

RICE SOLAR ENERGY PROJECT

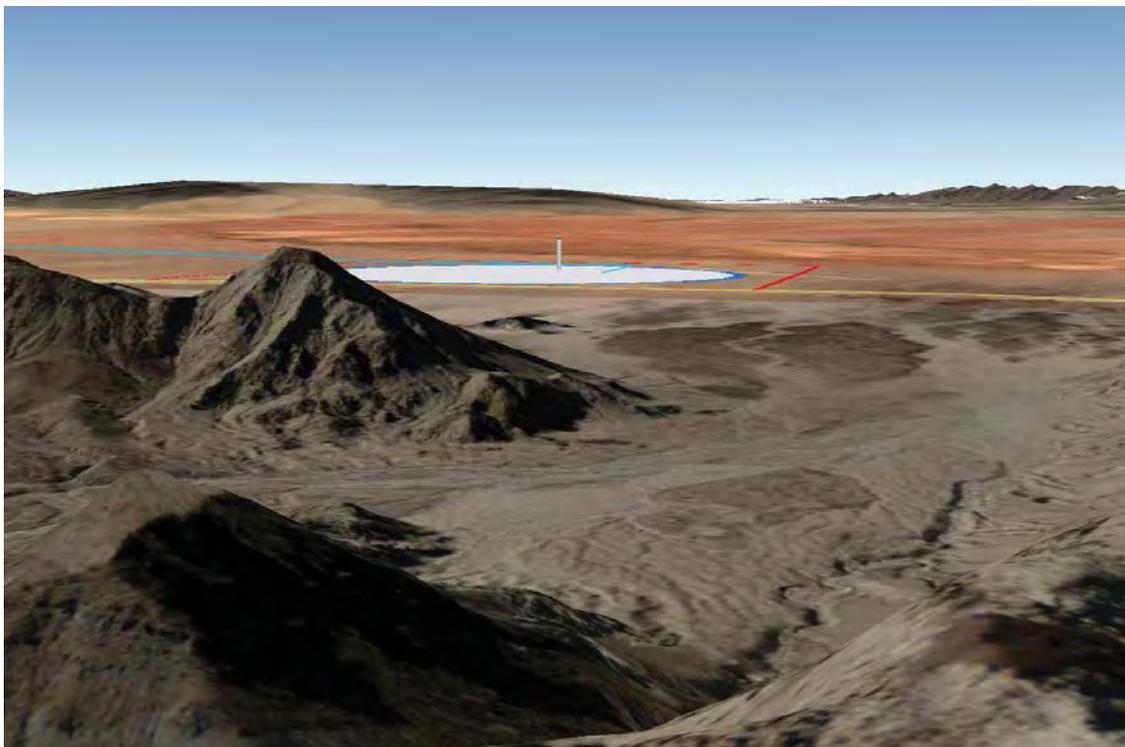
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ABSTRACT

Lead Federal Agency: U.S. Department of Energy (Western Area Power Administration; Loan Guarantee Program)

Lead State Agency: California Energy Commission

Cooperating Agency: U.S. Bureau of Land Management

Title: Draft Environmental Impact Statement/Staff Assessment for the Solar Reserve LLC Rice Solar Energy Project, Riverside County, California (DOE/EIS-0439)

Further Information: For information on the proposed Project, the EIS and general information about Western's transmission system, contact Ms. Liana Reilly, Western NEPA Document Manager, NEPA Document Manager, Western Area Power Administration, P.O. Box 281213, Lakewood, CO 80228-8213, telephone (800) 336-7288. For general information on the DOE NEPA process, please contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance (GC-54), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585, telephone (202) 586-4600 or (800) 472-2756. For information on the DOE Loan Guarantee Program's involvement in the Project, contact Ms. Angela Colamaria, NEPA Document Manager, DOE Loan Guarantee Program, 1000 Independence Ave. SW, LP-10, Washington, DC 20585, telephone (202) 287-5387, or e-mail angela.colamaria@hq.doe.gov. For information on BLM's role with the Project or the possible CDCA Plan Amendment, contact Ms. Allison Shaffer, BLM Project Manager, Project Manager, Palm Springs South Coast Field Office, Bureau of Land Management, 1201 Bird Center Drive, Palm Springs, CA, 92262, telephone (760) 833-7100 or e-mail CAPSSolarRice@blm.gov.

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Abstract: Rice Solar Energy (RSE) has submitted an Application for Certification to the California Energy Commission for a proposed 150 megawatt (MW) solar electric power plant that would use concentrating solar "power tower" technology to capture the sun's heat to make steam, which would power a traditional steam turbine generator. The solar generation facility, located on privately owned land, would use an air cooled condenser (i.e., dry cooling technology) for power plant cooling. Rice Solar Energy, LLC (RSE) has applied to Western to interconnect the proposed Project to Western's transmission system. A new 10-mile long 230-kV generator tie-line would extend from the southern boundary of the solar facility boundary to a new substation to be constructed adjacent to Western's existing Parker-Blythe #2 transmission line. RSE also submitted an application to the DOE LGP seeking a guarantee for the proposed Project.

RSE has submitted a right-of-way (ROW) application to the BLM for the Project components (the generator tie-line, substation, access road, and fiber optic line) to be constructed on a total of approximately 12 acres of land managed by the BLM. The Project site is in an undeveloped area of the Sonoran Desert in eastern Riverside County, California, near State Route 62, approximately 40 miles northwest of Blythe, California, and 15 miles west of Vidal Junction, California, on lands managed by the BLM.

Comments on this Draft EIS should be sent to Ms. Liana Reilly at the Western address above. Comments must be postmarked no later than the expiration of the 90 day comment period announced in the U.S. Environmental Protection Agency's Notice of Availability for this Draft EIS.

RICE SOLAR ENERGY PROJECT (RSEP)

STAFF ASSESSMENT, DRAFT ENVIRONMENTAL IMPACT ASSESSMENT

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INTRODUCTION

The proposed action evaluated within this Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) is the construction and operation of the Rice Solar Energy Project (RSEP), a proposed solar-thermal generation facility. The RSEP power plant and a portion of the Generation Tie Line would be located on private land, and the remaining portion of the Tie Line would be on public lands managed by the Bureau of Land Management (BLM) in unincorporated eastern Riverside County, California. The interconnection to the electric transmission system would be to Western Area Power Administration's (Western's) Parker-Blythe #2 Transmission Line. The SA/DEIS represents a joint environmental review document developed by the California Energy Commission (Energy Commission), BLM and Western to evaluate potential impacts associated with the proposed action. The DEIS also functions as the environmental evaluation of a proposed amendment to BLM's California Desert Conservation Area (CDCA) Plan, which would identify the RSEP generation tie line within the Plan.

When considering a thermal-electric energy project of 50 megawatts or greater for licensing, the Energy Commission is the lead state agency for evaluating environmental impacts of a proposed licensing action under the California Environmental Quality Act (CEQA). The SA, the result of the Energy Commission staff's environmental evaluation process, is functionally equivalent to the preparation of an Environmental Impact Report.

Western, on behalf of the Department of Energy (DOE), is the lead federal agency evaluating environmental impacts of the proposed project under the National Environmental Policy Act (NEPA) as associated with the electrical interconnection to Western's transmission system. The proposed project is located partially on public lands managed by the BLM and would require a right-of-way grant and land use plan amendment to allow project use of those lands. For this reason, BLM is a cooperating agency in evaluating environmental impacts of the proposed project under NEPA, pursuant to an MOU between Western and BLM, and an MOU between DOE's Loan Guarantee Program (LGP) and BLM. The DEIS is the BLM's environmental evaluation of the potential impacts that could result from the authorization of the requested right-of-way and similarly serves as Western's environmental evaluation of the potential impacts that could result from the proposed electrical transmission interconnection. The LGP is also participating with Western in the preparation of this SA/DEIS as the project proponent has applied for a loan guarantee to fund the proposed project.

In August, 2007, the Energy Commission and BLM California Desert District (CDD) entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. The purpose of the MOU is to avoid duplication of staff efforts, share staff expertise and information, promote intergovernmental coordination, and facilitate public review. Consistent with the guidelines of the MOU, this document represents the Energy Commission's SA, as well as the BLM's and DOE's DEIS.

Following a 90-day public comment period, BLM and Western, on behalf of DOE, will issue a Final EIS.

For Energy Commission purposes, this SA/DEIS is a staff document that may be revised by staff based on comments received during a 30-day comment period. It is neither a document of the California Energy Commission Siting Committee, a draft decision by the Siting Committee, nor a Final Decision by the Energy Commission. Similarly, the SA/DEIS does not serve as a decision document that would be used by decision makers when considering approving the right-of-way grant by BLM or the interconnection to Western's transmission system.

PROJECT LOCATION AND DESCRIPTION

The applicant has proposed to locate the RSEP in the Mojave Desert, approximately 32 miles west of Parker, Arizona and approximately 40 miles northwest of Blythe, California in Riverside County, California. The nearest community is Vidal Junction, approximately 15 miles northeast. The site is adjacent to State Route 62 (SR-62), which parallels a portion of the Arizona-California Railroad and the Colorado River Aqueduct, near the junction of SR-62 and Blythe-Midland Road, and near the sparse remains of the abandoned town of Rice, California. The power plant would occupy 1,410 acres of a larger 2,560-acre parcel on private land located adjacent to, and immediately south of, SR-62, and would occupy about 99 acres of federal land managed by BLM associated with the generation tie line and new interconnection substation.

Approximately nine miles of the 10-mile long generation tie line would be located on public land administered by the BLM with the balance on private land. The electrical interconnection would be to Western's Parker-Blythe #2 161 kilovolt (kV) transmission line at a new substation located southeast of the power plant. RSEP would include fiber optic and/or microwave telecommunication facilities associated with the electrical interconnection to Western's facilities. The nearest community is Vidal Junction, approximately 15 miles northeast. Access to the site is directly from SR-62 (SR 2009a, Sections 1 and 2).

The proposed RSEP would be a concentrating solar thermal power plant development in which most of the power plant area consists of a field of heliostats (elevated mirrors guided by a tracking system) focusing solar energy on a solar receiver heat exchanger located on one centralized power tower. Each heliostat tracks the sun throughout the day and reflects the solar energy to the receiver. The project features thermal energy storage that allows solar energy to be captured throughout the day and retained in a liquid salt heat transfer fluid. When electricity is to be generated, the hot liquid salt is routed to a series of heat exchangers to heat water and produce steam. The steam is used to generate electricity in a conventional steam turbine cycle that would utilize an air-cooled condenser to minimize water consumption.

RSEP is designed to produce electricity at a capacity of 150 megawatts (MW) and annual energy of 450,000 megawatt-hours per year during periods of peak energy demands. The primary components of the 1,410 acre power plant site would include the heliostat field, a 653-foot high central tower and receiver, hot and cold liquid salt storage

tanks, a steam-turbine generator and associated equipment, a 20-cell air-cooled condenser, two on-site water wells, three evaporation ponds to capture and evaporate process wastewater, two storm water detention basins, an electrical switchyard, and associated administration and maintenance facilities (SR 2009a, Section 2). Please see the **Project Action/Proposed Project** section for a more details of the proposed project.

PUBLIC AND AGENCY COORDINATION

Both the Energy Commission's CEQA-equivalent process and the BLM's NEPA process provide opportunities for the public and other agencies to participate and consult in the scoping of the environmental analysis, and in the evaluation of the technical analyses and conclusions of that analysis. The following subsections describe the status of these outreach efforts.

Public Coordination

Both the Energy Commission's CEQA-equivalent process and the BLM's/Western's NEPA process provide opportunities for public participation in the scoping of the environmental analysis, and in the evaluation of the technical analyses and conclusions of that analysis. For the Energy Commission, this outreach program is primarily facilitated by the Public Adviser's Office (PAO). As part of the coordination of the environmental review process required under the Energy Commission/BLM California Desert District MOU and in coordination with Western, the agencies have jointly held public meetings and workshops which accomplish the respective public coordination objectives. This is an ongoing process that to date has involved the following efforts.

Libraries

The Application for Certification (AFC) was sent to local public libraries in Blythe and Desert Center, California and Parker, Arizona and at public libraries in Fresno, Eureka, San Diego and San Francisco, the California State Library, and the Energy Commission's library in Sacramento.

Outreach Efforts

The PAO's public outreach is an integral part of the Energy Commission's AFC review process. The PAO reviewed information provided by the applicant and also conducted its own outreach efforts to identify and locate local elected and certain appointed officials, as well as "sensitive receptors" (such as schools, community, cultural and health facilities and daycare and senior-care centers, as well as environmental and ethnic organizations). There were not any sensitive receptors identified within a six-mile radius of the proposed site for the project.

Notices for workshops and hearings have been and will continue to be distributed to those agencies, individuals, and businesses that are currently on or request to be placed on the project's mailing list. Notices were distributed for the Informational Hearing and Site Visit, which was conducted on January 25, 2010, in Blythe, California.

Coincident with the PAO's outreach efforts, BLM and Western solicited interested

members of the public and agencies through the NEPA scoping process. BLM and Western published a Notice of Intent to develop the EIS and amend the CDCA Plan in the Federal Register, Vol. 75, No. 59, pages 15427 - 15429, on March 29, 2010. BLM and Western conducted two Public Scoping meetings for the EIS in accordance with NEPA. The first of these was conducted on March 31, 2010 in Big River and the second was conducted on April 1, 2010 in Palm Desert.

During the process, the Energy Commission, BLM, Western and the applicant coordinated to conduct two workshops. The first was an Issue Resolution workshop which was held in Sacramento, California on March 19, 2010. The second was a Site Visit to Discuss Historical Resources conducted at the RSEP site on June 2, 2010. Both events were announced and made available to the public. The Energy Commission has also continued to accept and consider public comments.

Those agencies and individuals that have provided comments concerning the project have been considered in staff's analysis. This SA/DEIS provides agencies and the public with an opportunity to review the Energy Commission staff's analysis of the proposed project. Comments received on this SA/DEIS will be taken into consideration in preparing the subsequent project documents.

Energy Commission regulations require staff to notice, at a minimum, property owners within 1,000 feet of a project and 500 feet of a linear facility under its jurisdiction. This was done for the RSEP project.

The applicant's AFC, AFC Supplement, Responses to Data Requests, this SA/DEIS, and other project documents are located on the Energy Commission's website at <http://www.energy.ca.gov/sitingcases/ricesolar/index.html>.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of this mission. The order requires the USEPA and all other federal agencies (as well as state agencies receiving federal funds) to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

The purpose of the screening analysis is to determine whether a minority or low-income population exists within the potentially affected area of the proposed site. For all siting cases, Energy Commission staff conducts an environmental justice screening analysis in accordance with the "Final Guidance for Incorporating Environmental Justice Concerns in USEPA's National Environmental Policy Act (NEPA) Compliance Analysis" dated April 1998, which defined minority populations as either:

- a low-income and/or minority population of the affected area is greater than 50% of the affected area's general population; or

- the minority population percentage of the area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

California Statute, Section 65040.12 (c) of the Government Code, defines “environmental justice” to mean “fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.” In light of the progress made by federal environmental agencies on environmental justice, the Energy Commission has examined federal guidelines pursuant to its desire to follow environmental justice principles for the environmental review of this project.

The steps recommended by these guidance documents to assure compliance with the Executive Order are: (1) outreach and involvement; (2) a screening-level analysis to determine the existence of a minority or low-income population; and (3) if warranted, a detailed examination of the distribution of impacts on segments of the population. Though the Federal Executive Order and guidance are not binding on the Energy Commission, staff finds these recommendations helpful for implementing this environmental justice analysis. Staff has followed each of the above steps for the following 11 sections in the FSA/DEIS: Air Quality, Hazardous Materials, Land Use, Noise, Public Health and Safety, Socioeconomics and Environmental Justice, Soils and Water, Traffic and Transportation, Transmission Line Safety/Nuisance, Visual Resources, and Waste Management.

According to the Census 2000 data there were five people within six miles of the proposed project site which resided within California. With one person (20%) of the total California residents classified as minority (see **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE FIGURE 1**), no census blocks within a six-mile radius of the proposed RSEP site contain minority populations greater than 50%. The agencies normally identify below-poverty-level population within the six-mile radius using Year 2000 U.S. Census block group data. However, for this project the poverty data would be inaccurate for the six-mile radius because the census block groups are so large that they include persons well beyond the six-mile radius and therefore, would misrepresent the poverty data within the six-mile radius. The proposed action would not impact distinct Native American cultural practices or result in disproportionately high and adverse human health or environmental effects on minority communities.

STAFF’S ASSESSMENT

Each technical area section of the SA/DEIS contains a discussion of the project setting, impacts, and where appropriate, mitigation measures and conditions of certification. The SA/DEIS includes the staff’s assessment of:

- the environmental setting of the proposal;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- environmental impacts, and measures proposed to mitigate these impacts;

- the engineering design of the proposed facility, and engineering measures proposed to ensure the project can be constructed and operated safely and reliably;
- project closure;
- project alternatives;
- compliance of the project with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation;
- environmental justice for minority and low income populations, when appropriate; and
- proposed mitigation measures/conditions of certification.

SUMMARY OF PROJECT RELATED IMPACTS

The analysis of project-related direct, indirect and cumulative impacts within this SA/DEIS shows that staff is able to be conclusive in its assessment of impacts and recommended mitigation for most technical areas while remaining inconclusive for Biological Resources as a result of outstanding information needed. In the technical areas of Land Use, and Visual Resources, the direct and cumulative impacts are significant and unmitigable.

Staff is able to conclude for Biological Resources that for all aspects of the project other than the telecommunications option to install fiber optic cable on the Parker-Blythe #2 transmission line, that direct, indirect and cumulative impacts can be mitigated to less than significant levels, and that the project would conform to LORS. However, staff is unable to determine impacts, appropriate mitigation and whether this option would conform to LORS due to a lack of data associated with the option to establish telecommunications between RSEP and Western's system by installation of a fiber optic cable on the Parker-Blythe #2 Transmission Line. Staff expects to receive this information from the applicant in time to update the record prior to the issuance of the Presiding Member's Proposed Decision and to reflect the updates in the FEIS.

The assessment of Land Use, Recreation and Wilderness reveals that the project would still have the following significant/substantial and unmitigable impacts after implementing the proposed conditions of certification:

- Result in a loss of scenic character when considering both direct and cumulative impacts;
- Contribute substantially to cumulative land use and visual/scenic character impacts;

In addition, RSEP would not be consistent with various Riverside County LORS including various Land Use Element policies and a Multipurpose Open Space Element policy associated with the Riverside County General Plan.

With respect to Visual Resources, the agencies have identified, and staff concludes with respect to CEQA, that the proposed project, after implementing all staff-recommended conditions of certification, would still have significant and unmitigable adverse direct and cumulative visual impacts from several Key Observation Points including:

- Highway SR-62 to background distances of 5 miles or more, due particularly to solar receiver brightness; and
- Portions of the Turtle Mountain Wilderness Area at distances of roughly 5 miles or under due to the combination of mirror-field visibility, mirror-field glare, and solar receiver glare.

Within the local viewshed of Rice Valley and of SR 62 in the project vicinity, the anticipated operational visual impacts of the RSEP in combination with past and foreseeable future projects are considered potentially significant and unmitigable, particularly to motorists on SR 62, and to visitors to the area's many wilderness areas and Joshua Tree National Park. In addition, cumulative night light pollution impacts in the project area could become cumulatively considerable. Within the southern California desert, anticipated cumulative operational impacts of past and foreseeable future region-wide projects are considered cumulatively considerable, potentially significant and unmitigable considering the substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape. RSEP would not conform with a number of applicable LORS of San Bernardino and Riverside Counties pertaining to preservation of scenic resources and scenic highway view corridors.

The following table summarizes the potential environmental impacts and LORS conformance for each technical section. Following the table is a discussion of the technical area conclusions that are not currently favorable in consideration of:

1. the project's direct, indirect or cumulative impacts would not be mitigated to a less than significant level;
2. the project would not conform to applicable LORS; or
3. staff's determinations are inconclusive at this time due to outstanding data.

Cultural Resources effects are also summarized even though impacts would be mitigated to less than significant. This is in consideration of RSEP's impacts to historic Rice Army Airfield (Rice AAF), the western periphery of Camp Rice and the Desert Training Center Cultural Landscape. Please see the appropriate section of this document for more detailed discussions of the environmental settings, impacts, and proposed mitigation measures and Conditions of Certification for each resource area.

Technical Area	Complies with LORS	Direct & Indirect Impacts Mitigated to Less Than Significant	Cumulative Impacts Mitigated to Less Than Significant
Air Quality	Yes	Yes	Yes
Biological Resources	Inconclusive with respect to Telecommunications	Inconclusive with respect to Telecommunications	Inconclusive with respect to Telecommunications
Cultural Resources and Native American Values	Yes	Yes	Yes
Facility Design	Yes	Yes	Yes
Geology, Paleontology, and Minerals	Yes	Yes	Yes
Hazardous Materials Management	Yes	Yes	Yes
Land Use, Recreation & Wilderness	No Land use non-conformance due to visual/scenic impacts	No visual/scenic character impacts	No visual/scenic character impacts
Livestock Grazing	Yes	Yes	Yes
Noise and Vibration	Yes	Yes	Yes
Public Health and Safety	Yes	Yes	Yes
Power Plant Efficiency	Not Applicable	Not Applicable	Yes
Power Plant Reliability	Not Applicable	Not Applicable	Yes
Recreation	Yes	Yes	Yes
Socioeconomic and Environmental Justice	Yes	Yes	Yes
Soil and Water Resources	Yes	Yes	Yes
Traffic and Transportation	Yes	Yes	Yes
Transmission Line Safety/Nuisance	Yes	Yes	Yes
Transmission System Engineering	Yes	Yes	Yes
Visual Resources	No non-conformance due to visual/scenic impacts	No visual/scenic character impacts	No visual/scenic character impacts
Waste Management	Yes	Yes	Yes
Wild Horses and Burros	Yes	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes	Yes

BIOLOGY

Construction of the project would result in the permanent land use conversion of approximately 1,770 acres of habitat to support operation of the solar generator, appurtenant structures, and other project components. This summary provides a general overview of the project impacts to each of the biological resources that are present on the project site, have the potential to be present on the site, or are present off-site and have potential to be indirectly affected by the proposed project. This summary also describes potential mitigation measures that may be employed to avoid or reduce or potentially significant project impacts.

Native Vegetation and Habitat: The RSEP would eliminate or degrade native vegetation and wildlife habitat on the proposed solar generator and interconnector substation sites, and would cause temporary or long-term effects to contiguous habitat north of the solar generator site and along the generator tie-line and Parker-Blythe #2 transmission line alignments. These impacts would affect all plant and wildlife species on the site, including special status species. Construction of the project would result in the permanent land use conversion of approximately 1,770 acres of habitat to support operation of the solar generator, appurtenant structures, and other project components. The majority of this habitat is creosote bush scrub. There are no data available on vegetation types along the Parker-Blythe #2 transmission line. Staff believes that the majority of the alignment crosses creosote bush scrub similar to that on the project site, but it also appears to cross dunes in Rice Valley and numerous washes, some of which may support desert riparian or microphyll wash woodland.

Although construction would not result in the complete loss of vegetation on the solar generator site, staff considers the construction of exclusion fencing (designed to prevent desert tortoise from entering the project site), vegetation mowing, introduction of shade and added moisture from mirror washing, maintenance activity, and risk of invasion by weedy annuals to eliminate or degrade the habitat function of the site for all but the most disturbance-tolerant native species. Disturbance to native vegetation along the transmission line alignments would be limited to access routes, pull sites and tower sites, but mechanical access would cause long-term degradation to affected vegetation and habitat. To minimize project effects on vegetation and habitat, staff has proposed Conditions of Certification **BIO-1** through **BIO-9** (Designated Biologist Selection, Designated Biologist Duties, Biological Monitor Qualifications, Biological Monitor Duties, Designated Biologist and Biological Monitor Authority, Worker Environmental Awareness Program, Biological Resources Mitigation Implementation and Monitoring Plan, Impact Avoidance and Minimization Measures, and Compliance Verification), **BIO-10** (Revegetation and Compensation for Impacts to Native Vegetation), and **BIO-11** (Weed Management Plan). To address specific construction-related impacts to native vegetation and habitat loss, staff has incorporated measures proposed by the applicant and has proposed supplemental measures in Condition of Certification **BIO-16** (Desert Tortoise Habitat Compensation). Staff concludes these measures would reduce impacts of the solar generator facility, generator tie-line, and interconnector substation to vegetation and habitat to a level less than significant. Staff has not determined potential significance of project impacts along the Western Parker-Blythe #2 161-Kv Transmission Line associated with installation of the fiber optic cable telecommunication

option, pending additional biological data.

Rare Plants: One special-status species, chaparral sand verbena, was reported on the RSEP solar generator site and another, Harwood's milk vetch, was reported on the generator tie-line alignment. Other late-season special status species may also occur on the site. There are no available data on special status plant occurrence along the Parker-Blythe #2 transmission line. Staff believes that impacts to chaparral sand verbena would be less than significant under CEQA, and that potentially significant impacts to Harwood's milk vetch can be reduced below a level of significance with the implementation of staff's proposed impact avoidance and minimization measures. These measures are detailed in staff's proposed Conditions of Certification **BIO-1** through **BIO-11**, **BIO-12** (Special-Status Plant Impact Avoidance and Minimization), and **BIO-16**. In addition, **BIO-12** would require additional special-status plant surveys on the Parker-Blythe #2 transmission line and late-season surveys on all project component sites. **BIO-12** provides a strategy to evaluate significance of potential impacts to any special status plants that may be affected by the project, and a series of mitigation measures to reduce those impacts, if any, below a level of significance. Staff concludes that, with mitigation as recommended, impacts of the solar generator site, generator tie-line, and interconnector substation to rare plants would not be significant. Staff has not determined potential significance of project impacts along the Western Parker-Blythe #2 161-Kv Transmission Line associated with installation of the fiber optic cable telecommunication option, pending additional biological data.

Common Wildlife and Nesting Birds: Construction of the RSEP would adversely affect common wildlife and nesting birds due to ground disturbance, operation, and permanent exclusion fencing around the perimeter of the solar generator site. Species unable to disperse to surrounding areas will be confined within the project boundaries by the exclusionary fencing, and would be subject to increased risks of road kill and repeated disturbance from human activities during construction and operation. Off-site effects would include noise, lighting, and other disturbance, as well as potential for introduction and spread of weeds and altered off-site hydrology. Transmission line construction and upgrades would degrade habitat at access points (above) and would cause short-term noise and disturbance impacts to wildlife in the construction area. To reduce project effects on common wildlife and nesting birds, staff has proposed Conditions of Certification **BIO-1** through **BIO-11** (above). Among their other requirements, these conditions would require construction scheduling, pre-construction nesting surveys, and other measures to avoid impacts to nesting birds at all construction sites. In addition, staff has recommended Condition of Certification **BIO-16** (Tortoise Habitat Compensation), which also would serve to compensation habitat for common wildlife species and impacts to nesting birds would be avoided by the application of **BIO-13** (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds). Staff concludes that, with mitigation as recommended, impacts of the solar generator site, generator tie-line, and interconnector substation to common wildlife would not be significant. Staff has not determined potential significance of project impacts along the Western Parker-Blythe #2 161-kV Transmission Line associated with installation of the fiber optic cable telecommunication option, pending additional biological data.

Based on research at a smaller project site using similar technology, operation of the project is expected to result in bird collisions with the heliostat mirrors and incineration

at or near focused solar heat at the central tower. Staff cannot quantify the expected impact or assess its significance. Staff has proposed Condition of Certification **BIO-25** (Avian and Bat Protection Plan / Monitoring Operational Impacts Of Solar Collection Facility On Birds), which would require an Avian Protection Plan and a Bird Monitoring Study to monitor the death and injury of birds, and to develop and implement adaptive management measures if those impacts are substantial.

Desert Tortoise: Implementation of the RSEP would result in adverse effects to desert tortoise (federally and State listed as a threatened species). Construction of the proposed project would result in the permanent loss of approximately 1,770 acres of occupied desert tortoise habitat. One desert tortoise was located on the solar generator site during field surveys, and staff estimates that about four tortoises (two adults and one or two juveniles) may live on the site. In addition, about ten tortoise eggs may be expected on the site in a typical year. The transmission line corridors and interconnector substation also are in occupied desert tortoise habitat. To mitigate project impacts to desert tortoises and habitat, staff proposes Conditions of Certification **BIO-1** through **BIO-11** (above), which apply to protection of desert tortoise and other biological resources, and Conditions of Certification **BIO-14** through **BIO-17**, which are specific to desert tortoise. **BIO-14** requires pre-construction clearance surveys and exclusion fencing, to remove desert tortoises from the solar generator site and prevent tortoises from entering the site in the future. **BIO-15** requires implementing a translocation plan in accordance with US Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) guidelines, to translocate tortoises to suitable off-site habitat and monitor them. **BIO-16** requires acquisition, protection, and enhancement of compensation desert tortoise habitat. Staff's proposed compensation ratio is 1:1 for habitat loss at the solar generator site and 3:1 for habitat loss on the transmission lines and interconnector substation site, so that a total of 1,988 acres of compensation land would be required. In large part, this requirement may be met through dedication and protection of applicant-owned lands contiguous to the solar generator site. These lands, or other compensation lands, would be protected under a conservation easement and managed in perpetuity as desert tortoise habitat. BLM's requirement for mitigation at a 1:1 ratio, which may include funding for BLM to implement desert tortoise habitat enhancement projects on public land, would also serve to satisfy a portion of the compensation mitigation. Staff recommends a security in the amount \$5,213,088.41 to ensure completion of the habitat compensation requirement. This security includes costs to acquire, protect, and manage the compensation lands in perpetuity, as described in the analysis below and in **BIO-16**. Staff's recommended Condition of Certification **BIO-17** requires management actions to prevent any project-related increase in common raven predation on desert tortoises, as well as contribution on a per-acre basis to a region-wide raven management strategy. This suite of mitigation measures was developed by cooperatively by Energy Commission, Western, USFWS, CDFG, and BLM staff. Staff concludes that, with mitigation as recommended, impacts of the solar generator site, generator tie-line, and interconnector substation to desert tortoises would be less than significant pursuant to CEQA and would be fully mitigated as required under the California Endangered Species Act (CESA). Staff has not determined potential significance of project impacts along the Western Parker-Blythe #2 161-Kv Transmission Line associated with installation of the fiber optic cable telecommunication option, pending additional biological data.

Couch's spadefoot: Couch's spadefoot, a toad-like amphibian, is a BLM sensitive species and CDFG Species of Special Concern that breeds in summer rain pools and burrows below ground throughout most of the year. Its potential for occurrence on the solar generator site is low, but suitable habitat may be found on the Parker-Blythe #2 transmission line alignment. Staff's recommended Condition of Certification **BIO-23** (Couch's Spadefoot Surveys and Breeding Habitat Avoidance) would require seasonal breeding habitat surveys and, as applicable, avoidance of breeding pools during construction of any portion of the project. Staff concludes that this measure would reduce potential project impacts below a level of significance.

Mojave Fringe-Toed Lizard: The Mojave fringe-toed lizard is a BLM sensitive species and California Species of Special Concern. Its primary habitat is fine wind-blown (aeolian) sand deposits such as dunes and sandy patches within scrubby vegetation. It is not expected to occur on the solar generator site, but may occur on the generator tie-line alignment or interconnector substation site, and probably occurs on portions of the Parker-Blythe #2 transmission line alignment. Construction impacts to habitat along the transmission lines would be temporary because aeolian habitat is only sparsely vegetated and post-construction habitat recovery would occur naturally in only a short time. Proposed Condition of Certification **BIO-8** requires that generator tie-line construction and fiber optic OPGW installation on the existing Parker-Blythe #2 transmission line shall avoid any aeolian sand habitat wherever feasible, and, avoidance is infeasible, site-specific measures will be developed and implemented. Staff concludes that project impacts to Mojave fringe-toed lizard would not be significant.

Burrowing Owl: Construction of the RSEP would result in direct loss of habitat for the burrowing owl (a BLM sensitive species and a California Species of Special Concern). The applicant estimates up to seven burrowing owls occur on the solar generator site and generator tie line alignment. Staff's proposed Condition of Certification **BIO-19** (Burrowing Owl Impact Avoidance and Compensation Measures) provides measures to avoid take or direct impacts to burrowing owls, and to compensate for habitat loss based on the number of single owls or nesting pairs on the site. Habitat compensation may be "nested" within compensation lands required for desert tortoise habitat compensation (**BIO-16**, above). Staff concludes that project impacts of the solar generator site, generator tie-line, and interconnector substation to burrowing owl would be less than significant with incorporation of recommended mitigation. Staff has not determined potential significance of project impacts along the Western Parker-Blythe #2 161-Kv Transmission Line associated with installation of the fiber optic cable telecommunication option,, pending additional biological data.

Golden Eagle: Golden eagle is a BLM sensitive species, and also is protected under the federal Bald and Golden Eagle Protection Act and is ranked as Fully Protected under the California Fish and Game Code. No suitable nesting habitat is found on the solar generator site or generator tie-line alignment; potential nesting habitat along the existing Parker-Blythe #2 transmission line is unknown. Staff has proposed Conditions of Certification **BIO-18** (Pre- Construction Surveys for Golden Eagles) and **BIO-25** (Avian Protection Plan / Monitoring Operational Impacts Of Solar Collection Facility On Birds), to avoid construction-related disturbance to nesting golden eagles along the transmission line. The generator tie-line could present a new collision or electrocution

threat to golden eagles. Staff's recommended Condition of Certification **BIO-8** requires that transmission lines, fiber optic lines, and all electrical components shall be designed, installed, and maintained in accordance with guidelines and practices as recommended by the Avian Power Line Interaction Committee's publications to reduce the likelihood of large bird electrocutions and collisions. Project construction would eliminate or degrade approximately 1,770 acres of foraging habitat in the region. This loss could interfere with normal behavior, causing golden eagles to forage more widely and therefore spend less time at or near their nests. This effect could be considered "take," pursuant to the Bald and Golden Eagle Protection Act. Staff's recommended Condition of Certification **BIO-16** (above) requires acquisition, protection, and enhancement of compensation desert tortoise habitat; this habitat also would serve as golden eagle foraging habitat. The solar generator may present a collision or incineration hazard to golden eagles. Staff's recommended Condition of Certification **BIO-25** (above) would evaluate that hazard and implement adaptive management measures as determined necessary. Staff concludes that project impacts of the solar generator site, generator tie-line, and interconnector substation to golden eagle would be less than significant with incorporation of recommended mitigation. Staff has not determined potential significance of project impacts along the Western Parker-Blythe #2 161-Kv Transmission Line associated with installation of the fiber optic cable telecommunication option, pending additional biological data.

Burrowing mammals: American badgers and desert kit foxes occur throughout the Project area, and construction activities could crush or entomb these burrowing species. Staff's proposed Condition of Certification **BIO-19**, which requires preconstruction surveys and avoidance measures to protect badgers and kit foxes, would avoid these potential impacts.

State and Federal Jurisdictional Waters: The project would directly or indirectly affect numerous state-jurisdictional desert washes and ephemeral channels on the solar generator site and along transmission line corridors. The US Army Corps of Engineers (ACOE) has determined that streambeds on the solar generator and generator tie-line alignment are not within federal jurisdiction as Waters of the US. Streambeds on the Parker-Blythe #2 transmission line have not been delineated and no ACOE jurisdictional determination has been made. Staff's proposed Condition of Certification **BIO-22** (Streambed Impact Minimization and Compensation Measures) requires the acquisition and protection of offsite streambed habitat at a 1:1 ratio for streambed acreage lost on the solar generator site and generator tie-line alignment, and implementation of Best Management Practices to minimize impacts on the site. Habitat compensation for impacts to state-jurisdictional waters may be "nested" within compensation lands required for desert tortoise habitat compensation (**BIO-16**, above). With implementation of staff's proposed Conditions of Certification **BIO-22** staff concludes that project impacts of the solar generator site, generator tie-line, and interconnector substation to state-jurisdictional waters would be less than significant. In addition, staff recommends Condition of Certification **BIO-28** (Channel Decommissioning and Reclamation Plan), to be implemented upon project termination. ACOE has not indicated whether it holds federal jurisdiction over streambeds potentially impacted along the Western Parker-Blythe #2 161-Kv Transmission Line or whether such impacts would be authorized under a Nationwide General Permit. Staff has not determined potential state jurisdiction or CEQA significance of project impacts along that alignment, pending additional data.

Wildlife Movement: Construction of the proposed RSEP would have the potential to interrupt wildlife movement through the area. The solar generator site could interrupt potential north-south movement at two suitable wildlife crossings over the nearby California Aqueduct, and the project's perimeter fence could direct animals travelling east-west in the area onto State Highway 62 where risk of vehicle strike would be increased. Staff concludes that the potential impacts to north-south movement would be less than significant and that implementation of staff's recommended Condition of Certification **BIO-21** (Fence locations: Logistics, Lay-down Area and Access Road) would reduce potential impacts to east-west movement below a level of significance.

Cumulative Impacts: Staff concludes that without mitigation, the RSEP would contribute to the cumulatively significant loss of regional resources, including the State and federally threatened desert tortoise and other special status species. Impact avoidance and minimization measures described in staff's analysis and included in the conditions of certification would help reduce impacts to these resources. These compensatory measures are necessary to offset project-related losses, and to assure compliance with State and federal laws such as the federal and State Endangered Species Acts. With the implementation of these measures, staff concludes that the solar generator site, generator tie-line, and interconnector substation contributions to cumulative significant impacts to biological resources would not be considerable. Staff has not determined potential cumulative significance of project impacts along the Western Parker-Blythe #2 161-Kv Transmission Line associated with installation of the fiber optic cable telecommunication option, pending additional biological data.

Staff concludes that, with the incorporation of recommended Conditions of Certification **BIO-1** through **BIO-28**, the proposed RSEP solar generator site, generator tie-line, and interconnector substation would be in compliance with applicable Laws, Ordinances, Regulations, and Standards (LORS). Staff has not determined whether the Western Parker-Blythe #2 161-Kv Transmission Line associated with installation of the fiber optic cable telecommunication option, would comply with applicable LORS, pending additional biological data.

CULTURAL RESOURCES

With respect to CEQA, staff concludes that the proposed Rice Solar Energy Project (RSEP) would have significant direct impacts to the features and artifact concentrations associated with the historic Rice Army Airfield (Rice AAF) and the western periphery of Camp Rice (CA-SBA-10526H), as well as potential direct impacts to 23 other eligible or assumed eligible archaeological sites.

Staff finds that the RSEP construction impacts, when combined with impacts from the past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts to cultural resources at the regional level. Staff recommends the adoption of **CUL-1**, which would reduce RSEP's cumulative impacts to a less than significant level. The program established by this condition of certification would define, document, and nominate the Desert Training Center Cultural Landscape to both the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR). Other solar projects in the

southern desert, including Blythe Solar Power Project, Palen Solar Power Project, and Genesis Solar Energy Project, are also included in this regional effort.

Staff also recommends that the Energy Commission adopt Conditions of Certification **CUL-2** through **CUL-11**, to mitigate RSEP's project-specific cultural resource impacts. These conditions of certification include the following:

- **CUL-2** identifies the positions and qualifications of personnel responsible for implementing and monitoring the Energy Commission cultural resource conditions of certification .
- **CUL-3** specifies the information and project documentation to be supplied by the project owner.
- **CUL-4** requires the preparation and implementation of a Cultural Resources Monitoring and Mitigation Plan (CRMMP), which would structure and govern the implementation of the broader treatment program.
- **CUL-5** would require the preparation of a final Cultural Resources Report (CRR) that would analyze, interpret, and document the results of all field activities and research findings for the RSEP cultural resources management program.
- **CUL-6** would require training of all project personnel to identify, avoid, protect, and provide appropriate notice of potential cultural resources in the project construction area.
- **CUL-7** and **CUL-8** would provide construction monitoring and cultural resources discovery protocols.
- **CUL-9** identifies data recovery protocols for the Rice AAF/Camp Rice.
- **CUL-10** identifies a process for resolving any inconsistencies in impact significance and mitigation requirements, as it would relate to stipulations within an Energy Commission/Western/BLM Memorandum of Agreement (MOA), Section 106 consultation. The MOA may be included in the Western and BLM Final Environmental Impact Statement (FEIS) for the RSEP interconnection and right-of-way application or be released as a separate document. However, the Energy Commission's Staff Assessment (SA) will be published in advance of the FEIS and completion of the MOA. Therefore, there is the possibility that staff's recommended conditions of certification may conflict with the mitigation measures or monitoring protocols identified in this document. Updated information may be needed in the Energy Commission's record to identify or clarify any differences between the Energy Commission conditions of certification and proposed Federal cultural resources mitigation.
- **CUL-11** would require construction of a public use area on the project site as partial mitigation for the impacts to historic and scenic values of the area, also serving to conform with LORS consistent with the requirements of Section 25529 of the Warren-Alquist Act.
- **CUL-12** would ensure previously documented and newly discovered cultural resources within Western's Parker Dam-Blythe Transmission Line No. 2 corridor and Historic Interpretive Area are flagged and avoided during proposed construction.

Implementation of the proposed conditions of certification included in this Cultural Resources section would satisfy the Energy Commission's responsibility to comply with CEQA, ensure consistency with the applicable LORS, and reduce impacts to cultural resources to a less than significant level. The identification of relevant and reasonable mitigation measures also conforms to NEPA requirements for the BLM/Western analysis that can be considered in their Records of Decision (ROD).

LAND USE

The proposed Rice Solar Energy Project would be located on land within the California Desert Conservation Area (CDCA), as amended by the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan. The project footprint would include approximately 1,410 acres of privately owned property and about 99 acres of "Multiple-Use Class M" (MUC-M) public (federal) lands, managed by the U.S. Bureau of Land Management (BLM), on a 2,560-acre project site. Siting of electrical generation plants on Class M lands requires compliance with federal, state, and local laws and the NEPA environmental review process.

The proposed project would also require BLM approval of an Amendment to the CDCA Plan and issuance of a Right-of-Way (ROW) grant for use of approximately 99 acres: a 10-mile long corridor, 150 feet wide, and a three-square-acre plot for the transmission lines and interconnection substation. The applicant has submitted an initial ROW application with the approximate acreage and alignment, which would be modified to include only the final project footprint prior to issuance.

The proposed project would not:

- Result in the loss or conversion of Farmland or forest land to non-agricultural uses.
- Conflict with or result in a change to any agricultural zoning or existing Williamson Act contracts.
- Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.
- Directly or indirectly divide an established community.
- Induce substantial population growth in the project area.
- Impact airport operations.

The proposed project would have a less than significant impact on:

- Wilderness and recreation areas.
- Permanent loss of lands within a portion of the proposed project footprint for agriculture, natural resources, and recreation.
- Recreational use of and access to a portion of the proposed project site and surrounding BLM-managed federal lands.
- The historic significance and National Register eligibility of Camp Rice.

- Future land use and development.

The proposed project would have a less than significant impact, with full implementation of the applicable conditions of certification, on:

- Agricultural use (grazing) and access in an established federal rangeland area within the CDCA.
- Consistency with most applicable land use plans, policies, and regulations of an agency with jurisdiction, or that would normally have jurisdiction, over the project.

The proposed project would have the following significant/substantial, unavoidable impacts before considering whether impacts would be mitigated to less than significant with proposed conditions of certification:

- Result in a loss of scenic character when considering both direct and cumulative impacts;
- Result in the loss of a National Register eligible historic resource (Rice Army Airfield).
- Contribute substantially to cumulative land use and visual/scenic character, recreational, biological, and cultural impacts.

The proposed project would still have the following significant/substantial and unmitigable impacts after implementing the proposed conditions of certification:

- Result in a loss of scenic character when considering both direct and cumulative impacts;
- Contribute substantially to cumulative land use and visual/scenic character impacts;

The proposed project would not be consistent with the following laws, ordinances, regulations, and standards, even with implementation of proposed conditions of certification:

- Riverside County General Plan Land Use Element policies: LU 4.3, LU 6.1, LU 8.2, LU 13.1, LU 13.3, LU 20.1, LU 20.2, LU 20.4, LU 30.1
- Riverside County General Plan Multipurpose Open Space Element policy OS 21.1

VISUAL RESOURCES

The agencies have identified, and staff concludes with respect to CEQA, that the proposed project, after implementing all staff-recommended conditions of certification, would still have significant and unavoidable adverse direct and cumulative visual impacts from several Key Observation Points including:

- Highway SR-62 to background distances of 5 miles or more, due particularly to solar receiver brightness; and
- portions of the Turtle Mountain Wilderness Area at distances of roughly 5 miles or under due to the combination of mirror-field visibility, mirror-field glare, and solar receiver glare.

Staff has recommended **Traffic and Transportation** Conditions of Certification **TRANS-6**, Heilostat Positioning Plan, and **TRANS-7**, Power Tower Monitoring Plan, to ensure that potential glare from the project is minimized to the maximum extent possible and does not pose a health and safety risk. However, staff concludes that with these measures, glare from the project, particularly from the solar receiver, would remain a bright, intrusive source of sub-hazardous nuisance glare to viewers on Highway SR 62 and in other locations at distances within a range of 5 miles or more.

Impacts of the Reduced Acreage Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. However, the degree and extent of those impacts would be somewhat less than those of the Proposed Project.

Impacts of the North of Desert Center Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. Comparison to the proposed project is mixed. Impacts would be less than those of the Proposed Project due to the more developed and visually compromised setting when compared to that of the Proposed Project. However, the number of residents adversely affected would be substantial, and viewers in the easternmost slopes of Joshua Tree National Park could be affected.

Impacts of the State Route 62/Rice Valley Road Generation Tie Line Alternative would have the same significant unavoidable visual impacts as the proposed project, and in addition would substantially increase those impacts by introducing a new line into the immediate visual foreground of State Route 62 (SR-62).

The anticipated visual impacts of the Proposed Project, Reduced Acreage, North of Desert Center and SR 62/Rice Valley Road Generation Tie Line Alternatives, in combination with past and foreseeable future local projects in their local vicinity, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and significant.

Along SR 62, there are four proposed solar energy projects including RSEP that would result in a substantial man-made visual intrusion into a majority of the remaining visually intact and scenic portions of SR 62, potentially rendering it ineligible for designation as a State scenic highway. These four projects would affect over 50 miles of the most scenically intact portions of that highway, altering it from a natural, scenically intact desert landscape into one characterized by the strong visual influence of these industrial facilities. In addition, cumulative night light pollution impacts in the project area could become cumulatively considerable. Therefore, within the local viewshed of Rice Valley and of SR 62 in the project vicinity, the anticipated operational visual impacts of the RSEP in combination with past and foreseeable future projects are considered potentially significant and unmitigable, particularly to motorists on SR 62, and to visitors to the area's many wilderness areas and Joshua Tree National Park.

Within the southern California desert, anticipated cumulative operational impacts of past and foreseeable future region-wide projects are considered cumulatively considerable, potentially significant and unmitigable considering the substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a

substantially more urbanized character in the overall southern California desert landscape.

All action alternatives studied, with staff-recommended conditions of certification, would not conform with a number of applicable local Laws, Ordinances, Regulations and Standards (LORS) of San Bernardino and Riverside Counties pertaining to preservation of scenic resources and scenic highway view corridors, as described under the Compliance With LORS section of this analysis.

NOTEWORTHY PUBLIC BENEFITS

The RSEP, if constructed and operated as proposed, would provide the following benefits to California and its residents:

- RSEP would provide 150 MW of renewable energy power, which will assist in meeting California's Renewable Portfolio Standard, which specifies that retail sellers of electricity serve 20% of their load with renewable energy by 2010. (Pub. Util. Code, § 399.11 et seq.) Gubernatorial Executive Orders increase the requirement to 33% by 2020. (Governor's Executive Order S-14-08.)
- Producing electricity from renewable resources provides a number of significant benefits to California's environment and economy, including improving local air quality and public health, reducing global warming emissions, developing local energy sources and diversifying our energy supply, improving energy security, enhancing economic development and creating jobs. (2009 CEC Integrated Energy Policy Report, page 231.)
- Scientific studies quantify the negative impacts of global climate change to California's and the world's population, food supplies, public health and environment, including flora and fauna of coastal and desert regions. In order to reduce the impact, the State has adopted goals to reduce greenhouse gas (GHG) emissions through, among other things, renewable energy development.
- RSEP would assist the state in meeting its ambitious Greenhouse Gas reduction targets by generating 150 MW of electricity with vastly lower greenhouse gas emissions than existing fossil fuel burning generating facilities.
- By generating electricity without the use of fossil fuels, RSEP would reduce California's dependence on fossil fuels, a diminishing energy source.
- Electricity produced by RSEP would displace fossil-fuel derived power and reduce the need to operate less efficient peaking power plants.
- Energy storage allows RSEP to decouple the process of solar energy collection from that of power generation, allowing the plant to generate steady and uninterrupted power during hours of peak electricity demand, despite cloud cover, and even at night.
- RSEP would provide construction jobs for an average and peak workforce of 280 and 438, respectively, and approximately 47 jobs during operations. Most of those jobs will require highly trained workers.
- With total capital costs for RSEP estimated to be \$750 – 850 million, construction of

RSEP would provide a boost to the economy from the purchase of major equipment, payroll, and supplies.

- The public's access to history associated with Rice AAF, Camp Rice, and the Desert Training Center/California-Arizona Maneuver Area would be significantly enhanced as a result of RSEP.

INTRODUCTION

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INTRODUCTION

The proposed action evaluated within this Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) is the construction and operation of the Rice Solar Energy Project (RSEP), a proposed solar-thermal generation facility. The RSEP power plant and a portion of the Generation Tie Line would be located on private land, and the remaining portion of the Tie Line would be on public lands managed by the Bureau of Land Management (BLM) in unincorporated eastern Riverside County, California. The interconnection to the electric transmission system would be to Western Area Power Administration's (Western's) Parker-Blythe #2 Transmission Line. The SA/DEIS represents a joint environmental review document developed by the California Energy Commission (Energy Commission), BLM and Western to evaluate potential impacts associated with the proposed action.

When considering a thermal-electric energy project of 50 megawatts or greater for licensing, the Energy Commission is the lead state agency for evaluating environmental impacts of a proposed licensing action under the California Environmental Quality Act (CEQA). The SA, the result of the Energy Commission staff's environmental evaluation process, is functionally equivalent to the preparation of an Environmental Impact Report.

Western, on behalf of the Department of Energy (DOE), is the lead federal agency evaluating environmental impacts of the proposed project under the National Environmental Policy Act (NEPA) as associated with the electrical interconnection to Western's transmission system. The proposed project is located partially on public lands managed by the BLM and would require a right-of-way grant and land use plan amendment to allow project use of those lands. For this reason, BLM is a cooperating agency in evaluating environmental impacts of the proposed project under NEPA, pursuant to an MOU between Western and BLM, and an MOU between DOE's Loan Guarantee Program (LGP) and BLM. The DEIS is the BLM's environmental evaluation of the potential impacts that could result from the authorization of the requested right-of-way and similarly serves as Western's environmental evaluation of the potential impacts that could result from the proposed electrical transmission interconnection. The LGP is also participating with Western in the preparation of this SA/DEIS as the project proponent has applied for a loan guarantee to fund the proposed project.

In August, 2007, the Energy Commission and BLM California Desert District (CDD) entered into a Memorandum of Understanding (MOU) to jointly develop the environmental analysis documentation for solar thermal projects which are under the jurisdiction of both agencies. The purpose of the MOU is to avoid duplication of staff efforts, share staff expertise and information, promote intergovernmental coordination, and facilitate public review. Consistent with the guidelines of the MOU, this document represents the Energy Commission's SA, as well as the BLM's and DOE's DEIS. Following a 90-day public comment period, BLM and Western, on behalf of DOE, will issue a Final EIS.

For Energy Commission purposes, this SA/DEIS is a staff document. It is neither a document of the California Energy Commission Siting Committee, a draft decision by the Siting Committee, nor a Final Decision by the Energy Commission. Similarly, the SA/DEIS does not serve as a decision document that would be used by decision makers when considering approving the right-of-way grant by BLM or the interconnection to Western's transmission system. The SA/DEIS describes and evaluates the following:

- the proposed project;
- the existing environment;
- whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations, and standards (LORS);
- the environmental consequences of the proposed project including potential public health and safety impacts;
- the potential cumulative impacts of the proposed project in conjunction with other existing and known planned developments;
- mitigation measures proposed by the applicant, staff, interested agencies, local organizations, and interveners which may lessen or avoid potential impacts;
- the proposed conditions under which the project should be constructed and operated, if it is certified (known as "conditions of certification"); and
- alternatives to the proposed project.

The analyses contained in this SA/DEIS are based upon information from the: 1) Application for Certification (AFC), 2) responses to data requests, 3) supplementary information from local, state, and federal agencies; interested organizations; and individuals, 4) existing documents and publications, 5) independent research, 6) the Plan of Development submitted by the applicant to the BLM in 2009, and 7) comments at workshops. The SA/DEIS presents conclusions about potential environmental impacts and conformity with LORS, as well as proposed conditions of certification/mitigation measures that apply to the design, construction, operation, and closure of the facility. Each proposed condition of certification/mitigation measure is followed by a proposed means of verification that the condition has been met.

BACKGROUND

SolarReserve, LLC is a Delaware limited liability company with its principal place of business in Santa Monica, California. It has formed limited liability company Rice Solar Energy, LLC (referred to as applicant or SolarReserve hereafter) for the purposes of developing a concentrating solar power generation facility, filing a right-of-way (ROW) application with the BLM for the use of public land, filing for electrical transmission interconnection with Western, and for filing an AFC with the Energy Commission. SolarReserve has executed a Power Purchase Agreement with Pacific Gas and Electric to deliver 150 MW of generating capacity and 450,000 megawatt-hours (MWH) of renewable energy annually to the California market, proposing construction over 30 months beginning in spring 2011 and completing by the fourth quarter of 2013.

Through the limited liability company, the applicant has applied for one ROW grant from the BLM to construct the 161/230 kilovolt (kV) RSEP Generation Tie Line for which a 9-mile section of the overall 10-mile length would pass through BLM land and then interconnect to Western's 161 kV Parker-Blythe Transmission Line #2. In addition, a one-mile long, 12 kV distribution line extension would be constructed from Southern California Edison's distribution line adjacent to State Route 62, which would include a span of less than 200 feet across BLM land. The project would occupy 1,410 acres of private land, use approximately 180 acre feet of water per year, and operate for a term of approximately 30 years.

Solar Reserve has applied to Western to interconnect the proposed Project to Western's transmission system. The new 230-kV transmission line from the solar facility would extend approximately ten miles from the solar facility boundary to a new substation to be constructed adjacent to Western's existing 161 kv Parker-Blythe Transmission Line #2. Additionally, Western would need to replace an overhead ground wire on its existing Parker-Blythe transmission line with a fiber optic ground wire to allow communication from the new plant to the existing system. The substation, to be owned and operated by Western, would be located adjacent to Western's existing Parker-Blythe transmission line. The new substation would be approximately 300 x 400 feet or about three acres. The applicant's request was filed in accordance with Western's Open Access Transmission Service Tariff (Tariff). Western's Tariff provides open access to its transmission system. If there is available capacity in the transmission system, Western provides transmission services through an interconnection.

Additionally, on September 14, 2009, SolarReserve applied to the DOE's LGP for a loan guarantee in response to LGP's July 29, 2009 solicitation announcement (DE-FOA-0000140), pursuant to Title XVII of the Energy Policy Act of 2005 (EPAAct). DOE can comply with the requirements under EPAAct by selecting eligible projects that meet the goals of the Act. SolarReserve has applied to the LGP for a loan guarantee pursuant to Title XVII of the EPAAct. Western, on behalf of DOE, is the lead Federal agency for purposes of NEPA compliance. LGP is participating in the review of this NEPA document to ensure that analyses needed to support its decision-making on whether to provide a loan guarantee to SolarReserve are provided in the SA/DEIS.

The proposed project could help meet the explicit policy goals of the State of California of producing 33% of the state's electricity by renewable sources by 2020, and the Federal goals of producing 10% of the nation's electricity from renewable sources by 2012 and 25% by 2025, and of approving 10,000 MW of non-hydropower renewable energy generated from the public lands by 2015. Authorities include:

- Executive order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."
- The Energy Policy Act of 2005 (EPAAct), which requires the Department of the Interior (BLM's parent agency) to approve at least 10,000 MW of non-hydroelectric renewable energy on public lands by 2015. Only a portion of the RSEP Generation Tie Line would be located on public land.

- Governor Schwarzenegger's Executive Order S-14-08 dated November 17, 2008, that raises California's renewable energy goals to 33 percent by 2020 and improves processes for licensing renewable projects.
- Secretarial Order 3285, dated March 11, 2009, which "establishes the development of renewable energy as a priority for the Department of the Interior".

AGENCY AUTHORITIES AND RESPONSIBILITIES

The Energy Commission has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). The Energy Commission must review power plant AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Resources Code, § 25519), and compliance with applicable governmental laws or standards (Pub. Resources Code, § 25523 (d)). The Energy Commission staff's analyses were prepared in accordance with Public Resources Code, section 25500 et seq.; Title 20, California Code of Regulations, section 1701 et seq.; and CEQA (Pub. Resources Code, § 21000 et seq.).

The Bureau of Land Management's authority for the proposed action includes Federal Land Policy and Management Act (FLPMA) of 1976 [43 United States Code (U.S.C.) 1701 et seq.], Section 211 of the Energy Policy Act (EPAAct) of 2005 (119 Stat. 594, 600), and BLM's Solar Energy Development Policy of April 4, 2007. The FLPMA authorizes BLM to issue right-of-way grants for renewable energy projects. Section 211 of the Energy Policy Act of 2005 states that the Secretary of the Interior should seek to have approved a minimum of 10,000 megawatts of non-hydroelectric renewable energy generating capacity on public lands by 2015.

Western must consider interconnection requests to its transmission system in accordance with its Tariff and the FPA. Western satisfies FPA requirements to provide transmission service on a non-discriminatory basis through compliance with its tariff. Under the FPA, FERC has the authority to order Western to allow an interconnection and to require Western to provide transmission service at rates it charges itself and under terms and conditions comparable to those it provides itself. However, Western has discretion whether to allow the interconnection based on its NEPA review.

Title XVII of EPAAct established a Federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of EPAAct authorizes the Secretary of Energy to make loan guarantees for a variety of projects, including those that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." The Recovery Act amended EPAAct by adding a mandate to promote "job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and State and local fiscal stabilization." The two principal goals of the loan guarantee program are to encourage commercial use in the

United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits.

PROJECT DESCRIPTION (CASE AND PROPERTY DESCRIPTION)

SolarReserve's concentrating power tower technology consists of a large field of mirrors or heliostats that reflect the sun's energy onto a central receiver positioned on top of a tower. The project features thermal energy storage that allows solar energy to be captured throughout the day and retained in a liquid salt heat storage and transfer medium. When electricity is to be generated, the hot liquid salt is routed to a series of heat exchangers to heat water and produce steam. The steam is used to generate electricity in a conventional steam turbine cycle that would utilize an air-cooled condenser for cooling and to minimize water consumption.

The proposed action is designated by BLM as ROW serial number CACA 051022 as attributable to the generation tie line, a portion of which would be located on BLM land. The site consists of four parcels (Assessor Parcel Numbers 801-070-003, 801-070-004, 801-100-005, 801-100-006) and is located in Sections 24 and 25 of Township 1 South, Range 20 San Bernardino Baseline and Meridian (SBBM), approximately 32 miles west of Parker, Arizona and approximately 40 miles northwest of Blythe, California in Riverside County, California. The nearest community is Vidal Junction, approximately 15 miles northeast. The power plant would occupy 1,410 acres of a larger 2,560-acre project parcel on private land, and within a 3,324-acre privately-owned ownership property located adjacent to, and immediately south of, State Route 62. The portion of the generation tie line proposed for the right-of-way grant to be located on BLM-managed lands comprises approximately 163.64 acres of long-term (life of facility) disturbance, and approximately 218.18 acres of temporary disturbance. The substation facility will comprise of approximately 2.75 acres on public lands and would require a temporary disturbance of approximately 20.66 acres.

Power Plant Long-Term Acreage on Private Lands:

Township 1 South, Range 20 East, San Bernardino Baseline and Meridian

The project site would occupy approximately 1,410 acres on a private land parcel of 3,324 acres within Sections 24 and 25. The RSEP site consists of four parcels with Assessor Parcel Numbers as follows:

- 801-070-003;
- 801-070-004;
- 801-100-005; and
- 801-100-006.

The Linear Facilities would occupy approximately 263 acres.

Legal Description

San Bernardino Baseline and Meridian

Township 1 South, Range 21 East,
Sec. 28, S1/2;
Sec. 33, N1/2;

Sec. 34, N1/2; SE1/4;
Sec. 35, S1/2.

Township 2 South, Range 21 East,
Sec. 1, N1/2, SE1/4;
Sec. 2, NE1/4.

Township 2 South, Range 22 East,
Sec.6, SW1/4;
Sec, 7, N1/2,SE1/4;
Sec. 8, SW1/4;
Sec, 17 N1/2;
Sec, 21, NE1/4;
Sec.22, W1/2, SE1/4.

APPLICANT OBJECTIVES

The applicant's project objectives are set forth below. The fundamental objective is to build a solar project that generates and delivers a minimum of 450,000 megawatt-hours of cost-competitive renewable solar energy annually that will help the State meet its Renewable Portfolio Standard goals for new renewable electric generation. To assist in meeting the requirement for additional generating capacity, SolarReserve has developed solar technology which requires commercial-scale development to demonstrate its technical and commercial viability, and has entered into a power purchase agreement to provide power from renewable sources into the California Independent System Operator (CAISO) system. The applicant's objectives include the following:

1. Generate controllable, predictable renewable power using integral thermal storage technology that:
 - a. Captures solar energy throughout the day, through conditions of varying sunshine and even periods of dense cloud cover;
 - b. Stores thermal energy for electricity production during hours of peak electricity demand, including nighttime hours;
 - c. Generates stable power that enhances grid system stability and helps to facilitate integration of new intermittent renewable resources elsewhere; and
 - d. Avoids the need for support from costly grid resources such as spinning reserves and peaking turbines.
2. Deliver a minimum of 450,000 MWh of cost-competitive renewable power annually;
3. Size the generator output (150 MW) so as to maximize energy deliveries, reliably, during high electric demand hours;
4. Minimize use of public lands by siting the project on private property that is formerly disturbed; and
5. Produce a reliable electricity supply free of carbon emissions to help diversify California's electrical power generation portfolio.

CEQA OBJECTIVES

State Objectives

Senate Bill 1078, passed on 2002, established the California Renewable Portfolio Standard (RPS), which requires utilities to increase their sale of electricity produced by renewable energy sources, including solar facilities, by a minimum of one percent per year with a goal of 20 percent of their total sales by 2017. However, the California Public Utilities Commission, Energy Commission, and the California Power Authority adopted the Energy Action Plan (EAP), which pledged that the agencies would meet an accelerated goal of 20% by the year 2010. As a result, the California Senate passed Senate Bill 107 to be consistent with the EAP, and accelerated the implementation of RPS, requiring utilities to meet the goal of 20% renewable energy generation by 2010. In November 2008, California's Governor instituted Executive Order S-14-08 which establishes an updated RPS goal that all retail sellers of electricity shall serve 33% of their load with renewable energy by 2020. The Mojave Desert has been identified as an area with high potential for solar resource development. The Project would allow California utilities to increase the percentage of renewable resources in their energy portfolio, and aid the utilities in reaching the goals set forth by the RPS.

CEQA guidelines require a clearly written statement of objectives to guide the lead agency in developing a reasonable range of alternatives and aid decision-makers in preparing findings or a statement of overriding considerations. CEQA specifies that the statement of objectives should include the underlying purpose of the project (Section 15126.6(a)). These objectives reflect the applicant's objectives and the BLM's stated purpose and need of the Project and will be considered in the comparison of alternatives, as required under both NEPA and CEQA. The Energy Commission developed the following objectives for the Project:

1. to construct and operate a 150 MW utility-scale solar facility in California capable of interconnecting to the California Independent System Operator (California ISO) Grid through Western's electrical transmission system;
2. to locate the facility in areas of high solarity with ground slope of less than 6 percent; and
3. to contribute to the State of California's renewable energy goals, the National Energy Policy of 2001 (Executive Order 13212), and the Energy Policy Act of 2005 (Public Law 109-58, August 8, 2005) which encourage the development of renewable energy resources.

BLM PURPOSE AND NEED

National Environmental Policy Act (NEPA) guidance published by the Council on Environmental Quality (CEQ) states that environmental impact statements' Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 CFR §1502.13). The following discussion sets forth the purpose of, and need for, the project as required under NEPA.

The purpose of the BLM's proposed action is to approve, approve with modifications, or disapprove a ROW application filed by Rice Solar Energy, LLC (applicant), which is a subsidiary of SolarReserve, LLC to develop the RSEP. The BLM, in conjunction with Western and LGP, will determine and disclose the environmental impacts of the 150 MW RSEP proposal and decide whether granting the requested ROW associated with a portion of the generation tie line and approving the transmission line interconnection respectively are in the public interest. The BLM has determined that the proposed solar project and associated ROW would require an amendment to the CDCA Plan (Plan). The BLM will also consider the amendment of the CDCA Plan to allow for the project.

BLM's purpose and need for the RSEP is to respond to the applicant's application under Title V of the FLPMA (43 USC 1761) for a right-of-way (ROW) grant to construct, operate, maintain, and decommission a generation tie line, a portion of which would be located on public land. These project activities would be associated with development of a concentrated solar electric generation plant along with the associated infrastructure in compliance with FLPMA, BLM Regulations, and other applicable federal laws

The need for the action has its basis in Federal orders and laws that require government agencies to evaluate energy generation projects and facilitate the development of renewable energy sources. The proposed project could help meet the explicit policy goals of the State of California and the Federal goals of producing 10% of the nation's electricity from renewable sources by 2012 and 25% by 2025 and of approving 10,000 MW of non-hydropower renewable energy generated from the public lands by 2015. Authorities include:

- Executive order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."
- The Energy Policy Act of 2005 (EPAAct), which requires the Department of the Interior (BLM's parent agency) to approve at least 10,000 MW of renewable energy on public lands by 2015. While the RSEP power plant would not be located on public land, a portion of the generation tie line would be located on public land. Currently, proposed renewable energy projects amounting to about 39,000 MW of electricity are on file with the BLM within the California Desert District; however, it is expected that only a fraction of these will be constructed and operated.
- Secretarial Order 3285A1, dated February 22, 2010, which "establishes the development of renewable energy as a priority for the Department of the Interior".

DOE PURPOSE AND NEED

Western. Western's purpose and need is to approve or deny the interconnection request in accordance with its Tariff and the FPA.

Under the Tariff, Western offers capacity on its transmission system to deliver electricity when capacity is available. The Tariff also contains terms for processing requests for the interconnection of generation facilities to Western's transmission system. The Tariff substantially conforms to Federal Energy Regulatory Commission (FERC) final orders that provide for non-discriminatory transmission system access. Western originally filed

its Tariff with FERC on December 31, 1997, pursuant to FERC Order Nos. 888 and 889. Responding to FERC Order No. 2003, Western submitted revisions regarding certain Tariff terms and included Large Generator Interconnection Procedures (LGIP) and a Large Generator Interconnection Agreement in January 2005. In response to FERC Order No. 2006, Western submitted additional term revisions and incorporated Small Generator Interconnection Procedures and a Small Generator Interconnection Agreement in March 2007. In September 2009, Western submitted yet another set of revisions to address FERC Order No. 890 requirements along with revisions to existing terms.

In reviewing interconnection requests, Western must ensure that existing reliability and service is not degraded. Western's LGIP provides for transmission and system studies to ensure that system reliability and service to existing customers are not adversely affected by new interconnections. These studies also identify system upgrades or additions necessary to accommodate the proposed project and address whether the upgrades/additions are within the project scope.

LGP. The purpose and need of LGP's proposed action is to comply with its mandate under EPAct by selecting eligible projects that meet the goals of the Act. LGP is participating in this NEPA process to assist in determining whether to issue a loan guarantee to SolarReserve to support the proposed project.

LAND USE PLAN CONFORMANCE AND AMENDMENT (BLM)

The principal land use plan affecting this proposed project is the U.S. Bureau of Land Management's (BLM) California Desert Conservation Area (CDCA) Plan of 1980, as amended, and the Northern and Eastern Mojave Desert Colorado Plan (NECO), which amends the CDCA Plan for those areas identified as the northern and eastern Colorado Desert. The CDCA Plan requires that proposed transmission lines (including generation tie lines) located outside of existing designated utility corridors equal to or greater than 161 kV undergo a Plan Amendment process.

Other Agency Plans. For this proposed project, the Energy Commission is the lead agency for CEQA, and an analysis of conformance with applicable Riverside County land use plans is included within the **Land Use, Recreation and Wilderness** section of this SA/DEIS. Land within Riverside County is classified according to the Riverside County General Plan. The General Plan identifies the land area of the proposed RSEP facility as Open Space-Rural (OS-RUR) and is zoned Controlled Development Area (W-2-10) according to the county land use ordinance, a designation that allows use for electric power generation. Therefore, the proposed project conforms to the applicable County General Plan.

Planning Criteria (BLM)

The CDCA Plan planning criteria are the constraints and ground rules that guide and direct the development of the Plan Amendment. They ensure that the Plan Amendment is tailored to the identified issues and that unnecessary data collection and analyses are avoided. They focus on the decisions to be made in the Plan Amendment, and will achieve the following:

“Sites associated with power generation or transmission not identified in the Plan will be considered through the Plan Amendment process.”

Because the proposed facility is not currently identified within the CDCA Plan, an amendment to identify the proposed facility within the Plan is hereby proposed. As specified in Chapter 7, Plan Amendment Process, there are three categories of Plan Amendments, including:

- Category 1, for proposed changes that will not result in significant environmental impact or analysis through an Environmental Impact Statement;
- Category 2, for proposed changes that would require a significant change in the location or extent of a multiple-use class designation; and
- Category 3, to accommodate a request for a specific use or activity that will require analysis beyond the Plan Amendment Decision.

Based on these criteria, approval of the proposed project would require a Category 3 amendment. This section summarizes the procedures necessary to evaluate the proposed Plan Amendment, as well as the procedures required to perform the environmental review of the right-of-way (ROW) application.

Statement of Plan Amendment. The Implementation section of the Energy Production and Utility Corridors Element of the CDCA Plan lists a number of Category 3 amendments that have been approved since adoption of the Plan in 1980. An additional amendment is proposed to be added to this section of the Plan, and would read “Permission granted to construct generation tie line associated with solar energy facility (proposed Rice Solar Energy Project).”

Plan Amendment Process. The Plan Amendment process is outlined in Chapter 7 of the Plan. In analyzing an applicant’s request for amending or changing the Plan, the BLM District Manager, Desert District, will:

1. Determine if the request has been properly submitted and if any law or regulation prohibits granting the requested amendment.
2. Determine if alternative locations within the CDCA are available which would meet the applicant’s needs without requiring a change in the Plan’s classification, or an amendment to any Plan element.
3. Determine the environmental effects of granting and/or implementing the applicant’s request.
4. Consider the economic and social impacts of granting and/or implementing the applicant’s request.
5. Provide opportunities for and consideration of public comment on the proposed amendment, including input from the public and from federal, State, and local government agencies.
6. Evaluate the effect of the proposed amendment on BLM management’s desert-wide

obligation to achieve and maintain a balance between resource use and resource protection.

Decision Criteria for Evaluation of Proposed Plan Amendment. The Decision Criteria to be used for approval or disapproval of the proposed amendment require that the following determinations be made by the BLM Desert District Manager:

1. The proposed amendment is in accordance with applicable laws and regulations;
2. The proposed amendment will provide for the immediate and future management, use, development, and protection of the public lands within the CDCA.

The BLM Desert District Manager will base the rationale for these determinations on the principles of multiple use, sustained yield, and maintenance of environmental quality as required in the Federal Land Policy and Management Act (FLPMA) of 1976.

Decision Criteria for Evaluation of Application. In addition to defining the required analyses and Decision Criteria for Plan Amendments, the Plan also defines the Decision Criteria to be used to evaluate future applications in the Energy Production and Utility Corridors Element of Chapter 3. These Decision Criteria include:

1. Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
2. Encourage joint-use of corridors for transmission lines, canals, pipelines, and cables;
3. Provide alternative corridors to be considered during processing of applications;
4. Avoid sensitive resources wherever possible;
5. Conform to local plans whenever possible;
6. Consider wilderness values and be consistent with final wilderness recommendations;
7. Complete the delivery systems network;
8. Consider ongoing projects for which decisions have been made; and
9. Consider corridor networks which take into account power needs and alternative fuel resources.

Factors to be Considered. The Plan also states that, in the evaluation of proposed power plants, BLM will use the same factors affecting the public lands and their resources as those used by the Energy Commission. These factors are the environmental information requirements defined in the California Code of Regulations (CCR) Title 20, Appendix B, and include:

- General (Project Overview)
- Cultural Resources

- Land Use
- Noise
- Traffic and Transportation
- Visual Resources
- Socioeconomics
- Air Quality
- Public Health
- Hazardous Materials Handling
- Worker Safety
- Waste Management
- Biological Resources
- Water Resources
- Soils
- Paleontological Resources
- Geological Hazards and Resources
- Transmission System Safety and Nuisance
- Facility Design
- Transmission System Design
- Reliability
- Efficiency

The specific determinations required for the Plan Amendment evaluation are discussed in detail below. This DEIS acts as the mechanism for evaluating both the proposed project application, and the proposed Plan Amendment. The factors specified in CCR Title 20, Appendix B are included within the scope of the analysis presented in the SA/DEIS.

Possible Land Use Plan Amendment and Alternatives

The Applicant has applied for a ROW on public lands in favor of a 161/230 kV transmission line but did not request a CDCA Plan amendment directly. Nonetheless, the BLM has determined that a CDCA Plan amendment would be required if a ROW were granted for the transmission line to support the RSEP. Regardless of whether the proposed project is approved, the BLM could elect to amend the CDCA Plan. Consequently, the following range of outcomes of the BLM's potential CDCA Plan amendment process is as follows:

- PA1 – The CDCA Plan (1980, as amended) would be amended to designate a corridor to allow for the 161/230kV transmission line that would support the RSEP. (This is the proposed land use plan amendment.)
- PA2 – The CDCA Plan (1980, as amended) would not be amended.

PROJECT EVALUATION AND DECISION PROCESS

Energy Commission Process

The Energy Commission's siting regulations require staff to independently review the AFC and assess whether the list of environmental impacts contained is complete and whether additional or more effective mitigation measures are necessary, feasible, and available (Cal. Code Regs., tit. 20, §§ 1742 and 1742.5(a)).

In addition, staff must assess the completeness and adequacy of the measures proposed by the applicant to ensure compliance with health and safety standards and the reliability of power plant operations (Cal. Code Regs., tit. 20, § 1743(b)). Staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable laws, ordinances, regulations, and standards are met (Cal. Code Regs., tit. 20, § 1744(b)).

Staff conducts its environmental analysis (Staff Assessment) in accordance with the requirements of the California Environmental Quality Act (CEQA). No additional Environmental Impact Report (EIR) is required because the Energy Commission's site certification program has been certified by the California Resources Agency as meeting all requirements of a certified regulatory program (Pub. Resources Code, § 21080.5 and Cal. Code Regs., tit. 14, § 15251 (j)).

Following a 30-day comment period for the SA/DEIS as it pertains to the Energy Commission's CEQA process (separate from BLM's and Western's 90-day comment period for the Plan Amendment), staff will prepare responses to comments and update the SA/DEIS with an addendum as needed. Staff's impact assessment, including the recommended conditions of certification, is only one piece of evidence that the Siting Committee will consider in reaching a decision on the proposed project and making its recommendation to the full Energy Commission. At the public hearings, all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Siting Committee also allows all parties to argue their positions on disputed matters, if any, and they provide a forum for the Committee to receive comments from the public and other governmental agencies.

Following the hearings, the Siting Committee's draft recommendation to the full Energy Commission on whether or not to approve the proposed project will be contained in a document entitled the Presiding Members' Proposed Decision (PMPD). Following its publication, the PMPD is circulated for 30 days in order to receive written public comments. At the conclusion of the comment period, the Siting Committee may prepare a revised PMPD. At the close of the comment period for the revised PMPD, the PMPD is submitted to the full Energy Commission for a decision.

BLM and Western Process

Because the Project involves a potential land use plan amendment, the SA/DEIS is required to be available for a 90-day public comment period as it pertains to BLM's NEPA requirements, after which a Final EIS (FEIS) will be issued. BLM and Western will review and develop responses to comments provided by the public and other

agencies during the 90-day public comment period. The responses to the comments and other information identified during this period will be incorporated into a Final EIS (FEIS), which would identify the preferred alternative. These additional comments and responses will also be considered in the PMPD or the revised PMPD, which precedes the Energy Commission's Final Decision. A Notice of Availability (NOA) of the FEIS would be published when the FEIS becomes available for public review. The FEIS would be available for public review for a minimum of 30-days before the BLM and Western issue a Record of Decision (ROD). The decision regarding the ROW grant is in full force and effect upon the issuance of the ROD; however it is also appealable to the Interior Board of Land Appeals upon issuance of the ROD. The FEIS will also contain a proposed decision to amend the BLM Plan. Proposed plan amendment decisions may be protested within 30-days of the proposed decision. BLM cannot make a final decision regarding issuance of a ROW grant or amending the Plan until any Plan protest is resolved.

Under the NEPA process, the significance of the impacts is developed based on the definition of "significantly" provided in NEPA regulations Section 1508.27 (40 C.F.R. § 1508.27). This evaluation includes both the context of the action with respect to the affected resources, as well as the intensity of the effect on those resources. The following are considered in evaluating the intensity:

- Whether the impact is beneficial or adverse;
- The degree to which the proposed action affects public health or safety;
- Unique characteristics of the geographic area, including parks, farmlands, wetlands, wild and scenic rivers, or ecologically critical areas;
- The degree to which the effects are likely to be highly controversial;
- The degree to which the effects are highly uncertain or involve unique or unknown risks;
- The degree to which the action may establish a precedent for future actions;
- Whether the action may be individually insignificant, but cumulatively significant when combined with other actions;
- The degree to which the action may adversely affect significant scientific, cultural, or historical resources;
- The degree to which the action may adversely affect an endangered or threatened species or its habitat; and
- Whether the action threatens a violation of federal, State, or local law or requirements imposed for the protection of the environment.

As outlined in NEPA regulations Section 1502.16 (40 C.F.R. § 1502.16), the analysis also includes a discussion of both direct and indirect effects and their significance, adverse environmental effects which cannot be avoided, whether impacts are short-term or long-term, and any irreversible or irretrievable commitments of resources.

The decisions to be made by the agencies (licensing by the Energy Commission, right-of-way grant by BLM, and approval to interconnect by Western) are independent of each other.

LGP Process

While the SA/DEIS was being developed, LGP also carried out a detailed technical and legal evaluation of the proposed project pursuant to its procedures for loan guarantees set out at 10 CFR Part 609. When the FEIS is completed and made available to the public, LGP will carry out an independent review to ensure that LGP-related comments have been addressed and that the LGP's proposed action is substantially the same as the action described in the EIS. LGP may reach agreement on a conditional commitment for a loan guarantee prior to completion of the SA/DEIS and the approvals by Western and BLM. A condition precedent would be included in the conditional commitment requiring that the NEPA review, Western interconnection approval, and the BLM ROW grant process be completed before LGP closes the loan guarantee transaction.

Following conclusion of the NEPA process, BLM's decision on issuance of the ROW grant, and Western's decision to approve electric transmission interconnection, LGP will issue a Record of Decision (ROD) and proceed to close the loan guarantee transaction provided that the applicant has satisfied all the detailed terms and conditions contained in the conditional commitment and other related documents, and all other contractual, statutory, and regulatory requirements.

Agency Coordination

California Energy Commission

As noted previously, the Energy Commission has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). The Energy Commission must review power plant AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Resources Code, § 25519), and compliance with applicable governmental laws or standards (Pub. Resources Code, § 25523 (d)). The agency's analyses were prepared in accordance with Public Resources Code, section 25500 et seq.; Title 20, California Code of Regulations, section 1701 et seq.; and CEQA (Pub. Resources Code, § 21000 et seq.).

As discussed above, the SA/DEIS for this proposed project was developed as a joint environmental review document, under an MOU between the Energy Commission and BLM California Desert District (CDD) and in cooperation with Western. Throughout the environmental review process, BLM, Western and Energy Commission staff have conducted joint technical analysis, and co-authored the SA/DEIS.

As noted previously, the Energy Commission certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent

permitted by federal law (Pub. Resources Code, § 25500). However, both the Commission and BLM typically seek comments from and work closely with other regulatory agencies that administer LORS that may be applicable to the proposed project. The following paragraphs describe the agency coordination that has occurred through this joint SA/EIS process.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction to protect water quality and wetland resources under Section 404 of the Clean Water Act. Under that authority, USACE reviews proposed projects to determine whether they may impact such resources, and/or be subject to a Section 404 permit. Throughout the FSA/DEIS process, the Energy Commission, BLM, Western and the applicant have provided information to the USACE to assist them in making a determination regarding their jurisdiction and need for a Section 404 permit. The USACE rendered a final opinion on July 27, 2010 concluding that the project does not affect waters of the U.S., and thus does not require such a permit.

National Park Service

The National Park Service manages the Joshua Tree National Park, which is located south of SR 62 roughly 25 miles to the west of the project site. Because of the proximity of Joshua Tree National Park, the Park Service has been invited to participate in scoping meetings and public workshops, and will be provided the opportunity to review and provide comment on the SA/DEIS.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction to protect threatened and endangered species under the Endangered Species Act (ESA). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally-listed species. The desert tortoise (*Gopherus agassizii*), which occurs in the proposed project area, is a federally-listed threatened species, and therefore formal consultation with the USFWS is required. This consultation was originally initiated in August 2010 through Western's preparation and submittal of a Biological Assessment (BA) which describes the proposed project to the USFWS. This consultation will be reinitiated in October 2010. This consultation has been initiated through the preparation and submittal of a Biological Assessment (BA) which describes the proposed project to the USFWS. Following up to a 135-day review of the BA, the USFWS is expected to issue a Biological Opinion (BO) which will specify mitigation measures which must be implemented for the protection of the desert tortoise.

State Water Resources Control Board/Regional Water Quality Control Board

The Colorado River Basin Regional Water Quality Control Board (RWQCB) has the authority to protect both surface water and groundwater resources at the proposed project location. Throughout the SA/DEIS process, the Energy Commission, BLM, Western and the applicant have invited the RWQCB to participate in public scoping and workshops, and have provided information to assist the agency in evaluating the potential impacts and permitting requirements of the proposed project. The RWQCB has responded by providing comments that have been evaluated and incorporated into

the SA/DEIS analysis. The agency has also made a determination that the proposed project would impact waters of the state, and has specified conditions to satisfy waste discharge requirements. These requirements are included as a recommended Condition of Certification/Mitigation Measure.

California Department of Fish and Game

The California Department of Fish and Game (CDFG) has the authority to protect water resources of the state through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. The Energy Commission, BLM, and the applicant have provided information to CDFG to assist in their determination of the impacts to streambeds, and identification of permit and mitigation requirements. The applicant filed a Streambed Alteration Agreement with CDFG on April 30, 2010. The requirements of the Streambed Alteration Agreement will be included as a recommended Condition of Certification/Mitigation Measure.

CDFG also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA). On May 5, 2010, the applicant filed an application for authorization for incidental take of the desert tortoise under Section 2081(b) of the CESA. The requirements of the Incidental Take Permit will be included as a recommended Condition of Certification/Mitigation Measure.

Tribal relationships

Western is serving as the lead federal agency for conducting consultation under Section 106 of the Historic Preservation Act and has notified affected Indian Tribes regarding the proposed project, has sought their comments and has invited them to consult on the project on a government-to-government basis.

County of Riverside

County of Riverside reviewed the proposed RSEP, and provided comments as to its LORS conformance that were received on September 21, 2010. While the comments were not received in time to address in the SA/DEIS, the agencies have considered county LORS in preparing the SA/DEIS, and will address the county's comments subsequently to the extent their comments are not already satisfied.

Public Coordination

Both the Energy Commission's CEQA-equivalent process and the BLM's/Western's NEPA process provide opportunities for public participation in the scoping of the environmental analysis, and in the evaluation of the technical analyses and conclusions of that analysis. For the Energy Commission, this outreach program is primarily facilitated by the Public Adviser's Office (PAO). As part of the coordination of the environmental review process required under the Energy Commission/BLM California Desert District MOU and in coordination with Western, the agencies have jointly held public meetings and workshops which accomplish the respective public coordination objectives. This is an ongoing process that to date has involved the following efforts.

Libraries

The AFC was sent to local public libraries in Blythe and Desert Center, California and Parker, Arizona and at public libraries in Fresno, Eureka, San Diego and San Francisco, the California State Library, and the Energy Commission's library in Sacramento.

Outreach Efforts

The PAO's public outreach is an integral part of the Energy Commission's AFC review process. The PAO reviewed information provided by the applicant and also conducted its own outreach efforts to identify and locate local elected and certain appointed officials, as well as "sensitive receptors" (such as schools, community, cultural and health facilities and daycare and senior-care centers, as well as environmental and ethnic organizations). There were no sensitive receptors identified within a six-mile radius of the proposed site for the project.

Notices for workshops and hearings have been and will continue to be distributed to those agencies, individuals, and businesses that are currently on or request to be placed on the project's mailing list. Notices were distributed for the Informational Hearing and Site Visit, which was conducted on January 25, 2010, in Blythe, California.

Coincident with the PAO's outreach efforts, BLM and Western solicited interested members of the public and agencies through the NEPA scoping process. BLM and Western published a Notice of Intent to develop the EIS and amend the CDCA Plan in the Federal Register, Vol. 75, No. 59, pages 15427 - 15429, on March 29, 2010. BLM and Western conducted two Public Scoping meetings for the EIS in accordance with NEPA. The first of these was conducted on March 31, 2010 in Big River and the second was conducted on April 1, 2010 in Palm Desert.

During the process, the Energy Commission, BLM, Western and the applicant coordinated to conduct two workshops. The first was an Issue Resolution workshop which was held in Sacramento, California on March 19, 2010. The second was a Site Visit to Discuss Historical Resources conducted at the RSEP site on June 2, 2010. Both events were announced and made available to the public. The Energy Commission has also continued to accept and consider public comments.

Those agencies and individuals that have provided timely comments concerning the project have been considered in staff's analysis. This SA/DEIS provides agencies and the public with an opportunity to review the Energy Commission staff's analysis of the proposed project. Comments received on this SA/DEIS will be taken into consideration in preparing the subsequent project documents.

Energy Commission regulations require staff to notice, at a minimum, property owners within 1,000 feet of a project and 500 feet of a linear facility under its jurisdiction. This was done for the RSEP project. Staff's ongoing public and agency coordination activities for this project are discussed under the Public and Agency Coordination heading in the **Executive Summary**.

The applicant's AFC, AFC Supplement, Responses to Data Requests, this SA/DEIS, and other project documents are located on the Energy Commission's website at <http://www.energy.ca.gov/sitingcases/ricesolar/index.html>.

Summary of Public and Agency Comments

The BLM/Western and Energy Commission processes include soliciting comments regarding the scope of the analysis from other government agencies, the public, and non-governmental organizations. Issues were identified by reviewing the comment documents received. All of the public comment documents were reviewed and the following section provides a summary of the issues, concerns, and/or questions identified. For this report, the issues have been grouped into one of the three following categories:

- Issues or concerns that could be addressed by effects analysis;
- Issues or concerns that could develop an alternative and/or a better description or qualification of the alternatives;
- Issues or concerns outside the scope of the EIS.

The comments discussed below are paraphrased from the original comment letters. To a minor degree, some level of interpretation was needed to identify the specific concern to be addressed. Similar comments were grouped together and then summarized. Original comment letters may be reviewed upon request at the BLM Palm Springs-South Coast Field Office at 1201 Bird Center Drive, Palm Springs, California, 92262, during normal business hours, from 8:00 am to 4:30 pm.

A. Effects Analysis

Comments in this category will be described in detail in the affected environment section of the EIS or addressed in the effects analysis for each alternative.

Purpose and Need

- Purpose and need should be a clear, objective statement of rationale for the Project
- Project should be discussed in the context of the larger energy market; identify potential purchasers of the power produced; discuss how the Project will assist in meeting its renewable energy portfolio standards and goals

Air Resources and Climate Change

- Greenhouse gas emissions/climate change impacts on plants, wildlife, and habitat
- Discussion of how projected impacts could be exacerbated by climate change
- Cumulative impacts associated with multiple large-scale solar projects and how resources would be affected by climate change
- Quantify and disclose anticipated climate change benefits of solar energy
- Quantify and greenhouse gas emissions from different types of generating facilities and comparing values
- Discussion of trenching/grading/filling and effects on carbon sequestration of the natural desert

- Ambient air conditions; National Ambient Air Quality Standards (NAAQS); criteria pollutant nonattainment areas; potential air quality impacts
- Describe and estimate air emissions, including construction and maintenance activities; specify emission sources by pollutant from mobile sources, stationary sources, and ground disturbance
- Identify need for an Equipment Emissions Mitigation Plan (EEMP)
- Identify need for a Fugitive Dust Control Plan

Water Resources (Surface and Ground water)

- Quantify water usage of Project
- Describe source(s) of water
- Existing groundwater conditions
- Identify potentially-affected groundwater basin
- Basin annual recharge rates
- Water right permitting process and status of water rights within the basin
- Water right permits that contain special conditions
- Cumulative impacts to groundwater quantity and quality, including impacts from other large-scale solar installations
- Types of technology that can minimize water use for solar thermal projects
- Impacts to springs or other open water bodies and biologic resources
- Feasibility of using other sources of water, including wastewater or deepaquifers, as cooling water
- Possibility of recycling water that would be sent to evaporation pond
- Discussion of wet cooling vs. dry cooling systems
- Implementation of conservation measures to reduce water demand
- Subsidence potential
- Effects of climate change on water supply
- Discussion of potential effects of Project discharges, if any, on surface and groundwater quality
- Identify chemical characteristics of pond water and how seepage into groundwater would be prevented
- Identify storm design containment capacity of ponds and how overflow would be managed
- Disposal of wastewater or other fluids into subsurface is subject to requirements of the Underground Injection Control Program; permits may be required
- Determination if Project requires a Section 404 permit under the Clean Water Act (CWA)

- Include a jurisdictional delineation for all waters of the US, including ephemeral drainages
- Description of natural drainage pattern and during Project operations; identify whether any component of Project is within 50 or 100-year floodplain
- Provide information on CWA Section 303(d) impaired waters, if any, and efforts to develop and revise TMDLs

Biological Resources

- If there are threatened or endangered species present, recommend consultation with USFWS and prepare a Biological Opinion under Section 7 of the ESA
- Baseline conditions of habitats and population of covered species
- Description of how avoidance, mitigation, and conservation measures would protect and encourage recovery of covered species and habitats in Project area
- Monitoring, reporting, and adaptive management efforts to ensure species and habitat conservation effectiveness
- Potential impact of construction, installation, operation, and maintenance activities (deep trenching, grading, filling, fencing)
- Potential impacts to native vegetation and/or animal species due to increased shade from heliostats
- Maximize options to protect habitat and minimize habitat loss and fragmentation
- Impacts associated with constructing fences
- Potential impacts on avian species due to collisions with power tower and/or heliostats
- Potential for concentrating solar rays to burn avian species in flight
- If evaporation and/or stormwater ponds would attract wildlife, particularly migratory waterfowl and potential impacts
- Impacts regarding habitat fragmentation, movement corridors, and loss of connectivity
- Impacts due to non-native invasive species
- Inclusion of an invasive plant management plan
- Impacts resulting from vegetation clearance
- Impacts to species due to change in water flow (both surface and groundwater); introduction of pollutants; mortality by vehicle encounters;
- Impacts to species due to alteration of adjacent conservation areas (National Landscape Conservation Lands, Desert Wildlife Management Areas, Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, National Wildlife Refuge System lands, National Park Service Lands, and designated critical habitat

Wildlife Resources (Priority species, special status species)

- Impacts to the following species:
 - Desert tortoise
 - Desert bighorn sheep
 - Migratory birds
 - Eagles, esp. Golden eagle
 - Western burrowing owl
- Activities occurring on lands beyond the boundaries of conservation areas can affect desert tortoise populations
- If Project cannot be designed to avoid impacts to desert tortoise, develop and implement a translocation plan that minimizes take on and adjacent to Project site and associated transmission
- Potential avian mortality from electrocution from transmission lines and power tower
- Recommend use of Avian Protection Plan (APP) Guidelines

Coordination with Tribal Governments

- Describe process and outcome of government to government consultation with tribal governments and how issues, if any, were addressed in selection of proposed alternative
- Address existence of Indian sacred sites in the Project area, including Executive Order 13007 and distinguish it from Section 106 of NHPA
- Identify NRHP eligible sites and development of a Cultural Resource Management Plan

Land Use/Special Designations (ACECs, WAs, WSAs, etc.)

- Discuss how Project would support or conflict with objectives of federal, state, tribal, or local land use plans, policies, and controls

Hazardous Materials

- Direct, indirect, and cumulative impacts of hazardous waste from construction and operation
- Identify hazardous waste types and volumes, and expected storage, disposal, and management plans
- Address applicability of state and federal hazardous waste requirements
- Alternate industrial processes using less toxic materials should be evaluated as mitigation
- Describe concentrated, dewatered solid waste associated with evaporation ponds and whether this waste would be transported offsite for disposal

- Address full product life cycle of components by minimizing impacts during raw material extraction, manufacture heliostats in a zero waste facility, and provide for future heliostat disassembly for material recovery for reuse and recycling

Environmental Justice (minority and low-income communities)

- Evaluation of environmental justice populations within geographic scope of Project and potential for disproportionate adverse impacts to minority and low-income populations; approaches used to foster public participation by these populations; assessment of Project impact on these populations should reflect coordination with those affected populations;

Cumulative Impacts

- Identify current condition of resource as measure of past impacts
- Identify trend in condition of resource as measure of present impacts
- Identify all ongoing, planned, and reasonable foreseeable projects in study area
- Identify future condition of resource based on analysis of impacts from reasonably foreseeable projects or actions
- Assess cumulative impacts contribution of proposed alternatives to long-term health of the resource, and provide specific measurements
- Disclose parties responsible for avoiding, minimizing, and mitigating adverse impacts
- Identify opportunities to avoid and minimize impacts, including working with other entities
- Identify whether the Project is located within a solar energy study area or close proximity
- Consider impacts associated with multiple large-scale solar projects in the desert southwest
- Impacts resulting from additional power supply, including amount of growth and likely location
- Effects of transmission needs of other reasonably foreseeable projects

B. Alternative Development and/or Alternative Design Criteria

Comments in this category will be considered in the development of alternatives or can be addressed through design criteria in the alternative descriptions.

- Alternatives should include discussion of alternative sites, capacities, and generating technologies including different types of solar energy technologies
- Feasibility of using residential and wholesale distributed generation, in conjunction with increased energy efficiency
- Preferred alternative should consider decreasing the capacity, relocating components, and shrinking overall footprint
- Discussion of each alternative's potential to impact air traffic and safety

- Discussion of each alternative's potential to cause adverse aquatic impacts
- Describe current condition of land; whether it is disturbed; and extent it could be used for other purposes
- Describe all waters of the US that could be affected by alternatives, including acreages, channel lengths, habitat types, values, and functions.
- Use of EPA's Renewable Energy Interactive Mapping Tool to explore potential use of disturbed sites in proximity to the Project site that might be utilized
- Pursue siting on disturbed, degraded, and contaminated sites before considering large tracts of undisturbed public lands
- Identify previously disturbed lands in close proximity to existing transmission infrastructure and load centers that could support solar energy projects and reduce impacts to wildlands and species

C. Issues or Concerns Outside the Scope of the EIS

Comments in this category are outside the scope of analysis and will not be addressed in the EIS:

- Commenter states ability to provide easement for transmission line construction
- Commenter states BLM approval process is too complex and lengthy
- Commenter requests reduction of federal controls
- Commenter requests measurement of benefits of Project verses costs
- Commenter questions if BLM could produce power in other ways, such as oil, gas, or nuclear
- Commenter has property interest in area proposed for transmission line

ORGANIZATION OF THE DOCUMENT

The SA/DEIS begins with an Executive Summary, Introduction, Proposed Action Alternative/Project Description, Alternatives, and Cumulative Scenario. The environmental, engineering, and public health and safety analyses of the proposed project are contained in 19 separate chapters. They include the following: Air Quality, Biological Resources, Cultural Resources and Native American Values, Hazardous Materials Management, Land Use, Noise and Vibration, Public Health and Safety, Socioeconomics and Environmental Justice, Soil and Water Resources, Traffic and Transportation, Transmission Line Safety and Nuisance, Visual Resources, Waste Management, Worker Safety and Fire Protection, Geology and Paleontology and Minerals, Facility Design, Power Plant Efficiency, Power Plant Reliability, and Transmission System Engineering. These chapters are followed by the general project conditions, an evaluation of significant unavoidable adverse impacts, the irreversible and irretrievable commitment of resources, and growth inducing effects; summary of public participation efforts; a list of preparers; and references. The organization of the technical section chapters is as follows:

- summary of conclusions
- laws, ordinances, regulations and standards (LORS);

- the regional and site-specific setting;
- project direct and indirect impacts;
- mitigation measures;
- closure and decommissioning impacts and mitigation;
- Reduced Acreage Alternative;
- SR 62/Rice Valley Road Generation Tie Line alternative;
- North of Desert Center alternative;
- no project/no action alternative;
- cumulative impacts;
- noteworthy public benefits;
- mitigation measures/conditions of certification for both construction and operation (as applicable); and
- conclusions and recommendations.

PROPOSED ACTION/PROJECT DESCRIPTION

John Kessler

INTRODUCTION

The applicant for the proposed Rice Solar Energy Project (RSEP) is SolarReserve, LLC, a Delaware limited liability company with its principal place of business in Santa Monica, California. It has formed limited liability company Rice Solar Energy, LLC (referred to as applicant or SolarReserve hereafter) for the purposes of developing a concentrating solar power generation facility. RSEP as proposed requires a right-of-way (ROW) with the U.S. Bureau of Land Management (BLM) for the use of public land associated with the generation tie line, an electrical transmission interconnection with Western Area Power Administration (Western) for transmitting its power, and license certification from the California Energy Commission (Energy Commission). The Applicant will use Solar Reserve's solar thermal technology to develop RSEP which is distinguishable from other concentrated solar power technologies by its use of liquid salt as the heat transfer medium, and its ability to store thermal energy and deliver power when it is most needed.

The applicant filed a right-of-way (ROW) application (CACA 051022) with the BLM on May 12, 2009 as attributable to the generation tie line, a portion of which would be located on BLM land. The applicant filed an Application for Certification (AFC) with the California Energy Commission seeking a license to develop the RSEP on October 21, 2009. On December 2, 2009, the Energy Commission accepted the AFC as data adequate. The analysis contained in the SA/DEIS applies to the proposed project as a whole.

PROJECT LOCATION

The site is located approximately 32 miles west of Parker, Arizona and approximately 40 miles northwest of Blythe, California in Riverside County, California. The nearest community is Vidal Junction, approximately 15 miles northeast. The site is adjacent to State Route 62 (SR-62), which parallels a portion of the Arizona-California Railroad and the Colorado River Aqueduct, near the junction of SR-62 and Blythe-Midland Road, and near the sparse remains of the abandoned town of Rice, California. The power plant would occupy 1,410 acres of a larger 2,560-acre parcel on private land located adjacent to, and immediately south of, SR-62.

The applicant has proposed to locate the RSEP in the Mojave Desert, approximately 32 miles west of Parker, Arizona and approximately 40 miles northwest of Blythe, California in Riverside County, California. The power plant would occupy 1,410 acres of a larger 2,560-acre parcel on private land located adjacent to, and immediately south of, State Route 62 (SR-62). Approximately nine miles of the 10-mile long generation tie line would be located on public land administered by the BLM with the balance on private land. The electrical interconnection would be to Western's Parker-Blythe #2 161 kilovolt (kV) transmission line at a new substation located southeast of the power plant. The nearest community is Vidal Junction, approximately 15 miles northeast. Access to the

site is directly from SR-62 (SR 2009a, Sections 1 and 2). Please see **Project Description Figure 1 – Regional Setting** and **Project Description Figure 2 – Local Setting**.

PROJECT DESCRIPTION

The proposed RSEP would be a concentrating solar thermal power plant development in which most of the power plant area consists of a field of heliostats (elevated mirrors guided by a tracking system) focusing solar energy on a solar receiver heat exchanger located on one centralized power tower. Each heliostat tracks the sun throughout the day and reflects the solar energy to the receiver. The project features thermal energy storage that allows solar energy to be captured throughout the day and retained in a liquid salt heat transfer fluid. When electricity is to be generated, the hot liquid salt is routed to a series of heat exchangers to heat water and produce steam. The steam is used to generate electricity in a conventional steam turbine cycle that would utilize an air-cooled condenser to minimize water consumption.

RSEP is designed to produce electricity at a capacity of 150 megawatts (MW) and annual energy of 450,000 megawatt-hours per year during periods of peak energy demands. The primary components of the 1,410 acre power plant site would include the heliostat field, a 653-foot high central tower and receiver, hot and cold liquid salt storage tanks, a steam-turbine generator and associated equipment, a 20-cell air-cooled condenser, two on-site water wells, three evaporation ponds to capture and evaporate process wastewater, storm water detention basins, an electrical switchyard, and associated administration and maintenance facilities (SR 2009a, Section 2).

The acreages of the project’s land holdings and long term and permanent disturbances associated with the applicant’s final conceptual plans are summarized as follows in **Project Description Table 1**:

**Project Description Table 1
Summary of Project Components and Acreages¹**

Project component	Applicant-owned land	Private land (other)	Public (BLM) land	Total
Total contiguous applicant holdings (six parcels)	3,324 acres	n/a	n/a	3324 acres
Project site (four parcels, to be merged into one)	2,560 acres	n/a	n/a	2560 acres
Solar generation site, including permanent facilities within perimeter fence and Admin. Area	1,410 acres	0	0	1410 acres
Permanent stream channel diversions (outside perimeter fence) ²	35-60 acres			35-60 acres
Long-term construction-phase disturbance (parking, lay-down, logistics)	60 acres	0	0	60 acres
Permanent new access and maintenance road for transmission line (24 ft. wide x 4.6 miles) ³	0		14-16 acres	14-16 acres
Long-term disturbance for new	Negligible		Negligible	Negligible

distribution line (existing line to perimeter of of solar generator site)				
Long-term disturbance for new transmission line towers and pull sites ⁴	10 acres	10 acres	80 acres	100 acres
Permanent disturbance for interconnector substation			3 acres	3 acres
Long-term disturbance for ground line construction on existing Western 161 kV Transmission Line ⁵		Unkn.	Unkn.	127 acres
Total Project disturbance area	1,515-1,540 acres	10 acres +	97-99 acres +	1,749-1,776 acres

1. Data from the Application for Certification (SR 2009a) unless otherwise noted.
2. Staff estimate based on revised RSEP General Arrangement Figure (CH2MHill 2010x).
3. Total generator tie- line right of way = 150 acres Rice Solar Energy Project PLAN OF DEVELOPMENT, September 2009)). Staff estimates road disturbance as 24-foot width x length of road; length is reported as 4.6 miles in SR 2009a, and as 5.4 miles in CH2MHill 2010d.
4. Staff estimates 90 towers and 10 pull sites, each site approximately one acre; approximately 80% of tower and pull sites would be on BLM land.
5. Estimate provided by Western (pers. comm. between S. White and W. Werner).

The proposed project would cause total long term and permanent disturbance of about 1,749 – 1,776 acres, and would utilize about 99 acres of federal land managed by BLM. Please see **Project Description Figure 3 – Visual Simulation from Turtle Mountains Wilderness Area.**

SOLAR POWER PLANT EQUIPMENT AND FACILITIES

HELIOSTATS

Up to 17,500 heliostats would occupy approximately 1,370 acres arranged in concentric circles around the receiver tower. Each heliostat would be configured with a single mirror array hung in the landscape position. Each mirror would be 24 feet high by 28 feet wide, providing a reflective surface of 672 square feet per heliostat (See **Project Description Figure 4 – Heliostats**). Each heliostat has a 12-foot high post or pier-type foundation to support and anchor the unit. The overall height of the heliostats would be about 26 feet when they are facing near horizontally, with about two feet of ground clearance. The heliostat power and control cables would be direct-bury cables in the field up to each individual heliostat unit. Electric power would be distributed from medium voltage switchgear in the power block area via direct-bury cables to step-down transformers located throughout the heliostat field. Low voltage power is then sent via circuit breaker panels and direct-bury cables centrally located in the field to service the individual heliostats. Similarly, command and status signals would be sent to the individual heliostats via direct-bury control cables from the Master Control System (MCS) located in the power block. The command and status signals would be distributed to each unit through Heliostat Field Controllers (HFC's) that would direct the movement of each heliostat to track the movement of the sun (SR 2010b).

The arrangement of the heliostats within the array is optimized to maximize the amount of solar energy that can be collected by the field, and to avoid interference among

heliostats as they track the sun during the day. The heliostats are arranged in arcs encircling the receiver tower extending in concentric rings from the central tower. The receiver tower is offset somewhat to the south of the true center of the heliostat field. Because the plant is situated in the northern hemisphere, this layout optimizes the various sun angles between heliostats and the receiver, given that the sun, on a calendar year basis, remains primarily to the south of the receiver. Heliostats in the northern section of the heliostat array have the highest solar collection efficiency because the sun is predominantly in the southern horizon, and they have the most direct reflection angle to the central tower (most perpendicular to the face of the mirror as it reflects to the central tower). Conversely, heliostats in the southern section of the heliostat array have the lowest solar collection efficiency.

The heliostat spacing will vary through the field with tighter spacing in the center of the field near the power block and central tower. The spacing will gradually become greater as the heliostats are arranged further from the central tower in concentric rows, since the outermost rows will reflect at a flatter angle and require more spacing to avoid shadow effects on each other. The nearest spacing will average 30 feet between heliostats and 27 feet between rows (foundation center to foundation center) at the first two rows nearest the solar tower. The farthest spacing will range from an average of 57 feet between heliostats and 67 feet between rows at the outermost rows on the south side of the solar field, to an average of 60 feet between heliostats and 80 feet between rows at the outermost rows on the north side (CH2MHill 2010a, DR 101).

The heliostats have the ability to rotate 360 degrees around the pedestal and would move in the vertical plane within an approximate range from facing laterally to facing upward. The range of vertical motion can more specifically be defined by referencing two points in that range defined by 0 degrees as facing laterally and 90 degrees as facing upward. If looking at the heliostat from a side view, the full vertical range would vary from a position of 6 degrees upward from facing laterally and would extend to 10 degrees beyond facing perfectly upward (or at a position corresponding to an arc of 100 degrees from facing laterally). The range of motion is as illustrated in **Project Description Figure 4 - Heliostats**. Daily positioning of the heliostats would vary according to operating mode and is described as follows:

1. Night Stow position – During the night, the heliostats would face upward;
2. Morning startup - At dawn, the applicant proposes that the heliostats would be moved from the stowed position to their respective standby position to be readied for sun tracking;
3. Standby position - The standby position is proposed to be relatively close to the tracking position, but instead of reflecting solar energy to the receiver, it would be reflected to one of four target points located at the horizontal center plane elevation of the receiver and approximately 100 feet radially from the receiver surface;
4. Sun tracking - The tracking position that would vary according to the heliostat's location in proximity to the power tower and the sun's position;

5. Evening shutdown – Heliostats would move slowly along predefined paths of motion in groups specified to minimize simultaneous power consumption, and come to rest in the stow position facing upward;
6. Load (power output) reduction – The RSEP thermal energy receiver and storage system can receive all solar energy collected at any time of day, and thus heliostats would not need to be directed away from the receiver to control power output;
7. Reducing solar input to avoid overheating the receiver – In the event the receiver is at risk of overheating, such as related to equipment failure, pre-assigned groups of heliostats would be placed in standby position in order to off-point from the receiver; Should the condition persist for a longer period, the heliostats would be directed to the stow position.
8. Loss of AC station power – The emergency standby generator(s) will automatically start and the entire collector field will begin an emergency defocus sequence where all the heliostats are commanded to point off of the receiver so that all concentrated solar energy is removed within 60 seconds; The applicant has proposed that the heliostats would focus on one of four target points according to the Standby position.
9. Mirror washing - Approximately every two weeks, mirrors would be washed by moving the heliostats into a position between 6 and 45 degrees (CH2MHill 2010a, DRs 150, 151).

SOLAR RECEIVER TOWER AND THERMAL ENERGY COLLECTION AND STORAGE

The solar receiver would be located on the top of a cylindrical concrete tower. The tower structure would be approximately 538 feet tall. The height of the receiver atop the tower would be 100 feet and together, the top of the receiver tower would be 638 feet above the ground surface. A 15-foot high crane would be mounted on top of the receiver to facilitate receiver panel maintenance, making the total height of the receiver tower 653 feet above the ground. The tower would include necessary warning lights to meet Federal Aviation Administration (FAA) regulations. The receiver would be constructed of a series of manifolds and tubes. The cold salt, as stored in a cold liquid salt tank at ground level, would enter the manifold system at approximately 550°F, and would be distributed to the panels of receiver tubes where the solar energy from the heliostats heats the salt to approximately 1,050°F. The heated salt would then flow from the receiver to the hot salt storage tank located at ground level. Before start-up and commissioning of the power plant, the salt mixture of sodium nitrate (NaNO₃) and potassium nitrate (KNO₃) would need to be heated and maintained above the minimum temperature of 450°F to remain in a liquid form.

The thermal energy storage capability allows heat to be stored until required for production of electrical power, allowing power generation to operate independently of solar energy collection. Thermal energy storage provides the ability to extend the power generation period beyond the daylight hours between sunrise and sunset. With the ability for heated salt to be retained in insulated storage tanks, it can be withdrawn and power generated to follow the peak load demands of the electrical grid system which typically includes the afternoon and evening hours after sunset. To produce steam and

generate electricity, the hot salt is pumped through a steam generating system that transfers heat from the salt to water, and supplies superheated steam for use in a conventional Rankine cycle steam turbine-generator. Upon leaving the steam generation system, the salt is returned to the cold tank where it is stored prior to reheating in the solar receiver tower.

The liquid salt system incorporates several “fail safe” features, including gravity drain of the salt loop and steam generation system on loss of grid power in order to avoid solidification should the salt cool down before normal operation can resume. In order to prevent thermal damage to the receiver panels in the event of an interruption in salt flow, an emergency coolant vessel located in the interior of the receiver is filled with low temperature liquid salt pressurized with compressed air to fill the receiver. If the heliostats cannot be directed away from the receiver when salt flow is lost (due to a loss of power), the emergency coolant vessel discharges its contents into the receiver panels to maintain approximately one minute of salt flow. Emergency diesel generators would be installed to provide power for directing the heliostats from the receiver to the Standby Position to prevent overheating of the receiver in the event of a stoppage of salt flow. If power is lost, the diesel generators would have a 10-second start time in order to begin powering the heliostats to the Standby Position in designated groups at a time and in a sequential manner. A 10,000-gallon diesel fuel storage tank would provide on-site storage of diesel adequate to power equipment and building needs for an extended power outage.

(See **Project Description Figure 5 – Project Layout** and **Project Description Figure 6 - Project Elevation**).

POWER BLOCK

When power generation is desired, hot salt is pumped from the hot thermal storage tank into a series of feedwater heaters and steam generation modules to transfer the heat from the hot salt to water and saturated steam, and produce superheated steam. The steam is used in a Rankine cycle reheat steam turbine-generator to produce electricity. Superheated steam is expanded through the high-pressure stages of the turbine, routed back to the steam generation system where it is reheated and then returned to expand through the intermediate and low-pressure turbine sections. The steam turbine drives an attached generator to produce electricity. Waste heat contained in steam exhausted from the turbine is then rejected to the atmosphere through a dry cooling process utilizing an air-cooled condenser. Condensed steam is returned to the steam generation cycle by way of multi-stage condensate and feedwater preheaters and a deaerator.

The RSEP solar power plant would have a power block located slightly south of the center of the solar field. The RSEP solar-thermal plant would include the following equipment and facilities in the power block:

- Hot and cold salt storage tanks;
- solar power tower and receiver;
- steam generation system consisting of an economizer, steam drum, evaporator, and superheater that ultimately converts water to superheated steam for the high-

pressure turbine stage; a reheater of the high-pressure turbine stage exhaust reheats steam for supply to the intermediate and low-pressure turbine stages;

- steam turbine-generator;
- air-cooled condenser for steam condensation;
- auxiliary equipment (feed water heaters, feedwater and condensate pumps, a de-aerator, emergency diesel generator(s), diesel fire pump(s), etc.);
- auxiliary cooling system consisting of an air-cooled and wet surface air cooler for the steam turbine lubricating oil;
- a raw water tank with a 840,000 gallon capacity, to supply water for plant use and fire fighting;
- a demineralized water storage tank;
- water treatment system consisting of two multi-stage reverse osmosis (RO) units and electrodeionization (EDI) equipment; and a
- wastewater treatment system consisting of a reaction chamber, clarifier and filter press to treat the first pass RO reject stream.

Please see **Project Description Figure 7 – General Arrangement of the Power Block Area.**

USE OF FOSSIL FUEL FOR INITIAL SALT CONDITIONING AND EMISSION CONTROLS

Fossil fuels consisting of either propane or compressed natural gas would be used prior to plant startup in two small boilers for the initial melting, heating and conditioning of the salt thermal storage medium. Oxides of Nitrogen (NO_x) emissions from the boilers would be controlled by employing ultra low NO_x burners, and fluid gas recirculation. The RSEP facility may utilize aqueous ammonia (19% NH₃) as an option for emissions control of the salt melting and conditioning equipment during plant commissioning activities. The ammonia would be brought onsite by a licensed contractor in tanker trucks. Liquid ammonia tanker trucks have capacities of up to 11,400 gallons. The capacity of the tanker trucks expected to be used for the RSEP is 7,500 gallons. A maximum of two tanker trucks will be onsite at any time; thus, the maximum amount of ammonia onsite at the RSEP would be 15,000 gallons. The trucks will stay onsite until empty and no permanent ammonia storage tanks will be built for the RSEP.

The salt conditioning process is a one-time event that takes place during plant commissioning, resulting in a closed loop system of liquid salt storage and circulation that will remain heated and contained for the life of the project. The melting and heating process is expected to operate continuously, 24 hours per day and 7 days per week, until the plant's total inventory of 35,000 tons of salt has been melted. The salt commissioning process would take approximately 140 days and is expected to begin in about Month 18 of the construction schedule. The other construction activities and their associated emissions would continue during the salt system commissioning activities.

Fossil fuels will not be needed during RSEP operations except for use in vehicles associated with mirror washing and plant maintenance, with the emergency standby generators for delivering backup station power, and with fire water pumps should station power fail. This equipment would include the latest emission controls as required by California Air Resources Board. Please see the **Air Quality** section for more information on emissions and controls.

WATER SUPPLY AND DISCHARGE

The facilities would require a water source to support operations, including process water consisting of make-up water for the steam system and wash water for the heliostats, and potable water for domestic water needs. Groundwater would be supplied from one of two wells that would be constructed within or in close proximity to the power block. The power block would be connected to the groundwater wells by underground water pipelines. The applicant estimates project water consumption would not exceed a maximum of 180 acre-feet per year (afy), which would primarily be used to provide water for washing heliostats (mirrors) and to maintain proper chemistry of boiler feed water by replacing boiler feed water blow-down. The applicant has estimated that average annual water demands for all project operating needs would be on the order of 100 afy allocated as shown in **Project Description Table 2**.

**Project Description Table 2
Average Daily and Annual Average RSEP Water Demands**

Water Use	Average Daily Use (gpm)¹	Annual Use (AFY)²
<i>Heliostat Mirror Wash</i>	51	31
<i>Steam Cycle Makeup</i>	52	31
<i>Potable Water</i>	5	3
<i>Other uses including wet surface air cooler (WSAC), service water, quench water</i>	62	38
Average Use Total	170	103
<i>Margin for other uses</i>	25	15
Total Plant Consumption	195	118
Maximum Annual Use	--	180
Wastewater Discharge		
<i>Service water</i>	5	--
<i>WSAC blowdown</i>	27	--
<i>Hydrostatic test water</i>	*	--
Average discharge to evap. ponds	32	~20

¹ Gallons per minute

² Acre-feet per year, based on 3,286 hours of operation per year .

¹ Gallons per minute

² Acre-feet per year, based on 3286 hours of operation per year .

* A volume of approximately 6 million gallons will be used during hydrostatic testing. Wastewater discharge facilities shall be operational, and monitoring networks must be installed prior to discharge.

The quality of groundwater would be improved using a treatment system for meeting the requirements of the boiler make-up and mirror wash water. Water treatment equipment would consist of two-pass reverse osmosis membrane filters, and a electrodeionization system. Demineralized water would be stored in a demineralized water storage tank.

FIRE PROTECTION

The fire protection system would be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water would be the 840,000 gallon raw water storage tank to be located in the power block as supplied by the project groundwater well. Approximately 480,000 gallons would be usable for plant process needs and 360,000 gallons would be reserved for fire protection. The project's overall fire water suppression system would be divided into two distinct fire suppression systems. One fire pump set would serve the fire suppression needs within the power block, and the second would serve the needs of the solar receiver tower and administration and shops areas located between SR 62 and the solar field. For both fire water pump systems, an electric jockey pump and electric motor-driven main fire pump would be provided to increase the water pressure to the level required to serve all fire fighting systems. In addition, a backup diesel engine-driven fire pump would be provided for each of the two fire water pump systems to pressurize the fire loop if the power supply to the electric motor-driven main fire pumps fail (SR 2009a, Section 2). The project would not include any specific facilities to address potential wild fires.

RSEP ACCESS DURING CONSTRUCTION AND OPERATIONS

The primary access to RSEP will be from SR 62 into a driveway entering the Administration area. During construction and within the RSEP, there are no planned routes or frequencies for vehicular traffic within the heliostat field. The primary construction activity within the heliostat field will be for installation of the heliostats and includes drilling of a foundation for the heliostat, setting of rebar and anchor bolts within the foundation, pouring of concrete/grout for the foundation, mounting the heliostat pedestal on the foundation, installation of the heliostat panels, installing wiring (power and communication) to each heliostat, creating smooth paths of travel for vehicles, and commissioning of each heliostat. The foundations will be drilled using a large hydraulically driven auger that will be mounted on an excavator, drill rig, or other mobile equipment. Flat bed or other types of trucks will deliver rebar and other supplies. Cranes, forklifts, boom trucks, loaders, or other types of equipment will be used to lift and place the rebar in place. Concrete trucks will deliver concrete to each foundation. Flat bed or other types of trucks will deliver the heliostat parts including the pedestal and panels. Small trenching equipment and backhoes will be used to install cables. Loaders, small dozers, motor graders, water trucks, and compactors will be used to backfill trenches and create smooth roads. Water trucks will apply water for dust suppression and for moisture conditioning of the soils. Pickup trucks and crew trucks will transport men, small tools, and miscellaneous material throughout the heliostat field during the construction and commissioning process.

During RSEP operations, the planned routes of travel have not been determined for operation within the heliostat field. The primary vehicle traffic during operation will be a

water truck for mirror washing. Additional vehicles will include pickup trucks and crew vehicles for maintenance and inspection. Also, mobile cranes or other types of equipment will be used to lift heliostat panels/parts as necessary for maintenance (SR 2009b, Project Description) .

Please see **Project Description Figure 5 – Project Layout** to see the proposed location of the RSEP Main Entrance from SR 62, and the power block and perimeter access roads .

FENCING

The project area would be surrounded by security fence, which would be constructed of galvanized steel chain-link, with barbed wire at the top as required. The security fence would surround the outer perimeter of the power plant, the substation, and the administrative complex. Tortoise barrier fence would also be installed in accordance with the Recommended Specifications for Desert Tortoise Exclusion Fencing (USFWS 2005). The tortoise fence would consist of 1-inch horizontal by two-inch vertical galvanized welded wire. The fence would be installed to a depth of 12 inches, and would extend 22 to 24 inches above the ground surface and integrated with the security fence.

TRANSMISSION SYSTEM INTERCONNECTION AND UPGRADES

The RSEP would deliver power via a 10-mile long 161-kilovolt (kV) transmission generation tie line to a new substation that would be owned and operated by Western. The generation tie line would interconnect to Western's Parker-Blythe #2 transmission line southeast of the RSEP, and the substation would be located adjacent to the transmission line. The new substation would be located on less than three acres on public land. The power plant would have a switchyard with a step-up transformer to increase the 18 kV generator output voltage to 161 kV. The transformer would need to be capable of an output voltage of 230 kV for conversion at such time that Western chooses to operate the Parker-Blythe #2 transmission line at 230 kV. The applicant has proposed that the single circuit generator tie line be supported by 75 to 115-foot high single pole structures. The line would take the most direct and shortest route from the southern limits of the heliostat circle to the new substation, with the first 5.4 miles along a newly built private dirt road connecting to Rice Valley Road, and the remaining 4.6 miles along Rice Valley Road on BLM land to the substation interconnection point (SR2009a, Section 2). Please see **Project Description Figure 1 – Regional Setting** for the locations of the proposed Generation Tie Line and the existing Parker-Blythe #2 transmission line.

The interconnection of the RSEP to Western's Parker-Blythe #2 transmission line would potentially require upgrades to be performed to downstream transmission facilities connected to Western's system associated with Southern California Edison's (SCE's) and Imperial Irrigation District's (IID's) transmission systems. These upgrades are expected to consist of modifications to existing facilities that could include reconductoring, substation switchgear and transformer upgrades and system protection control modifications (CH2MHill 2010s, System Impact Study). Please see the **Transmission System Engineering** section for more information.

RSEP may also have a connection to SCE's distribution system for purposes of supplying power during construction and for backup station power during operations. The 1.1 mile long extension of the 12-kV line would extend SCE's line from a point 175 feet east of the project's eastern parcel boundary in a westward direction along the northern boundary of RSEP paralleling SR 62, and would terminate at RSEP's administration building area. During operations, the electrical service from SCE may serve as a backup for non-operational station power loads. During operations, the station power as primarily fed from RSEP's steam turbine-generator would consume about 10% of RSEP's gross generation as needed to supply plant auxiliaries such as pumps, control systems, lighting, and heating/ventilation/air conditioning (SR 2009a, Section 2).

TELECOMMUNICATIONS FACILITIES

The interconnection of RSEP to Western's transmission system would require telecommunication facilities be installed to provide a protective relay circuit and a supervisory control and data acquisition (SCADA) circuit, together with data and telephone services. The applicant has identified several options for constructing the telecommunication path from RSEP to the new Western interconnection substation, and for communicating to an existing Western substation. To provide for telecommunication pathways from the new RSEP power plant to the new substation, a fiber optic cable would be incorporated with the 10-mile long overhead generation tie line to the new Rice interconnection substation. From the new substation interconnecting the RSEP to Western's system, telecommunications would be established in one of the following manners: 1) replacing one of two existing overhead ground wires on the Parker-Blythe #2 transmission line with a fiber optic core overhead ground wire to either or both of Western's existing Parker and Blythe substations; 2) microwave (radio-frequency) transmission from either RSEP or the new substation to terminate at either Western's Blythe, Headgate Rock, or Black Point substations or to an existing telecommunications site at Cunningham Mountain; or 3) power line carrier/Broadband-over-Power-Line (BPL).

The two optical cable options for the Parker-Blythe #2 transmission line would be integrated with the same poles or towers as would support the generator tie and transmission lines. The BPL option would utilize the electrical conductor of the generator tie and transmission lines. The microwave option could involve an intermediate tower located along the general line of sight of the terminal ends of the microwave path. It is possible that the applicant would run buried fiber optic cable from RSEP to an intermediate tower along the SR 62 ROW if a microwave path selected were near SR 62. If an intermediate tower is needed, it would have a small footprint and could be located to avoid biological and cultural resources (CH2MHill 2010k). (Please see **Project Description Figure 8 – Telecommunications Options**). For more information on the proposed telecommunication facilities, please refer to **Transmission System Engineering Appendix A**.

PROJECT DESIGN AND MANAGEMENT APPROACH

STORMWATER MANAGEMENT APPROACH

The proposed project would utilize a drainage design similar to that of the former Rice Airfield. Runoff received from the north of SR 62 would be diverted outward and away from the site's eastern and western boundaries by constructing the perimeter loop road along the northern half of the heliostat field as a raised feature with a channel on the outward side to direct the flows much like the 1940s-era diversion dike diverted flows from the former Rice Army Airfield. Onsite runoff would only be contained in areas where rainwater could be exposed to contaminants. The solar field runoff would be allowed to discharge freely with minimal concentration. Runoff generated between SR-62 and the site would be conveyed around the site's perimeter by a natural bottom channel (SR 2009a, App. 5.15c).

The existing storm water flow across the proposed project is generally from north to south, across the toe of an alluvial fan originating in the Turtle Mountains. Storm water is conveyed across the site through an extensive network of ephemeral drainages with an average slope of 2%. All drainage in the Rice Valley flows toward the valley's topographic low point, Rice Valley dry playa. During major storm events, the ephemeral washes can flow for periods of a few hours to 24-hours with the possibility of flash floods and mass wasting. The ephemeral drainages have been determined to be non-jurisdictional features by the Army Corps of Engineers under Section 404 of the Clean Water Act (CH2MHill 2010r), but are still considered Waters of the State (SR 2009a). For further discussion on the jurisdictional determination, please refer to the **Biological Resources** section.

The proposed project is sited within a previously modified drainage shed and would be constructed in the same location as the Rice Army Airfield. Directly north of the proposed project site location and north of SR-62 is a railroad currently owned by the California and Arizona Railroad Co. This section of railroad originally owned by Santa Fe Railroad was built no later than the early 1900s. Diversion dikes built to capture runoff from the Turtle Mountains, channel water beneath the railroad tracks. In the late 1930s, the Colorado Aqueduct was constructed immediately up-gradient of the railroad. The aqueduct required its own set of dikes to channel water above the siphoned section of the canal. In its present-day state, these current dikes capture all runoff up-gradient of SR-62 and channel it across the road to the south (SR 2009a).

The Rice Municipal Airport was acquired by the U.S. Army in 1942 and is presumed to have utilized the drainage system currently in place. Water generated up-gradient of the site, in the Turtle Mountains, is conveyed by two diversion dikes around the airfield. These dikes are not currently functioning, due to a lack of maintenance since the airfield was abandoned. After the dikes were breached, it is presumed that the historical natural drainage network re-established itself. The most hydraulically significant drainages on site are those crossing SR-62 adjacent to the project. Two road crossings at SR-62, convey all drainage generated up gradient of the site through or around the project (SR 2009a).

The proposed project is located in Federal Emergency Management Agency (FEMA) Zone D, which is classified as an area with a possible but undetermined flood hazard.

Although a flood hazard analysis has not yet been conducted by FEMA for this area, a Conceptual Drainage Study was completed by the applicant. The proposed project is not within a 100-year floodplain (SR 2009a).

The applicant has proposed that all drainage would collect at the south end of the project in a shallow 30-acre detention facility. This unlined basin would allow for discharge through either infiltration or through a discharge pipe at the lower end of the basin. The function of the discharge pipe would be to maintain the pre-developed discharge rate for the 100-year, 24-hour storm. The project would result in an increase in impervious area from construction of an administration building, a warehouse, power block areas, and a perimeter road. Please see **Project Description Figure 9 – Existing RSEP Site Topography** and **Project Description Figure 10 – Proposed Drainage Plan**.

WASTE MANAGEMENT

Construction activities would generate an estimated 350 cubic yards of non-hazardous solid wastes, consisting of scrap wood, steel, glass, plastic, scrap metal, and paper. Of these items, recyclable materials would be separated and removed to the extent reasonably possible, and transported to recycling facilities. Non-recyclable solid materials (insulation, other plastics, food waste, roofing materials, vinyl flooring and base, carpeting, paint containers, packing materials, etc.) would be disposed of at a Class III landfill (SR 2009a, Table 5.14-1).

Non-hazardous liquid wastes would be generated during construction, and would include equipment washdown water, emission control scrubbing solution purge, storm water runoff and sanitary waste. Storm water runoff would be managed in accordance with appropriate LORS (SR 2009a, Table 5.14-2). Sanitary wastes would be pumped to tanker trucks by licensed contractors for transport to a sanitary wastewater treatment plant. Please see the **SOIL AND WATER RESOURCES** section of this document for more information on the management of project wastewater.

During construction, anticipated hazardous wastes include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Estimated amounts are 60 empty containers, 7,500 gallons of oils, solvents, and adhesives (every 90 days), and 36 batteries (per year). Empty hazardous material containers would be returned to the vendor or disposed of at a hazardous waste facility; solvents, used oils, paint, oily rags, and adhesives would be recycled or disposed of at a hazardous waste facility; and spent batteries would be transported to a recycling facility (SR 2009a, Table 5.14-1).

During RSEP operations, the proposed project would generate both non-hazardous and hazardous wastes in solid and liquid forms under normal operating conditions. Non-hazardous solid wastes generated during project operations would consist of glass, paper, wood, plastic, cardboard, deactivated equipment and parts, defective or broken electrical materials, empty non-hazardous containers, and other miscellaneous solid wastes. The project would generate approximately 10 cubic yards per year of non-hazardous waste, (the estimate does not include sewage) (SR 2009a, Section 5.14.1.2.2). Such wastes would be recycled to the greatest extent possible, and the

remainder would be removed on a regular basis for disposal in a Class III landfill. Non-hazardous oily rags (one 55-gallon drum per month) would be laundered at an authorized recycle facility. Sanitary wastewater would be treated with an onsite septic system, and sludge would be contained onsite and transported to an off-site disposal facility as needed. Storm water runoff would be managed by diverting oncoming surface runoff around the RSEP site and by allowing on-site runoff to drain as it would naturally from north to south on the RSEP site. The onsite runoff would drain into a 30-acre detention pond where it would infiltrate or be released gradually.

The project proposes to use three five (5)-acre, double-lined evaporation ponds to manage the industrial wastewaters generated by the power block. Each brine pond would have an average design depth of at least six feet to allow for one foot of sludge build up, three feet of operational depth, and two feet of freeboard. The ponds would be constructed and lined as follows:

- a base layer consisting of either a geosynthetic clay liner (GCL) or 2 feet of onsite material with a hydraulic conductivity of less than 1×10^{-6} cm/sec;
- a secondary high density polyethelene (HDPE) liner (minimum of 40 mil);
- a leak detection and removal system comprising a geonet and collection sump; and
- a primary 60 mil high density polyethylene (HDPE) liner at the surface of the ponds.

The wastewater to be discharged into the evaporation ponds is anticipated to be non-hazardous; however, it would contain pollutants which could exceed water quality objectives or affect the beneficial uses of ground water, if released. Therefore, the wastewater would be classified as a “designated waste” and would be regulated by the State and Regional Water Boards. The Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) has jurisdiction over the area where the RSEP would be located. Please see the **SOIL AND WATER RESOURCES** section of this document for more information on storm water and process wastewater disposal.

Hazardous wastes that may be generated during routine project operation include oily absorbent and spent oil filters, and used hydraulic fluid (SR 2009a, p. 5.14-8). In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or cleanup materials that may also require management and disposal as hazardous waste.

PROJECT CONSTRUCTION

The applicant has proposed RSEP construction would begin in the first quarter of 2011, begin startup testing in the first quarter of 2013, and to achieve commercial operation by third quarter of 2013 for an overall 30-month construction period. The applicant expects the peak construction period to occur between months 8 and 20 with a peak construction workforce of up to 438 workers. The applicant proposes to perform construction between 5 AM to 7 PM on weekdays and Saturdays. Construction could occur at times on a 24-hour, seven day-per-week basis to make up schedule deficiencies, to work around extreme mid-day heat or other weather events, or to complete critical construction activities such as when pouring concrete.

FACILITY OPERATION AND MAINTENANCE

Assuming the construction of RSEP were to begin during the first quarter of 2011, the applicant estimates that RSEP construction would be completed and the power plant commercially operational during the third quarter of 2013. The proposed project would be designed for an operational life of 30 years. The RSEP is designed to maximize solar energy collection during daylight hours while enabling the steam turbine-generator to operate during hours of highest system power demands, which generally occur during afternoons and early evenings. The project would be dispatchable, load-following and operated at an annual capacity factor of approximately 35%.

It is anticipated that all the electricity produced by the plant would be sold under contract to one or more power purchasers. The exact operational profile of the plant would be dependent on weather conditions, the power purchaser's economic dispatch decisions and resource scheduling, transmission constraints and other factors. The project would participate in the day-ahead scheduling market controlled by the California Independent System Operator (California ISO) with the power purchaser acting as Scheduling Coordinator for the RSEP. At the time of preparation of this document, the applicant had executed a Power Purchase Agreement with Pacific Gas and Electric that was pending the approval of the California Public Utilities Commission (CPUC).

The applicant anticipates that RSEP operations and maintenance would employ up to 47 full-time employees. Heliostat washing would normally be conducted five days per week using diesel-fueled tank trucks specially fitted with high-pressure washers. The trucks would carry demineralized water and would be driven slowly through the heliostat field, spraying high pressure water onto the heliostat mirrors to remove accumulated dust or foreign matter. The heliostats would be washed about every 2 weeks. Vegetation in the heliostat field would be kept trimmed near ground level, and soil binders and weighting agents would be used to control fugitive dust and minimize dust accumulation on the mirrors as could occur by wind or vehicle traffic.

PROJECT DECOMMISSIONING

Following the operational life of 30 years, the project owner would perform site closure activities to meet federal and state requirements for the rehabilitation and revegetation of the project site after decommissioning. The procedures to be used for project decommissioning and restoration would be in accordance with a Facility Closure Plan. Under this plan, it would be expected that all aboveground structures and facilities would be removed to a depth below grade, and removed offsite for recycling or disposal. Some concrete, piping, and other materials existing below grade may be left in place. Areas that had been graded would be restored to original contours. Shrubs and other plant species would be revegetated.

REFERENCES

CH2MHill 2010a – CH2M Hill/D. Davy (tn 55813). Applicant's Response to CEC Staff Data Requests 1 to 168, dated 3/08/10. Submitted to CEC/J. Kessler on 3/09/10.

CH2MHill 2010b – CH2M Hill/ D. Davy (tn 55924). Applicant's Response to CEC Staff Data Requests 130, 139 to 141, 143 to 144, dated 3/16/10. Submitted to CEC/J. Kessler on 3/16/10.

CH2MHill 2010d – CH2M Hill/ D. Davy (tn 56161). Applicant's Response to CEC Workshop Queries 9 & 10 – Gen. Tie Alignment & Reduce Acreage Alternatives, dated 4/7/10. Submitted to CEC/J. Kessler on 4/7/10.

CH2MHill 2010k – CH2M Hill/ D. Davy (tn 57123). Applicant's Response to CEC Staff Workshop Query regarding Telecommunications, dated 6/14/10. Submitted to CEC/J. Kessler on 6/14/10.

CH2MHill 2010r – CH2M Hill/D. Davy (tn 57082). Email from U.S. Army Corps of Engineers to U.S. EPA Documenting Non-Jurisdictional Waters for RSEP. Dated 6/9/10. Submitted to CEC/J. Kessler on 6/9/10.

CH2MHill 2010s – CH2M Hill/D. Davy (tn 57199). Applicant's Transmission System Impact Study. Dated 6/14/10. Submitted to CEC/J. Kessler on 6/14/10.

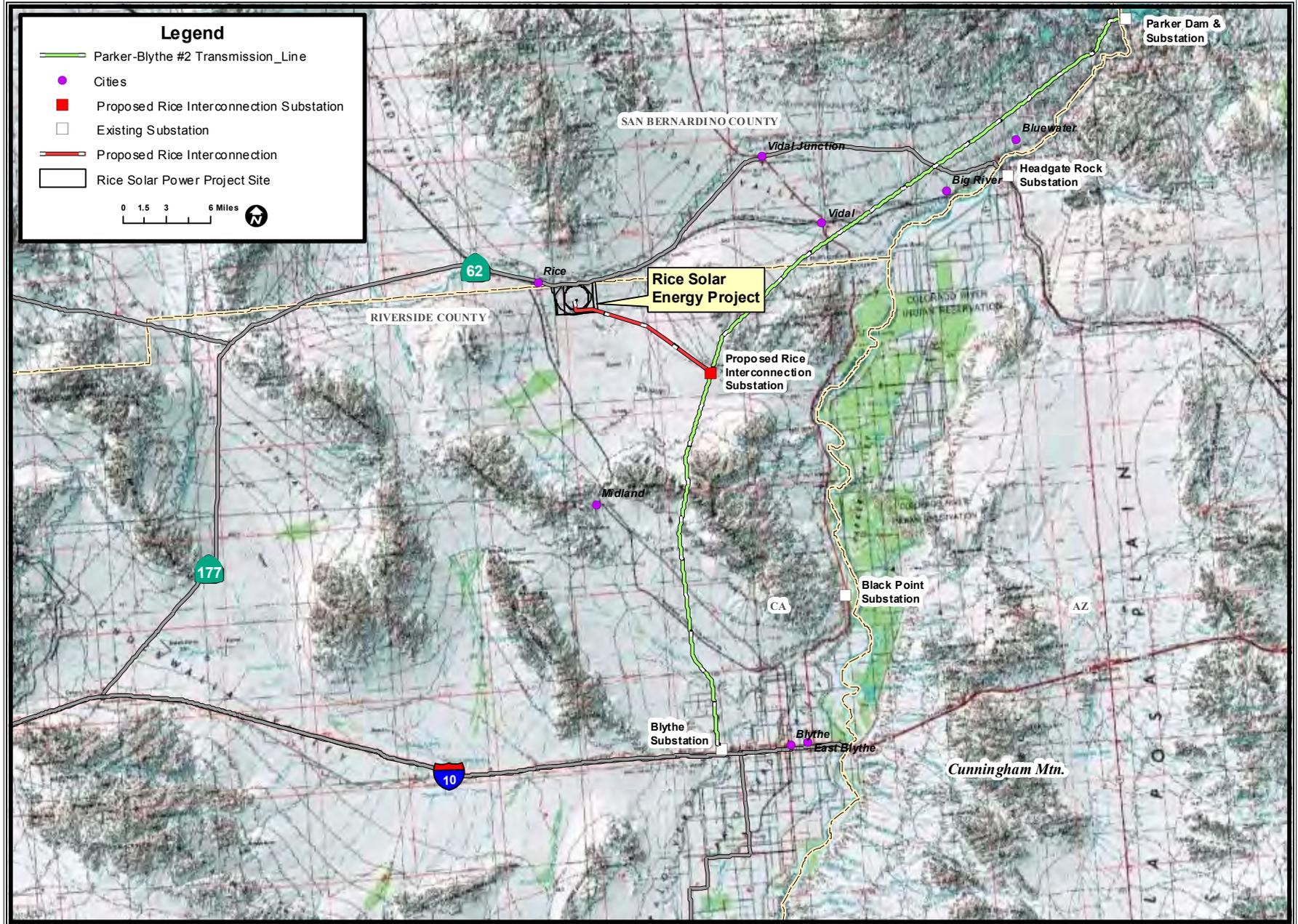
CH2MHill 2010x – CH2M Hill/D. Davy (tn 57619). Applicants Supplemental Information Item #6 - Revised General Arrangement. Submitted to CEC/J. Kessler 07-13-10.

SR 2009a – Solar Reserve/ T. Georgis (tn: 53723). Application for Certification. Dated 10/13/09. Submitted to CEC/Docket Unit on 10/21/09.

SR 2009b – Solar Reserve/ T. Georgis (tn: 54204). Applicant's Data Adequacy Supplement. Dated 11/19/09. Submitted to CEC/Docket Unit on 11/20/09.

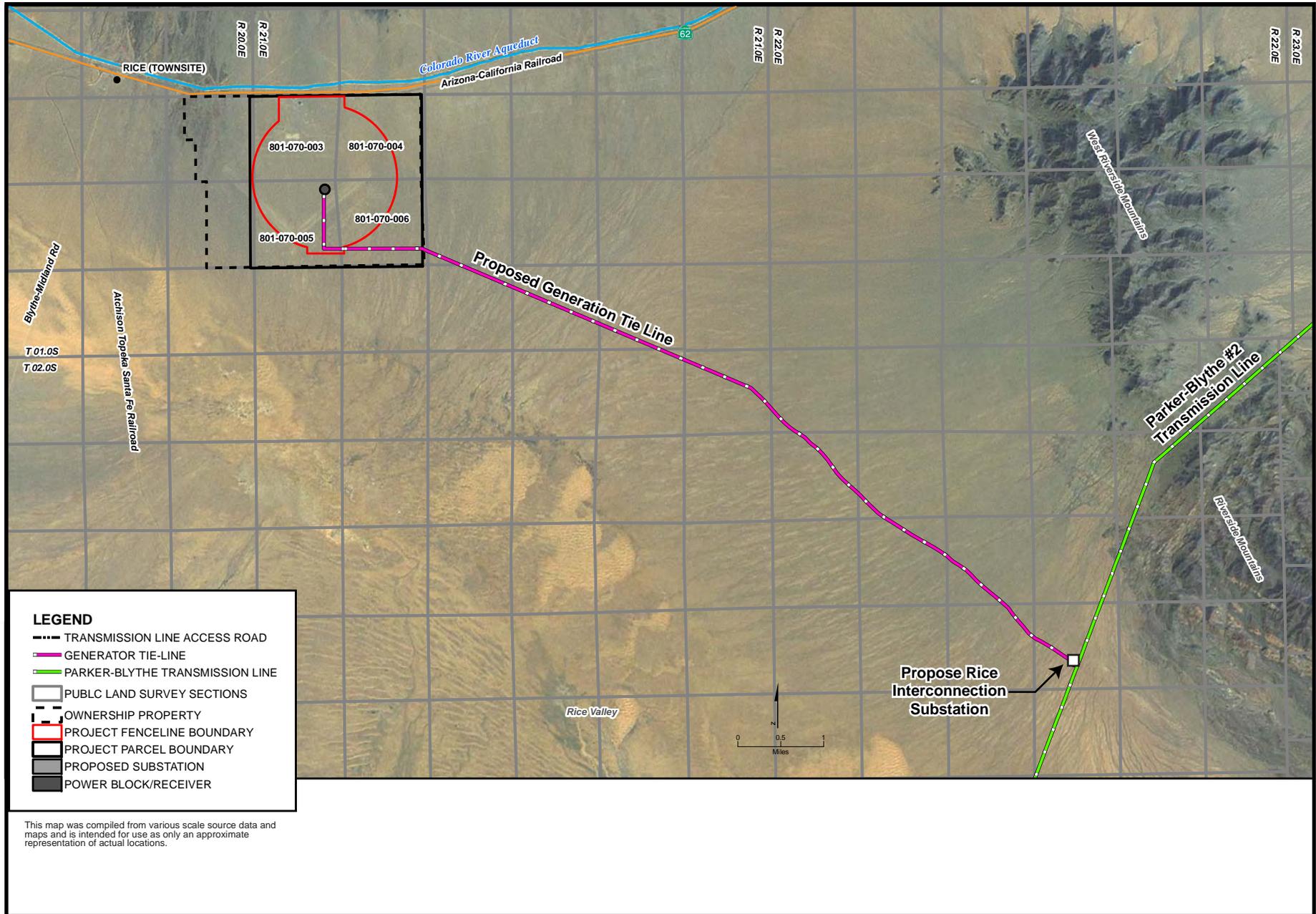
SR 2010b – Solar Reserve/ S. Kaminski (tn: 58353). Applicant's description of heliostat power and control cable installation. Dated 8/18/10. Submitted to CEC/Docket Unit on 9/8/10.

PROJECT DESCRIPTION - FIGURE 1
 Rice Solar Power Project - Regional Setting & Parker-Blythe #2 Transmission Line



PROJECT DESCRIPTION

PROJECT DESCRIPTION - FIGURE 2
Rice Solar Energy Project - Local Setting

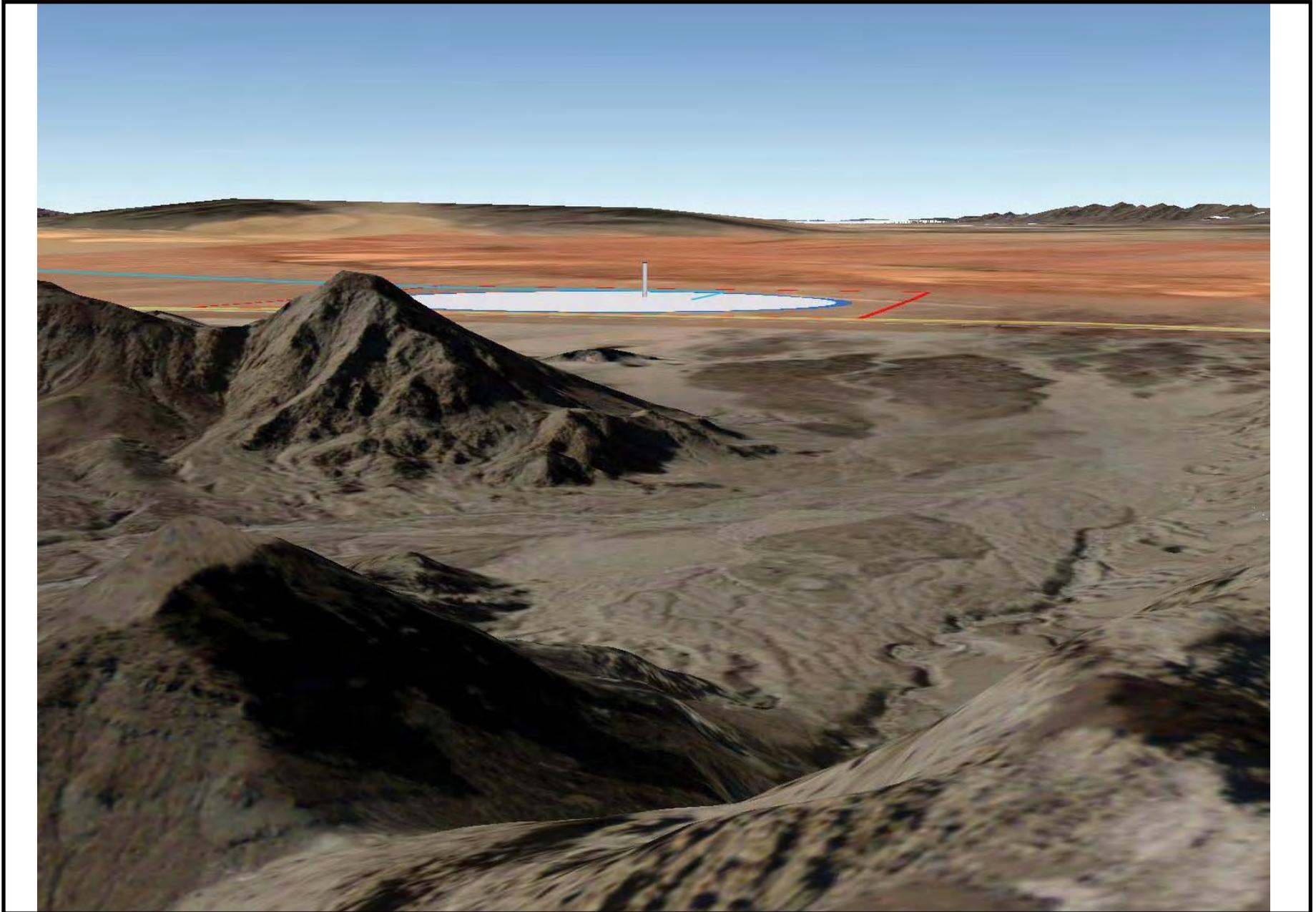


PROJECT DESCRIPTION

- LEGEND**
- TRANSMISSION LINE ACCESS ROAD
 - GENERATOR TIE-LINE
 - PARKER-BLYTHE TRANSMISSION LINE
 - PUBLIC LAND SURVEY SECTIONS
 - OWNERSHIP PROPERTY
 - PROJECT FENCELINE BOUNDARY
 - PROJECT PARCEL BOUNDARY
 - PROPOSED SUBSTATION
 - POWER BLOCK/RECEIVER

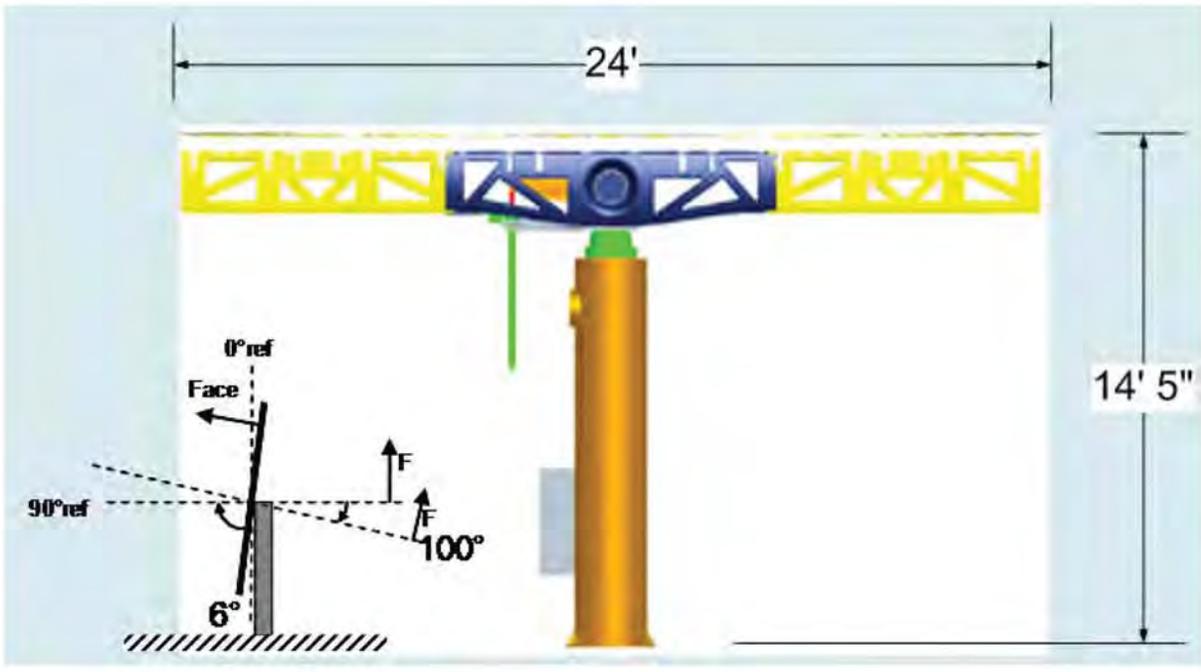
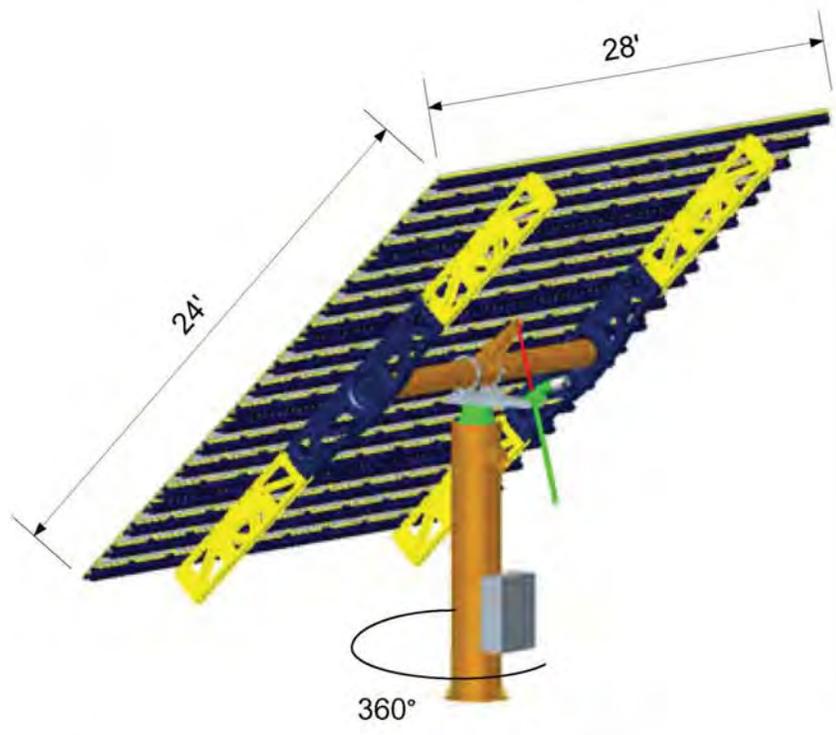
This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

PROJECT DESCRIPTION - FIGURE 3
Rice Solar Energy Project - Visual Simulation Looking South



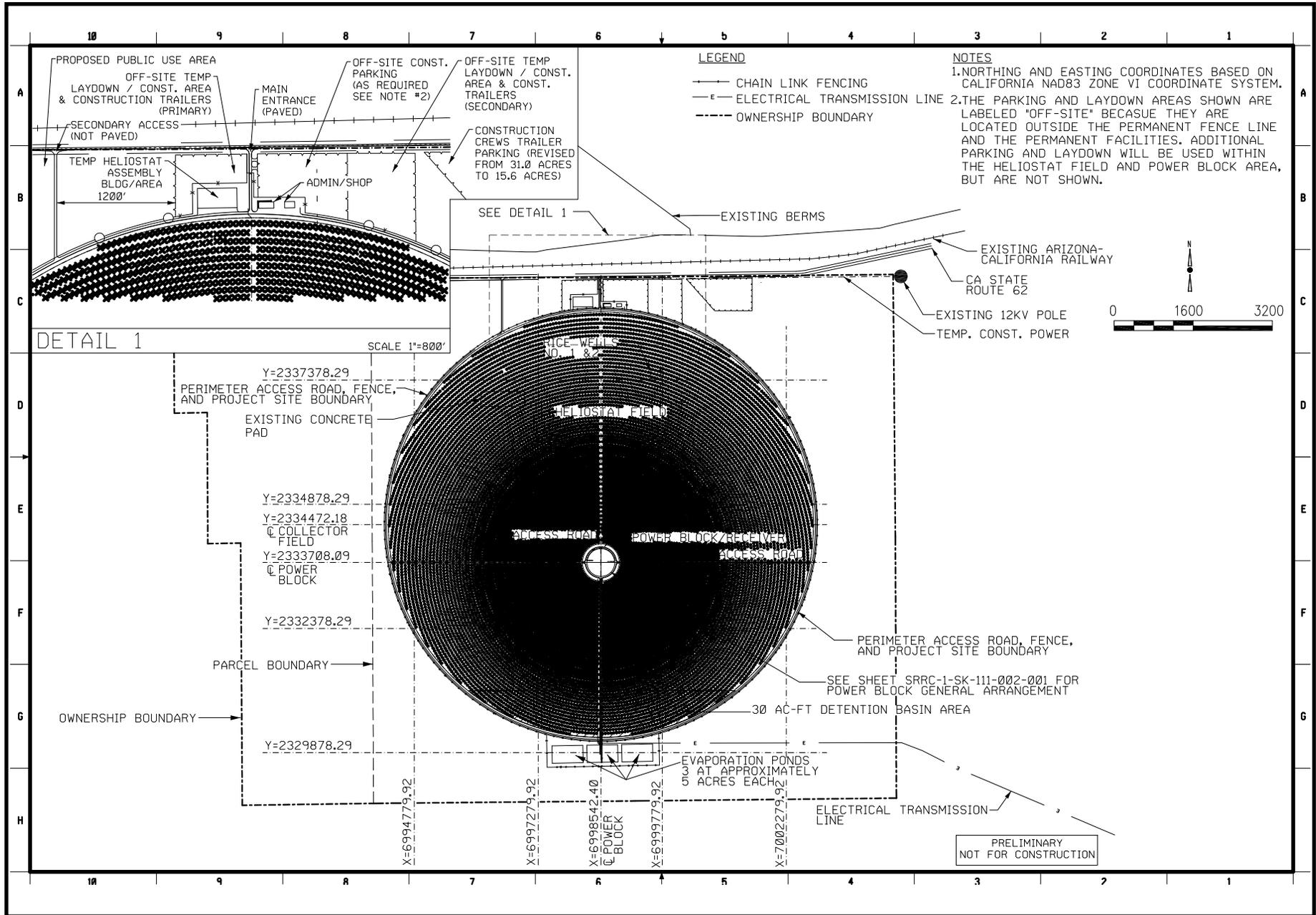
PROJECT DESCRIPTION

PROJECT DESCRIPTION - FIGURE 4
Rice Solar Energy Project - Heliostats



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: William Kanemoto (Rice Figure 12 DR 156)

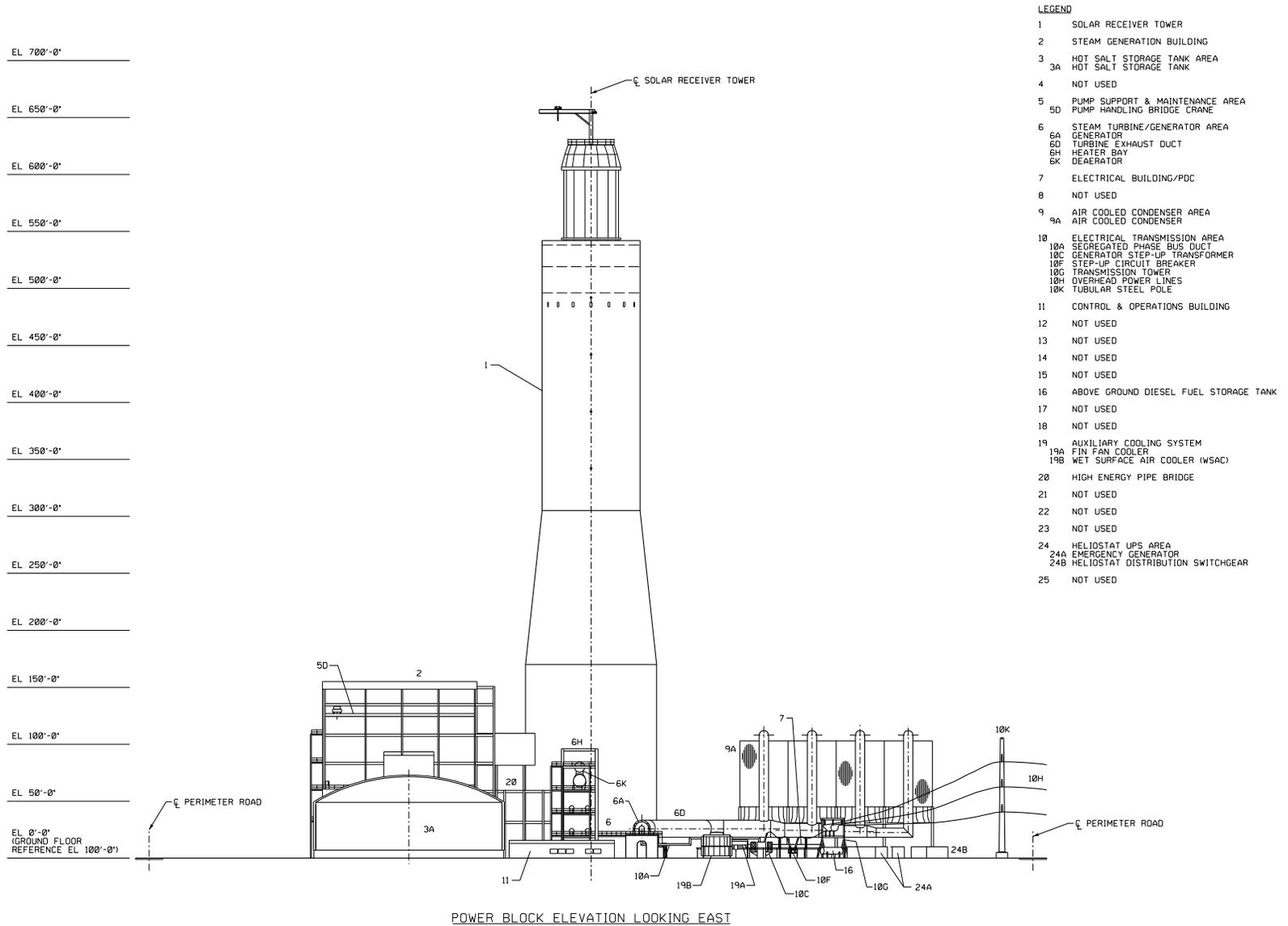
PROJECT DESCRIPTION - FIGURE 5
Rice Solar Energy Project - Project Layout



PROJECT DESCRIPTION

PROJECT DESCRIPTION - FIGURE 6

Rice Solar Energy Project - Project Elevation



- LEGEND**
- 1 SOLAR RECEIVER TOWER
 - 2 STEAM GENERATION BUILDING
 - 3 HOT SALT STORAGE TANK AREA
 - 3A HOT SALT STORAGE TANK
 - 4 NOT USED
 - 5 PUMP SUPPORT & MAINTENANCE AREA
 - 5D PUMP HANDLING BRIDGE CRANE
 - 6 STEAM TURBINE/GENERATOR AREA
 - 6A GENERATOR
 - 6D TURBINE EXHAUST DUCT
 - 6H HEATER BAY
 - 6K DEGENERATOR
 - 7 ELECTRICAL BUILDING/PDC
 - 8 NOT USED
 - 9 AIR COOLED CONDENSER AREA
 - 9A AIR COOLED CONDENSER
 - 10 ELECTRICAL TRANSMISSION AREA
 - 10A SEGREGATED PHASE BUS DUCT
 - 10C GENERATOR STEP-UP TRANSFORMER
 - 10F STEP-UP CIRCUIT BREAKER
 - 10G TRANSMISSION TOWER
 - 10H OVERHEAD POWER LINES
 - 10K TUBULAR STEEL POLE
 - 11 CONTROL & OPERATIONS BUILDING
 - 12 NOT USED
 - 13 NOT USED
 - 14 NOT USED
 - 15 NOT USED
 - 16 ABOVE GROUND DIESEL FUEL STORAGE TANK
 - 17 NOT USED
 - 18 NOT USED
 - 19 AUXILIARY COOLING SYSTEM
 - 19A FIN FAN COOLER
 - 19B WET SURFACE AIR COOLER (WSAC)
 - 20 HIGH ENERGY PIPE BRIDGE
 - 21 NOT USED
 - 22 NOT USED
 - 23 NOT USED
 - 24 HELIOSTAT UPS AREA
 - 24A EMERGENCY GENERATOR
 - 24B HELIOSTAT DISTRIBUTION SWITCHGEAR
 - 25 NOT USED

NOTES:

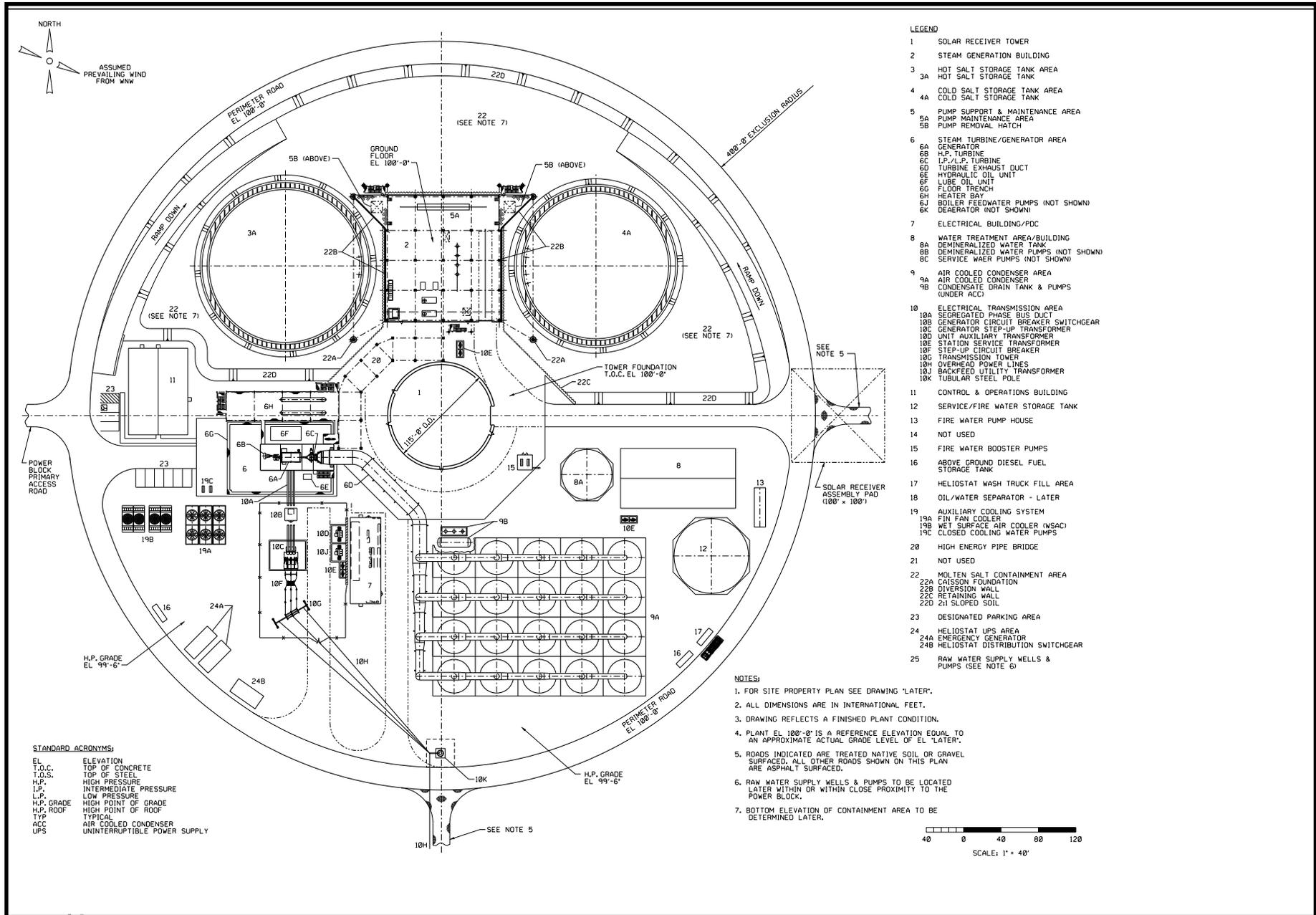
1. FOR POWER BLOCK PLAN SEE DRAWING SRRC-1-SK-111-002-002.
2. FOR ALL OTHER NOTES, REFERENCES AND STANDARD ACRONYMS SEE DRAWING SRRC-1-SK-111-002-002.



PROJECT DESCRIPTION

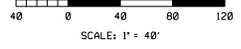
PROJECT DESCRIPTION - FIGURE 7

Rice Solar Energy Project - General Arrangement of the Power Block Area



- LEGEND**
- 1 SOLAR RECEIVER TOWER
 - 2 STEAM GENERATION BUILDING
 - 3 HOT SALT STORAGE TANK AREA
 - 3A HOT SALT STORAGE TANK
 - 4 COLD SALT STORAGE TANK AREA
 - 4A COLD SALT STORAGE TANK
 - 5 PUMP SUPPORT & MAINTENANCE AREA
 - 5A PUMP MAINTENANCE AREA
 - 5B PUMP REMOVAL HATCH
 - 6 STEAM TURBINE/GENERATOR AREA
 - 6A GENERATOR
 - 6B H.P. TURBINE
 - 6C I.P./L.P. TURBINE
 - 6D TURBINE EXHAUST DUCT
 - 6E HYDRAULIC OIL UNIT
 - 6F LUBE OIL UNIT
 - 6G FLOOR TRENCH
 - 6H HEATER BAY
 - 6J BOILER FEEDWATER PUMPS (NOT SHOWN)
 - 6K DEAERATOR (NOT SHOWN)
 - 7 ELECTRICAL BUILDING/PDC
 - 8 WATER TREATMENT AREA/BUILDING
 - 8A DEMINERALIZED WATER TANK
 - 8B DEMINERALIZED WATER PUMPS (NOT SHOWN)
 - 8C SERVICE WATER PUMPS (NOT SHOWN)
 - 9 AIR COOLED CONDENSER AREA
 - 9A AIR COOLED CONDENSER
 - 9B CONDENSATE DRAIN TANK & PUMPS (UNDER ACC)
 - 10 ELECTRICAL TRANSMISSION AREA
 - 10A SEGREGATED PHASE BUS DUCT
 - 10B GENERATOR CIRCUIT BREAKER SWITCHGEAR
 - 10C GENERATOR STEP-UP TRANSFORMER
 - 10D UNIT AUXILIARY TRANSFORMER
 - 10E STATION SERVICE TRANSFORMER
 - 10F STEP-UP CIRCUIT BREAKER
 - 10G TRANSMISSION TOWER
 - 10H OVERHEAD POWER LINES
 - 10J BACKFEED UTILITY TRANSFORMER
 - 10K TUBULAR STEEL POLE
 - 11 CONTROL & OPERATIONS BUILDING
 - 12 SERVICE/FIRE WATER STORAGE TANK
 - 13 FIRE WATER PUMP HOUSE
 - 14 NOT USED
 - 15 FIRE WATER BOOSTER PUMPS
 - 16 ABOVE GROUND DIESEL FUEL STORAGE TANK
 - 17 HELIOSTAT WASH TRUCK FILL AREA
 - 18 OIL/WATER SEPARATOR - LATER
 - 19 AUXILIARY COOLING SYSTEM
 - 19A FIN FAN COOLER
 - 19B WET SURFACE AIR COOLER (WSAC)
 - 19C CLOSED COOLING WATER PUMPS
 - 20 HIGH ENERGY PIPE BRIDGE
 - 21 NOT USED
 - 22 MOLTEN SALT CONTAINMENT AREA
 - 22A CAISSON FOUNDATION
 - 22B DIVERSION WALL
 - 22C RETAINING WALL
 - 22D 2H SLOPED SOIL
 - 23 DESIGNATED PARKING AREA
 - 24 HELIOSTAT UPS AREA
 - 24A EMERGENCY GENERATOR
 - 24B HELIOSTAT DISTRIBUTION SWITCHGEAR
 - 25 RAW WATER SUPPLY WELLS & PUMPS (SEE NOTE 6)

- NOTES:**
1. FOR SITE PROPERTY PLAN SEE DRAWING "LATER".
 2. ALL DIMENSIONS ARE IN INTERNATIONAL FEET.
 3. DRAWING REFLECTS A FINISHED PLANT CONDITION.
 4. PLANT EL 100'-0" IS A REFERENCE ELEVATION EQUAL TO AN APPROXIMATE ACTUAL GRADE LEVEL OF EL "LATER".
 5. ROADS INDICATED ARE TREATED NATIVE SOIL OR GRAVEL SURFACED. ALL OTHER ROADS SHOWN ON THIS PLAN ARE ASPHALT SURFACED.
 6. RAW WATER SUPPLY WELLS & PUMPS TO BE LOCATED LATER WITHIN OR WITHIN CLOSE PROXIMITY TO THE POWER BLOCK.
 7. BOTTOM ELEVATION OF CONTAINMENT AREA TO BE DETERMINED LATER.

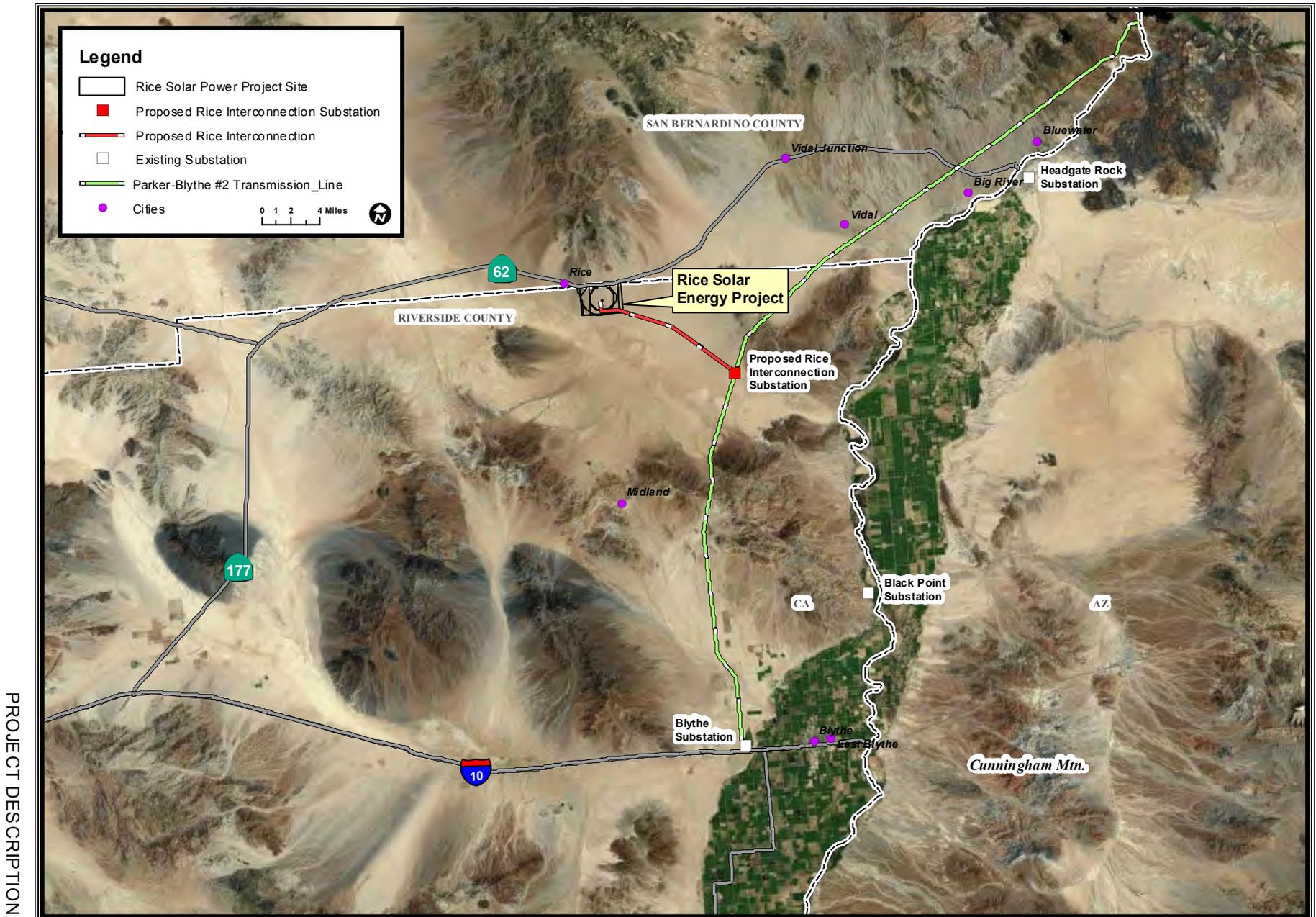


STANDARD ACRONYMS:

EL.	ELEVATION
T.O.C.	TOP OF CONCRETE
T.O.S.	TOP OF STEEL
H.P.	HIGH PRESSURE
I.P.	INTERMEDIATE PRESSURE
L.P.	LOW PRESSURE
H.P. GRADE	HIGH POINT OF GRADE
H.P. ROOF	HIGH POINT OF ROOF
TYP	TYPICAL
ACC	AIR COOLED CONDENSER
UPS	UNINTERRUPTIBLE POWER SUPPLY

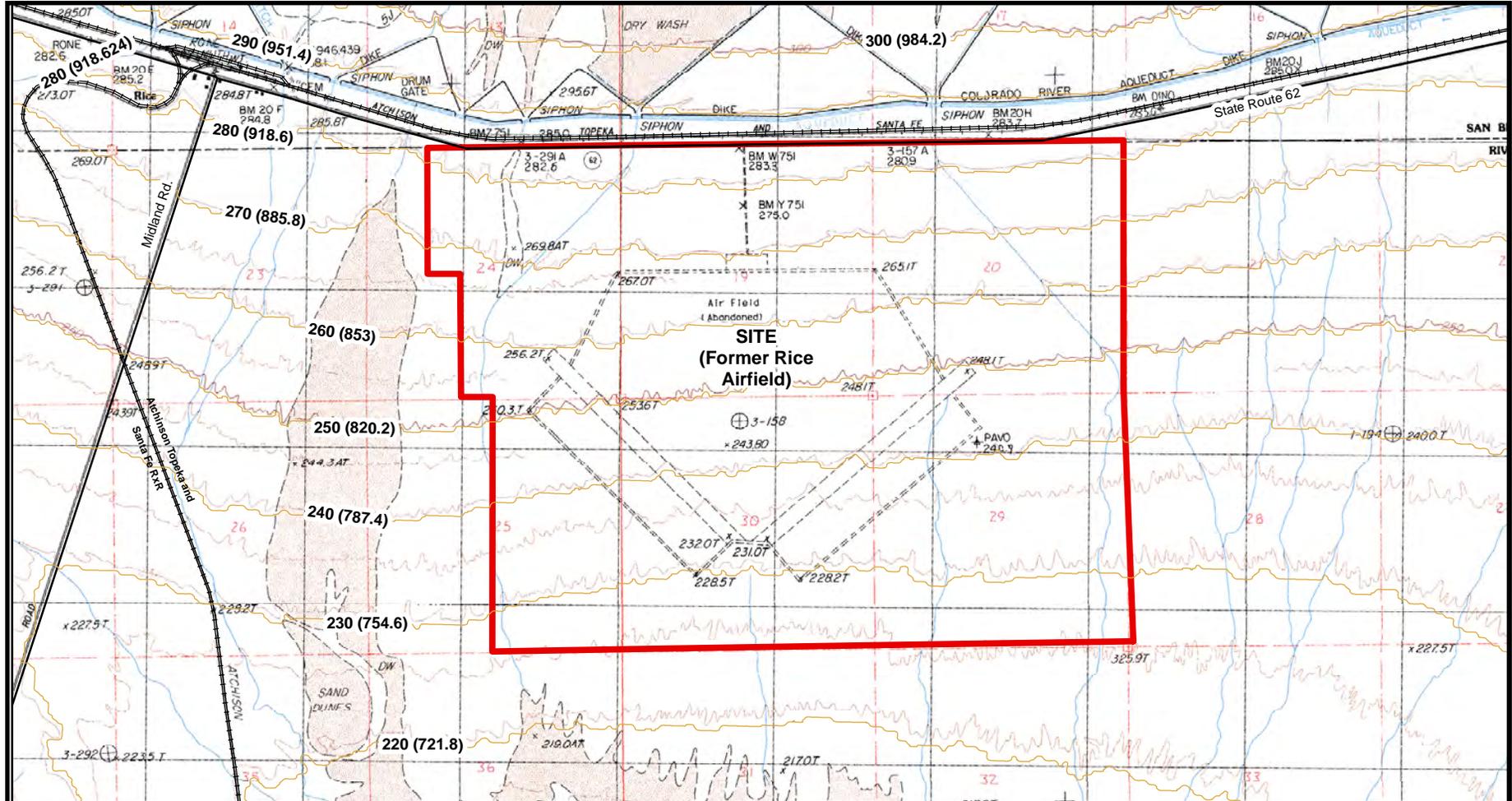
PROJECT DESCRIPTION

PROJECTION DESCRIPTION - FIGURE 8
 Rice Solar Power Project - Telecommunications Options

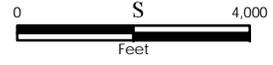


PROJECT DESCRIPTION

PROJECT DESCRIPTION - FIGURE 9
 Rice Solar Energy Project - Existing RSEP Site Topography



NOTES:
 Contours are in Meters and Feet -
 220 m (721.8 ft)
 SOURCE:
 USGS 7.5' Quad Sheet, Rice
 All Locations approximate

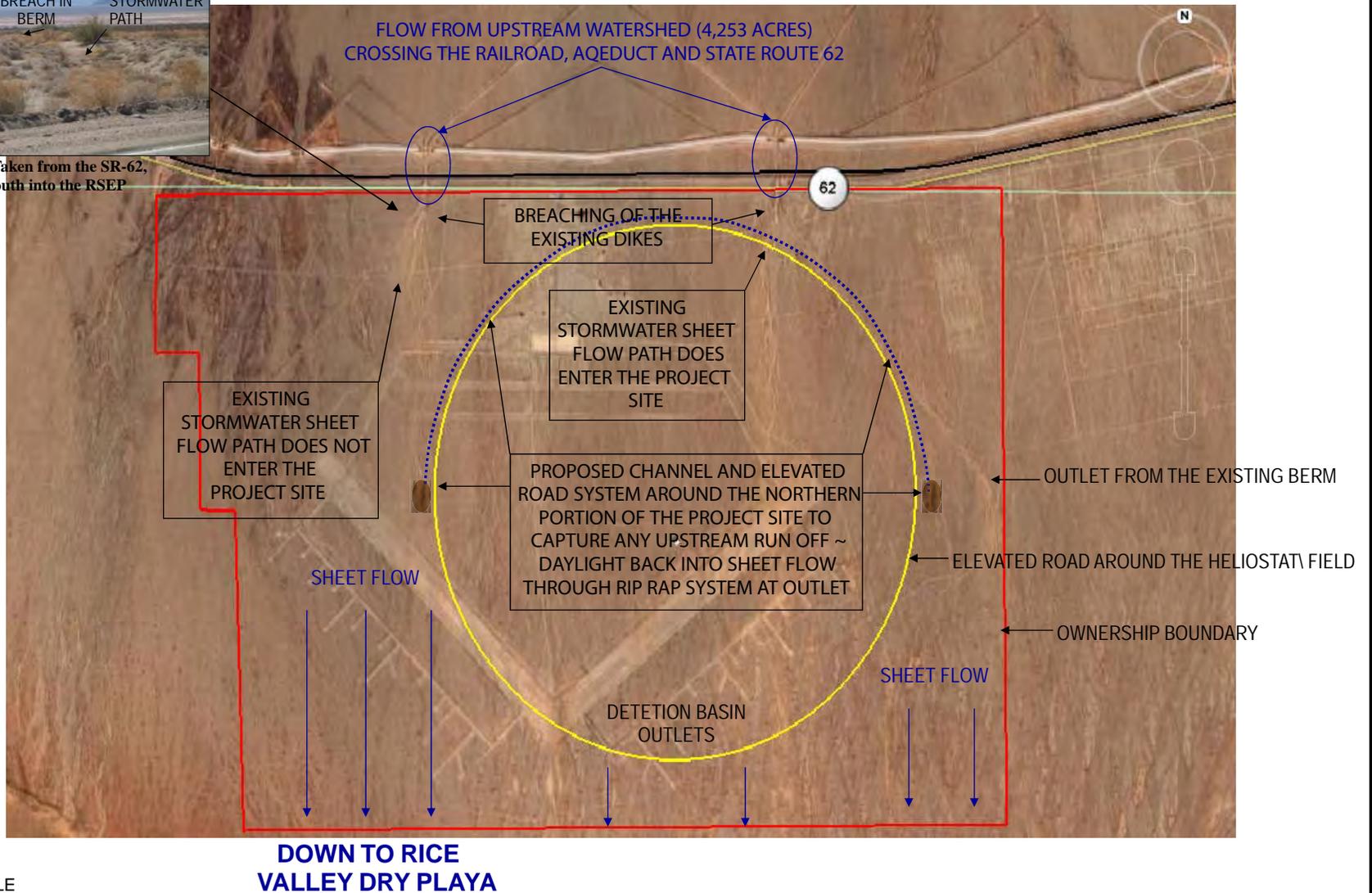


PROJECT DESCRIPTION

PROJECT DESCRIPTION - FIGURE 10
 Rice Solar Energy Project - Proposed Drainage Plan



Photo A: Taken from the SR-62, Looking South into the RSEP



PROJECT DESCRIPTION

NOT TO SCALE
 Source: Google Earth, 2009
 Photos from B.Anders,
 Rice Solar Energy Project
 Site Visit 2008

ALTERNATIVES

Testimony of Suzanne Phinney, D.Env.

SUMMARY OF CONCLUSIONS

In this analysis of the Rice Solar Energy Project, 28 alternatives have been developed and evaluated in addition to the proposed project. These include two modifications of the project at the proposed site, the no project alternative, 12 alternative site locations, a range of solar and renewable energy technologies, generation technologies using different fuels, and conservation/demand-side management.

Of the 28 alternatives, four alternatives were determined to be reasonable by the Bureau of Land Management and Western Area Power Administration (Western) and feasible by the Energy Commission and have the potential to result in reduced impacts in comparison with the proposed project: the Reduced Acreage Alternative, the North of Desert Center Alternative, the SR 62/Rice Valley Road Transmission Line Alternative, and the No Project/No Action Alternative.

CEC Staff have determined that the No Project/No Action Alternative is not superior to the proposed project because it would likely delay development of renewable resources or shift renewable development to other similar areas, and would lead to increased operation of existing power plants that use non-renewable technologies.

The Reduced Acreage Alternative, North of Desert Center Alternative and SR 62/Rice Valley Road Transmission Line Alternative would reduce impacts in comparison to the proposed project. The Reduced Acreage Alternative would incrementally reduce impacts to cultural resources on the historic Rice Army Airfield site and to biological resources. The North of Desert Center Alternative would eliminate all use of the historic Rice Army Airfield, which is also habitat for desert tortoise. Additionally, this alternative would avoid impacts to wildlife movement, alteration of ephemeral streams, and alteration of sand movement. The SR 62/Rice Valley Road Transmission Line Alternative would eliminate the need for a new access road and therefore would reduce impacts to desert habitat. However, these alternatives would not substantially reduce or change the nature of impacts associated with the proposed project, may result in less efficient operations, and could pose feasibility challenges.

The eleven other alternative sites (Cadiz, McCoy, Agricultural Lands, Blythe Mesa, Broadwell Lake, Gabrych, Garlock Road, Manix, Mesquite Lake, Siberia East, and South of Hwy 98) would not substantially reduce impacts and the feasibility of developing projects at these locations is reduced because of size, shape and ownership limitations.

Alternative solar thermal technologies (Stirling dish, solar parabolic trough and linear Fresnel) are also evaluated. As compared with the proposed solar power tower technology, these technologies would not substantially change the severity of visual impacts, biological resources impacts and cultural resource impacts, though land requirements vary among the technologies. Distributed generation solar photovoltaic facilities (i.e., photovoltaic panels placed on surfaces such as rooftops and parking lots) would likewise require extensive square footage or acreage, although they would

minimize the need for undisturbed open space. However, increased deployment of distributed solar photovoltaic technology faces challenges in manufacturing capacity, cost, and policy implementation.

Other generation technologies (wind, geothermal, biomass, tidal, wave, natural gas, and nuclear) are also examined as possible alternatives to the project. These technologies would either be infeasible at the scale of the Rice Solar Energy Project, or they would create their own significant adverse impacts in other locations. For example, a natural gas plant would use substantially less land and avoid cultural and biological resources impacts, but it would contribute to greenhouse gas emissions and would not meet the project's renewable generation objective. Construction of new nuclear power plants is currently prohibited under California law.

Conservation and demand side management programs would likely not meet the state's growing electricity needs that would be served by the Rice Solar Energy Project. In addition, these programs would not provide the renewable energy required to meet the California Renewables Portfolio Standard (RPS) requirements.

Staff's analysis of renewable energy technology options indicates that contributions from each commercially available renewable technology will be needed to meet California's RPS requirements and to achieve the statewide RPS target for 2020 (between 45,000 gigawatt-hours to almost 75,000 gigawatt-hours according to the 2009 Integrated Energy Policy Report). Wave and tidal technologies are not yet commercially available in the United States. Therefore, the combined contribution of the alternatives of wind, distributed solar photovoltaic, geothermal, and biomass is needed to complement rather than substitute for the Rice plant's contribution to meeting statewide RPS requirements.

Alternatives Table 1 lists the alternatives retained for analysis in this Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) and those eliminated, and summarizes the rationale for each conclusion. The locations of all site alternatives are depicted in **Alternatives Figure 1**.

**Alternatives Table 1.
Summary of Alternatives Retained and Eliminated**

Alternative	Rationale for Retention or Elimination
Alternatives Retained for CEQA and NEPA analysis	
Reduced Acreage Alternative	Evaluated in the SA/DEIS because it would reduce impacts to biological and cultural resources.
North of Desert Center Alternative	Evaluated in the SA/DEIS because it would reduce impacts to biological and cultural resources.
SR 62/Rice Valley Road Transmission Line Alternative	Evaluated in the SA/DEIS because it would reduce impacts to desert habitat.
No Project/No Action Alternative	Required under CEQA and NEPA. Do not approve the right-of-way (ROW) grant, do not amend the CDCA Land Use Plan of 1980, as amended, and do not approve interconnection application.

Alternative	Rationale for Retention or Elimination
Alternatives Evaluated but Eliminated from Detailed Analysis	
Cadiz Alternative	Would not substantially reduce impacts of the RSEP project. Location on undisturbed site and significantly longer transmission line would increase the potential for environmental impacts.
McCoy Alternative	Would not substantially reduce impacts of the RSEP project. On BLM rather than private land.
Agriculture Lands Alternative	Inadequate shape and size for RSEP project. Would not substantially reduce impacts.
Blythe Mesa Alternative	Inadequate shape and size for RSEP project. High potential to interfere with Blythe airport.
Broadwell Lake Alternative	Sufficient size with shorter transmission interconnection. However, potentially greater impacts in a number of issue areas (including biological resources, visual resources, and recreation). On BLM rather than private land.
Gabrych Alternative	Inadequate shape for RSEP project. Would not substantially reduce impacts and would have potentially greater impacts in a number of issue areas (including water resources, land use and recreation, visual resources, and noise and vibration).
Garlock Road Alternative	Inadequate shape and size for RSEP project. Would not substantially reduce impacts.
Manix Alternative	Sufficient size. Would not substantially reduce impacts of the RSEP project.
Mesquite Lake Alternative	Site is traversed by many linear features (highways, railroad tracks, canals, and transmission lines) making it too fragmented for the RSEP project.
Siberia East Alternative	Would not substantially reduce impacts of the RSEP project and would potentially have greater impacts in a number of issue areas (including biological and visual resources). On BLM rather than private land.
South of Hwy 98 Alternative	Inadequate shape for RSEP project. Would not substantially reduce impacts and would potentially have greater impacts in a number of issue areas (including recreation and water resources).
Stirling Dish Technology Alternative	Would not substantially reduce impacts of the RSEP project.
Solar Parabolic Trough Alternative	Would not substantially reduce impacts of the RSEP project.
Linear Fresnel Technology Alternative	Would reduce area required but would not eliminate significant impacts of the RSEP Project.
Distributed Solar Technology Alternative	While it will very likely be possible to achieve 250 MW of distributed solar energy over the coming years, the limited numbers of existing facilities make it difficult to conclude with confidence that this much distributed solar will be available within the timeframe required for the RSEP project. Barriers exist related to interconnection with the electric distribution grid. Also, solar PV is one of the components of the renewable energy mix required to meet the California RPS requirements, and additional technologies like solar thermal generation would also be required.

Alternative	Rationale for Retention or Elimination
Wind Energy	A wind project would not reduce impacts in comparison to the RSEP Project. Also, wind is one of the components of the renewable energy mix required to meet the California Renewable Portfolio Standard requirements, so additional technologies like solar thermal generation would also be required.
Geothermal Energy	Transmission infrastructure for multiple geothermal facilities (i.e. 2 to 5 to generate output equivalent to the RSEP) could increase environmental impacts.
Biomass Energy	Most biomass facilities produce only small amounts of electricity (in the range of 3 to 10 MW) and so could not meet the project objectives related to the California RPS. In addition, between 15 and 50 facilities would be needed to achieve 150 MW of generation, creating substantial adverse impacts.
Tidal Energy	Tidal fence technology is commercially available in Europe. However, it has not been demonstrated and proven at the scale that would be required to replace the proposed project, particularly with Pacific tides. Therefore, the development of 150 MW of tidal energy generation capacity within the timeframe required for the RSEP project is considered speculative.
Wave Energy	Unproven technology at the scale that would be required to replace the proposed project; it may also result in substantial adverse environmental impacts.
Natural Gas	Would not attain the objective of generating renewable power meeting California's renewable energy needs.
Coal	Would not attain the objective of generating renewable power meeting California's renewable energy needs and is not a feasible alternative in California.
Nuclear Energy	The permitting of new nuclear facilities in California is not currently allowable by law.
Conservation and Demand-side Management	Conservation and demand-management alone are not sufficient to address all of California's energy needs and would not provide the renewable energy required to meet the California RPS requirements.

INTRODUCTION

Rice Solar Energy, LLC, a wholly owned subsidiary of SolarReserve, LLC, proposes to build the Rice Solar Energy Project (RSEP) on privately owned land in eastern Riverside County. The proposed transmission interconnection with the Western Area Power Administration's Parker-Blythe #2 transmission line would cross both privately owned land and land within the jurisdiction of the BLM. Since the BLM and Western are federal agencies and the California Energy Commission has State authority to license thermal power plants, the RSEP is subject to review under both NEPA and CEQA.

The purpose of this alternatives analysis is to comply with State and Federal environmental laws by providing an analysis of a reasonable range of feasible alternatives which could substantially reduce or avoid any potentially significant adverse impacts of the proposed project. This section summarizes the potentially significant

adverse impacts of the proposed project and analyzes different technologies and alternative sites that may reduce or avoid some or all of those significant adverse impacts.

Four alternatives in addition to the proposed project were determined to be feasible by the BLM/Western and the Energy Commission: the Reduced Acreage Alternative, the North of Desert Center Alternative, the SR 62/Rice Valley Road Transmission Line Alternative, and the No Project/No Action Alternative. These alternatives are analyzed in further detail within each of the technical sections of this document, and are considered for selection as the preferred alternative by the agencies.

This section discusses and analyzes all alternatives eliminated from consideration by the Energy Commission, the BLM and Western.

ALTERNATIVES DEVELOPMENT AND SCREENING PROCESS

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

California Environmental Quality Act Criteria

The *Guidelines for Implementation of the California Environmental Quality Act*, Title 14, California Code of Regulation, section 15126.6(a), provides direction by requiring an evaluation of the comparative merits of “a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.” In addition, the analysis must address the No Project Alternative (Cal. Code Regs., tit. 14, § 15126.6(e)).

The range of alternatives is governed by the “rule of reason” which requires consideration only of those alternatives necessary to permit informed decision making and public participation. CEQA states that an environmental document does not have to consider an alternative of which the effect cannot be reasonably ascertained and of which the implementation is remote and speculative (Cal. Code Regs., tit. 14, § 15125(d)(5)).

National Environmental Policy Act Criteria

NEPA requires that the decision-makers and the public be fully informed of the impacts associated with the proposed project. The intent is to make good decisions based on understanding environmental consequences, and to take actions to protect, restore, and enhance the environment.

Alternatives identified must be consistent with BLM and Western’s purpose and need for the action under consideration, which include consideration of the applicant’s objectives (both are defined below). NEPA Sec. 1502.14(a) requires that an Environmental Impact Statement (EIS) rigorously explore and objectively evaluate all reasonable alternatives that are practical or feasible from the technical and economic standpoint and from using common sense, rather than simply desirable from the standpoint of the applicant. (CEQ Forty Questions, No. 1A)

As a general matter, the federal Lead Agency decision makers will ultimately determine the feasibility of each alternative at the time of project approval. It should be noted that NEPA does not limit reasonable alternatives to ones the lead agency can adopt, and the agency should consider wide-reaching alternatives when the issue at hand is a broad one, such as a large-scale energy supply issue. (See *Natural Resources Defense Council, Inc. v. Morton* (D.C. Cir. 1972) 458 F.2d 827, 836 (“*Morton*”).) Further, “[i]n determining the scope of alternatives to be considered, the emphasis is on what is ‘reasonable’ rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative...” (CEQ Forty Questions, No. 2a.)

Consideration of the No Action Alternative is mandated by NEPA. Under the no-action alternative, Western would deny the interconnection request and BLM would not grant a ROW. There would be no plan amendment to the California Desert Conservation Area. As with the CEQA No Project Alternative, this is the scenario that would exist if the proposed project were not constructed.

SCREENING METHODOLOGY

To prepare the alternatives analysis, the following methodology was used:

1. Develop an understanding of the project, identify the basic objectives of the project, and describe its potentially significant adverse impacts.
2. Identify and evaluate technology alternatives to the project such as increased energy efficiency (or demand-side management) and the use of alternative generation technologies (e.g., solar or other renewable or nonrenewable technologies).
3. Identify and evaluate alternative locations for consideration by the Energy Commission.
4. Evaluate potential alternatives to select those qualified for detailed evaluation.
5. Evaluate the impacts of not constructing the project, known as the No Project alternative under CEQA and the No Action alternative under NEPA.

Based on this methodology, each potential alternative was evaluated according the following criteria for its ability to:

- avoid or substantially lessen one or more of the potential significant adverse effects of the project;
- meet most or all of the project objectives;
- be consistent with BLM and Western’s purpose and need.

APPLICANT’S PROJECT OBJECTIVES AND PURPOSE

Five primary objectives are set forth by Rice Solar Energy, LLC (SR 2009a, p. 1-2):

- Provide sustained renewable power using integral thermal storage technology that is controllable and predictable and that can:
- Deliver a minimum of 450,000 MWh of cost-competitive renewable power annually

- Concentrate energy deliveries around high electric demand hours with generator output sized at 150 MW
- Minimize use of public lands by siting the project on previously disturbed private property
- Produce a reliable electricity supply free of carbon emissions to help diversify California's electrical power generation portfolio

Additionally, Rice Solar Energy, LLC states the following purposes of the project:

- Minimize or eliminate the length of transmission interconnections
- Respond to California's on-peak demand for electricity and contributed to the displacement of dirtier, less-efficient fossil fuel generation resources (i.e. peaking turbines) throughout the region
- Support Governor Schwarzenegger's Executive Order S-21-09 to streamline California's renewable energy project approval process and to increase the State's RPS to 33% renewable power by 2020.

PROJECT OBJECTIVES OF THE ENERGY COMMISSION (CEQA)

After considering the objectives set out by the applicant, the Energy Commission has identified the following basic project objectives, which are used to evaluate the viability of alternatives in accordance with CEQA requirements:

- construct and operate a 150 MW utility-scale solar facility in California capable of interconnecting to the California Independent System Operator (California ISO) Grid through Western's electrical transmission system;
- locate the facility in areas of high solarity with ground slope of less than 6%;
- contribute to the State of California's renewable energy goals, the National Energy Policy of 2001, and the Energy Policy Act of 2005 (Public Law 109-58, August 8, 2005) which encourage the development of renewable energy resources; and

PURPOSE AND NEED FOR PROPOSED PROJECT AND PLAN AMENDMENT (BLM AND WESTERN)

Bureau of Land Management. Federal orders and laws require government agencies to evaluate energy generation projects and facilitate the development of renewable energy sources. The Energy Policy Act of 2005 (EPAAct) requires the United States Department of the Interior (DOI), BLM's parent agency, to approve at least 10,000 MW of renewable energy on public lands by 2015. Executive Order 13212, dated May 18, 2001, mandates that agencies expedite their "review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections" in the "production and transmission of energy in a safe and environmentally sound manner."

Secretarial Order 3283, *Enhancing Renewable Energy Development on the Public Lands*, requires the BLM to ensure that processing and permitting of renewable energy projects complies with the requirements of the National Environmental Policy Act,

Endangered Species Act, National Historic Preservation Act, and all other laws and regulations; improve efficiencies in the processing of renewable energy applications and consistent application of renewable energy policies; and develop Best Management Practices for renewable energy projects on public lands to ensure the most environmentally responsible development of renewable energy.

Secretarial Order 3285, *Renewable Energy Development by the Department of the Interior* requires the BLM to encourage the development of environmentally responsible renewable energy generation. Both of these Secretarial Orders will be considered in responding to the Rice Solar Energy application for the proposed RSEP project.

BLM's purpose and need for the RSEP is to respond to the applicant's application under Title V of the FLPMA (43 USC 1761) for a right-of-way (ROW) grant to construct, operate, maintain, and decommission a generation tie line, a portion of which would be located on public land, and to consider approving an interconnection to Western's electric transmission system respectively. These project activities would be associated with development of a concentrated solar electric generation plant along with the associated infrastructure in compliance with FLPMA, BLM Regulations, Western's regulations and other applicable federal laws. Pursuant to BLM's California Desert Conservation Area (CDCA) Plan (1980, as amended), proposed transmission lines located outside of existing designated utility corridors in excess of 161 kV will be considered through the Plan Amendment process.

Western Area Power Administration. Rice Solar Energy has applied to Western to interconnect the proposed project to Western's transmission system. The new 230-kV transmission line from the solar facility would extend approximately ten miles from the solar facility boundary to a new substation to be constructed adjacent to Western's existing line. The substation, to be owned and operated by Western, would be located adjacent to Western's existing Parker-Blythe #2 transmission line. Western's proposed action is to interconnect the proposed Project to Western's transmission system and to make any necessary modifications to Western facilities to accommodate the interconnection.

Department of Energy. Rice Solar Energy, LLC has also applied to the United States Department of Energy (DOE) for a loan guarantee pursuant to Title XVII of the EAct. Title XVII of EAct authorizes the United States Secretary of Energy to make loan guarantees for a variety of types of projects, including those that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases, and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." The two principal goals of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The purpose and need for action by DOE is to comply with their mandate under EAct by selecting eligible projects that meet the goals of the Act.

SUMMARY DESCRIPTION OF THE PROPOSED PROJECT AND PROJECT IMPACTS

The Project Description of the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) provides a detailed description of the proposed project, and a summary is presented here as context for the alternatives analysis (SR 2009a, Sections 1.0, 2.0, 3.0, 4.0, 5.2, 5.6, 5.15).

The RSEP would be a 150 MW solar thermal facility using concentrating solar power (CSP) technology. A large circular field of mirrors (heliostats) focuses sunlight onto a central receiving tower; up to 17,500 heliostats would occupy 1,410 acres (2.20 square miles). Each 24-foot by 28-foot heliostat would be mounted on a 12-foot tall post. The solar tower and receiver (plus 15-foot crane) would have a total height of 653 feet.

The RSEP would use liquid salt (a mixture of sodium nitrate and potassium nitrate) as the heat transfer fluid. Seventy million pounds (4.4 million gallons) of liquid salt would be stored in insulated hot (1,050° F) and cold (550° F) tanks to retain solar energy. Thermal energy storage allows electric generation beyond sunlight hours and during periods of cloud cover, for an average of 8.4 hours per day. To produce electricity, the salt would circulate through the receiver and steam generation system, where superheated steam is used in a Rankine cycle reheat steam turbine generator. Steam turbine exhaust would be dry-cooled utilizing a 20-cell air-cooled condenser (ACC), which reduces water use. The facility's maximum water consumption would be 180 acre feet per year; daily water use would average 248 gallons per minute. Water would be supplied by two onsite wells and stored in a tank with a capacity of 840,000 gallons.

The project would be located on a 2,560-acre square-shaped parcel within a larger 3,324-acre ownership property in eastern Riverside County's Rice Valley. The ownership property includes portions of Section 24 and 25, Township 1 South, Range 20 East; and all of Sections 19, 20, 29 and 30, Township 1 South, Range 21 East, San Bernardino Base and Meridian. It consists of six Riverside County parcels: APNs 801-042-004, 801-062-012, 801-070-003, 801-070-004, 801-100-005, and 801-100-006. The site is south of State Route 62, 1 mile east of the junction with Blythe-Midland Road. The Arizona-California Railroad and California Aqueduct parallel the north side of the highway. The site was used during WWII as Rice Army Airfield, part of the army's Desert Training Center/California-Arizona Maneuver Area. It was operated privately until abandoned between 1954 and 1958. The nearest active residences are at Vidal Junction, 15 miles to the northeast. Driving distances are 40 miles from Blythe, 65 miles from Needles, 75 miles from Twentynine Palms, and 85 miles from Yuma, Arizona.

The flat and sparsely vegetated Rice Valley is dominated by Sonoran creosote bush scrub habitat. A large wind-blown sand dune system stretches along the southern end of the valley. The valley is bounded by the rugged Turtle Mountains to the north and the Big Maria Mountains to the south. The Arica Mountains are to the west and the West Riverside Mountains to the east, forming a sink with no hydrological connectivity. Rice Valley lacks any major washes. The site is designated open space-rural in the Riverside County General Plan.

The RSEP would interconnect with Western's 161 kV Parker-Blythe #2 transmission line, 10 miles southeast of the site. A new substation (300 feet by 400 feet) would be constructed at the interconnection point. The 10-mile generation tie line that would connect RSEP to Western's Parker-Blythe #2 transmission line would cross private and BLM land; the latter part is adjacent to the Rice Valley Wilderness Area. The gen tie would operate at 161 kV, and could operate at 230 kV with minor transformer modifications when Western converts the Parker-Blythe #2 line to 230 kV. Portions of the transmission line route would be considered by the BLM as Multiple-Use Class M (Moderate Use) per the CDCA. SolarReserve has signed a power purchase agreement with Pacific Gas and Electric (PG&E) for the electricity generated from the RSEP.

The RSEP would not use natural gas and would have no natural gas pipeline connections. Propane would be trucked in for initial salt melting and auxiliary heating.

Environmental impacts for all issue areas would not be significant or would be mitigated to a less than significant level, including impacts to biological resources, cultural resources, and local fire protection. However, the proposed RSEP, with all staff-recommended conditions of certification, would have significant and unavoidable adverse visual impacts.

Impacts of the Reduced Acreage Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. However, the degree and extent of those impacts would be somewhat less than those of the Proposed Project. In addition, the smaller footprint would avoid the most active ephemeral washes, and have less impacts to biological resources than the proposed project.

Impacts of the North of Desert Center Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. Comparison to the proposed project is mixed. Impacts would be less than those of the Proposed Project due to the alternative's more developed and visually-compromised setting. However, the number of residents adversely affected would be substantial, and viewers in the easternmost slopes of Joshua Tree National Park could be affected. The North of Desert Center is located primarily on fallow land and there would be fewer overall impacts to biological resources as compared to the RSEP site. Although located near an airport, impacts to aviation could be mitigated to less than significant. (The Chuckwalla Valley Raceway privately operates the runway at the Desert Center Airport immediately to the east). However, the alternative site could result in a cumulatively significant impact to local roadway traffic level of service.

Impacts of the SR 62/Rice Valley Road Transmission Line Alternative would have the same significant unavoidable visual impacts as the proposed project, and in addition would substantially increase those impacts by introducing a new transmission line into the immediate visual foreground of SR 62.

The anticipated visual impacts of the Proposed Project, Reduced Acreage, North of Desert Center and SR 62/Rice Valley Road Transmission Line Alternatives, in combination with past and foreseeable future local projects in their local vicinity, and past and foreseeable future region-wide projects in the southern California desert are

considered potentially cumulatively considerable and significant. These action alternatives would fail to conform with a number of applicable local Laws, Ordinances, Regulations and Standards (LORS) of San Bernardino and Riverside Counties pertaining to preservation of scenic resources and scenic highway view corridors.

The alternatives analysis focuses on the consideration of visual resource impacts, along with other environmental and engineering impacts, and the extent to which they could be reduced or eliminated by alternatives to the proposed project.

SUMMARY OF SCOPING AND SCREENING RESULTS

The public scoping comment period allowed the public and regulatory agencies an opportunity to comment on the scope of the SA/EIS, comment on the alternatives considered, and identify issues that should be addressed in the SA/EIS. The discussion below presents the key issues identified from the written and oral comments received during the scoping process on the RSEP project. The specific issues raised during the public scoping process are:

- Alternatives should include discussion of alternative sites, capacities, and generating technologies including different types of solar energy technologies. (Alternative sites addressed under the North of Desert Center Alternative, SR 62/Rice Valley Road Transmission Line Alternative, Applicant's Site Alternatives, and Staff's Site Alternatives; capacities under the Reduced Acreage Alternative; generating technologies under Alternative Renewable Technologies; and solar technologies under Alternative Solar Generation Technologies)
- Feasibility of using residential and wholesale distributed generation, in conjunction with increased energy efficiency. (Distributed solar addressed in Alternative Solar Generation Technologies. Conservation and demand side management addressed in Alternative Methods of Generating or Conserving Electricity, but not discussed in conjunction with distributed solar.)
- Preferred alternative should consider decreasing the capacity, relocating components, and shrinking overall footprint. (The Reduced Acreage Alternative considers a reduced capacity and footprint.)
- Discussion of each alternative's potential to impact air traffic and safety. (Addressed under the Blythe Mesa Alternative, which has a high potential to interfere with air safety and in the Traffic and Transportation section in conjunction with the North of Desert Center Alternative. Other alternative sites are not sited in proximity to active runways.)
- Discussion of each alternative's potential to cause adverse aquatic impacts. (Presence of surface water features and potential to cause aquatic impacts generally discussed for each alternative site in this section. Also discussed in the Soil & Water Resources section for retained alternatives.)
- Description of current condition of land; whether it is disturbed; and extent it could be used for other purposes. (Current condition and uses of land generally discussed for each alternative site in this section. Also discussed in the Land Use section for retained alternatives.)

- Description of all waters of the US that could be affected by alternatives, including acreages, channel lengths, habitat types, values, and functions. (Applicable surface water features discussed under the environmental assessment of each alternative site in this section. Also discussed in the Soil & Water Resources section for retained alternatives.)
- Use of EPA's Renewable Energy Interactive Mapping Tool to explore potential use of disturbed sites in proximity to the Project site that might be utilized. (Comment noted.)
- Pursue siting on disturbed, degraded, and contaminated sites before considering large tracts of undisturbed public lands. (Consistent with Applicant's Project Objectives and Purpose, as listed in this section.)
- Identify previously disturbed lands in close proximity to existing transmission infrastructure and load centers that could support solar energy projects and reduce impacts to wildlands and species. (Project site is on disturbed land; the North of Desert Center alternative is also on disturbed land and near transmission infrastructure.)

Scoping comments are also listed in the **Introduction** section of this SA/DEIS and in the Western/BLM Final Scoping Report.

ALTERNATIVES EVALUATED UNDER NEPA AND CEQA

The requirements for evaluation of alternatives under NEPA and CEQA are described above under the Alternatives Development and Screening Process. This section describes the four alternatives to the proposed project that are retained for analysis: the Reduced Acreage Alternative, the North of Desert Center Alternative, the SR 62/Rice Valley Road Alternative, and the No Project/No Action Alternative. The proposed project and the retained alternatives are evaluated under both NEPA and CEQA in the Environmental Analysis and Engineering Assessment sections of this document.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would have a 10% smaller heliostat field. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,410 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe #2 transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker-Blythe #2 161 kV transmission line.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 140 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state- and federally-listed threatened desert tortoise and impacts to the historic Rice airfield. Additionally, the Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. The site is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would need to be realigned to roughly follow the site boundary. A new 0.125-mile transmission line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site; a transmission upgrade and a system impact study would likely be required. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

The North of Desert Center Alternative would utilize concentrated solar power (CSP) technology. A circular field of mirrors (heliostats) surrounding a 653 foot solar tower would occupy 1,410 acres of the site. Approximately 17,500 heliostats would be utilized, each 24-feet by 28-feet and mounted on a 12-foot tall post. The heliostat field, power block, parking areas, administration building, water treatment system, evaporation ponds, and 230-kV switchyard would all be contained within the 1,504-acre fenced project footprint.

The North of Desert Center Alternative is comprised largely of private properties but also includes BLM land in the eastern portion of the site. The site is in the Colorado Desert and meets slope and solarity requirements. The elevation of the site is between 500 and 700 feet above sea level. The majority of the North of Desert Center parcels consist primarily of fallow agriculture land and approximately 84 acres of existing active agriculture in the northwest section. The site would be accessed via Rice Road (SR 177) off the I-10. The alternative would be located just east of the Chuckwalla Valley Raceway, a 400- acre racing facility located at the former Desert Center Airport. Construction of Phases II and III of the Raceway are pending. In addition, the Raceway privately operates the runway at the Desert Center Airport.

The North of Desert Center Alternative is evaluated in this SA/DEIS because it would reduce impacts to cultural resources associated with the historic Rice Army Airfield. This alternative would also reduce biological resource impacts and would avoid impacts to wildlife movement, alteration of ephemeral streams, and alteration of sand movement associated with the proposed project. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

Under the North of Desert Center Alternative, approval by the agencies would require the applicant to submit new applications to the Energy Commission, Western and BLM, which would then be reviewed and a new environmental document prepared.

SR 62/RICE VALLEY ROAD TRANSMISSION LINE ALTERNATIVE

The SR 62/Rice Valley Road Transmission Line Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe #2 transmission line at the same location as the proposed project transmission line. This alternative transmission line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The gen tie would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area, on previously disturbed land, over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new transmission line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Transmission Line Alternative route is illustrated in **Alternatives Figure 4**.

The SR 62/Rice Valley Road Transmission Line Alternative is evaluated in this SA/DEIS because it would avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including desert tortoise. It would also avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road.

NO PROJECT/NO ACTION ALTERNATIVE

CEQA No Project Alternative

The No Project Alternative under CEQA defines the scenario that would exist if the proposed RSEP project were not constructed. The CEQA Guidelines state that "the purpose of describing and analyzing a 'no project' alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Cal. Code Regs., tit. 14 § 15126.6(i)). The No Project analysis in this SA/DEIS considers existing conditions and "what would be reasonably expected to occur in the foreseeable future if the project were not approved..." (Cal. Code Regs, tit. 14 § 15126.6(e)(2)).

If the No Project Alternative were selected, the construction and operational impacts of the RSEP project would not occur. There would be no grading of the site, no loss of resources or disturbance of approximately 2,560 acres (for the square-shaped parcel) of desert habitat, and no installation of power generation and transmission equipment. The No Project Alternative would also eliminate contributions to cumulative impacts on a number of resources and environmental parameters in eastern Riverside County and in the Mojave Desert as a whole.

In the absence of the RSEP project, however, other power plants, both renewable and non-renewable, may have to be constructed to serve the demand for electricity and to meet RPS requirements. The impacts of these other facilities may be similar to those of the proposed project because these technologies could require large amounts of land like that required for the RSEP project. They may be located on desert habitat that has not been previously disturbed, and may be on public rather than privately-owned land. The No Project/No Action Alternative may also lead to siting of other non-solar renewable technologies to help achieve the California RPS.

Additionally, if the No Project Alternative were chosen, additional gas-fired power plants may be built, or existing gas-fired plants may operate longer. If the proposed project were not built, California would not benefit from the reduction in greenhouse gases that this facility would provide, and PG&E would not receive the 150 MW contribution to its renewable state-mandated energy portfolio.

NEPA No Action Alternative

Under NEPA, the No Action Alternative is used as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the proposed action and the alternatives. Under the No Action Alternative, Western would deny the interconnection request and BLM would not grant a ROW. Like the No Project Alternative described above, under the No Action Alternative, the impacts of the RSEP project would not occur.

The No Project/No Action Alternative is addressed under the Environmental Analysis and Engineering Assessment of each resource element.

ALTERNATIVES CONSIDERED BUT NOT EVALUATED IN FURTHER DETAIL

This section considers potential alternatives to the proposed RSEP project that were evaluated, and but not retained for further analysis in this SA/DEIS for the following reasons: they were determined to not be feasible for meeting key project objectives; they are not yet commercially available; or they would not result in lesser impacts than the proposed action.

APPLICANT'S SITE ALTERNATIVES

Alternative sites were identified by the applicant in its Application for Certification (AFC). They are evaluated in this analysis and, based on the findings of the analyses, are not carried forward for detailed evaluation in this SA/EIS. The applicant-identified alternative sites are:

- Cadiz Alternative Site
- McCoy Alternative Site

The two sites are discussed in the following paragraphs.

Cadiz Alternative Site

Cadiz was identified by Rice Solar Energy LLC in the AFC as a potential alternative site for the proposed RSEP project; see **Alternatives Figure 5**. The 2,551-acre Cadiz Alternative Site is approximately 2 miles by 2 miles and occupies Sections 2 and 3 of Township 4N Range 14E and Sections 34 and 35 of Township 5N Range 14E. The 4 parcels are owned by Cadiz, Inc. (San Bernardino County APNs 055-63-2104, 055-63-1117, 055-63-2105, and 055-63-1116) and are adjacent to land administered by the BLM. The Cadiz Alternative Site is 6 miles south of the National Trails Highway (Route 66), 20 miles south of Interstate 40, 15 miles east of the town of Amboy, and six miles south of Chambless (which contains the nearest residences). The nearest town with full services is Twentynine Palms, approximately 65 miles to the southwest. The site can be accessed from Cadiz Road off of the National Trails Highway; approximately three miles of Cadiz Road would likely need paving or improvements.

The site is currently undeveloped, and does not appear to support recent uses. Adjacent lands (to the north and west) have been or are currently under agricultural production. San Bernardino County permits electrical power generation at the site (zoned AG-160), but requires a General Plan amendment to apply the Energy Facilities Overlay. Pacific Solar Investments Cadiz has filed a right-of-way application with the BLM for land adjacent to the south of the site. A 60-mile transmission interconnection would be required to connect to Western's Parker-Blythe #2 transmission line. A connection to Metropolitan Water District's (MWD) 230-kV line near the Iron Mountain substation would require an approximately 30-mile interconnection (SR 2009a, Sections 6.3.3 and 6.4; CH2MHill 2010a).

Neither the site nor the transmission connection (to either the Western or MWD line) would fall within the boundaries of the Mojave Trails Proposed National Monument, which is located to the north.

Environmental Assessment. As with the proposed RSEP site, the Cadiz site would result in the permanent loss of approximately 1,410 acres of desert habitat. According to the applicant, CNDBB records indicate the potential presence of Nelson's bighorn sheep, and vermilion flycatcher (which may also be present at the proposed site). The California Native Plant Society Inventory of Rare and Endangered Species indicates that Harwood's woollystar may occur within or near the Cadiz site. The Cadiz site, however, has a lesser degree of disturbance than the Rice site (which was previously used as an airfield), and would require a significantly longer transmission connection. Thus impacts to biological and visual resources are expected to be greater than at the proposed site.

Nearby potential historic cultural resources include: an old road that runs between Cadiz and Amboy; sections of the original Route 66; the BNSF railroad originally built in 1883 by the Atlantic and Pacific Rail Road Company; and the Atchison Topeka Santa Fe Railroad, which is now the Arizona and California Railroad (ARZC). The region was used by Native Americans, including Mojave and Chemehuevi groups. The Cadiz site is not listed as being eligible for the National Historic Register (CH2MHill 2010a). The California Historical Information System (CHRIS) conducted an archaeological and historic database search for the Cadiz site (CH2MHill 2010g); prior studies of the area indicate isolated archaeological finds and limited prehistoric use. Many of the historic

resources in the region are along the ARZC and other corridors. Impacts to cultural resources would likely be less than at the proposed site.

San Bernardino County land use designations and zoning would allow for development of a solar facility. However, a General Plan Amendment for an Energy Facilities Overlay would be required (SR 2009a).

Groundwater availability is unknown based on existing information. Impacts to other issue areas would likely be similar to the proposed site or mitigable with appropriate measures (SR 2009a).

Rationale for Elimination

The Cadiz site provides no substantial reduction in impacts over the proposed RSEP site and could create new impacts of its own. The lengthier transmission line would increase the potential for impacts to biological, cultural, and soil and water resources. In addition, it would not be located on disturbed land, unlike the proposed site. For these reasons, the Cadiz alternative site was eliminated from further consideration in this SA/DEIS.

McCoy Alternative Site

McCoy was also identified by Rice Solar Energy, LLC as a potential alternative site. See **Alternatives Figure 6**. The 1,905 acre-site is comprised of 5 parcels (Riverside County APNs 812-110-003, 812-110-009, 812-130-011, 812-161-020, and 812-220-025) in Township 5S, Range 21E, Sections 24 and 25; and in Township 5S, Range 22E, Sections 19 and 30. Four of the parcels are administered by the BLM, and the remaining parcel is under private ownership. The site occupies an area approximately 2 miles by two miles, minus one square mile in the southeastern corner. A circular heliostat field of 1,410 acres as proposed by the applicant would not fit within the site boundaries, and additional parcels would be needed to accommodate the project. The site is approximately 8 miles northwest of the city of Blythe, and 6 miles north of the Blythe airport. It sits in a valley framed by the northwest to southeast trending McCoy Mountains and Big Maria Mountains. Midland Road provides paved access to within 3.5 miles of the site. A network of unpaved roads extends to approximately one mile of the site. The nearest rural residence is two miles away, and the nearest residential cluster is five miles to the southeast, along the northwestern edge of the city of Blythe.

The site is currently open desert, and does not appear to support recent uses. It is not adjacent to degraded or impacted private lands. There are a number of BLM ROW applications within five miles of the McCoy site: Bull Frog Green Energy- Big Maria Vista to the north, Altera Black Hills to the northeast, Next Era Energy- McCoy to the west (may overlap with the McCoy Alternative site), and Chevron Energy- Blythe to the south. The site is located within the Southwest Area National Corridor; a one-mile transmission line would be needed to interconnect to Western's Parker-Blythe #2 transmission line to the west. A new interconnection substation would be required. (SR 2009a, Sections 6.3.2 and 6.4; CH2MHill 2010a)

Environmental Assessment

As with the proposed site, a project at the McCoy Alternative site would result in the permanent loss of 1,410 acres of desert habitat. The California Native Plant Society Inventory of Rare and Endangered Species indicates that California satintail (*Imperata brevifolia*) may occur partially within the site. Other species that have been observed to occur at the McCoy site or may potentially occur in the region include the desert tortoise, bitter hymenoxys, California leaf-nosed bat, California McCoy snail, dwarf germander, and vermilion flycatcher (CH2MHill 2010a). While the McCoy site would have a substantially shorter transmission interconnection (and less associated habitat disturbance), it would be located on undisturbed, open-space. Thus overall impacts to biological resources would be similar or reduced in comparison to the proposed RSEP site.

The McCoy site is not listed as being eligible for the National Historic Register, and the CHRIS database search found no archaeological or historic studies within 0.25 miles of the site boundary (CH2MHill 2010g). However, the applicant assumed that the site may contain cultural resources due to results from a nearby assessment. Water availability may be a concern at this site. City of Blythe treated wastewater infiltrates into Colorado River Aquifer and Colorado River water is fully allocated. Groundwater availability and potential for impacts to water resources are unknown (CH2MHill 2010a; SR 2009a). Visual impacts at the McCoy site would be slightly less than the RSEP due to a shorter transmission line connection; however, significant impacts would still be expected.

Rationale for Elimination

Since the McCoy site does not provide a substantial reduction in impacts over the proposed site, staff did not retain it for further consideration.

STAFF'S SITE ALTERNATIVES

Staff has identified sites throughout the California desert as potential locations for solar facility development. As with the Applicant's site alternatives, these alternative sites were evaluated, but based on findings from the analysis, not carried forward for detailed evaluation in this SA/EIS. Staff-identified alternative sites include the following:

- Agriculture Lands
- Blythe Mesa
- Broadwell Lake
- Gabrych
- Garlock Road
- Manix
- Mesquite Lake
- Siberia East
- South of Hwy 98

All of the sites would likely have adequate solar insolation, although detailed studies may be needed to determine if sufficient for CSP technology. Each site is discussed in the following paragraphs.

Agriculture Lands Alternative Site

The Agriculture Lands site is located in the Imperial Valley, southwest of El Centro. See **Alternatives Figure 7**. Although a large amount of disturbed land occurs in the Imperial Valley, the majority of it is active and viable farmland. In 2009, staff contacted local agencies and visited the area to consider farmland that is no longer economically viable or productive. Seven separate and unconnected parcels, totaling 4,600 acres, would comprise this alternative site. All parcels are on disturbed land; BL-1 has been fallow for several years with recovering native habitat whereas BL-2 through BL-7 consist of active agricultural lands with little or no native habitat. The site is subject to flooding from the Gleeson, Pinto, and Yuha Washes (Imperial County 2007). An approximately 7.5-mile interconnection would be required to reach the Imperial Valley Substation.

Environmental Assessment

The site consists of agricultural land, except for limited areas of Sonoran desert scrub and desert dry wash woodland (dominated by smoke tree (*Psorothamnus spinosus*)) in parcel BL-1. Five washes are thought to occur on the site. The site supports burrowing owl (*Athene cunicularia*) and flat tailed horned lizard (*Phrynosoma mcallii*), as well as sensitive plants such as annual rock-nettle (*Euclidia rupestris*) (CDFG 2009). Building a solar facility on the site would primarily impact agricultural lands, and as such, would have an impact on few listed and sensitive wildlife species and their habitats, with exception of burrowing owl, which is known to use agricultural land for foraging. As the surrounding area is highly disturbed with agriculture, impacts to biological resources would likely be less than at the proposed site.

Impacts to cultural resources would also likely be less than the RSEP site. The Imperial County General Plan EIR identifies most of the Agricultural Lands as having zero to rare cultural resources although some of Parcel BL-6 is located in an area identified as very sensitive for cultural resources (Imperial County 1993).

Given the site's agricultural nature, visual impacts would be reduced in comparison to the RSEP.

According to the Imperial County General Plan Land Use Element, industrial uses are not permitted on agricultural lands except for those directly associated with agricultural products and processes. Although Imperial County and the Imperial Irrigation District signed a 2009 Joint Resolution to encourage the growth of renewable energy in the Imperial Valley (Imperial County 2009a), the proposed project would not directly contribute to Imperial County's energy supplies and could be inconsistent with the resolution.

Rationale for Elimination

The Agriculture Land's parcels are of varying configurations. None of the parcels would be of adequate shape or size for a 150 MW solar power tower facility. Furthermore, Interstate 8 and Highway 98 bisect the larger of the parcels. The site would be suitable

for a solar project with smaller, discrete units, but would not be large enough to accommodate the RSEP project. Staff thus eliminated it from further consideration.

Blythe Mesa

The Blythe Mesa alternative site is northwest of Blythe, in the Palo Verde Valley. (It is in the general vicinity of the McCoy site discussed above). The site includes land that is no longer productive or economically viable for agriculture, as well as Solar Energy Study Areas on public lands identified in BLM Solar Energy Development Programmatic EIS documents (EERE and BLM 2010). Staff identified a 6,200-acre site that consists of three sections: a 2,780-acre southern section (Section 1), 2,000-acre eastern section (Section 2), and 1,280-acre northern section (Section 3). See **Alternatives Figure 8**. The acreage is primarily privately-owned, with a small portion administered by the BLM. The site, comprised of 50% agriculture, is primarily surrounded by undeveloped BLM land to the west. Agricultural land, as well as a Riverside County dumping site, golf course, and rural residences are located to the east.

Section 1, the largest of the three sections, consists of 56 parcels with 10 different landowners. It is accessed via Interstate 10 at the W. Hobson Way exit. There are no structures on this site, which is immediately north of the Blythe Energy Project Substation and approximately one mile north of the Blythe airport. A major wash made up of approximately 46 acres of desert dry wash woodland traverses this section. Section 1 also contains a disturbed wetland, two active detention basins, and three inactive detention basins.

Section 2 consists of 79 parcels and 23 landowners. It contains scattered residences and is accessed from Midland Road. It is crossed by the railroad tracks of the Arizona & California Railroad Company, and has a wash that appears to drain agricultural fields.

Section 3 consists of 17 parcels with 10 landowners, and contains scattered residences. It is crossed by the Atchison Topeka and Santa Fe railroad and Western's 161 kV Parker-Blythe #2 transmission line. A transmission interconnection (for any of the three sections) would likely follow the ROW of the Western line. The interconnection would trend south for 10-12 miles to reach the proposed Colorado River Substation. It would be located primarily on open space and through agriculture fields.

Environmental Assessment

CNDDDB records (CDFG 2009) indicate a number of sensitive species in the vicinity; desert tortoise (*Gopherus agassizii*) is reported adjacent to or within the northern and eastern portion of the site. The desert dry wash and areas of Sonoran creosote bush scrub would be permanently lost as a result of vegetation clearing and grading for a solar facility. However, approximately 85% of the alternative site is already moderately to highly disturbed as a result of cultivated fields, graded areas, wells, dirt roads, and railroads. As such, impacts to biological resources would likely be similar to that of the previously disturbed proposed site. The degree of ground disturbance also reduces the potential for currently undocumented cultural resources.

Sensitive receptors include the rural residences within Sections 2 and 3 and a residential area about 100 feet from the same sections. Noise impacts would be higher

than at the proposed site, where there are no nearby sensitive receptors. The southern section's one-mile proximity to the Blythe airport and the 653-foot tall central tower give the site a high potential to interfere with air traffic. The airport has two runways and for the 12-month period ending in 2006, aircraft operations averaged 69 takeoffs and landings per day (Solar Millennium 2009a).

Although this location is less remote than the RSEP site (and thus presents a greater contrast to the landscape), the location of sensitive receptors near the Blythe Mesa site would result in equally significant visual resource impacts should a project be located at this site.

Rationale for Elimination

As currently depicted, the sections of the Blythe Mesa Alternative site are either of inadequate size or shape for the proposed project. Section 1 has sufficient acreage, but is in an L-shape, not conducive for a concentrating solar power facility. Expansion of any of the three sections to accommodate the facility would involve encompassing more undisturbed desert habitat.

Furthermore, the proximity (of the only section with sufficient acreage) to the Blythe airport would likely make the site infeasible, particularly given the height of the central receiving tower. As such, staff is not retaining this site for further consideration.

Broadwell Lake

The Broadwell Lake alternative site is located on land administered by the BLM, approximately 8.5 miles north northwest of Interstate 40 at Ludlow, in unincorporated San Bernardino County. The site is approximately 1.5 miles east of the Kelso Dunes Wilderness, 7 miles north-northwest of the Bristol Mountains Wilderness, and 1 mile west of Broadwell Dry Lake. National Trails Highway (Route 66) and Interstate 40 are located approximately 8.5 miles south of the alternative site, and the historic Tonopah and Tidewater Railroad is located approximately 7 miles south of the site. The 5,000-acre site is of more than sufficient size for the proposed RSEP and is accessed via Crucero Road, a one-lane dirt road with an exit off Interstate 40 (DWR 2004). See **Alternatives Figure 9**.

The project would require a new substation and short interconnection to existing 230-kV and 500-kV SCE transmission lines, 1 mile northwest of the site.

Environmental Assessment

A project at Broadwell Lake would result in the permanent loss of relatively undisturbed vegetation (Mojave creosote scrub). CNDDDB records indicate that the site has potential habitat for the desert tortoise, but that there are no records for the species within 10 miles of site (CDFG 2009). Impacts to biological resources would likely be greater than for the previously disturbed proposed site.

The site is highly visible from the Kelso Dunes Wilderness and Bristol Mountain Wilderness, as there are no natural visual buffers. It is also visible from the Cady Mountains, including the Sleeping Beauty Subregion, and potentially visible from the Afton Canyon Natural Area (an Area of Critical Environmental Concern, and one of the

few places the Mojave River flows on the surface most of the year). Broadwell Lake also has a high level of recreational use, and receives many visitors. Impacts to visual resources and recreation would thus likely be higher than at the proposed site.

The Broadwell Lake site has twenty known archaeological, architectural, and historical sites, and is deemed to have a high sensitivity for Prehistoric and Historic Archaeological Resources (AIC 2008). The site would be located within the BLM North and Eastern Mojave (NEMO) Desert Management Plan, and the BLM Western Mojave Planning Area. Any significant unmitigated biological impacts caused by the project could make the site incompatible with the NEMO or Western Mojave Plans.

Rationale for Elimination

A project at the Broadwell Lake alternative site would have a significantly shorter transmission interconnection, but would develop undisturbed, public land. The site would have potentially higher environmental impacts – including to biological resources, visual resources, and land use and recreation – than the proposed site. Staff therefore eliminated it from further consideration.

Gabrych

The Gabrych alternative site is located in the Palo Verde Valley by the Colorado River, east of the City of Palo Verde. It is on 10 parcels of privately owned land (with only one landowner) making up 1,800 acres of land. The site is bordered to the south and east by the Colorado River, and would avoid the Harvey's Hole Fishing community that is adjacent to the river. A small sand/gravel mining operation just west of the residential area would also be avoided. The Riverside/Imperial County line forms the northern border. Active agriculture is found to the west and north of site. See **Alternatives Figure 10**.

The site is comprised primarily (85%) of active agricultural fields and active sheep grazing. The site also supports native habitat, including 38 acres of riparian scrub, 82 acres of arrowweed scrub, and 35 acres of desert saltbush scrub in the southwestern portion of the site and adjacent to the river. Seven acres of the Colorado River occur within the southern portion, and are jurisdictional to the U.S. Army Corps of Engineers and California Department of Fish and Game (CDFG). Other jurisdictional areas may include named on-site canals, riparian habitat along the D-23-1-3 and C Canals, and arrowweed scrub occurring in the southwestern corner of the site.

The site could connect with the SCE system at the proposed Colorado Substation through a new transmission line that would trend west from the site for approximately five miles then turn north for approximately 12 miles. The new transmission line would cross BLM land and active and fallow agricultural land, would be located adjacent to the existing Western 161 kV transmission line, and would be located within an existing CDD designated utility corridor. The transmission line would be within 500 feet of rural residences within the town of Palo Verde.

Environmental Assessment

CNDDDB records (CDGF 2009) identify the state-endangered (and of federal concern) Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) along the eastern

edge of the site, in riparian habitat associated with the river. The BLM-sensitive Yuma myotis (*Myotis yumanensis*) is reported along the southern boundary of site. A number of other special status species – including the Colorado River cotton rat (*Sigmodon arizonae plenus*) – occur to the west of the site. A solar project at the Gabrych site would need to avoid the native and potentially jurisdictional habitat in the site's western portion and along the river, thereby lessening potential impacts to special status species as well. Potential impacts may still occur to canals, which may result in impacts to waters of the State and/or waters of the U.S.

Less than 2% of the site has been systematically surveyed for cultural resources. However, the potential for unrecorded cultural resources is low, as the entire surface of the Gabrych Alternative site (with the exception of 233 acres) has been plowed or impacted by other agricultural activities. Impacts to cultural resources are likely to be less than at the proposed RSEP site.

A project at the site could result in temporary impacts to recreational users travelling down the Colorado River, and a direct impact on recreational users at Harvey's Fishing Hole. There would also be noise and visual impacts to Harvey's Fishing Hole. These visual impacts would likely be significant, similar to the proposed RSEP.

Rationale for Elimination

The site would be too narrow for the proposed project. Avoiding the native and potentially jurisdictional habitat in the western portion of the site (as well as along the Colorado River) further limits the dimensions of the site under consideration. Further study, however, could assess the feasibility of adding parcels to the north of the site. Since the site would not substantially reduce environmental impacts – and would have greater impacts to water resources, land use and recreation, visual resources, and noise and vibration – staff eliminated the site from further consideration.

Garlock Road

The Garlock Road Alternative site is located in southeastern Kern County's Fremont Valley, upstream of Koehn Dry Lake. It consists almost exclusively of fallow agricultural fields and is surrounded largely by undisturbed, native vegetation communities. The site encompasses five vegetation communities (in this approximate order of coverage from high to low): disturbed habitat, disturbed desert saltbush scrub, disturbed stabilized dunes, desert saltbush scrub, and developed. Disturbed habitat supports species such as mustard (*Sisymbrium* sp.), thistle (*Salsola* sp.), Mediterranean grass (*Schismus* sp.), and filaree (*Erodium* sp.). Less disturbed, surrounding areas are designated Desert Tortoise Critical Habitat.

The 2,000-acre site is comprised of 11 privately owned parcels in a rough U shape. See **Alternatives Figure 11**. There are a few isolated buildings onsite, as well as a handful of residential structures in the town of Garlock to the north of the site. It is unknown if they are occupied. The transmission interconnection to SCE's Kramer-Inyoken 230-kV transmission line would follow Garlock Road to the east and then Goler Road to the south; additional private party and BLM parcel crossings would be required.

Environmental Assessment

Special status species observations have been reported to the California Natural Diversity Database (CNDDDB) within five miles of the Garlock Road Alternative site. Listed species include desert tortoise (*Gopherus agassizii*), Western snowy plover (*Charadrius alexandrinus nivosus*) and Mohave ground squirrel (*Spermophilus mohavensis*) (CDFG 2009). The largely disturbed nature of the site, however, would limit wildlife use of the site for foraging, sheltering, breeding, or dispersal. However, since the site occurs in the center of Fremont Valley, wildlife may cross the site to travel between the mountains to the north and south or between the upper elevations in the valley to the east to Koehn Lake to the west. Impacts to biological resources would likely be similar to that of the proposed site, which is likewise on disturbed land surrounded by comparatively undisturbed desert habitat.

There are washes along the northern border and skirting the northwestern-most corner of the Garlock Road Alternative site. A focused delineation would be required to confirm jurisdiction since the wash may have connection to Koehn Lake. In relation to the wash, the northwestern portion of the site falls within a flood zone designated by the Federal Emergency Management Agency DFIRM (Digital Flood Insurance Rate Map) (Kern County 2010); use of affected parcels would likely require engineering measures to reduce the risk of flooding.

Constructing and operating a solar facility at the Garlock Road Alternative site could affect the site of Old Garlock (3.2 miles southwest of the current town location), and possibly one historic archaeological site, an historic can dump that may extend into the Garlock Road Alternative area. Because of the history of agricultural use of the entire site there is little potential for intact prehistoric or historic surface resources. Based on available information, impacts would be potentially less than or similar to that of the proposed site.

A project at this site would be visible to motorists and to users of designated offroad routes in the BLM Rand Mountains Fremont Valley Management Area (BLM 2008), offroad trails in the El Paso Mountains, and the southeast portion of the Red Rock Canyon State Park. Visual impacts would likely be significant and similar to the proposed RSEP project.

Rationale for Elimination

As configured, the site is not of adequate shape or size for the proposed RSEP. Additional small privately-owned parcels (with unclear levels of past disturbance) could be added to make the site more of a square shape; however the site may still not be large enough to accommodate the project without encroaching on undisturbed land or Desert Tortoise Critical Habitat. Furthermore the site provides no substantial reduction in impacts over the proposed site, and was dropped from further consideration.

Manix

The 2,600-acre alternative site would be located near Manix in San Bernardino County. See **Alternatives Figure 12**. The site is large enough for the proposed project with some room for adjustment. It contains a combination of privately-owned and BLM administered land, including some fallow and ruderal fields and developed areas. The

site wholly or partially comprises 47 parcels in Township 10N, Range 4E, Sections 6, 5, 7, 8, 17, 18, and 20; and Township 10N, Range 3E, Sections 12 and 13. Union Pacific railroad tracks (which parallel Interstate 15 and Yermo Road) form the northern border. The Mojave River and CDFG's Camp Cady Wildlife Area are located to the south. Mojave creosote bush scrub and atriplex scrub are the predominant vegetation types. Site access from Interstate 15 would be via the Harvard Road exit, Cherokee Road, Manix Road or Troy Road.

SCE's Coolwater-Dunn Siding 115 kV transmission line runs through the Manix alternative site, and would need to be realigned. A project at the site would require either an upgrade of the SCE transmission line or the construction of a new 10-mile 161 kV or 230 kV transmission line that would follow the existing corridor southwest to the Coolwater Substation.

Environmental Assessment

The Mojave River (which rarely flows in the Manix area) runs to the south of the site. There are patches of well developed riparian habitat and areas of no and poorly developed riparian habitat. Sensitive species – including Mojave fringe-toed lizard (*Uma scoparia*), desert tortoise (*Gopherus agassizii*), and Barstow woolly sunflower (*Barstow woolly sunflower*) – may occur in the vicinity of the alternative site (CDFG 2009). The Manix site, however, is generally made up of unsuitable to medium quality habitat for desert tortoise. It contains poor quality habitat for rare plants. Impacts to biological resources would likely be similar to that of the proposed site.

The site is adjacent to the Mojave River floodplain, a landscape context with moderately high frequency of prehistoric archaeological sites. Camp Cady, established by the U.S. Dragoons in 1860, is a California State Historical Landmark (No. 963-1). The former San Pedro, Los Angeles, and Salt Lake Railroad, now the Union Pacific Railroad, and segments of the Old Spanish Trail, the Mormon Trail, and the Mojave Road are thought to run through the area comprising the alternative site; the presence and integrity of these segments are presently unconfirmed. The site could thus have similar or slightly greater impacts to cultural resources than the proposed site.

Interstate 15 provides ready access to workers from the Barstow and Victor Valley areas, decreasing air emissions associated with commuting. Travel on Interstate 15, however, operates at a congested level on Friday afternoons, and a traffic analysis may result in the need to limit construction-period truck and commute traffic to off-peak periods. Construction equipment could travel to Barstow via railroad. In addition, the proximity to Interstate 15 would lead to prominent visibility for traffic in both directions. However, given the site's agricultural setting and proximity to motorists, visual impacts are likely to be similar to the proposed RSEP site.

Rationale for Elimination

The Manix site would be suitable in size and configuration for the proposed RSEP. Although portions of it have been previously disturbed, there would be no reduction in impacts (and slightly greater impacts in some issue areas) as compared to the proposed site. With 47 parcels, site control may be difficult to obtain. For these reasons, staff rejected Manix from further consideration.

Mesquite Lake

The Mesquite Lake alternative site is located in the Imperial Valley between the towns of El Centro and Brawley. As defined by the Mesquite Lake Specific Plan, Mesquite Lake is an area bordered by Keystone Road to the north, Highway 86 to the west, Harris Road to the south, and approximately 2,250 feet east of Old Highway 111 to the east. Transmission lines and roads occur within the site. The Mesquite Lake Plan Specific Area encompasses approximately 5,100 acres of land previously used primarily for agriculture. An additional 2,150 additional acres may be available immediately to the north. See **Alternatives Figure 13**.

The site is highly disturbed and is promoted for job-producing industrial land uses. Active and inactive agricultural land is comprised of hay fields, fallow fields, cattle grazing, a fish farm, processing plant, and equipment staging areas. There are several industrial facilities including the Holly Sugar Plant, Imperial Valley Resource Recovery Plant (an operational biomass facility), and a non-operational alternative-fuel-burning electric power plant. Four additional projects have applied for use of land in the Specific Plan. The Specific Plan contains 70 parcels owned by 52 landowners (EDAW 2006). Several canals (of which the largest is Rose Canal) traverse the site. A 25-mile interconnection would be needed to reach the Imperial Valley Substation.

Environmental Analysis

Three vegetation communities have been identified within the plan area: bush seepweed-iodine bush scrub, tamarisk scrub, and disturbed wetlands (EDAW 2006). CNDDDB records (CDFG 2009) indicate that sensitive species (within five miles of the site) may include the flat-tailed horned lizard (*Phrynosoma mcallii*), Yuma clapper rail (*Rallus longirostris yumanensis*), Western yellow bat (*Lasiurus xanthinus*), burrowing owl (*Athene cunicularia*), Gila woodpecker (*Melanerpes uropygialis*), Crissal thrasher (*Toxostoma crissale*), and Abrams' spurge (*Chamaesyce abramsiana*). Although construction of a solar power tower project would primarily occur on active and fallow agricultural lands, the burrowing owl is known to use agricultural land for habitat. Agriculture lands and fish ponds on the site also provide foraging, covert, and/or breeding habitat for migratory birds, including special-status bird species that may be present. The fields do not support habitat suitable for the flat-tailed horned lizard and Le Conte thrasher. The surrounding area is more intensely disturbed than the Rice Valley and overall impacts to biological resources would likely be similar or less than the proposed site.

Fifteen known archaeological, architectural, or historical sites would potentially be affected by construction and operation of a solar facility at the Mesquite Lake Alternative site (SES 2009m; EDAW 2006). However, areas where intensive cultivation for agricultural use have occurred would have a low probability for the presence of significant cultural resources due to deep excavation for drainage tiles and recurring surface disturbance (Imperial County 2006). As a significant portion of the site has been cultivated, development of a solar project at the site would likely impact fewer cultural resources than the proposed site.

Although the area includes active and fallow farmland, the loss of agricultural lands is likely to be a less than significant impact because the County has determined, since the

1970s, that the project area's highest and best use would be for medium and heavy industrial uses that would provide for more diversified employment opportunities and has rezoned the land for industrial use (EDAW 2006).

Rose Canal, its tributaries, and a few small areas of tamarisk scrub may be considered jurisdictional by the Corps and/or CDFG.

Given the more industrial nature of the site, visual impacts would likely be less than the proposed site.

Rationale for Elimination

The overall size and shape of the Mesquite Lake alternative site is sufficient for the RSEP project. However, it is traversed by three (34.5 kV, 92 kV, and 161 kV) Imperial Irrigation District transmission lines, Highway 111 and Dogwood Road (north to south arteries), the Rose Canal, and Union Pacific Railroad tracks. The highly disturbed site would be suitable for a solar project with smaller, discrete units, but not for the proposed solar power tower facility. As such, Mesquite Lake was not carried forward for detailed analysis.

Siberia East

The 4,000-acre Siberia East site is off the National Trails Highway (Route 66) in San Bernardino County. It is 8.5 miles southeast of Ludlow, five miles south of Interstate 40, and north of the Twentynine Palms Marine Corps Base. The National Trails Highway and Burlington Santa Fe railroad form the northeast border of the site. Barstow is 50 miles to the west. See **Alternatives Figure 14**.

Siberia East is on BLM-administered land, in the West Mojave Planning Area and in the California Desert Conservation Area. The land classification of Multiple Use would allow for a solar facility if NEPA requirements are met. BrightSource Solar has submitted an application to the BLM for a 1,600 MW solar project on a larger 15,000-acre area at the site.

The site consists primarily of undisturbed Mojave Desert scrub, specifically creosote bush scrub, mixed scrub and blackbush scrub (San Bernardino County 2006). The site also falls on the northern border of the Northern Colorado Desert Tortoise Recovery Unit. A 22-mile interconnection would need to be constructed, most likely to the SCE's Pisgah Substation to the northwest of the site.

Environmental Assessment

Siting the RSEP project at the Siberia East site would result in the permanent loss of relatively undisturbed vegetation, in what is currently open space, public land. Impacts to biological resources would likely be greater than that of the proposed site, and there could be direct and/or indirect impacts to the desert tortoise or its occupied habitat.

The San Bernardino Archaeological Information Center, in its record search report, stated the site was deemed to have a high sensitivity for prehistoric and historic archaeological resources, a low sensitivity for historic resources, and unknown sensitivities for cultural landscapes and ethnic resources (AIC 2008). A project at the

site would have a direct visual impact to the National Trails Highway (SBR-2910H) and visual impacts would likely be significant, similar to the proposed RSEP site.

Rationale for Elimination

The Siberia East site would not provide a reduction in impacts over the proposed site, and would likely have greater impacts to biological resources (particularly the desert tortoise). Furthermore, the site is on undisturbed public land whereas the proposed RSEP site is on previously disturbed private land. The Siberia East Alternative would require a longer (22-mile) transmission interconnection. For these reasons, staff eliminated the Siberia East Alternative from further consideration.

South of Hwy 98

The South of Highway 98 Alternative site is 5,000 acres located approximately four miles southeast of the greater El Centro region. See **Alternatives Figure 15**. It is on land withdrawn from BLM Management (in 1928) and administered by the Bureau of Reclamation. The site is sandwiched between Highway 98 to the north and the United States/Mexico border to the south. It is crossed by the concrete lined All-American Canal (parallel to the south of the highway). The 500 kV Southwest Powerlink Transmission Line is opposite the highway. Past seepage from the canal (prior to lining) has resulted in the formation of several hundred acres of wetland/riparian habitat on site.

Environmental Assessment

The site is partially disturbed (crossed by the canal, Southwest Powerlink, and off-road vehicle trails), and undeveloped on all sides, with the exception of Interstate 8 to the north.

Pursuant to the Imperial County General Plan, the All American Canal is considered a Significant Natural Area; it may also be considered a jurisdictional waterway. The canal supports year-round flows and is used by migratory waterfowl as well as resident species such as American coot (*Fulica Americana*) and great blue heron (*Ardea herodias*). The recent lining of the canal has resulted in the die-off of wetland vegetation in some areas, with continued loss expected. CNDDB species records (CDFG 2009) for five-miles of the site include one listed species: the federally endangered and state threatened Yuma clapper rail (*Rallus longirostris yumanensis*), and two California species of special concern: flat tailed horned lizard (*Phrynosoma mcallii*) and Yuma hispid cotton rat (*Sigmodon hispidus eremicus*). CNPS-listed sand food (*Pholisma sonorae*) and giant Spanish-needle (*Palafoxia arida* var. *gigantean*) also occur in the vicinity. As such, overall impacts to biological resources are expected to be slightly greater at the South of Highway 98 site than at the proposed RSEP site.

The Imperial County General Plan EIR identifies the site as having a moderate to light sensitivity for cultural resources (Imperial County 1993). A cultural resources records search conducted in 2009 for the site identified a total of 51 previously recorded cultural resources sites. Prior construction and maintenance of the All-American Canal may reduce the probability of undisturbed cultural resources at the site. This alternative site may have slightly less impact to cultural resources than the proposed site.

Visual impacts would likely be similar to the proposed RSEP site.

If water were to be obtained from the Seeley Waste Water Treatment Facility, construction of a 38-mile pipeline would be required.

Rationale for Elimination

The 5,000-acre site is long and narrow. The portion of the site south of the canal would be too narrow for the heliostat field of the proposed project. In addition, the site surrounds the BLM Tamarisk Long Term Visitor Area campground. A 30-mile transmission interconnection could be required to reach the Imperial Valley substation, with potential interference with agriculture operations and aerial spraying. An interconnection to the adjacent Southwest Powerlink is also a possibility, and an interconnection study would likely be required. As the site would not reduce environmental impacts, staff rejected it from further consideration.

ALTERNATIVE SOLAR GENERATION TECHNOLOGIES

In addition to the range of alternative sites discussed earlier, several alternative solar generation technologies were evaluated as potential alternatives to the proposed RSEP project. Although alternative solar generation technologies would achieve most of the project objectives, each would have different environmental or feasibility concerns. The following solar generation technologies were considered in this analysis:

- Stirling dish technology
- Parabolic trough
- Linear Fresnel technology
- Distributed solar technologies

Among the solar thermal technology alternatives, the linear Fresnel alternative has the potential for least ground disturbance due to its more compact configuration (reducing ground disturbance); however, the technology is proprietary and is not available to other applicants or developers. The distributed solar alternative would have fewer impacts than the proposed RSEP project because it would be located on already existing buildings or on already disturbed land. However, achieving 150 MW of distributed solar PV or solar thermal would depend on additional policy support, manufacturing capacity, and lower cost than currently exists to provide the renewable energy required to meet the California RPS requirements so additional technologies, like utility-scale solar thermal generation, would also be necessary.

These analyses assumed that the alternative technologies would be implemented on the site for the proposed RSEP site.

Stirling Dish Technology

Stirling dish technology uses a mirror array to convert thermal energy to electricity by concentrating and focusing sunlight on the receiver end of a Stirling engine. The curved dishes used to focus the sun's energy stand approximately 45 feet tall and occupy a maximum horizontal space of approximately 1,135 square feet (0.026 acres), with an anchored footprint of 12.5 square feet (assumed 4-foot diameter caisson). See

Alternatives Figure 16 for an illustration. The internal side of the receiver heats hydrogen gas, which expands; the pressure created by the expanding gas drives a piston, crankshaft, and drive shaft. The drive shaft turns a small electricity generator.

The entire energy conversion process takes place within a canister the size of an oil barrel. The generation process requires no water, and the engine does not produce emissions as no combustion takes place. Each concentrator consists of one Stirling engine mounted above one mirror array. Very little maintenance is required once each concentrator is installed, aside from periodic washing of the surface of the mirrors. In general, the Stirling system requires seven to nine acres of land per MW of power generated; a 150-MW Stirling engine field would require from 1,050 acres to 1,350 acres of land. Site preparation involves sinking a cement base with an embedded pedestal to support the dish (SES 2008). Each Stirling dish generates 25 kilowatts (KW) of power, so

6,000 dishes would be required to generate 150 MW. Each dish includes two major elements:

- **Solar Concentrator.** Large parabolic concentrators include 89 mirror facets attached to a frame by three point adjusting mounts (SES 2008). They are designed in five subassembly units for ease of transport and installation on site. Two small motors are attached to the pedestal and programmed to swivel the dish on two axes, following the sun's progress across the sky during the day.
- **Power Conversion Unit.** The Stirling engine's cylinder block incorporates four sealed cylinder assemblies along with coolers, regenerators, and heater heads (SES 2008). Concentrated solar energy heats up self-contained gas (hydrogen) in the power conversion unit, causing the gas to expand into the cylinders, moving the cylinders, and generating electricity. This cycle is repeated over and over as the engine runs at a steady rate of 1,800 rpm (SES 2008). Power is generated by heat transfer from the concentrated solar rays to the working gas in the engine's heater head, which converts the heat energy into mechanical motion. The generator of each unit in a utility-scale project is connected by underground transmission line to a small substation where the power can be transformed into a higher voltage for more efficient transmission across the grid.

Environmental Assessment

The land area required for a 150-MW Stirling engine power plant would range from 77% to a similar amount of the land required for the proposed RSEP project. In addition, Stirling engine technology allows for greater configuration flexibility and does not require the RSEP's circular arrangement. Localized cultural or biological resources could thus be more easily avoided.

It is not necessary to grade the entire parcel as only the 18-inch diameter pedestal of the Stirling engine requires level ground. However, it would still be necessary to grade permanent access roads between every two rows of Stirling engines due to the need for periodic mirror washing; the access road grading would result in vegetation removal and create a high contrast between the disturbed area and its surroundings.

The size and height of the Stirling mirrors would be similar to that of the heliostats used in the RSEP, and 6,000 Stirling engines would likewise introduce an industrial character and transformation of the site. Stirling technology would not include the 653-foot tall central receiver and tower, and impacts to visual resources would be comparatively less than those of the RSEP.

The area needed for a 150 MW Stirling engine power plant would be similar to approximately one-third less than the land requirement for the RSEP power plant, and the plant could have a more flexible configuration. Although grading requirements for the Stirling engines and solar concentrators are relatively small, grading for access roads would be extensive because access roads are required for every other row of Stirling engines (SES 2008a). Overall, impacts to recreation and land use, biological resources, and cultural resources would be slightly less than those of the RSEP facility. Visual impacts would also be slightly less without the proposed 653-foot tall central tower and receiver. However, Stirling engines would be similar to the proposed heliostats in size and height, and would be visible to viewers from the highway and nearby wilderness areas.

Rationale for Elimination

Because no substantial reduction in impact has been identified, the Stirling dish technology has been eliminated from further consideration as an alternative technology.

Parabolic Trough Technology

A parabolic trough system converts solar radiation to electricity by using sunlight to heat a fluid, such as oil, which is then used to generate steam. The plant consists of a large field of trough-shaped solar collectors arranged in parallel rows, normally aligned on a north-south horizontal axis. As illustrated in the photo below. Each parabolic trough collector has a linear parabolic-shaped reflector that focuses the sun's direct beam radiation on a linear receiver, also referred to as a heat collection element located at the focus of the parabola. See **Alternatives Figure 16** for an illustration. Heat transfer fluid within the collector is heated to approximately 740°F as it circulates through the receiver and returns to a series of heat exchangers where the fluid is used to generate high-pressure steam. The superheated steam is then fed to a conventional reheat steam turbine/generator to produce electricity.

A solar trough power plant generally requires land with a grade of less than 1%. On average, 4 to 8 acres of land are required per MW of power generated. A parabolic trough power plant would include the following major elements.

- **Parabolic Trough Collectors.** The parabolic trough collectors rotate around the horizontal north/south axis to track the sun as it moves through the sky during the day. Reflectors, or mirrors, focus the sun's radiation on a linear receiver/heat collection element, which is located along the length of the collector.
- **Solar Boiler.** Solar boilers are designed differently than conventional gas-fired boilers in that they are fueled with hot oil instead of hot gases. This design is similar to any shell and tube heat exchanger in that the hot heat transfer fluid is circulated through tubes and the steam is produced on the shell side.

- **Heat Transfer Fluid Oil Heater.** Due to the high freezing temperature of the solar field's heat transfer fluid (54°F), to eliminate the problem of oil freezing, an oil heater would be installed and used to protect the system during the night hours and colder months.

Parabolic trough power plants are the most established type of large solar generator.

They are currently being proposed throughout the California desert, and exist in several places, including the following examples:

- **Sunray Energy, Inc. Solar Energy Generating System** is located in Daggett, adjacent to an abandoned power tower facility. It generates 44 MW.
- **Kramer Junction Solar Energy Generating System** is located about 30 miles west of Barstow. The solar energy generating system projects are a series of utility-scale solar thermal electric power plants, which were designed and developed in the mid-1980s by LUZ Industries. The facility can produce 165 MW at full capacity (Solel 2008).

Environmental Assessment

Parabolic trough technology requires approximately four to eight acres per MW compared to the RSEP which requires about nine acres per MW. A 150 MW solar field using parabolic trough technology would thus encompass 600 to 1,200 acres of land, resulting in a 15% to 57% reduction in land use.

Cooling water demands using wet cooling could be on the order of 900 AFY for a 150 MW plant (6 AFY/MW). Dry-cooling could potentially only require 27 AFY for 150 MW (0.18 AFY/MW) (NRDC 2008c). This compares to the proposed RSEP's maximum water consumption of 180 acre feet per year.

Although this technology would have collectors that are approximately 30 feet high, in comparison to the 653-foot RSEP tower, visual impacts have been considered significant in the evaluation of recent solar thermal projects utilizing parabolic trough technology.

Rationale for Elimination

While parabolic trough technology is a viable renewable technology and could reduce the footprint of the project on the order of 12% to 56%, it would not significantly reduce the impacts of the proposed RSEP. Therefore, this alternative technology is eliminated from further consideration.

Linear Fresnel Technology

A solar linear Fresnel power plant converts solar radiation to electricity by using flat moving mirrors to follow the path of the sun and reflect its heat on the fixed pipe receivers located about the mirrors. See **Alternatives Figure 16**. During daylight hours, the solar concentrators focus heat on the receivers to produce steam, which is collected in a piping system and delivered to steam drums located in a solar field and then transferred to steam drums in a power block (Carrizo 2007). The steam drums transferred to the power block will be used to turn steam turbine generators and

produce electricity. The steam is then cooled, condensed into water, and recirculated back into the process.

Each row-segment is supported by large hoops that rotate independently on metal castors. Rotation of the reflectors would be driven by a small electrical pulse motor. Reflectors are stowed with the mirror aimed down at the ground during the night. The major components are:

- **Compact Linear Fresnel Reflector (CLFR) Solar Concentrator.** A solar Fresnel power plant would use Ausra's proprietary CLFR technology which consists of slightly curved linear solar reflectors that concentrate solar energy on an elevated receiver structure. Reflectors measure 52.5 by 7.5 feet (Carrizo 2007). There are 24 reflectors in each row. A line is made up of 10 adjacent rows and operates as a unit, focusing on a single receiver (Carrizo 2007).
- **Receiver Structure.** The receiver structure is approximately 56 feet tall (Carrizo 2007). It would carry a row of specially coated steel pipes in an insulated cavity. The receiver would produce saturated steam at approximately 518°F from cool water pumped through the receiver pipes and heated (Carrizo 2007). The steam would drive turbines and produce electricity.

Environmental Assessment

In general, the linear Fresnel technology requires four to five acres of land per MW of power generated. A 150 MW solar linear Fresnel field would require approximately 600 to 750 acres of land. This acreage is approximately 44% to 55% of that land required for the RSEP heliostat field. There would likely be a corresponding reduction in impacts to cultural resources, biological resources, soil and water resources, and other resources associated with land disturbance. The technology could also allow for a more flexible configuration, as the rows could be arranged to avoid sensitive areas.

A project using linear Fresnel technology would also reduce visual impacts, with 56 foot tall receivers (for the 177 MW CESF project) compared to a 653-foot tall central receiver for the RSEP. However, a Fresnel project would still industrialize a remote area, and be visible to viewers from the highway and nearby wilderness areas.

Rationale for Elimination

The Fresnel solar technology is a proprietary technology owned by Ausra, Inc. However, Ausra, Inc. has changed its focus to being a technology and equipment provider rather than an independent power developer and owner and will focus on medium-sized (50 MW) solar steam generating systems for customers including steam users, such as food processors and enhanced oil firms and utilities for power augmentation systems that deliver steam into existing fossil-fuel power plants. Given its proprietary nature and Ausra's focus on smaller-scale plants, this technology was not carried forward for detailed analysis.

Distributed Solar Technology

There is no single accepted definition of distributed solar technology. The 2009 *Integrated Energy Policy Report* (IEPR) defines distributed generation resources as "grid-connected or stand-alone electrical generation or storage systems, connected to

the distribution level of the transmission and distribution grid, and located at or very near the location where the energy is used.”

Distributed solar facilities vary in size from kilowatts to tens of megawatts but do not require transmission to get to the areas in which the generation is used. Distributed solar generation is generally considered to use photovoltaic (PV) technology although at slightly larger scales it is also being implemented using solar thermal technologies. Both technologies are considered below.

Distributed Solar PV Systems

Distributed solar by nature reduces the amount of new or disturbed land required as well as the quantity of water required. Most distributed rooftop PV systems in California are crystalline systems, and result in approximately 15% of sunlight converted to energy (SB 2009). The newer technology is thin film, which converts approximately 5% to 10% of sunlight to energy.

California currently has over 515 MW of distributed solar PV systems which cover over 40 million square feet (CPUC 2009). During 2008, 158 MW of distributed solar PV was installed in California, doubling the amount installed in 2007 (78 MW), and installation data suggests that at least the same amount of MW could be installed in 2009 as in 2008 with 78 MW installed through May 2009 (CPUC 2009).

California’s Investor Owned Utilities (IOUs) have announced significant aggregations of small-scale solar PV projects. Southern California Edison (SCE) has installed the first 3 MW of a planned 250 MW of solar panels on 2 square miles of commercial rooftop (in 150 installations) in the next five years (SCE 2009). In July 2008, San Diego Gas and Electric (SDG&E) proposed its Solar Energy Project, which it projects will result in up to 77 MW of new installed solar capacity in the San Diego load basin. SDG&E would build and operate 52 MW of rooftop solar and expects that customer opportunities resulting from this effort could result in the installation of up to an additional 25 MW of capacity under the California Solar Initiative (CSI) that would not have otherwise been built (SDG&E 2008).

In February 2009, PG&E announced plans to develop 500 MW of solar PV projects over the next five years. In contrast to the SCE and SDG&E programs, PG&E would largely focus on projects from 1 to 20 MW, with ground-mounted systems, rather than rooftop panels, playing a substantial role (PG&E 2009). In June 2009, the City of San Jose issued a solicitation for installation of 50 MW on city facilities and/or land, as part of its Green Vision goal of achieving 100% of electricity from renewable energy by 2020 (San Jose 2010).

A study prepared in 2007 by Navigant Consulting, Inc. (NCI) and the Energy Commission calculated the economic potential of distributed rooftop PV, by county, for new and retrofitted buildings (NCI 2007). **Alternatives Table 2** identifies those counties with the greatest retrofit¹ economic potential. The calculations are based on the most

¹ New construction economic potential was substantially less than retrofit potential.

favorable scenario using state subsidies (California Solar Initiative incentives) and new business models² favoring PV development.

ALTERNATIVES Table 2
California Counties with Greatest Economic Potential for Distributed Rooftop PV
(MW)

County	2010- Residential	2010 – Commercial	2016 – Residential	2016 – Commercial
Los Angeles	16	45	85	168
San Bernardino	14	11	181	99
San Diego	3	15	23	137
Orange	11	15	71	77
Riverside	4	7	33	60

Projections for potential distributed rooftop PV development in Riverside County of 93 MW in the year 2016 would be 62% of the RSEP’s 150 MW capacity. Without state subsidies and new business models favoring development, these projections are significantly lower. For instance, Riverside’s rooftop potential (retrofit and new construction) in 2016 would be 22 MW. With state subsidies, but without new business models, the County would have a potential of 28 MW (19% of the capacity of the proposed project) in 2016 (NCI 2007). Due to variable factors affecting the state’s economic climate, the projected economic potential in the county and statewide is uncertain. Even if feasible, multiple distributed PV installations would not meet the permitting timeframes identified for the proposed RSEP project.

Environmental Assessment

Installations of 150 MW distributed solar PV would require approximately 42 million square feet (approximately 1.5 square miles). Distributed solar PV is assumed to be located on already existing structures or disturbed areas so little to no new ground disturbance would be required and there would be few associated biological and cultural resources impacts.

Minimal grading or new access roads would be required and relatively minimal maintenance and washing of the solar panels would be required. As such, it is unlikely that the rooftop solar PV alternative would create erosion impacts. Some water would be required to wash the solar panels, especially with larger commercial rooftop solar installations; however, the commercial facilities would likely already be equipped with drainage systems. Therefore, the wash water would not contribute to runoff or to erosion.

² For this analysis, NCI used three of the seven business models developed with the Energy Commission’s Public Interest Energy Research Program: PV as an Appliance (where PV systems can be sold to a homeowner and incorporated into the home like an appliance as “plug and play”), No Hassle PV (where a single entity bundles the system design, purchase, permitting, rebate application, installation, maintenance, and financing into one transaction for the customer), and PV Consumer Finance (in which initial PV system costs are financed using standard consumer finance models).

Because most PV panels are black to absorb sun, rather than mirrored to reflect it, glare would be lessened. Additionally, the distributed solar PV alternative would not require the additional operational components, such as dry-cooling towers, substations, transmission interconnection, and maintenance and operation facilities with corresponding visual impacts. Solar PV panels would be visible to passing residents and may be viewed by a larger number of people.

Consideration of CEQA/NEPA Criteria

Reduction of Impacts. Distributed solar technology is assumed to be located on already existing structures or disturbed areas so little to no new ground disturbance would be required; there would be few associated impacts to biological and cultural resources. Additionally, impacts to soils and waters as well as visual resources would be reduced.

Meet Most Project Objectives. A distributed solar technology alternative, if constructed at 150 MW, would meet the Energy Commission project objectives to operate 150 MW of renewable power in California capable of selling competitively priced renewable energy. The solar technology would not necessarily meet the objective to locate the facility in areas of high solar intensity, because the distributed technology could be located throughout the State.

Feasibility. The rate of PV manufacturing and installation is expected to continue to grow very quickly. However, given that there are currently only about 500 MW of distributed solar PV in California, the addition of 150 MW to eliminate the need for the RSEP cannot be guaranteed. This would require an even more aggressive deployment of PV at more than double the historic rate of solar PV than the California Solar Initiative program currently employs. Challenges to an accelerated implementation of distributed solar PV are discussed below.

- **RETI Consideration of Subsidies, Tariffs, Cost, and Manufacturing.** The RETI Discussion Draft Paper *California's Renewable Energy Goals – Assessing the Need for Additional Transmission Facilities* published with the RETI Final Phase 2A Report (September 2009), addresses the likelihood of a scenario of sufficient distributed solar PV to remove the need for utility scale renewable development. This discussion paper identified the factors likely to influence the pace of large scale deployment of distributed solar PV: subsidies, feed-in tariffs, manufacturing and installation cost, and manufacturing scale-up.
- **Cost.** The 2009 IEPR states that solar PV technology has shown dramatic cost reductions since 2007, and is expected to show the most improvement of all the technologies evaluated in the 2009 IEPR model, bringing its capital cost within range of that of natural gas-fired combined cycle units. However, the CPUC 33% *Renewables Portfolio Standard Implementation Analysis Preliminary Results* considered a number of cases to achieve a 33% RPS standard. The results of this study state that the cost of a high distributed generation case is significantly higher than the other 33% RPS alternative cases. The study explains that this is due to the heavy reliance on solar PV resources which are more expensive than wind and central station solar.

- **Tariffs.** The IEPR discusses the need to adjust feed-in tariffs to keep downward pressure on costs. Feed-in tariffs should be developed based on the size and type of renewable resources, given that the cost of generating energy from a 100-MW wind farm is less than the cost of generating to ensure a good mix of new renewable energy projects. According to the report, differentiating feed-in tariffs by type and size can ensure a good mix of new renewable energy projects and avoid paying too much for some technologies and too little for others.
- **Limited Installations.** Examples of large scale distributed solar projects are still limited. In the spring of 2008, SCE proposed 250 to 500 MW of rooftop solar PV to be installed in five years. As of January 2010, SCE had installed only 3 MW. As the 2009 IEPR points out, the potential for distributed resources remains largely untapped and integrating large amounts of distributed renewable generation on distribution systems throughout the State presents challenges.
- **Electric Distribution System.** The State's electric distribution systems are not designed to easily accommodate large quantities of randomly installed distributed generation resources at customer sites. Accomplishing this objective efficiently and cost-effectively will require the development of a new transparent distribution planning framework. The 2009 IEPR makes a number of recommendations to support the integration of distributed generation into the California grid, expand feed-in tariffs, and support the efforts to achieve the RPS goals as a whole. It also recommends supporting new renewable facilities and the necessary transmission corridors and lines to access the facilities.

In testimony filed by the Center for Biological Diversity in the Ivanpah Solar Electric Generating System (ISEGS) proceeding [Docket No. 07-AFC-5], Bill Powers stated his disagreement with the conclusions of the ISEGS Alternatives FSA/DEIS section addressing distributed solar PV. Mr. Powers believed that the technology and manufacturing capacity would be adequate to develop 400 MW of distributed PV, and that the distribution system would be able to accommodate the additional distributed generation. He presented numerous examples of California utility programs that have committed to development of hundreds of megawatts of additional distributed solar PV.

The conclusion of this section is that, while it will very likely be possible to achieve 150 MW of distributed solar energy over the coming years, the very limited numbers of existing facilities make it difficult to conclude with confidence that it will happen within the timeframe required for the RSEP project. As a result, this technology is eliminated from detailed analysis in this SA/EIS.

ALTERNATIVE RENEWABLE TECHNOLOGIES

Non-solar renewable generation technologies were considered as potential alternatives to the proposed RSEP project. The following renewable generation technologies were considered in this analysis:

- wind energy
- geothermal energy
- biomass energy

- tidal energy
- wave energy

The non-solar renewable technologies alternatives (wind, geothermal, biomass, tidal, wave) would either be infeasible for meeting key project objectives at the scale of the proposed RSEP project, or would not eliminate impacts caused by the project without creating impacts in other locations. Specifically, wind energy that would be viable at some locations in Riverside County could create its own impacts to biological, visual, cultural, and soil resources.

Wind Energy

Wind carries kinetic energy that can be used to spin the blades of a wind turbine rotor and an electrical generator, which then feed alternating current (AC) into the utility grid. Most state-of-the-art wind turbines operating today convert 35% to 40% of the wind's kinetic energy into electricity. A single 1.5-MW turbine operating at a 40% capacity factor generates 2,100 MWh annually.

Wind turbines currently being manufactured have power ratings ranging from 250 watts to 5 MW, and units larger than 7 MW in capacity are now under development (AWEA 2008). The average capacity of wind turbines installed in the United States in 2007 was 1.65 MW (EERE 2008). The perception of wind as an emerging energy source reached a peak in the early 1980s, when wind turbine generators to convert wind power into electricity were being installed in California at a rate of nearly 2,000 per year. Progress slowed a few years later, however, as start-up tax subsidies disappeared and experience demonstrated some deficiencies in design. At the present time, technological progress has caught up, contributing lower cost and greater reliability.

This technology is well developed and can be used to generate substantial amounts of power. There is now approximately 2,490 MW of wind-generated power being produced in California (AWEA 2008).

Modern wind turbines represent viable renewable alternatives to solar energy projects in the region as exemplified by the number of wind projects applications pending at the BLM in California. The BLM has received approximately 64 applications for wind projects in the California Desert District as of August 2009, for use of over 457,769 acres of land (BLM 2009). A total of three applications have been submitted for Riverside County, estimated at 94 MW of generation (CEC 2010).

Environmental Assessment

Wind turbines can create adverse environmental impacts, as summarized below (AWEA 2008):

- Wind energy requires between 5 and 17 acres per MW of energy created. As such a nominal 150 MW power plant would require between 750 and 2550 acres. However, wind turbine footprints typically use only 3-5% of the total area.
- Erosion can be a concern in certain habitats such as the desert or mountain ridgelines. Standard engineering practices can be used to reduce erosion potential.

- Birds collide with wind turbines. Avian deaths, particularly raptors, are a substantial concern depending on raptor use of the area.
- Wind energy can negatively impact birds and other wildlife by fragmenting habitat, both through installation and operation of wind turbines themselves and through the roads and power lines that are required to support the turbines.
- Bats collide with wind turbines. The extent of bat mortality depends on turbine placement and bat flight patterns.
- Visual impacts of wind turbines can be significant, and installation in scenic and high traffic areas can result in strong local opposition. Other impressions of wind turbines are that they are attractive and represent clean energy.

Approximately 750 to 2,550 acres of land would be required for a 150 MW wind electricity power plant. While wind plants would not necessarily impact the same types of wildlife and vegetation as the proposed RSEP plant, the significant acreage necessary for a 150 MW wind plant would still cause significant habitat loss in addition to potentially significant impacts from habitat fragmentation and bird and bat mortality. Wind turbines are often over 400 feet high for 2-MW turbines. As such, any wind energy project would be highly visible, similar to the proposed RSEP.

Rationale for Elimination

While wind electricity generation is a viable and important renewable technology in California, it would not reduce the large-scale ground disturbance and visual impacts associated with the RSEP project. Therefore wind generation was eliminated from further consideration in this SA/DEIS. Furthermore, it is part of a renewable energy supply mix along with solar thermal, which staff believes will be needed to meet statewide RPS requirements.

Biomass Energy

Electricity can be generated by burning organic fuels in a boiler to produce steam, which then turns a turbine; this is biomass generation. Biomass can also be converted into a fuel gas such as methane and burned to generate power. Wood is the most commonly used biomass for power generation. Major biomass fuels include forestry and mill wastes, agricultural field crop and food processing wastes, and construction and urban wood wastes. Several techniques are used to convert these fuels to electricity, including direct combustion, gasification, and anaerobic fermentation. Biomass facilities do not require the extensive amount of land required by the other renewable energy sources discussed, but they generate much smaller amounts of electricity.

Currently, nearly 19% of the state's renewable electricity derives from biomass and waste-to-energy sources (CEC 2007). Most biomass plant capacities are in the 3- to 10-MW range and typically operate as baseload capacity. The average size of a sales generation biomass plant is 21 MW (CBEA 2008). Unlike other renewable sources, the locational flexibility of biomass facilities would reduce the need for substantial transmission investments. Colmac Energy, Inc. currently operates a 47 MW plant in Riverside County's Coachella Valley. The plant, in operation since 1992, consumes approximately 325,000 tons per year of wood, agricultural, landscaping, and construction waste (Biomass Power Association 2009).

Solid fuel biomass (total of 555 MW) makes up about 1.75% of the state's electricity, and landfill methane gas generation (total of 260 MW) makes up about 0.75%. Existing landfills not now producing electricity from gas could add a maximum of about 170 MW of new generation capacity (CBEA 2008).

Environmental Assessment

Generally, small amounts of land are required for biomass power facilities; however, a biomass facility should be sited near a relatively large source of biomass to minimize the cost and truck emissions associated with bringing the biomass waste to the facility.

Operational noise impacts, originating from truck engines entering and exiting the facility repeatedly on a daily basis, may be a concern. Other operations of the biomass facilities, while internal to the main structure, can result in increased noise due to the material grinding equipment.

The emissions due to biomass fuel-fired power plant operation are generally unavoidable. Direct impacts of criteria pollutants could cause or contribute to a violation of the ambient air quality standards. Significant impacts can potentially occur for PM10 and ozone because emissions of particulate matter and precursors and ozone precursors could contribute to existing violations of the standards for those criteria pollutants. Biomass/biogas facility emissions could also adversely affect visibility and vegetation in federal Class I areas or state wilderness areas as a result of significantly deteriorating air quality related values in the wilderness areas. Toxic air contaminants from routine operation would also cause health risks that could adversely affect sensitive receptors in the local area of the plant.

Rationale for Elimination

Most biomass facilities produce only small amounts of electricity (in the range of 3 to 10 MW) and so could not meet the project objectives. Biomass facilities also generate significant air emissions and require numerous truck deliveries to supply the plants with the biomass waste materials. Also, in waste-to-energy facilities, there is some concern regarding the emission of toxic chemicals, such as dioxin, and the disposal of the toxic ash that results from biomass burning. Therefore, this technology is not analyzed in detail in this SA/DEIS as an alternative to the RSEP project.

Geothermal

Steam or high-temperature water from geothermal reservoirs is harnessed to drive steam turbine/generators. Geothermal plants range in size from under 1 MW to 200 MW. Geothermal plants provide highly reliable base-load power, with capacity factors from 90% to 98%. Plants, however, must be built near geothermal reservoir sites, as steam and hot water cannot be transported long distances without significant thermal energy loss. Geothermal plants are currently operating in the California counties of Lake, Sonoma, Imperial, Inyo, Mono, and Lassen. Larger geothermal areas in the Mojave Desert are in Coso Hot Springs (southwestern Inyo County) and Imperial County (CEC 2005).

The state has an estimated potential of more than 4,000 MW additional geothermal output (CEC 2009b), although few projects are currently proposed. Multiple (i.e. two to

five) smaller geothermal projects – and related transmission lines, wells, and pipelines – would likely be required to achieve the 150 MW capacity of the proposed RSEP project.

Environmental Assessment

Concerns regarding geothermal power plants include air quality, hazardous materials, and geology. Benefits from geothermal power plants include an increased reliability and less ground disturbance than some renewable resources, including solar.

Toxic air contaminants and odors would be emitted as a result of fuel combustion in construction-related equipment and vehicles and as a result of geothermal steam released during well testing. Hydrogen sulfide (H₂S) in geothermal steam is a toxic air contaminant and a colorless, flammable, poisonous compound with a characteristic rotten-egg odor. H₂S is toxic at concentrations higher than 30 parts per million (ppm) (CEC 2003), and fatal at concentrations above 100 ppm. However, H₂S is now often abated at geothermal power plants, resulting in a conversion of almost all of the H₂S into elemental sulfur (GEA 2007). Ammonia also occurs in geothermal steam and is a toxic air contaminant with a pungent, penetrating odor. Ammonia is a precursor pollutant to particulate matter in the ambient air.

Geothermal power projects require less ground disturbance than almost any other energy source, typically from about 0.2 to 0.5 acres per MW; however, geothermal plants must be built where the resource is since the steam cannot be piped long distances without significant heat loss. This results in a highly secure and predictable fuel supply (95% or higher availability (CEC 2003)), but inflexibility in siting. It may also result in a long interconnection requirement to reach a transmission system.

The construction emissions resulting from building multiple geothermal facilities would be similar to the type of construction emissions for the RSPP project. However, the geothermal facilities would require fewer acres of ground disturbance. Operational emissions from the geothermal facilities would be greater than those of the proposed RSEP project because of the potential emissions of ammonia and H₂S. However, with mitigation, these impacts would be reduced.

Because of the minimal ground disturbance required from the geothermal facilities themselves, impacts to biological resources and cultural resources would likely be minimized compared to the heliostat field for the RSEP. However, in that two to five geothermal facilities would be required for provision of 150 MW, depending on the locations of the new facilities, more transmission lines and switchyards with corresponding potential impacts (i.e., biological, cultural, soil & water, land use, visual) may be required for grid interconnection, when compared to the proposed RSEP.

Rationale for Elimination

Geothermal generation is a commercially available technology and is important for California's renewable energy future because it provides baseload power that is available 24 hours a day. Although geothermal facilities can be developed with substantially less ground disturbance than that needed for the RSEP, transmission infrastructure for multiple facilities (depending on their locations) can increase environmental impacts.

Despite the encouragement provided by Renewable Portfolio Standard targets and ARRA funding, few new projects have been proposed and no geothermal projects are included on the Renewable Energy Action Team list of projects requesting ARRA funds. Therefore, while the technology is clearly feasible and additional development is expected, the technology is not retained for detailed analysis in this SA/DEIS.

Tidal Energy

The oldest technology to harness tidal power for the generation of electricity involves building a dam, known as a *barrage*, across a bay or estuary that has large differences in elevation between high and low tides. Water retained behind a dam at high tide generates a power head sufficient to generate electricity as the tide ebbs and water released from within the dam turns conventional turbines.

Certain coastal regions experience higher tides than others. This is a result of the amplification of tides caused by local geographical features such as bays and inlets. In order to produce practical amounts of power for tidal barrages, a difference between high and low tides of at least five meters is required. There are about 40 sites around the world with this magnitude of tidal range. The higher the tides, the more electricity can be generated from a given site and the lower the cost of the electricity produced. Worldwide, existing power plants using tidal energy include a 240-MW plant in France, a 20-MW plant in Nova Scotia, and a 0.5-MW plant in Russia (EPRI 2006).

Tidal Fences

Tidal fences are effectively barrages that completely block a channel. If deployed across the mouth of an estuary, they can be very environmentally destructive. However, in the 1990s, their deployment in channels between small islands or in straights between the mainland and islands has increasingly been considered a viable option for the generation of large amounts of electricity.

The advantage of a tidal fence is that all the electrical equipment (generators and transformers) can be kept high above the water. Also, by decreasing the cross-section of the channel, current velocity through the turbines is significantly increased.

The United Kingdom is currently considering the feasibility of tidal energy across the Bristol Channel. The feasibility study began with the consideration of the Severn tidal barrage. The barrage would work similarly to a dam which generates hydro electric power by holding water back before it is allowed to flow at speed through a pipe at the base of the dam to drive the turbines (BBC 2007). Since then, alternative tidal projects have been proposed, including a tidal fence that would allow shipping to move freely and keep ports at Cardiff and Bristol open (BBC 2008). The results of the feasibility study are expected to be published in 2010; however, preliminary results from the Sustainable Development Commission confirmed the potential of the huge Severn tidal range to generate approximately 5% of United Kingdom's electricity (BIS 2009).

Tidal Turbines

Tidal turbines are the chief competition to the tidal fence. Looking like an underwater wind turbine, they offer a number of advantages over the tidal fence. They are less

disruptive to wildlife, allow small boats to continue to use the area, and have much lower material requirements than tidal fences.

Tidal turbines function well where coastal currents run at 2 to 2.5 meters per second (slower currents tend to be uneconomic while larger ones stress the equipment). Such currents provide an energy density four times greater than air, meaning that a 15-meter-diameter turbine will generate as much energy as a 60-meter-diameter windmill. In addition, tidal currents are both predictable and reliable, a feature which gives them an advantage over both wind and solar systems. The tidal turbine also offers significant environmental advantages over wind and solar systems because the majority of the assembly is hidden below the waterline and all cabling is along the sea bed.

There are many sites around the world where tidal turbines could be effectively installed. An ideal site is close to shore (within 1 kilometer) in water depths of about 20 to 30 meters. In April 2007, the first major tidal-power project was installed in the United States off New York City's Roosevelt Island (Fairley 2007). Turbines such as those used in New York City use in-flow turbines, thereby lessening the environmental impacts. A study conducted in 2006, *System Level Design, Performance, Cost and Economic Assessment – San Francisco Tidal In-Stream Power Plant*, concluded that a tidal plant located under the Golden Gate Bridge could create approximately 35 MW of power with no significant impacts to the environment and recommended further research and development into both ocean energy technology and a pilot project in San Francisco (EPRI 2006a).

Environmental Assessment

Tidal technologies, especially tidal fences, have the potential to cause significant biological impacts, especially to marine species and habitats. Fish could be caught in the unit's fins by the sudden drop in pressure near the unit. The passageways, more than 15 feet high and probably sitting on a bay floor, could squeeze out marine life that lives there or alter the tidal flow, sediment build-up, and the ecosystem in general. Even the in-flow turbines can have adverse impacts on marine systems. The in-flow turbines off New York City must undergo environmental monitoring for 18 months to ensure the turbines will not create adverse impacts to the river's marine wildlife. Also, depending on the location of the tidal technology, commercial shipping could be disrupted during construction.

The reduced tidal range (difference between high and low water levels) resulting from tidal energy generation can destroy inter-tidal habitat used by wading birds. Sediment trapped behind the barrage could also reduce the volume of the estuary over time.

Rationale for Elimination

Tidal fence technology is a commercially available technology in Europe, although limited to areas that are adjacent to a body of water with a large difference between high and low tides, and it can result in significant environmental impacts to ocean ecosystems. In-flow tidal turbines are a relatively new technology and are not considered an alternative to the RSEP project because they are an unproven technology at the scale that would be required to replace the proposed project. Additionally, the potential for adverse impacts of tidal turbines is still under review, as demonstrated by the pilot project under environmental monitoring in New York.

Therefore, this technology is not analyzed in detail in this SA/EIS as an alternative to the RSEP project.

Wave Energy

Wave power technologies have been used for nearly 30 years. Setbacks and a general lack of confidence have contributed to slow progress towards proven devices that would have a good probability of becoming commercial sources of electrical power using wave energy.

The highest energy waves are concentrated off the western coasts of the United States in the 40° to 60° latitude range north and south. The power in the wave fronts varies in these areas between 30 and 70 kilowatts per meter (kW/m) with peaks to 100 kW/m in the Atlantic southwest of Ireland, the Southern Ocean and off Cape Horn. Many wave energy devices are still in the research and development stage and would require large amounts of capital to get started. Additional costs from permitting and environmental assessments also make wave energy problematic (WEC 2007). Nonetheless, wave energy is likely to increase in use within the next 5 to 10 years.

The total power of waves breaking on the world's coastlines is estimated at two to three million MW. In favorable locations, wave energy density can average 65 MW per mile of coastline. Three approaches to capturing wave energy are:

- **Floats or Pitching Devices.** These devices generate electricity from the bobbing or pitching action of a floating object. The object can be mounted to a floating raft or to a device fixed on the ocean floor.
- **Oscillating Water Columns.** These devices generate electricity from the wave-driven rise and fall of water in a cylindrical shaft. The rising and falling water column drives air into and out of the top of the shaft, powering an air-driven turbine.
- **Wave Surge or Focusing Devices.** These shoreline devices, also called tapered channel or tapchan systems, rely on a shore-mounted structure to channel and concentrate the waves, driving them into an elevated reservoir. Water flow out of this reservoir is used to generate electricity, using standard hydropower technologies.

In December 2007, PG&E signed a power purchase agreement with Finavera Renewables, which had planned to operate a wave farm approximately 2.5 miles off the coast of Eureka, California. The agreement was for 2 MW of power beginning in 2012. On October 16, 2008, the California Public Utilities Commission rejected PG&E's request for approval of a renewable resource procurement contract with Finavera Renewables because, among other reasons, the CPUC concluded the project had not been shown to be viable. As stated in that decision, there is significant uncertainty surrounding wave technology and the wave energy industry is at a beginning stage (CPUC 2008). The CPUC did authorize up to \$4.8 million for PG&E to undertake its WaveConnect project in Decision D.09-01-036. WaveConnect is designed to document the feasibility of a facility that converts wave energy into electricity by using wave energy conversion (WEC) devices in the open ocean adjacent to PG&E's service territory.

In January 2010, the California State Lands Commission and the Federal Energy Regulatory Commission issued a Request for Statements of Interest to prepare an environmental document for the PG&E WaveConnect project discussed above. PG&E has selected a wave energy project siting area that is between 2.5 and 3.0 nautical miles (nm) from the shore in Humboldt County. WaveConnect consists of: (1) wave energy converters (WECs) including multi-point catenary moorings and anchors; (2) marker buoys, navigation lights, and environmental monitoring instruments; (3) subsea electrical cables extending on-shore to (4) land-based power conditioning equipment; (5) an above-ground transmission line and interconnection to the electrical grid; (6) data acquisition and telemetry equipment; and (7) security and safety equipment.

Environmental Assessment

The environmental impacts of wave power have yet to be fully analyzed. A recent study published by the U.S. Department of Commerce and National Oceanic and Atmospheric Administration listed a number of potentially significant environmental impacts created by wave power (Boehlert 2008):

- Significant reduction to waves with possible effects to beaches (e.g. changes to sediment transport processes).
- The use of buoys may have positive effects on forage fish species, which in turn could attract larger predators. Structures need to be designed to reduce the potential entanglement of larger predators, especially marine turtle species.
- Modifications to water circulation and currents may result in changes to larval distribution and sediment transport.
- Wave energy development may affect community structures for fish and fisheries.
- Lighting and above-water structures may result in marine bird attraction and collisions and may alter food webs and beach processes.
- A diversity of concerns would arise regarding marine mammals including entanglement issues.
- Energy-absorbing structures may affect numerous receptors and should avoid sensitive habitats.
- Potential hazards from chemicals used in the process must be addressed both for spills and for a continuous release such as in fouling paints.
- New hard structures and lighting may break loose and increase debris accumulation.
- Impacts on fish and marine mammals caused by noise coming from the buoys should be understood and mitigated.
- Electromagnetic effects may affect feeding or orientation and should be better understood.
- Impact thresholds need to be established. As projects scale up in location or implementation, new risks may become evident.

Rationale for Elimination

Wave energy is new and may not be technologically feasible; as stated above, PG&E is proposing to sponsor a project to test the feasibility of harnessing wave energy. Additionally, wave power must be located where waves are consistently strong; even then, the production of power depends on the size of waves, which result in large differences in the amount of energy produced. Wave technology is not considered an alternative to the RSEP project because it is an unproven technology at the scale that would be required to replace the proposed project and because it may also result in substantial adverse environmental impacts. Therefore, this technology is not analyzed in detail in this SA/DEIS as an alternative to the RSEP project.

ALTERNATIVE METHODS OF GENERATING OR CONSERVING ELECTRICITY

Nonrenewable generation technologies that require use of natural gas, coal, or nuclear energy would not achieve the key project objective for the proposed RSEP project to provide clean, renewable, solar-powered electricity and to assist meeting obligations under California's RPS Program.

While these generation technologies would not achieve this key objective, they are described briefly in this section to present this information to the public and decision makers. Conservation and demand-side management are also briefly addressed in this section.

The following topics were considered in this analysis:

- natural gas
- coal
- nuclear energy
- conservation and demand-side management

Of the three nonrenewable generation alternatives (natural gas, coal, and nuclear), only natural gas-fired power plants would be viable alternatives within California. However, gas-fired plants would fail to meet a major project objective to construct and operate a renewable power generating facility in California capable of selling competitively priced renewable energy consistent with the needs of California utilities and would therefore not achieve the purpose and need of the project. Because these alternatives would not support renewable power generation within California, and could have significant environmental impacts of their own, they were eliminated from further consideration.

Natural Gas Generation

Natural gas power generation accounts for approximately 22% of all the energy used in the United States and comprises 40% of the power generated in California (CEC 2007). Natural gas power plants typically consist of combustion turbine generators, heat recovery steam generators, a steam turbine generator, wet or dry cooling towers, and associated support equipment. An interconnection with a natural gas pipeline, a water supply, and electric transmission are also required. A gas-fired power plant generating 150 MW would generally require about six acres of land.

Environmental Assessment

Natural gas power plants may result in numerous adverse environmental impacts such as the following.

- Overall air quality impacts would increase because natural gas-fired power plants can contribute to local violations of the PM10 and ozone air quality standards, and operational emissions could result in toxic air contaminants that could adversely affect sensitive receptors. Net increases in greenhouse gas emissions due to natural gas-firing in the conventional power plants would also be substantial.
- Environmental justice may be a concern. Gas-fired power plants tend to be located in developed urban areas that are zoned for heavy industry. In some instances, low-income and minority populations are also located in such areas.
- To avoid adverse land use impacts, natural gas-fired power plants must be consistent with local jurisdictions' zoning.
- Several hazardous materials, including regulated substances (aqueous ammonia, hydrogen, and sulfuric acid), would be stored at a natural gas power plant during operation. Aqueous ammonia would be stored in amounts above the threshold quantity during the final stages of construction, initial start-up, and operations phases. Transport of hazardous materials during power plant operation includes delivery of aqueous ammonia and removal of wastes. During operation, the aqueous ammonia transporter would be required to obtain a Hazardous Material Transportation License in accordance with California Vehicle Code Section 32105 and would be required to follow appropriate safety procedures and routes.
- Cultural impacts can be severe depending on the power plant siting; however, because natural gas power plants require substantially fewer acres per MW of power generated, impacts to cultural resources would be expected to be fewer than with solar facilities.
- Power plant siting may result in the permanent conversion of designated farmland to non-agricultural uses. However, because natural gas power plants require substantially fewer acres per MW of power generated, impacts to designated farmlands would be expected to be less than with solar facilities.
- Visual impacts may occur with natural gas power plants because they introduce large structures with industrial character. The most prominent structures are frequently the cooling towers, which may reach 100 feet tall, and the power plant stacks, which may reach over 100 feet tall. Visible plumes from the cooling tower would also potentially occur.

Rationale for Elimination

Although natural gas generation is clearly a viable technology, it is not a renewable technology, so it would not attain the objective of generating renewable power meeting California's renewable energy needs. The air quality impacts of gas-fired plants include greenhouse gases and are one major reason that California's RPS was developed. Therefore, this alternative is not considered in detail as an alternative to the RSEP project and is not analyzed further in this SA/EIS.

Coal Generation

Coal-fired electric generating plants are the cornerstone of America's electric power generation system. Traditional coal-fired plants generate large amounts of greenhouse gases. New clean coal technology includes a variety of energy processes that reduce air emissions and other pollutants from coal-burning power plants. The Clean Coal Power Initiative is providing government co-financing for new coal technologies that help utilities meet the Clear Skies Initiative to cut sulfur, nitrogen, and mercury pollutants by nearly 70% by 2018. The Clean Coal Power Initiative is now focusing on developing projects that use carbon sequestration technologies and/or beneficial reuse of carbon dioxide (DOE 2008). However, these technologies are not yet in use.

In 2006, approximately 15.7% of the energy used in California came from coal fired sources; 38% of this was generated in state, and 62% was imported (CEC 2007). The in-state coal-fired generation includes electricity generated from out-of-state, coal-fired power plants owned by and reported by California utilities (CEC 2007). In 2006, California enacted Senate Bill 1368 (Perata, Chapter 598, Statutes of 2006), which prohibits utilities from making long-term commitments for electricity generated from plants that create more carbon dioxide (CO₂) than clean-burning natural gas plants (CEC 2007).

Environmental Assessment

Coal-fired power plants may also result in numerous adverse environmental impacts such as the following.

- Overall, air quality impacts would increase because coal-fired power plants contribute carbon dioxide, sulfur dioxide, nitrogen oxides, mercury, and fly ash (USEPA 2008a). Mining, cleaning, and transporting coal to the power plants generates additional emissions. Average per megawatt hour emissions of a coal-fired power plant are 2,249 pounds of carbon dioxide, 13 pounds of sulfur dioxide and six pounds of nitrogen oxides (USEPA 2008a). Net increases in greenhouse gas emissions due to coal-firing in conventional power plants would be significant.
- Health risks associated with power plants have also been documented, including problems associated with exposure to fine particle pollution or soot, an increase in asthma, and an increase in non-fatal heart attacks.
- Large quantities of water are generally required to produce steam and for cooling. When coal-fired power plants use water from a lake or river, fish or other aquatic life can be adversely impacted (USEPA 2008).

Rationale for Elimination

Although coal generation is a viable technology, it is not a renewable technology, so it would not attain the objective of generating renewable power meeting California's renewable energy needs. Existing technology for coal-fired plants results in high greenhouse gas emissions. Therefore, coal generation was eliminated from detailed analysis and is not considered further in this SA/DEIS.

Nuclear Energy

Due to environmental and safety concerns, California law currently prohibits the construction of new nuclear power plants in the state until the California Energy Commission finds that the federal government has approved and there exists a demonstrated technology for the permanent disposal of spent fuel from these facilities (CEC 2006). In June 1976, California enacted legislation directing the Energy Commission to perform an independent investigation of the nuclear fuel cycle. This investigation was to assess whether the technology to reprocess nuclear fuel rods or to permanently dispose of high-level nuclear waste had been demonstrated and approved and was operational (Public Resources Code 25524.1 (a) (1), 25524.1 (b), and 25524.2 (a)). After extensive public hearings, the Energy Commission determined that it could not make the requisite affirmative findings concerning either reprocessing of nuclear fuel or disposal of high-level waste as documented in the *Status of Nuclear Fuel Reprocessing, Spent Fuel Storage and High-level Waste Disposal*, Energy Commission publication P102-78-001 (January 1978.) As a result, the development of new nuclear energy facilities in California was prohibited by law.

It has been more than 25 years since the last comprehensive Energy Commission assessment of nuclear power issues. The *Nuclear Power in California: 2007 Status Report* (October 2007) provides a detailed description of the current nuclear waste issues and their implications for California. This was prepared as part of the development of the Energy Commission's *2007 Integrated Energy Policy Report* (CEC 2007).

Rationale for Elimination

The permitting of new nuclear facilities in California is currently illegal, so this technology is infeasible and is not considered further in this SA/EIS.

Conservation and Demand-Side Management

Conservation and demand-side management consist of a variety of approaches to reduction of electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. In 2005 the Energy Commission and CPUC's Energy Action Plan II declared cost effective energy efficiency as the resource of first choice for meeting California's energy needs. The Energy Commission noted that energy efficiency has helped flatten the state's per capita electricity use and saved consumers more than \$56 billion since 1978 (CPUC 2008). The investor-owned utilities' 2006-2008 efficiency portfolio marks the single-largest energy efficiency campaign in U.S. history, with a \$2 billion investment by California's energy ratepayers (CPUC 2008). However, with population growth, increasing demand for energy, and the need to reduce greenhouse gases, there is a greater need for energy efficiency.

The CPUC, with support from the Governor's Office, the Energy Commission, and the California Air Resources Board, among others, adopted the *California Long-Term Energy Efficiency Strategy Plan for 2009 to 2020* (CPUC 2008). The plan is a framework for all sectors in California including industry, agriculture, large and small businesses, and households. Major goals of the plan include:

- All new residential construction will be zero net energy by 2020;
- All new commercial construction will be zero net energy by 2030;
- Heating, ventilation, and air conditioning industries will be re-shaped to deliver maximum performance systems;
- Eligible low-income customers will be able to participate in the Low Income Energy Efficiency program and will be provided with cost-effective energy efficiency measures in their residences by 2020.

Rationale for Elimination

Conservation and demand-side management are important for California's energy future and cost effective energy efficiency is considered as the resource of first choice for meeting California's energy needs. However, with population growth and increasing demand for energy, conservation and demand-management alone are not sufficient to address all of California's energy needs. Additionally, it will not provide the renewable energy required to meet the California Renewable Portfolio Standard requirements, so technologies, like solar thermal generation, would be required. Therefore, they are not analyzed in detail in this SA/EIS as an alternative to the RSEP project.

CONCLUSIONS OF ALTERNATIVES ANALYSIS

In this analysis of the RSEP project, 28 alternatives to the proposed RSEP project were developed and evaluated. These include a reduced acreage alternative at the RSEP site, no action/no project alternatives, 12 alternative sites, solar and renewable technologies, generation technologies using different fuels, and conservation/demand-side management.

Of the 28 alternatives, four alternatives were determined to be reasonable by the Bureau of Land Management and Western Area Power Administration and feasible by the Energy Commission and have the potential to result in reduced impacts in comparison with the proposed project: the Reduced Acreage Alternative, the North of Desert Center Alternative, the SR 62/Rice Valley Road Transmission Line Alternative, and the No Project/No Action Alternative. CEC Staff have determined that the No Project/No Action Alternative is not superior to the proposed project because it would likely delay development of renewable resources or shift renewable development to other similar areas, and would lead to increased operation of existing power plants that use non-renewable technologies.

The Reduced Acreage Alternative, North of Desert Center Alternative and SR 62/Rice Valley Road Transmission Line Alternative would reduce impacts in comparison to the proposed project. The Reduced Acreage Alternative would be 8% smaller in size and would provide a relatively minor reduction in impacts to cultural resources on the historic Rice Army Airfield site and to biological resources. The benefits of reducing impacts may be outweighed by efficiency losses.

The North of Desert Center Alternative would eliminate all use of the historic Rice Army Airfield, which is also habitat for desert tortoise. Additionally, this alternative on mostly fallow land would avoid impacts to wildlife movement, alteration of ephemeral streams,

and alteration of sand movement. With mitigation, the operation of a private airfield servicing the nearby Chuckwalla Valley Raceway is unlikely to affect the feasibility of the alternative site. However, construction traffic at the North of Desert Center site could result in significant cumulative impacts to existing roadway level of service.

The SR 62/Rice Valley Road Transmission Line Alternative would eliminate the need for a new access road and therefore would reduce impacts to desert habitat caused by creation of a new 5.4-mile access road across undisturbed BLM land. However, the new line would traverse Camp Rice, a World War II Desert Training Center site. Its proximity to SR 62 and the California Aqueduct could affect the viewshed and increase the potential for bird collisions.

The eleven other alternative sites (Cadiz, McCoy, Agricultural Lands, Blythe Mesa, Broadwell Lake, Gabrych, Garlock Road, Manix, Mesquite Lake, Siberia East, and South of Hwy 98) would not substantially reduce impacts and the feasibility of developing projects at these locations is reduced because of size, shape and ownership limitations.

Alternative solar thermal technologies (Stirling dish, solar parabolic trough and linear Fresnel) are also evaluated. As compared with the proposed solar power tower technology, these technologies would not substantially change the severity of visual impacts, biological resources impacts and cultural resource impacts, though land requirements vary among the technologies. Distributed generation solar photovoltaic facilities (i.e., photovoltaic panels placed on surfaces such as rooftops and parking lots) would likewise require extensive acreage, although they would minimize the need for undisturbed open space. However, increased deployment of distributed solar photovoltaic technology faces challenges in manufacturing capacity, cost, and policy implementation.

Other generation technologies (wind, geothermal, biomass, tidal, wave, natural gas, and nuclear) are also examined as possible alternatives to the project. These technologies would either be infeasible at the scale of the Rice Solar Energy Project, or they would create their own significant adverse impacts in other locations. For example, a natural gas plant would use substantially less land and avoid cultural and biological resources impacts, but it would contribute to greenhouse gas emissions and would not meet the project's renewable generation objective. Construction of new nuclear power plants is currently prohibited under California law.

Conservation and demand side management programs would likely not meet the state's growing electricity needs that would be served by the Rice Solar Energy Project. In addition, these programs would not provide the renewable energy required to meet the California Renewable Portfolio Standard (RPS) requirements.

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ALTERNATIVES FIGURES

Alternatives Figure 1: Location of all Alternative Sites

Alternatives Figure 2: Reduced Acreage Alternative

Alternatives Figure 3: North of Desert Center Alternative

Alternatives Figure 4: SR 62/Rice Valley Transmission Line Alternative Route

Alternatives Figure 5: Cadiz Alternative

Alternatives Figure 6: McCoy Alternative

Alternatives Figure 7: Agricultural Lands Alternative

Alternatives Figure 8: Blythe Mesa Alternative

Alternatives Figure 9: Broadwell Lake Alternative

Alternatives Figure 10: Gabrych Alternative

Alternatives Figure 11: Garlock Alternative

Alternatives Figure 12: Manix Alternative

Alternatives Figure 13: Mesquite Lake Alternative

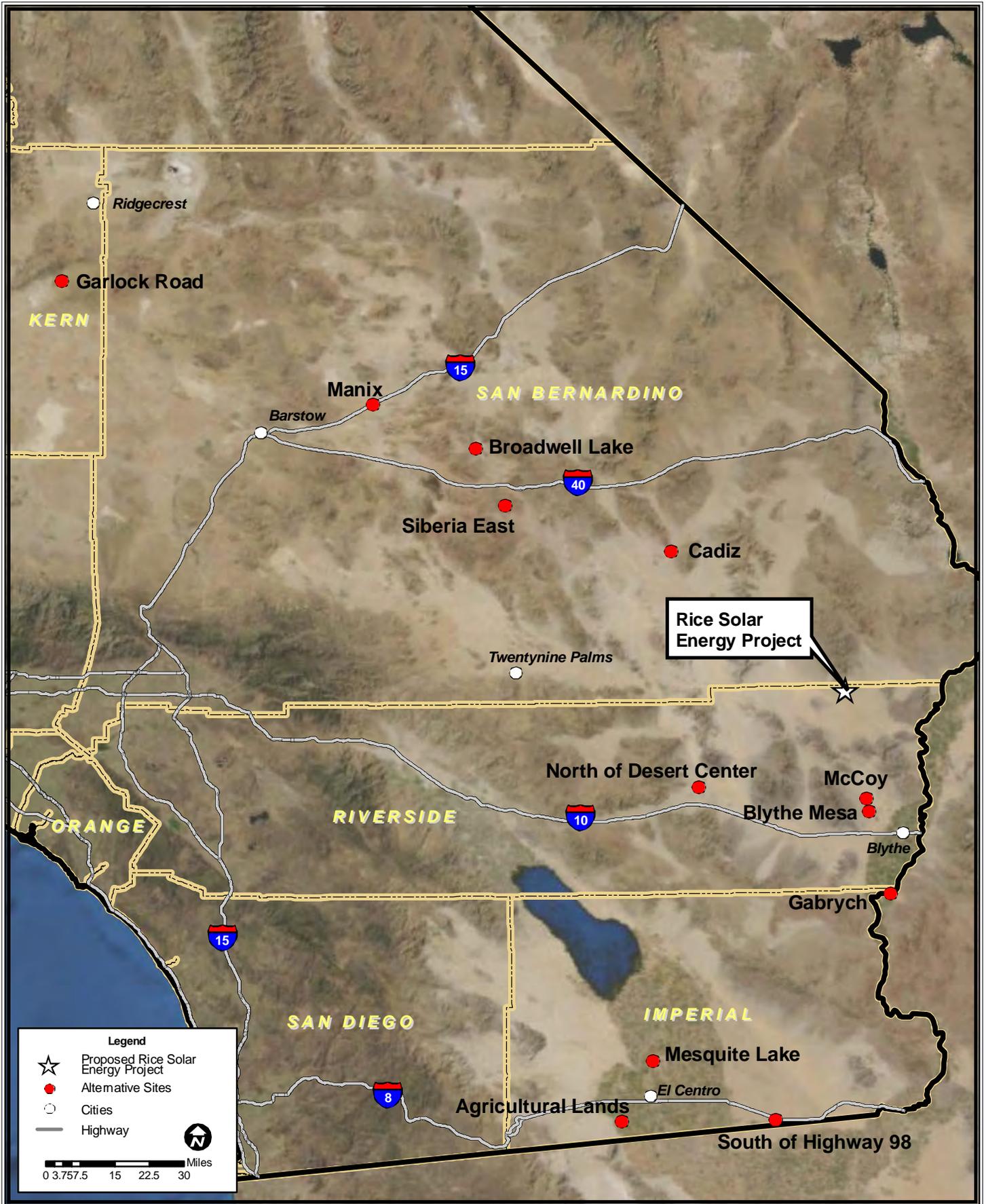
Alternatives Figure 14: Siberia East Alternative

Alternatives Figure 15: South of Highway 98 Alternative

Alternatives Figure 16: Stirling Dish, Parabolic Trough, and Linear Fresnel Technologies

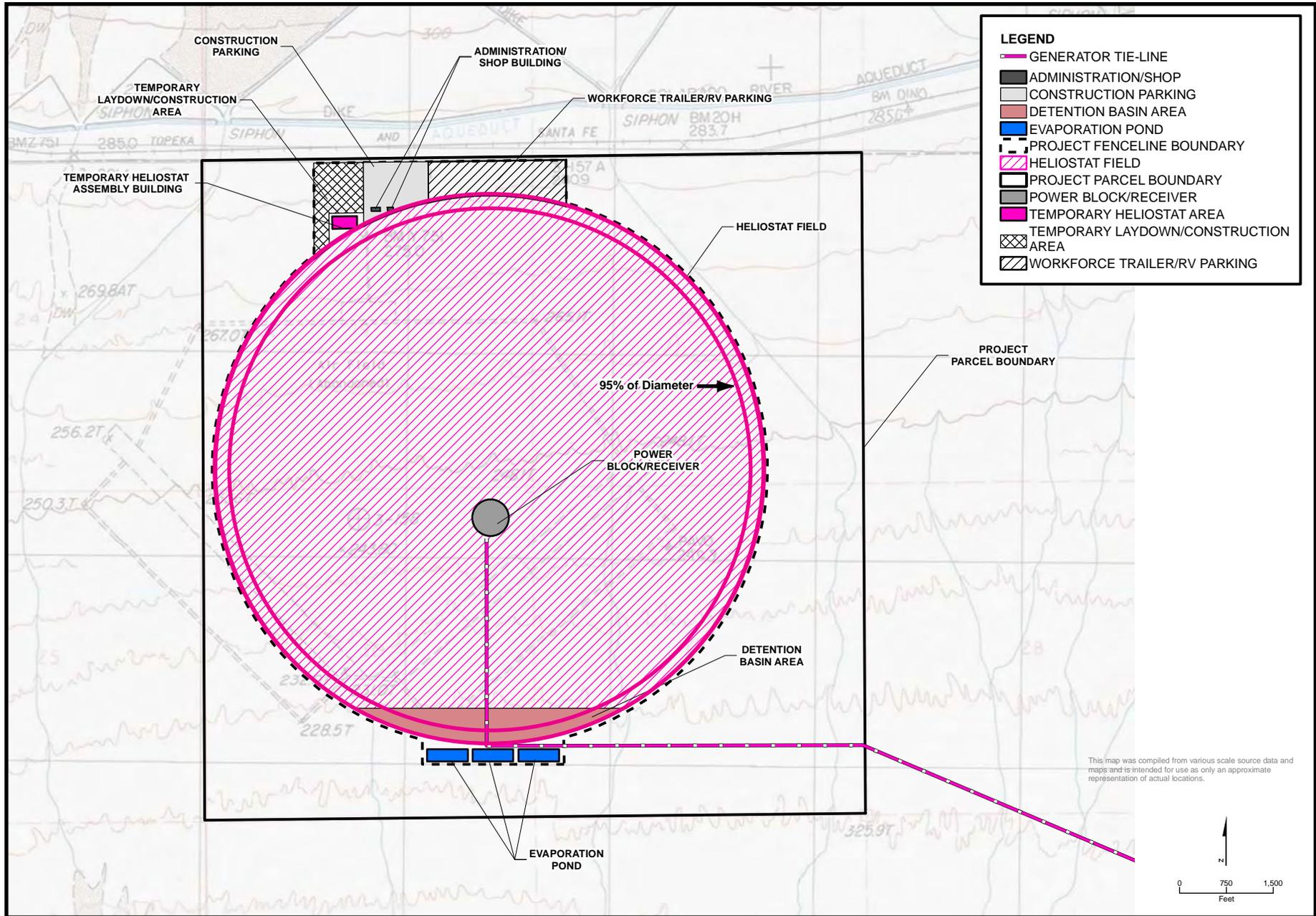
ALTERNATIVES - FIGURE 1

Rice Solar Energy Project - Locations of Alternative Sites



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: California Energy Commission and Solar Reserve, LLC

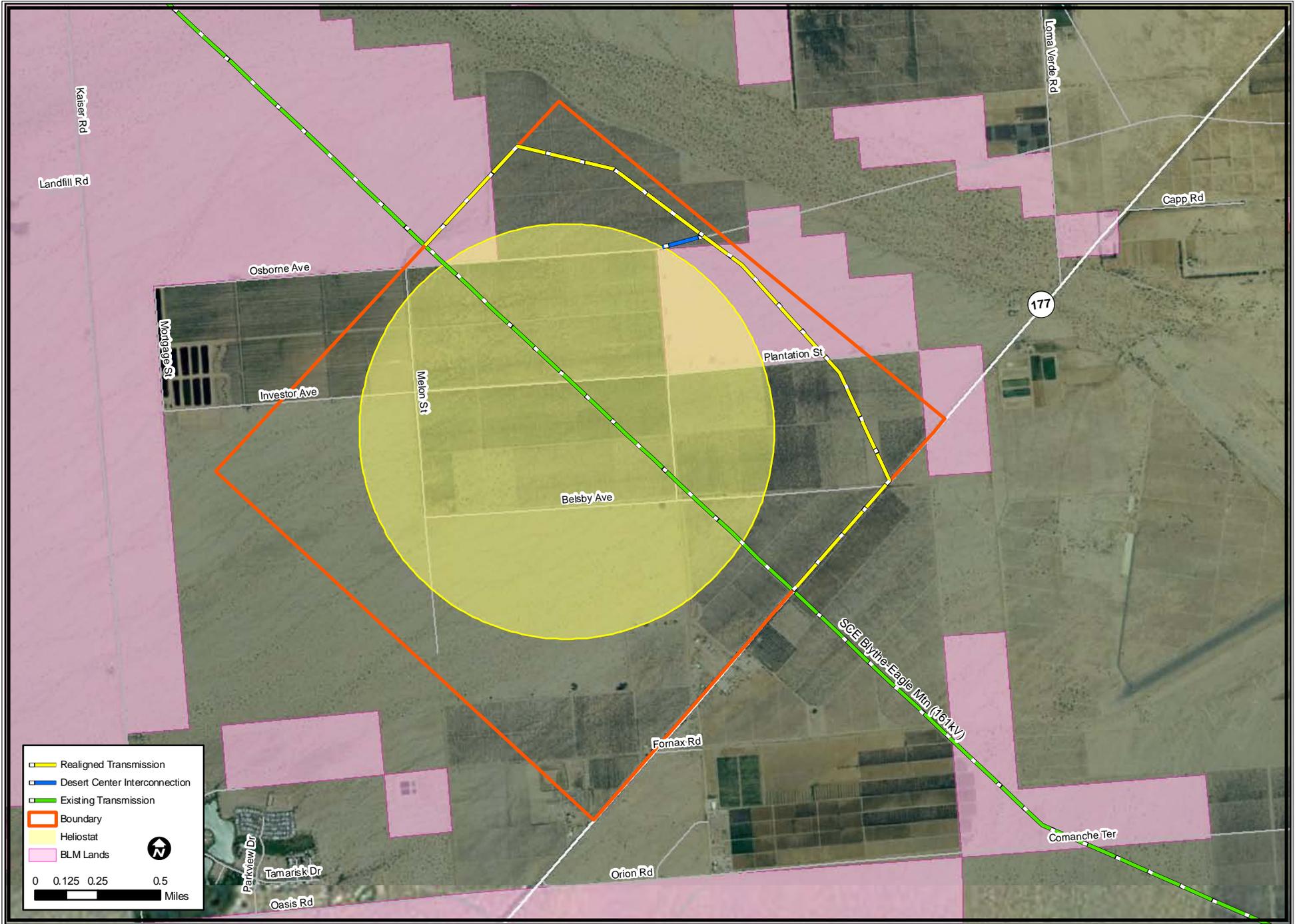
ALTERNATIVES - FIGURE 2
Rice Solar Energy Project - Reduced Acreage Alternative



ALTERNATIVES

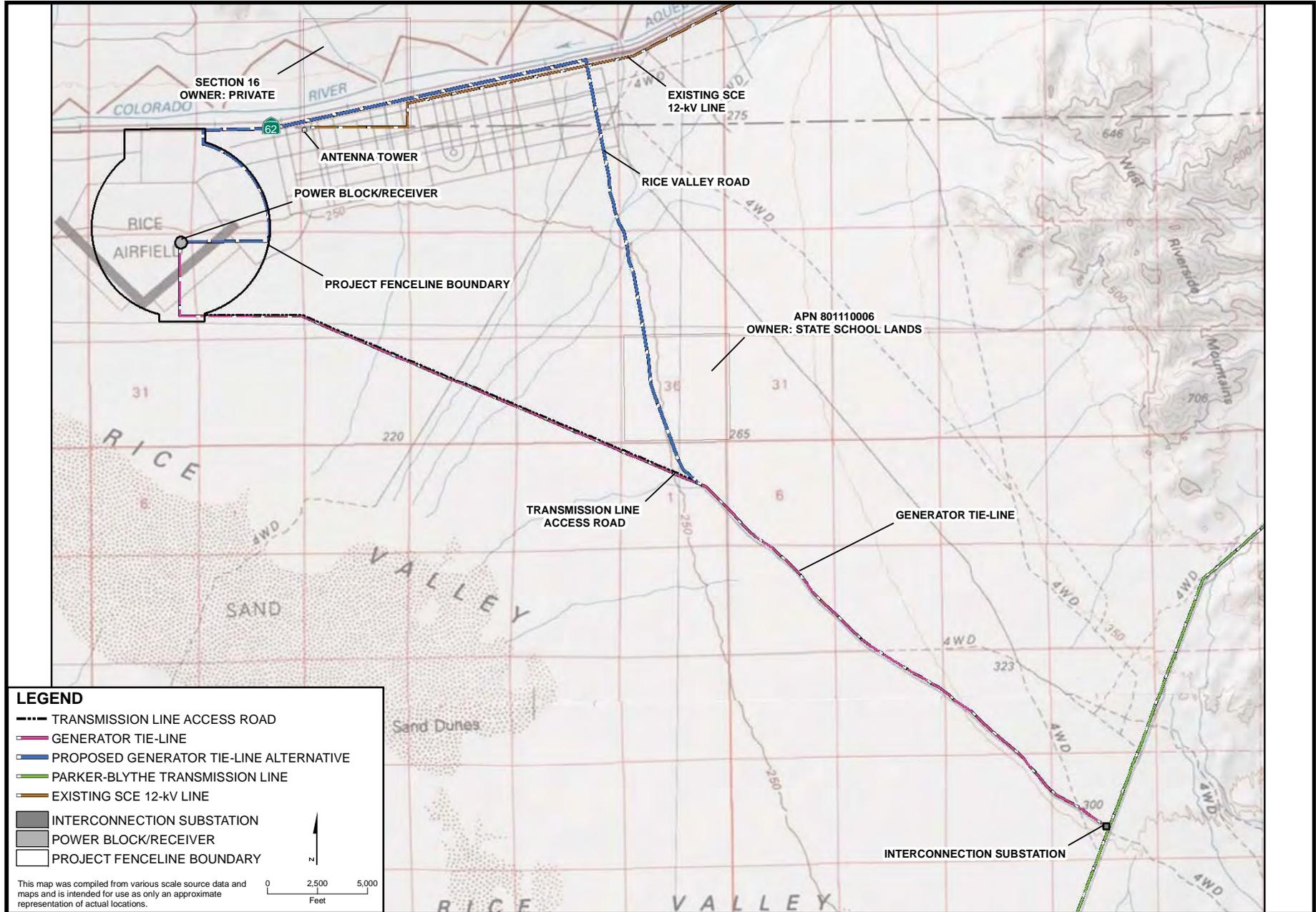
ALTERNATIVES - FIGURE 3

Rice Solar Energy Project - North of Desert Center Alternative



ALTERNATIVES - FIGURE 4

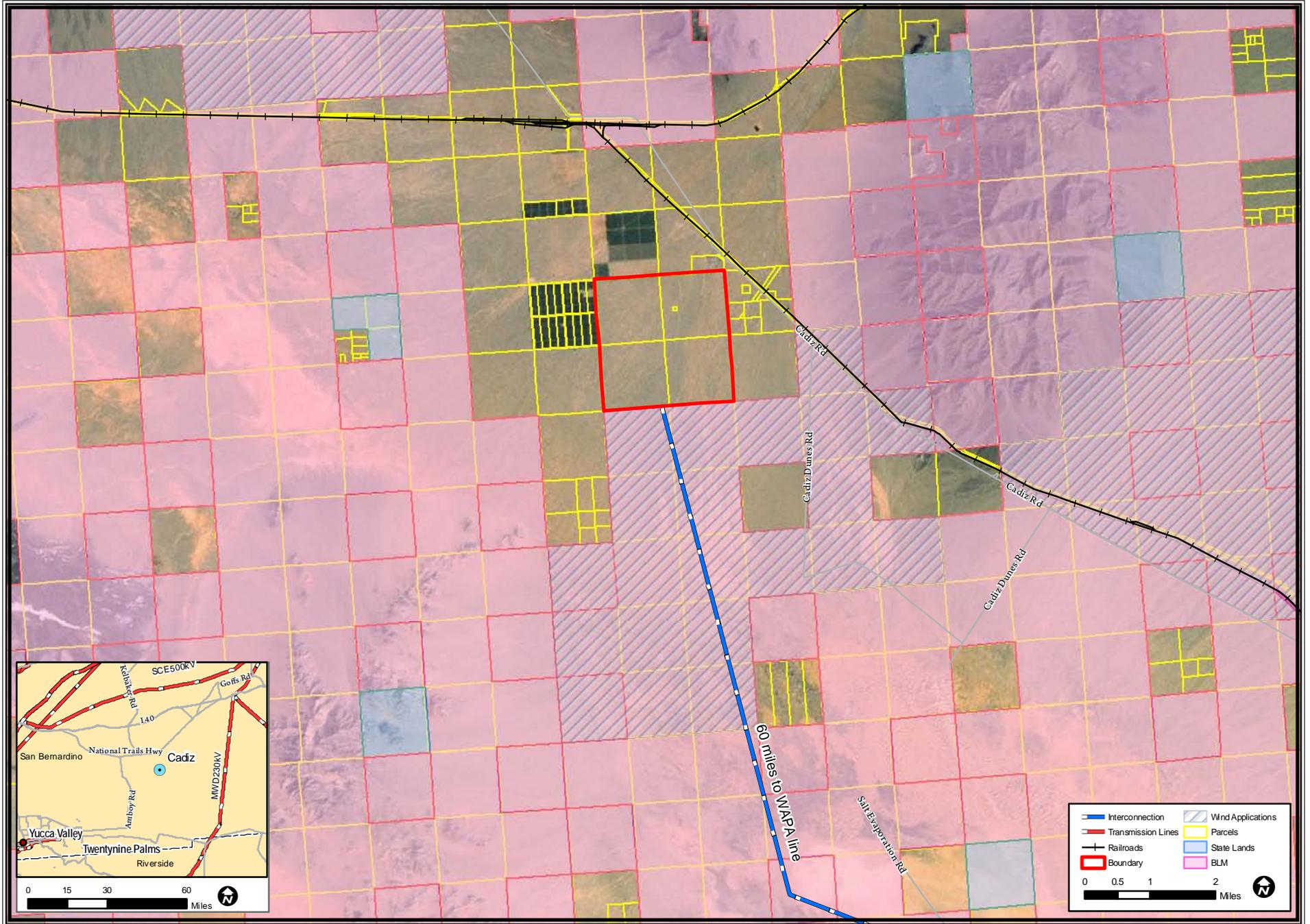
Rice Solar Energy Project - SR 62 / Rice Valley Road Transmission Line Alternative



ALTERNATIVES

ALTERNATIVES - FIGURE 5

Rice Solar Energy Project - Cadiz Alternative Site



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

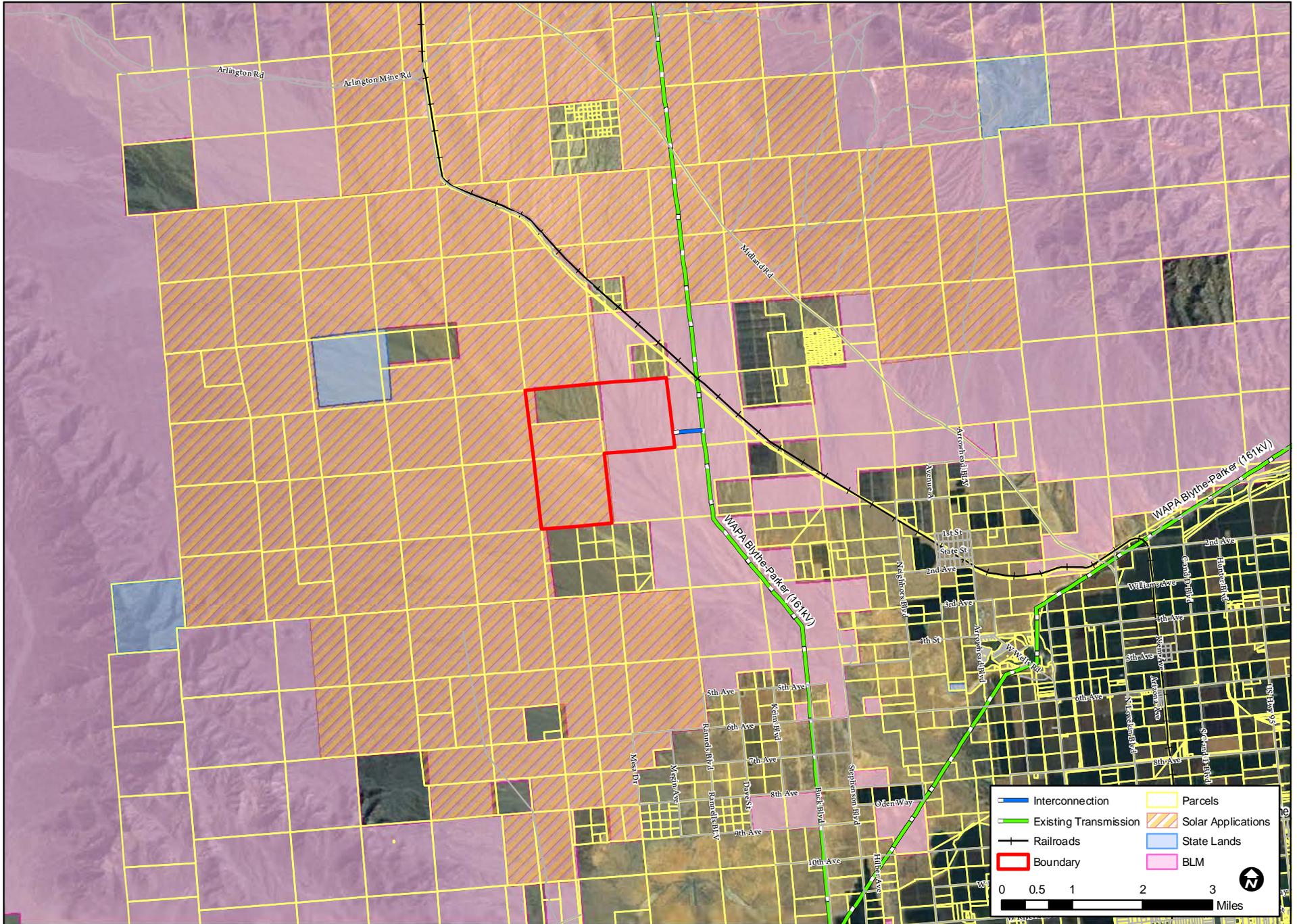
SOURCE: California Energy Commission, BLM, Aspen Environmental

ALTERNATIVES

ALTERNATIVES - FIGURE 6

Rice Solar Energy Project - McCoy Alternative Site

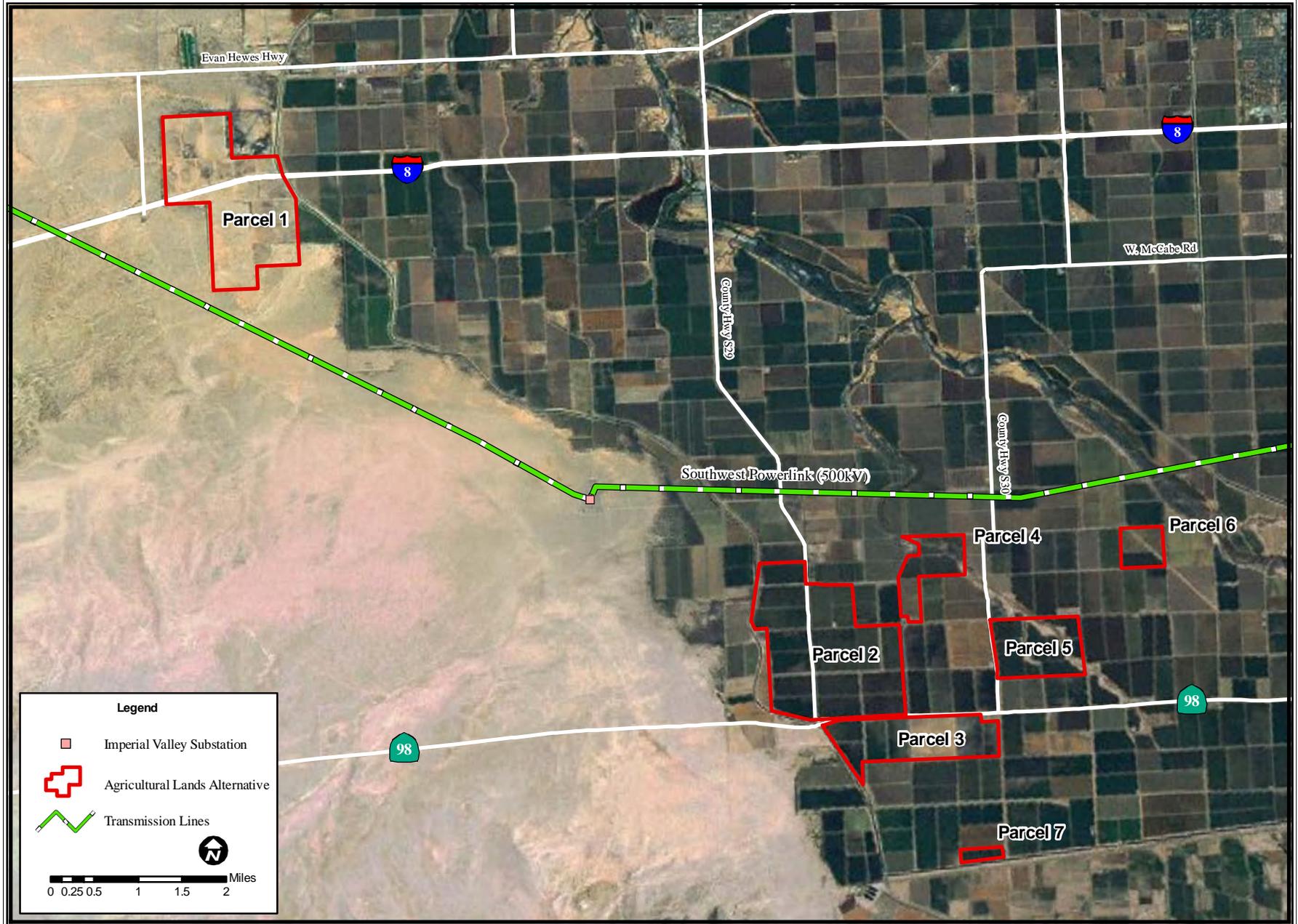
ALTERNATIVES



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

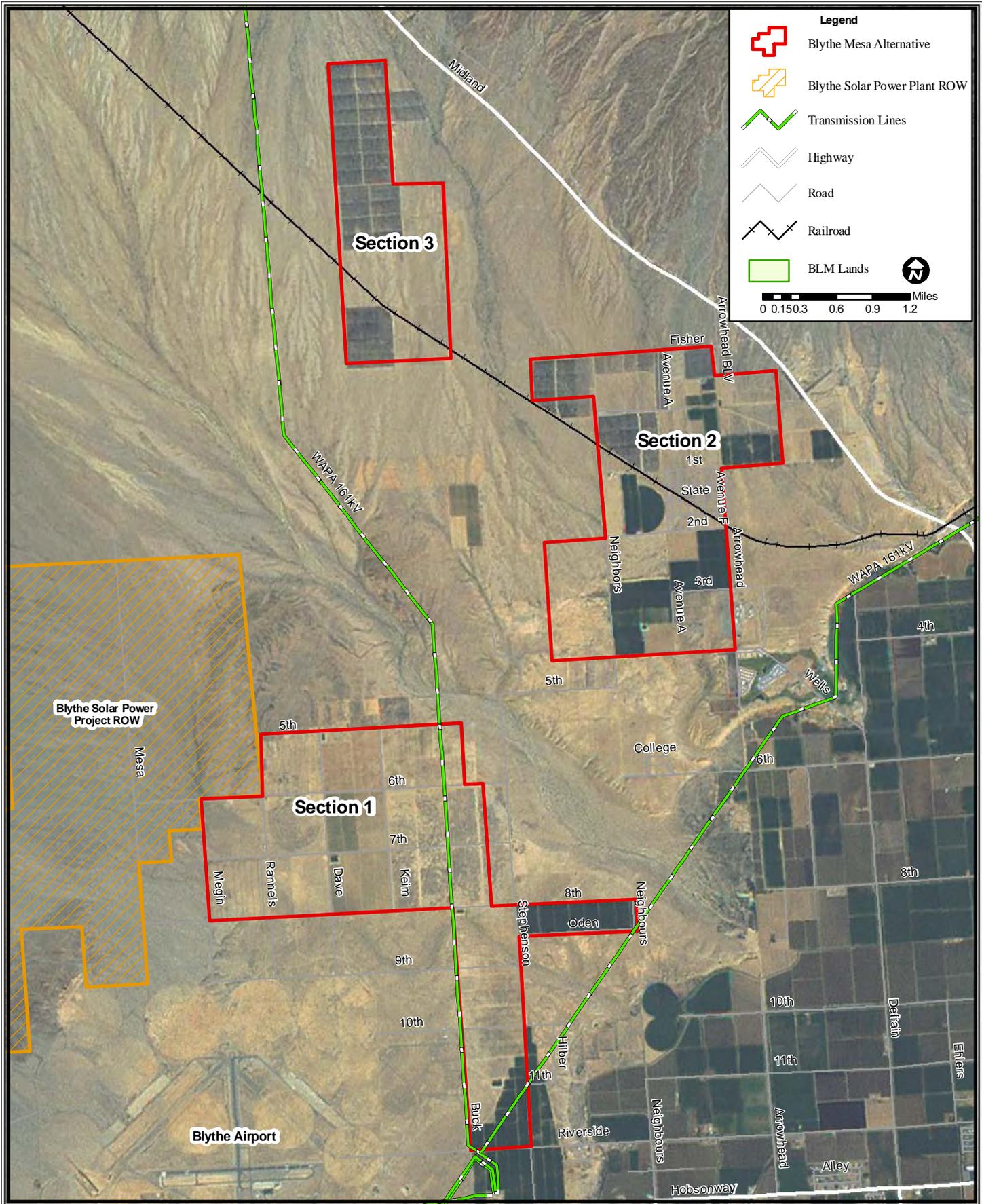
SOURCE: California Energy Commission, BLM, Aspen Environmental

ALTERNATIVES - FIGURE 7
Rice Solar Energy Project - Agricultural Lands Alternative



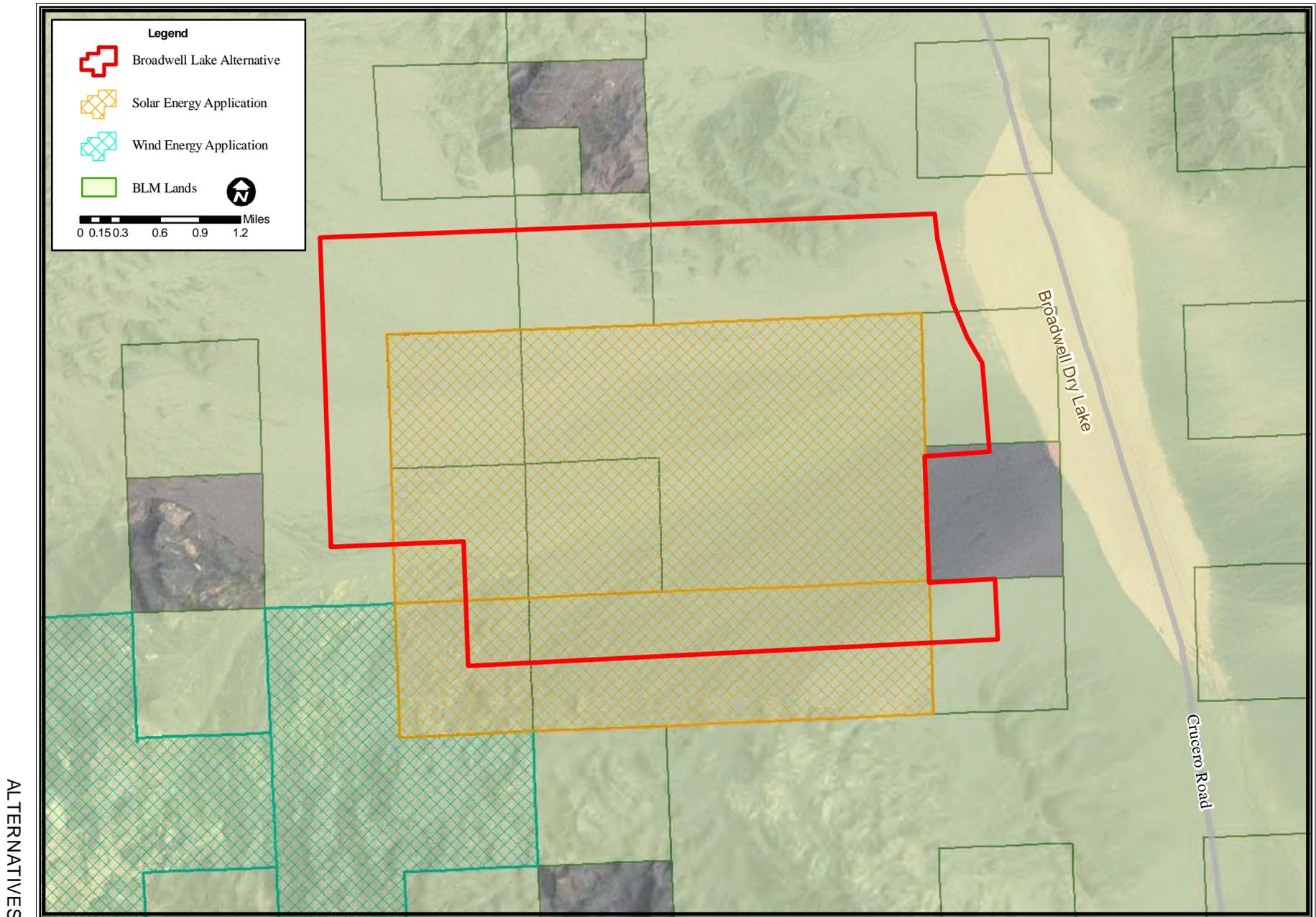
ALTERNATIVES

ALTERNATIVES - FIGURE 8
Rice Solar Energy Project - Blythe Mesa Alternative

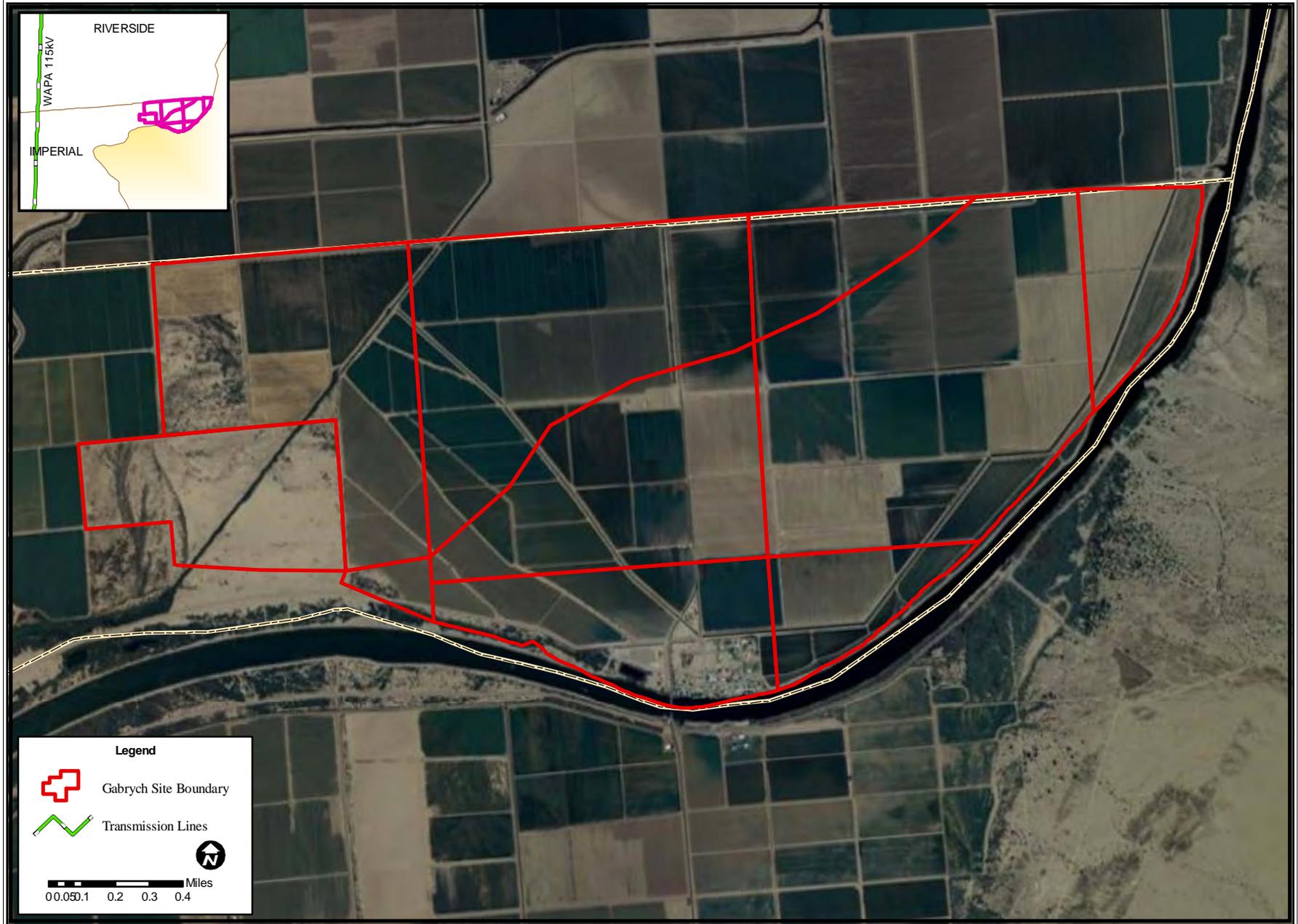


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
 SOURCE: California Energy Commission

ALTERNATIVES - FIGURE 9
Rice Solar Energy Project - Broadwell Lake Alternative



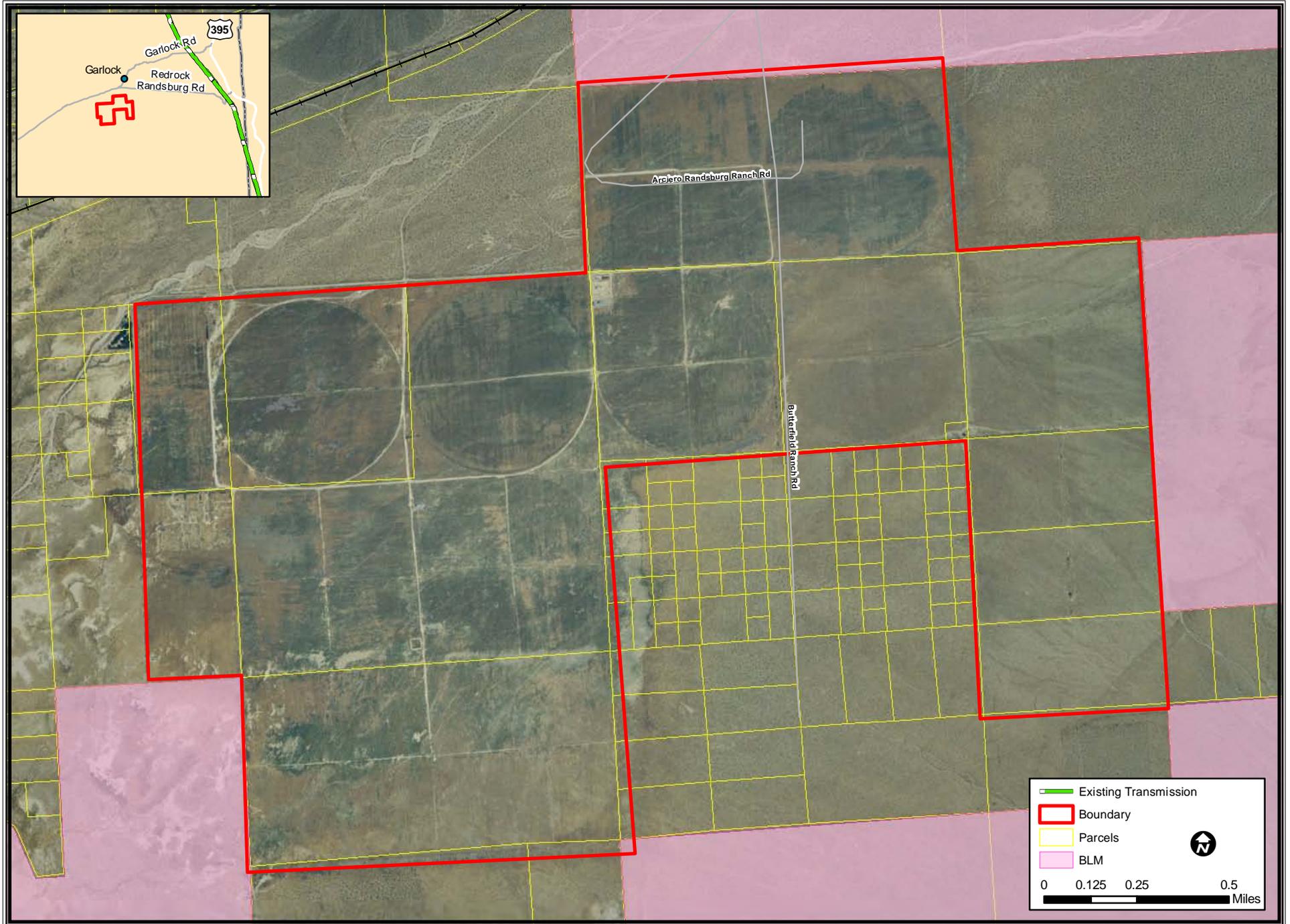
ALTERNATIVES - FIGURE 10
Rice Solar Energy Project - Gabrych Alternative



ALTERNATIVES

ALTERNATIVES - FIGURE 11

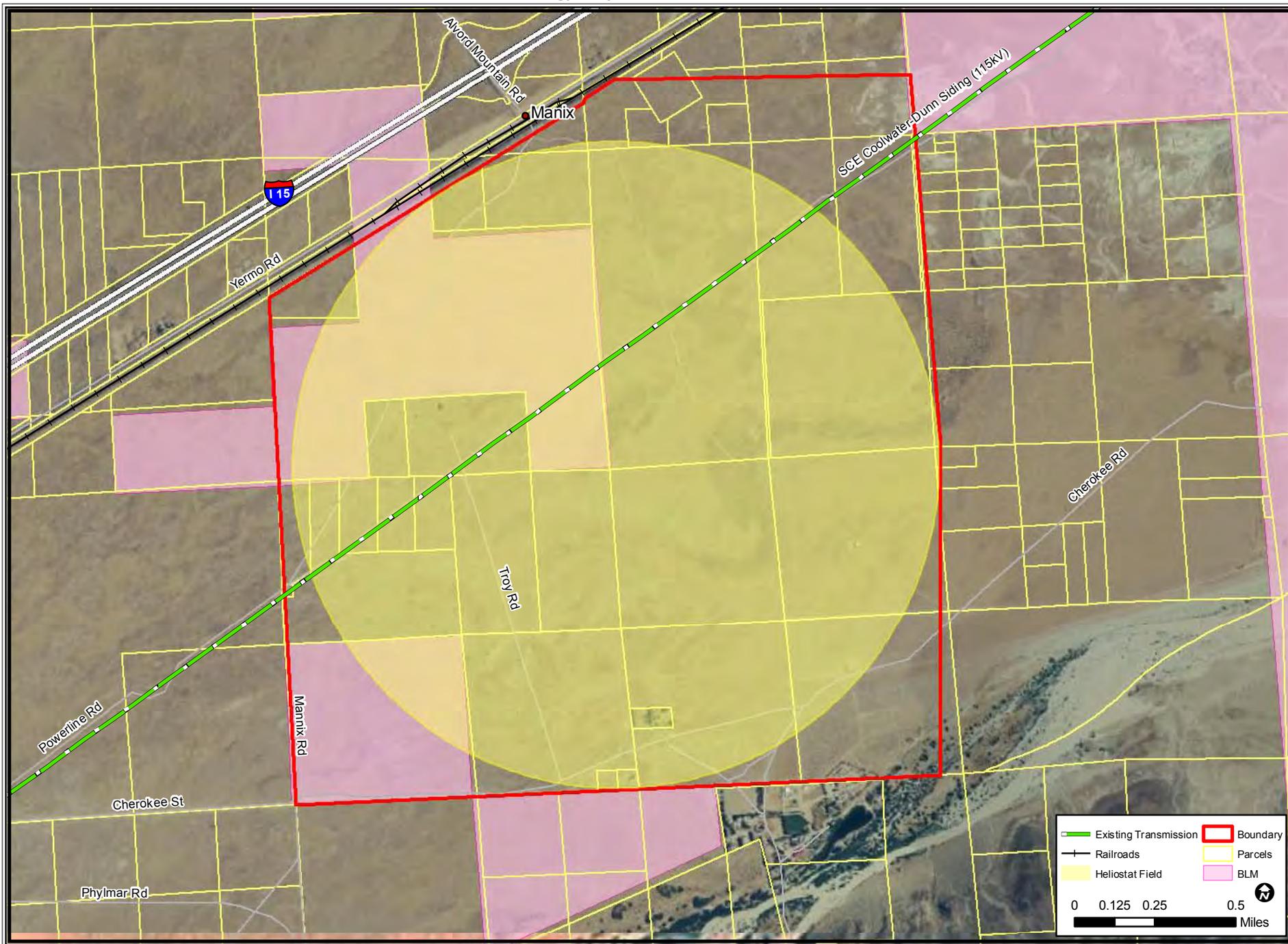
Rice Solar Energy Project - Garlock Road Alternative Site



ALTERNATIVES

ALTERNATIVES - FIGURE 12

Rice Solar Energy Project - Manix Alternative Site

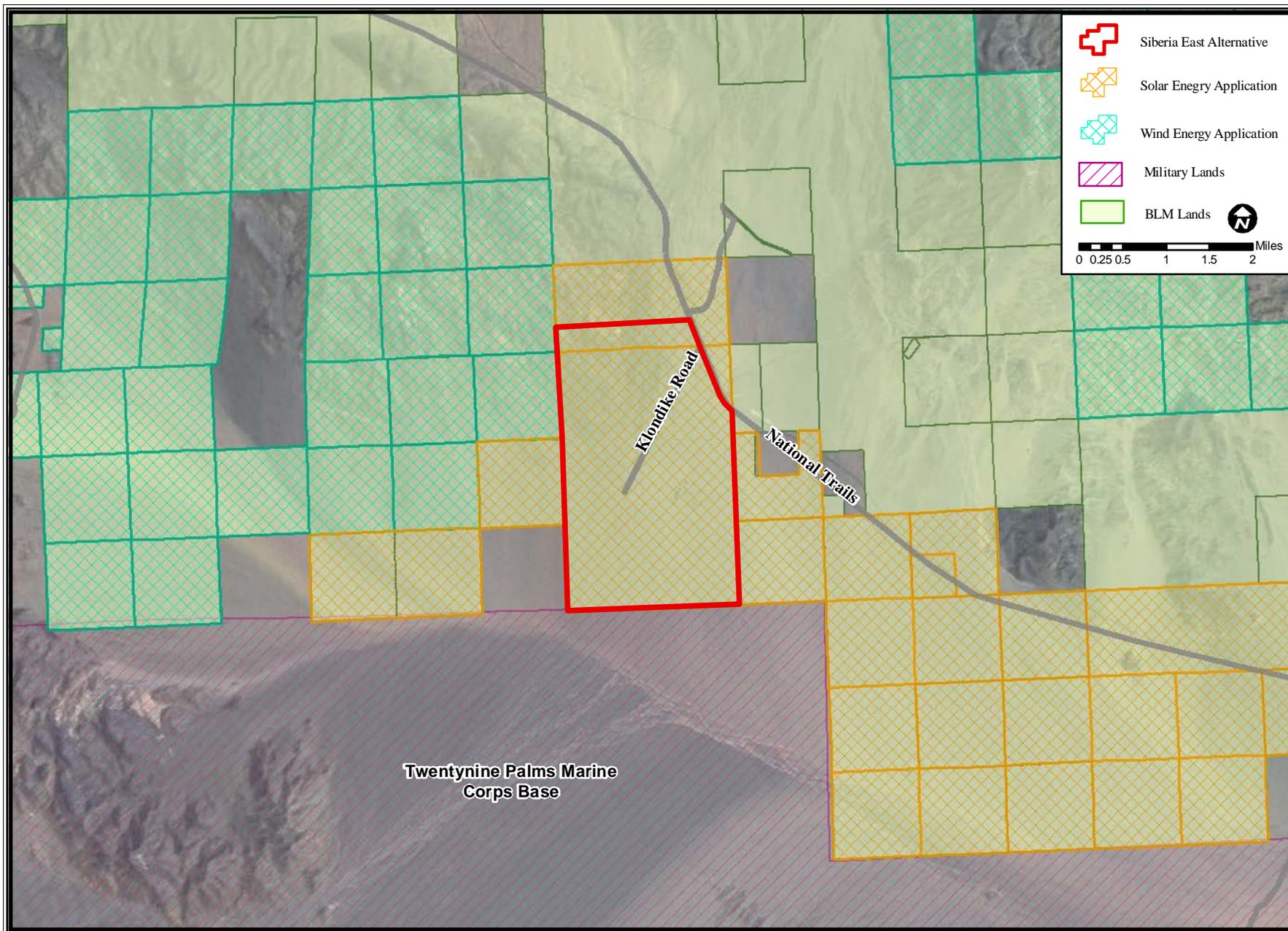


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission, BLM, Aspen Environmental

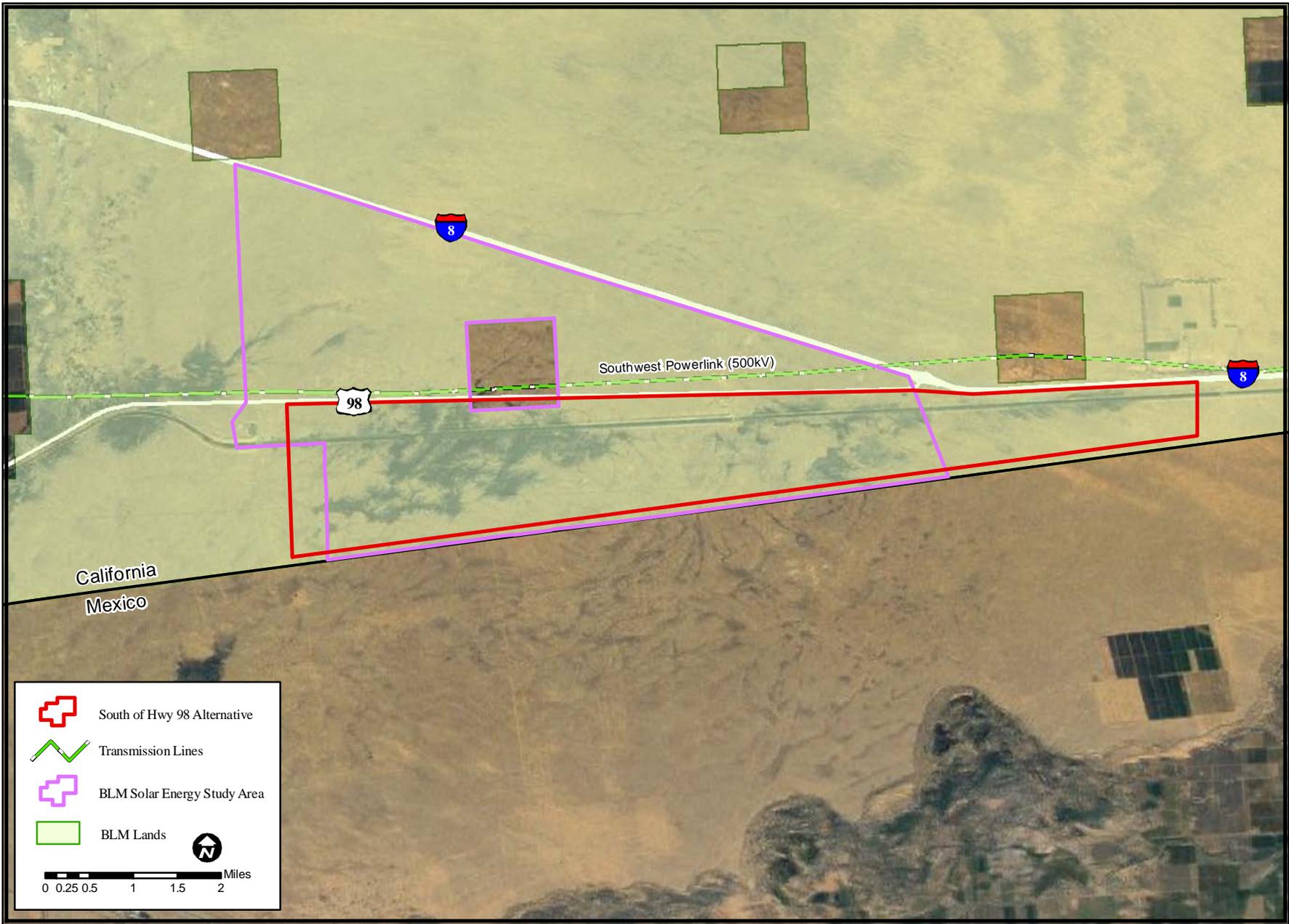
ALTERNATIVES

ALTERNATIVES - FIGURE 14
Rice Solar Energy Project - Siberia East Alternative



ALTERNATIVES

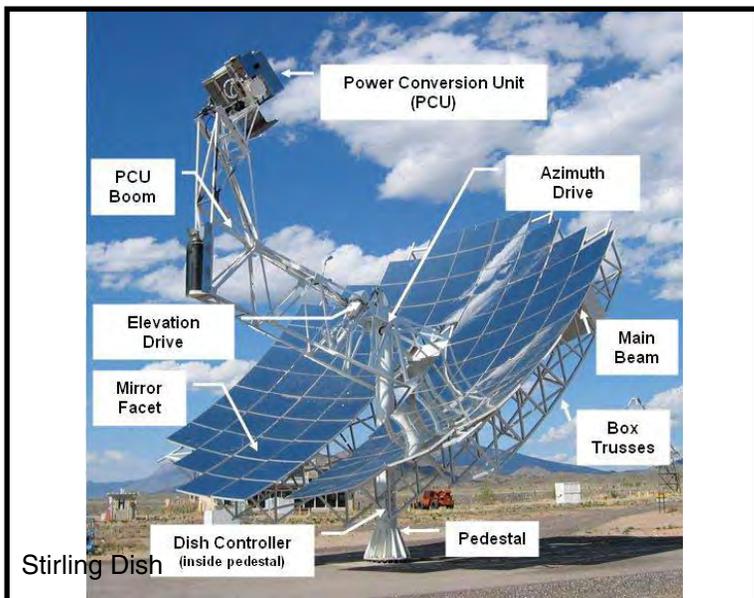
ALTERNATIVES - FIGURE 15
Rice Solar Energy Project - South of Hwy 98 Alternative



ALTERNATIVES

ALTERNATIVES - FIGURE 16

Rice Solar Energy Project - Solar Generation Technologies



Stirling Dish



Parabolic trough technology as used in Daggett, CA



Linear Fresnel Technology

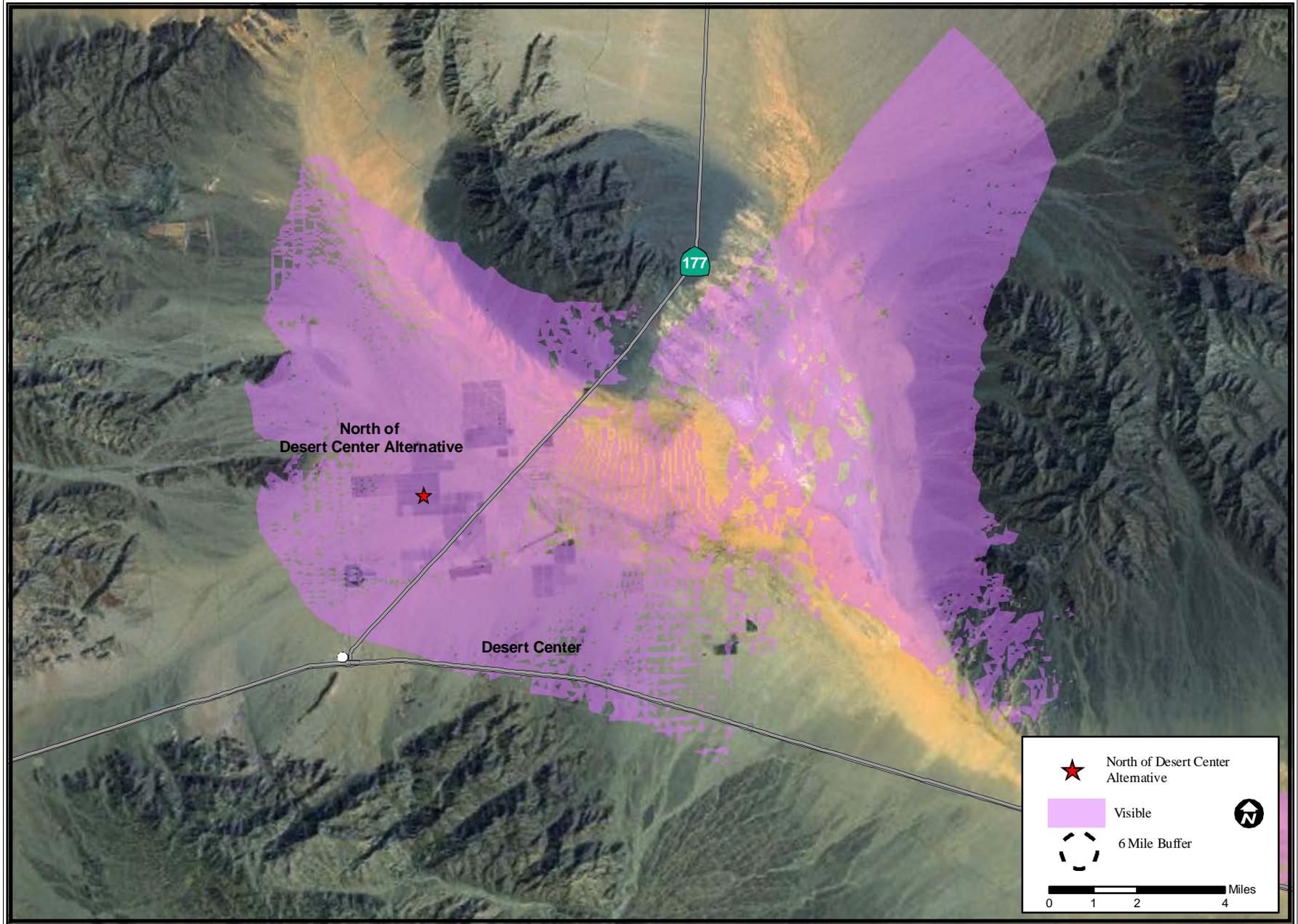


SunPower's PowerTracker Solar in Gwangju City Power Plant, South Korea - 1 MW

ALTERNATIVES

ALTERNATIVES - FIGURE 17
Rice Solar Power Project - North of Desert Center Alternative

ALTERNATIVES



CUMULATIVE SCENARIO

Testimony of Suzanne Phinney, D. Env

CUMULATIVE SCENARIO

INTRODUCTION

Preparation of a cumulative impact analysis is required under both CEQA and NEPA. “Cumulative impact” is the impact on the environment which results from the incremental impact of the Proposed Project when considered with other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such other actions (40 CFR §1508.7).

The Rice Solar Energy Project is proposed to be sited on private lands and is subject to CEQA review. A portion of the proposed generation tie line would traverse land managed by the Bureau of Land Management (BLM). The project would interconnect with a Western Area Power Administration (WAPA) transmission line and would require telecommunication from RSEP to the new substation and then to a Western substation. Under CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (14 Cal Code Regs §15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects is “cumulatively considerable” (14 Cal Code Regs §15130(a)). Such incremental effects are to be “viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (14 Cal Code Regs §15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

CEQA also states that both the severity of impacts and the likelihood of their occurrence are to be reflected in the discussion, “but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and shall focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact” (14 Cal Code Regs §15130(b)).

NEPA states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR §1508.7). Under NEPA, both context and intensity are considered. When considering intensity of an effect, we consider “[w]hether the action is related to other actions with individually minor but cumulatively significant impacts. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.” 40 CFR §1508.27(b)(7).

The intensity, or severity, of the cumulative effects should consider the magnitude, geographic extent, duration and frequency of the effects (CEQ, 1997). The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent

considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent, or chronic (CEQ, 1997).

RENEWABLE RESOURCES IN CALIFORNIA

A large number of renewable projects have been proposed on BLM land, State land, and private land in California. As of July 2010, there were 183 solar projects, 147 wind projects and 17 geothermal projects in various stages of the environmental review process or under construction in California (CEC 2010). Some of the solar, wind, and geothermal development applications have requested use of BLM land, including approximately one million acres of the California desert. State and private lands have also been targeted for renewable solar and wind projects.

A number of existing policies and incentives encourage renewable energy development. These incentives lead to a greater number of renewable energy proposals. Example of incentives for developers to propose renewable energy projects on private and public lands in California, include the following:

- U.S. Treasury Department's Payments for Specified Energy Property in Lieu of Tax Credits under §1603 of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5) - Offers a grant (in lieu of investment tax credit) to receive funding for 30% of their total capital cost at such time as a project achieves commercial operation (currently applies to projects that begin construction by December 31, 2010 and begin commercial operation before January 1, 2017).
- U.S. Department of Energy (DOE) Loan Guarantee Program pursuant to §1703 of Title XVII of the Energy Policy Act of 2005 - Offers a loan guarantee that is also a low interest loan to finance up to 80% of the capital cost at an interest rate much lower than conventional financing. The lower interest rate can reduce the cost of financing and the gross project cost on the order of several hundred million dollars over the life of the project, depending on the capital cost of the project.

The large renewable projects now described in applications to the BLM and on private land are competing for utility Power Purchase Agreements, which will allow utilities to meet state-required Renewable Portfolio Standards. Not all projects will complete the environmental review, and not all projects will be funded and constructed. It is unlikely that all proposed projects will be constructed for the following reasons:

- Not all developers will develop the detailed information necessary to meet BLM and Energy Commission standards. Some of the solar projects with pending applications are proposing generation technologies that have not been implemented at large scales. As a result, preparing complete and detailed plans of development (PODs) is difficult, and completing the required NEPA and CEQA documents is especially time-consuming and costly.
- As part of approval by the appropriate Lead Agency under CEQA and/or NEPA (generally the Energy Commission and/or BLM), all regulatory permits must be obtained by the applicant or the prescriptions required by the regulatory authorities incorporated into the Lead Agency's license, permit or right-of-way grant. The large size of these projects may result in permitting challenges related to endangered species, mitigation measures or requirements, and other issues.

- Also after project approval, construction financing must be obtained (if it has not been obtained earlier in the process). The availability of financing will be dependent on the status of competing projects, the laws and regulations related to renewable project investment, the ability to qualify for renewable energy incentives offered by the federal government and the time required for obtaining permits.

DEFINITION OF THE CUMULATIVE PROJECT SCENARIO

Cumulative impacts analysis is intended to highlight past actions that are closely related either in time or location to the project being considered, catalogue past projects and discuss how they have harmed the environment, and discuss past actions even if they were undertaken by another agency or another person. Most of the projects proposed in California have, are, or will be required to undergo their own independent environmental review under either CEQA or NEPA.

Under CEQA, there are two acceptable and commonly used methodologies for establishing the cumulative impact setting or scenario: the “list approach” and the “projections approach.” The first approach would use a “list of past, present, and probable future projects producing related or cumulative impacts.” 14 Cal Code Regs §15130(b)(1)(A). The second approach would use a “summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.” (14 Cal Code Regs §15130(b)(1)(B)). This SA/DEIS uses the “list approach” for purposes of state law to provide a tangible understanding and context for analyzing the potential cumulative effects of a Project.

In order to provide a basis for cumulative analysis for each discipline, this section provides information on other projects in both maps and tables. The Energy Commission and the BLM have identified the California desert as the largest area within which cumulative effects should be assessed for all disciplines, as shown in two maps and accompanying tables. However, within the desert region, the specific area of cumulative effect varies by resource. For this reason, each discipline has identified the geographic scope for the discipline’s analysis of cumulative impacts. Information on projects within the California desert is provided in the following tables and figures:

- Cumulative Impacts Table 1A lists renewable energy projects on BLM land in the California Desert District as defined by BLM.
- Cumulative Impacts Table 1B lists renewable energy projects on State and private lands in California .
- Cumulative Impacts Table 2 lists the existing projects in the Rice Valley area as well as existing projects in the eastern Riverside County area.
- Cumulative Impacts Table 3 lists future foreseeable projects in the Rice Valley area as well as future foreseeable projects in the eastern Riverside County area.
- Cumulative Impacts Figure 1 shows the general location of BLM lease applications within the California Desert District.

- Cumulative Impacts Figure 2 shows the location of existing and future foreseeable projects within the Rice Valley area and eastern Riverside County area.

All tables and figures are presented at the end of this section.

APPROACH TO CUMULATIVE IMPACT ANALYSIS

This SA/DEIS evaluates cumulative impacts within the analysis of each resource area, following these steps:

1. Define the geographic scope of cumulative impact analysis for each discipline, based on the potential area within which impacts of the Rice Solar Energy Project could combine with those of other projects.
2. Evaluate the effects of the Rice Solar Energy Project in combination with past and present (existing) projects within the area of geographic effect defined for each discipline.
3. Evaluate the effects of the Rice Solar Energy Project with foreseeable future projects that occur within the area of geographic effect defined for each discipline.

Each of these steps is described below.

Geographic Scope of Cumulative Analysis

The area of cumulative effect varies by resource. For example, air quality impacts tend to disperse over a large area, while traffic impacts are typically more localized. For this reason, the geographic scope for the analysis of cumulative impacts must be identified for each resource area.

The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of each analysis is based on the topography surrounding the Rice Solar Energy Project and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects will often extend beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the proposed action and alternatives.

In addition, each project in a region will have its own implementation schedule, which may or may not coincide or overlap with the Rice Solar Energy Project schedule. This is a consideration for short-term impacts from the Rice Solar Energy Project. However, to be conservative, the cumulative analysis assumes that all projects in the cumulative scenario are built and operating during the operating lifetime of the Rice Solar Energy Project.

Project Effects in Combination with Future Foreseeable Projects

Each discipline evaluates the impacts of the proposed project in light of the current baseline - the past, present (existing) and future projects near the Rice Solar Energy Project plant site. Cumulative Impacts Table 2 lists the existing projects within a 15-20 mile radius around the project site, encompassing the Rice Valley area. In addition, the

cumulative boundary was extended to include other renewable energy projects being sited in eastern Riverside County along the I-10 corridor. This extended boundary does not exceed a 40 mile radius around the proposed Rice project. Cumulative Impacts Table 3 lists the future/foreseeable projects in the Rice Valley area as well as eastern Riverside County. Both tables indicate project name, type, location, and status. Cumulative Impacts Figure 2 shows the locations of the existing and future/foreseeable projects in the Rice Valley area as well as the eastern Riverside County area.

Reasonably foreseeable projects that could contribute to the cumulative effects scenario depend on the extent of resource effects, but could include projects in the immediate Rice Solar Energy Project area as well as other large renewable projects in the California desert region. These projects are illustrated in Cumulative Impacts Table 1A and 1B and Cumulative Impacts Figures 1 and 2. As shown in the map and table, there are several projects in the region around the Rice Solar Energy Project whose impacts could combine with those of the proposed project. As shown on Cumulative Impacts Figure 1 and in Table 1, solar and wind development applications for use of BLM land have been submitted for approximately one million acres of the California Desert Conservation Area. Additional BLM land in Nevada and Arizona also has applications for solar and wind projects.

This data is presented for consideration within each discipline.

Table 1A. Renewable Energy Projects on BLM Land in the California Desert District		
BLM Field Office	Number of Projects & Acres	Total MW
Solar Energy		
Palm Springs Field Office	<ul style="list-style-type: none"> • 13 projects • 111,671 acres 	<ul style="list-style-type: none"> • 9,752 MW
Barstow Field Office	<ul style="list-style-type: none"> • 9 projects • 64,271 acres 	<ul style="list-style-type: none"> • 5,750 MW
El Centro Field Office	<ul style="list-style-type: none"> • 6 projects • 36,040 acres 	<ul style="list-style-type: none"> • 3,150 MW
Needles Field Office	<ul style="list-style-type: none"> • 13 projects • 171,196 acres 	<ul style="list-style-type: none"> • 12,280 MW
Ridgecrest Field Office	<ul style="list-style-type: none"> • 4 projects • 24,798 acres 	<ul style="list-style-type: none"> • 2,835 MW
TOTAL – CA Desert District	<ul style="list-style-type: none"> • 45 projects • 407,976 acres 	<ul style="list-style-type: none"> • 33,767 MW
Wind Energy		
Palm Springs Field Office	<ul style="list-style-type: none"> • 2 projects • 3,500 acres 	<ul style="list-style-type: none"> • not available
Barstow Field Office	<ul style="list-style-type: none"> • 17 projects • 135,126 acres 	<ul style="list-style-type: none"> • not available
El Centro Field Office	<ul style="list-style-type: none"> • 9 projects • 79,982 acres 	<ul style="list-style-type: none"> • not available

Table 1A. Renewable Energy Projects on BLM Land in the California Desert District		
BLM Field Office	Number of Projects & Acres	Total MW
Needles Field Office	<ul style="list-style-type: none"> • 6 projects • 131,380 acres 	<ul style="list-style-type: none"> • not available
Ridgecrest Field Office	<ul style="list-style-type: none"> • 21 projects • 315,061 acres 	<ul style="list-style-type: none"> • not available
TOTAL – CA Desert District	<ul style="list-style-type: none"> • 55 projects • 665,049 acres 	<ul style="list-style-type: none"> • not available
Geothermal Energy		
El Centro Field Office (TOTAL – CA Desert District)	<ul style="list-style-type: none"> • 8 projects • not available 	<ul style="list-style-type: none"> • 389 MW

Source: Renewable Energy Projects in the California Desert Conservation Area identifies solar and wind renewable projects as listed on the BLM California Desert District Alternative Energy Website (BLM 2010). Geothermal projects on BLM land identified from <http://www.energy.ca.gov/33by2020/documents/index.html>

Table 1B. Renewable Energy Projects on State and Private Lands in California		
Project	Location	Status
Solar Projects		
3 MW solar PV energy generating facility	San Bernardino County, Newberry Springs	MND published for public review
Abengoa Mojave Solar Project (250 MW solar thermal)	San Bernardino County, Harper Lake	Under environmental review
Antelope Valley Solar Ranch One (230 MW Solar PV)	Los Angeles and Kern Counties	Under environmental review
AV Solar Ranch One (230 MW solar PV)	Antelope Valley, Los Angeles County	Under environmental review
Beacon Solar Energy Project (250 MW Solar Thermal)	Kern County	Application for Certification approved by CEC
Bethel Solar Hybrid Power Plant (49.4 MW hybrid solar thermal and biomass)	Seeley, Imperial County	Under environmental review
Blythe Airport Solar 1 Project (100 MW solar PV)	Blythe, California	MND published for public review
Borrego Solar Farm (45 MW Solar PV)	San Diego County	Under environmental review
California Valley Solar Ranch (SunPower) (250 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
First Solar's Blythe (21 MW solar PV)	Blythe, California	Under construction
GE Energy LLC (40 MW Solar PV)	Kern County	Under environmental review
LADWP and OptiSolar Power Plant (68 MW solar PV)	Imperial County, SR 111	Under environmental review
LADWP Solar Project (10 MW Solar PV)	Kern County	Under environmental review
Lucerne Valley Solar (50 MW solar PV)	San Bernardino	Under environmental review
Mt. Signal Solar Power Station (49.4 MW hybrid solar thermal and biomass)	8 miles southwest of El Centro, Imperial County	Under environmental review
Palmdale Hybrid Power Project Unit 1 (50 MW solar thermal, part of a hybrid project)	City of Palmdale	Under environmental review
Rice Solar Energy Project (150 MW solar thermal)	Riverside County, north of Blythe	Under environmental review
Rosamond Solar Array (155 MW Solar PV)	Kern County	Under environmental review
San Joaquin Solar 1 and 2 (107 MW Solar hybrid)	Fresno	Under environmental review
Solargen Panoche Valley Solar Farm (400 MW Solar PV)	San Benito County	EIR in progress
Topaz Solar Farm (First Solar) (550 MW solar PV)	Carrizo Valley, San Luis Obispo County	Under environmental review
Willow Springs Solar Array (160 MW Solar PV)	Kern County	Under environmental review
Wind Projects		
AES Daggett Ridge (84 MW)	San Bernardino	EIS in progress

Table 1B. Renewable Energy Projects on State and Private Lands in California		
Project	Location	Status
Alta-Oak Creek Mojave Project (up to 800 MW)	Kern County, west of Mojave	Under environmental review
Granite Wind, LLC (81 MW)	San Bernardino	EIR/EIS in progress
Hatchet Ridge Wind Project	Shasta County, Burney	Under construction
Iberdrola Tule Wind (200 MW)	San Diego County, McCain Valley	EIR/EIS in progress
Lompoc Wind Energy Project	Lompoc, Santa Barbara County	Approved
Pacific Wind (Iberdrola)	McCain Valley, San Diego County	Under environmental review
PdV Wind Energy Project (up to 300 MW)	Kern County, Tehachapi Mountains	Approved
Solano Wind Project Phase 3 (up to 128 MW)	Montezuma Hills, Solano County	Under environmental review
TelStar Energies, LLC (300 MW)	Ocotillo Wells, Imperial County	Under environmental review
Geothermal Projects		
Buckeye Development Project	Geyserville, Sonoma	Under environmental review

Table 2. Existing Projects in the Rice Valley area and Eastern Riverside County

Project Name;	Agency ID	Location	Ownership	Status	Acres	Project Description
Existing Projects in the Rice Valley area within 15-20 miles of proposed project						
1	Iron Mountain Pumping Plant	Iron Mountain Pump Plant Road, ~18 miles northwest of Rice project	Metropolitan Water District of Southern California	Existing	N/A	Iron Mountain Pump Plant is part of the Metropolitan Water District of Southern California's facilities and houses the pumping plant, holding ponds, a small residential area and a portion of the Colorado River aqueduct itself. Ongoing Operation and Maintenance activities occur frequently and will continue throughout the life of the Pump Plant.
2	Iron Mountain Pump Plant Airport - Private	Iron Mountain Pump Plant Road, ~18 miles northwest of Rice project	Metropolitan Water District of Southern California	Existing	N/A	Privately owned and operating airport 18 miles northwest of the proposed Rice Solar Energy project.
3	Metropolitan Water District 230-kV Transmission Line	Riverside County, San Bernardino County, ~18 miles west of the proposed Rice project	Metropolitan Water District	Existing	N/A	Metropolitan Water District's 230-kV line running in a north-south direction from Camino Substation near Needles Freeway (Hwy 40) in San Bernardino County south to Eagle Mountain Substation in Riverside County.

Table 2. Existing Projects in the Rice Valley area and Eastern Riverside County

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
4	Iron Mountain Substation	San Bernardino County, ~18 miles northwest of the proposed project	Metropolitan Water District	Existing	N/A	Metropolitan Water District's Iron Mountain Substation located approximately 18 miles northwest of the proposed Rice Solar Energy Project.
5	Western Area Power Administration 161-kV Transmission Lines (2)	Two existing lines in eastern Riverside County, ~12 and ~20 miles east of proposed project.	Western Area Power Administration (WAPA)	Existing	N/A	WAPA's two 161-kV transmission lines running in a north-south direction east of proposed Rice Solar Energy Project, both terminating near CA/AZ border near Lake Havasu.
6	Rice Valley Grazing Allotment	Rice Valley, surrounding Rice Solar Energy Project to east, south and west.	BLM	Existing	74,740	A 10-year grazing lease on the Rice Valley Grazing Allotment authorizes sheep grazing on public land. The allotment boundaries form a U-shape parcel surrounding the proposed project site. The eastern boundary begins at approximately 2 miles east of the site and extends for ~2 miles east; the western boundary begins at approximately 2 miles west of the site and extends ~4 miles west. The southern boundary begins ~1 mile south of the site and extends ~10 miles south.
7	Arizona-California Railroad	Runs from Cadiz, Ca to Parker, Az. A portion parallels State Route 62, immediately north of proposed Rice project.	RailAmerica	Existing	N/A	The Arizona-California railroad operates nearly 300 miles of rail encompassing 190 miles of rail from Cadiz, Ca to Matthie, Az, 57 miles from Matthie, Az to Pheonix, Az and a 50 mile branch extending from Rice, Ca to Ripley, Ca.
8	Colorado River Aqueduct	Runs parallel to State Route 62, immediately north of proposed Rice project.	Metropolitan Water District of Southern California	Existing	N/A	The aqueduct carries water 242 miles, from Lake Havasu, on the Colorado River, to Lake Matthews in western Riverside County.

Table 2. Existing Projects in the Rice Valley area and Eastern Riverside County

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
9	West-wide Section 368 Energy Corridors	Riverside County	BLM, DOE, U.S. Forest Service	Approved by BLM and U.S. Forest Service	N/A	Designation of corridors on federal land in the 11 western states, including California, for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). One of the corridors runs along the southern portion of Riverside County.
10	Recreational Opportunities	Eastern Riverside County	BLM	Existing	N/A	BLM has numerous recreational opportunities on lands in eastern Riverside County and bordering eastern San Bernardino County, including Rice Valley Wilderness Area, Palen/McCoy Wilderness Area, the Turtle Mountains Wilderness Trail, Blythe-Vidal Old Road Trail, and Midland Long-Term Visitor Area.

Additional Existing Projects Outside 15-20 mile Boundary in Eastern Riverside County

11	Interstate 10	Linear project running from Santa Monica to Blythe (in California)	Caltrans	Existing	N/A	Interstate 10 (I-10) is a major east-west route for trucks delivering goods to and from California. It is a four lane divided highway in the Blythe region.
12	Eagle Mountain Pumping Plant	Eagle Mountain Road, west of Desert Center	Metropolitan Water District of Southern California	Existing	N/A	144 ft. pumping plant that is part of the Metropolitan Water District of Southern California's facilities located approximately 40 miles southwest of the proposed Rice project.
13	Blythe Energy Project	City of Blythe, north of I-10, 7 miles west of the CA/AZ border	Blythe Energy, LLC	Existing	76	520 MW combined-cycle natural gas-fired electric-generating facility. Project is connected to the Buck Substation owned by WAPA.
14	Kaiser Mine	Eagle Mountain, north of Desert Center	Kaiser Ventures, Inc.	Mining activities stopped in 1983.	N/A	Kaiser Steel mined iron ore at Kaiser Mine in Eagle Mountain and provided much of the Pacific Coast steel in the 1950s. Mining project also included the Eagle Mountain Railroad, 51 miles long. Imported steel captured market share in the 1960s and 1970s and primary steelmaking closed in the 1980s.
15	Devers-Palo Verde Transmission Line	From the Midpoint Substation to Devers Substation	Southern California Edison	Existing	N/A	Existing 500 kV transmission line parallel to I-10 from Midpoint Substation, approximately 10 miles southwest of Blythe, to the SCE Devers Substation, near Palm Springs.

Table 3. Future Foreseeable Projects in the Rice Valley area and Eastern Riverside County

Project Name; ID #	Agency ID	Location	Ownership	Status	Acres	Project Description
Future Foreseeable Projects in the Rice Valley area within 15-20 miles of proposed project						
A	Three Colorado River Aqueduct Rehabilitation Projects	Iron Mountain Pump Plant, ~18 miles northwest of proposed Rice project	Metropolitan Water District of Southern California	Under Construction	N/A	Metropolitan Water District of Southern California proposes to repair the delivery line expansion joints at the Iron Mountain Pumping Plant, located approximately 18 miles northwest of the proposed project. The work is scheduled to be complete February of 2011.
B	Ward Valley, Leopold Companies, Inc	San Bernardino County, ~5 miles northwest of proposed Rice project in the Ward Valley	Leopold Companies, Inc	Plan of Development in to Needles BLM	8,000	750 MW solar thermal power plant proposed in the Ward Valley approximately 5 miles northwest of the proposed Rice Solar Energy project.
Additional Future Foreseeable Projects Outside 15-20 mile Boundary in Eastern Riverside County						
C	Colorado River Substation	1.5 miles south of Interstate 10 and 4.75 miles east of Wileys Well Road	SCE		140	Expand the 500 kV switchyard, previously approved as part of the DPV2 CPCN on approximately 45 acres of land, into a full 500/220 kV substation on approximately 90 acres of land.
D	Desert Quartzite	South of I-10, 8 miles southwest of Blythe	First Solar (previously OptiSolar)	POD in to BLM	7,724	600 MW solar photovoltaic project located on 7,724 acres. Adjacent to DPV transmission line and SCE Colorado Substation. Approximately 27 AF would be used during construction and 3.8 AFY during operation.
E	Killbeck	26 miles northwest of proposed Rice project	Boulevard Associates	Plan of Development in to Needles BLM	12,046	1,000 MW solar thermal power plant located 26 miles northwest of proposed Rice project.
F	Cadiz Lake	26 miles west of proposed Rice project	Boulevard Associates	Plan of Development in to Needles BLM	35,639	1,000 MW solar thermal power plant located 26 miles west of proposed Rice project.

Table 3. Future Foreseeable Projects in the Rice Valley area and Eastern Riverside County

Project Name; ID #	Agency ID	Location	Ownership	Status	Acres	Project Description
G	Desert Sunlight	35 miles southwest of proposed Rice project	First Solar	Undergoing environmental review	5,128	550 MW solar photovoltaic project located 6 miles north of Desert Center in eastern Riverside County. The project footprint is 4,410 acres and the BLM ROW application is for 5,128 acres. Project would tie into the SCE Red Bluff substation. Approximately water usage is; 27 AFY of during construction and 3.8 AFY during operation.
H	EnXco 1	36 miles southwest of proposed Rice project	EnXco Development LLC	Plan of Development in to Palm Springs BLM	1,327	300 MW solar thermal power plant located north of Desert Center.
I	Chuckwalla Solar I	35 miles southwest of proposed Rice project, 1 mile north of Desert Center	Chuckwalla Solar I, LLC	Plan of Development submitted to BLM	4,099	200 MW solar photovoltaic project on 4,099 acres of land. Project would be developed in several phases and would tap into an existing SCE 161-kV transmission line crossing the site.
J	Palen Solar Power Project	33 miles southwest of proposed Rice project, 10 miles east of Desert Center	Solar Millennium LLC/Chevron Energy	Undergoing environmental review, construction to begin end of 2010.	5,213	500 MW solar trough project on 5,213 acres. Facility would consist of two 250 MW plants. Approximately 3,870 acres would be disturbed. Project would include interconnection to the SCE Red Bluff Substation. Project would use 300 AFY of water.
K	Genesis Solar Energy Project	30 miles south of proposed Rice project, north of I-10, near Ford Dry Lake	NextEra (FPL)	Undergoing environmental review. Construction to begin at the end of 2010.	4,535	250 MW solar trough project located on 4,535 acres north of the Ford Dry Lake. Project includes six mile natural gas pipeline and a 5.5 mile gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, and then travels east on shared transmission poles to the Colorado River Substation.
L	Blythe Solar Power Project	26 miles southeast of proposed Rice project	Solar Millennium LLC/Chevron Energy	Undergoing environmental review	9,481	1,000 MW solar trough facility on 9,481 acres
M	McCoy Project	20 miles south of proposed Rice project	EnXco development, LLC	Plan of Development in to Palm Springs BLM	20,608	250 MW solar trough project. ROW in process for monitoring water well drilling.
N	Big Maria Vista Solar Project	14 miles south of proposed Rice project	Bullfrog Green Energy	Plan of Development submitted to BLM	22,717	500 MW solar photovoltaic project, BLM ROW application is for 22,717 acres of land. Project would be built in three phases and would require 6,000 gallons of water monthly.

Table 3. Future Foreseeable Projects in the Rice Valley area and Eastern Riverside County

Project ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
O	Four Commercial Projects	Blythe, CA	Various	Approved	N/A	Four commercial projects have been approved by the Blythe Planning Department including the Agate Road Boat & RV Storage, Riverway Ranch Specific Plan, Subway Restaurant and Motel, and Agate Senior Housing Development.
P	Intake Shell	Blythe, CA		Under Construction	N/A	Reconstruction of a Shell facility located at Intake & Hobsonway. Demolition occurred in 2008, reconstruction planned for 2009-2010.
Q	Eighteen Residential Developments	Blythe, CA	Various	Approved/Under Construction	N/A	Fifteen residential development projects have been approved by the Blythe Planning Department including: Vista Palo Verde (83 Single Family Residential [SFR]), Van Weelden (184 SFR), Sonora South (43 SFR), Ranchette Estates (20 SFR), Irvine Assets (107 SFR), Chanslor Village (79 SFR), St. Joseph's Investments (69 SFR), Edgewater Lane (SFR), The Chanslor Place Phase IV (57 SFR), Cottonwood Meadows (103 Attached SFR), Palo Verde Oasis Phase IV (29 SFR). Three residential development projects have been approved and are under construction including: The Chanslor Phase II & III (78 SFR), River Estate at Hidden Beaches, Mesa Bluffs Villas (26 Attached SFR).
R	Blythe PV Project	Blythe, CA	First Solar	CPUC approved project terms of a 20 year power purchase agreement for sale of 7.5 MW, Under construction in forth quarter, 2009	200	7.5 MW solar photovoltaic project located on 200 acres. Project was constructed by First Solar and sold to NRG Energy.
S	Blythe Energy Project Transmission Line	From the Blythe Energy Project (Blythe, CA) to Devers Substation	Blythe Energy, LLC	Under construction	N/A	Transmission Line Modifications including upgrades to Buck Substation, approximately 67.4 miles of new 230 kV transmission line between Buck Substation and Julian Hinds Substation, upgrades to the Julian Hinds Substation, installation of 6.7 miles of new 230 kV transmission line between Buck Substation and SCE's DPV 500 kV transmission line.
T	Green Energy Express Transmission Line Project	70-mile transmission line from the Eagle Mountain Substation to southern California	Green Energy Express LLC	September 9, 2009, Green Energy Express LLC filed a Petition for Declaratory Order requesting that FERC approve certain rate incentives for the project	N/A	70-mile double-circuit 500 kV transmission line and new 500/230 kV substation from near the Eagle Mountain Substation (eastern Riverside County) to Southern California

Table 3. Future Foreseeable Projects in the Rice Valley area and Eastern Riverside County

Project Name; ID #	Agency ID	Location	Ownership	Status	Acres	Project Description
U	Blythe Energy Project II	Blythe, CA. Near the Blythe Airport and I-10	Blythe Energy, LLC	Approved December 2005	30 acres (located on Blythe Energy Project land)	520 MW combined-cycle power plant located entirely within the Blythe Energy Project site boundary. Blythe Energy Project II will interconnect with the Buck Substation constructed by WAPA as part of the Blythe Energy Project. Project is designed on 30 acres of a 76-acre site.
V	Eagle Mountain Pumped Storage Project	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	License application filed with FERC in June 2009	1,524	1,300 MW pumped storage project designed to store off-peak energy to utilize during on-peak hours. The captured off-peak energy will be used to pump water to an upper reservoir where the energy will be stored. The water will then be released to a lower reservoir through an underground electrical generating facility where the stored energy will be released back into the Southwestern grid during "high demand peak" times, primarily weekdays. Estimated water use is 8,100 AFY for the first four-year start-up period and replacement water is 1,763 AFY thereafter. 1
W	Blythe Airport Solar I Project	Blythe Airport, 31 miles south of proposed Rice Solar project	U.S. Solar	Application has been submitted to City of Blythe, City of Blythe approved the project in November, 2009	640	100 MW solar photovoltaic project located on 640 acres of Blythe airport land.
X	Red Bluff Substation	South of Desert Center	SCE		N/A	Proposed 230/500 kV Substation near Desert Center. Planned to interconnect renewable projects near Desert Center with the Devers-Palo Verde transmission line.
Y	Chuckwalla Valley Raceway	Desert Center Airport (no longer a functioning airport)	Developer Matt Johnson	Under construction, track expected to be open in mid 2010	400	Proposed 500-mile race track located on 400 acres of land that used to belong to Riverside County and was used as the Desert Center airport.

Table 3. Future Foreseeable Projects in the Rice Valley area and Eastern Riverside County

Project ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
Z	Eagle Mountain Landfill Project	Eagle Mountain, North of Desert Center	Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc.	U.S. Court of Appeals for the Ninth Circuit issued its ruling regarding the EIS for the project in 11/09 and ruled that the land exchange for the project was not properly approved by the administrative agency. Kaiser's Mine and Reclamation is considering all available options.	~ 3,500	The project proposed to develop the project on a portion of the Kaiser Eagle Mountain Mine in Riverside County, California. The proposed project comprises a Class III nonhazardous municipal solid waste landfill and the renovation and repopulation of Eagle Mountain Townsite. The proposal by the proponent includes a land exchange and application for rights-of-way with the Bureau of Land Management and a Specific Plan, General Plan Amendment, Change of Zone, Development Agreement, Revised Permit to Reclamation Plan, and Tentative Tract Map with the County. The Eagle Mountain landfill project is proposed to accept up to 20,000 tons of non-hazardous solid waste per day for 50 years.
AA	Wiley Well Communication Tower (part of the Public Safety Enterprise Communication System)	East of Wileys Well Road, just south of I-10	Riverside County	Final EIR for the Public Safety Enterprise Communication System published in August 2008.	N/A	The Public Safety Enterprise Communication project is the expansion of the County of Riverside's fire and law enforcement agencies approximately 20 communication sites to provide voice and data transmission capabilities to assigned personnel in the field.
AB	Desert Southwest Transmission Line	118 miles primarily parallel to DPV	Imperial Irrigation District	Final EIR prepared 2005. Approved by the BLM in 2006.	N/A	New, approximately 118-mile 500 kV transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation located approximately 10 miles north of Palm Springs, California.
AC	Mule Mountain Solar Project	South of I-10, approximately 4 miles west of Blythe	Bullfrog Green Energy	Plan of Development in to Palm Springs BLM	2,684	500 MW solar concentrating photovoltaic project located on 2,684 acres. Considering interconnection with proposed SCE Colorado Substation. Approximately 6,000 gallons of water would be required monthly.
Additional Projects Outside Cumulative Figure Boundaries						

Table 3. Future Foreseeable Projects in the Rice Valley area and Eastern Riverside County

Project Name; ID #	Agency ID	Location	Ownership	Status	Acres	Project Description
Proposed National Monument (former Catellus Lands)		Between Joshua Tree National Park and Mojave National Preserve		In December 2009, Senator Feinstein introduced bill S.2921 that would designate two new national monuments including the Mojave Trails National Monument.	941,000 acres	The proposed Mojave Trails National Monument would protect approximately 941,000 acres of federal land, including approximately 266,000 acres of the former railroad lands along historic Route 66. The BLM would be given the authority to conserve the monument lands and also to maintain existing recreational uses, including hunting, vehicular travel on open roads and trails, camping, horseback riding and rock hounding.
BLM Renewable Energy Study Areas		Northwest of Rice Solar project in San Bernardino County and along the I-10 corridor	BLM	Proposed	N/A	The DOE and BLM identified 24 tracts of land as Solar Energy Study Areas in the BLM and DOE Solar PEIS. These areas have been identified for in-depth study of solar development and may be found appropriate for designation as solar energy zones in the future.
Solar Energy projects along Arizona Border		Approximately 15 miles east of the CA/ AZ border along I-10 corridor	Various	Applications filed in to Arizona BLM field offices, application status listed as pending.	N/A	Five solar trough and solar power tower projects have been proposed along the I-10 corridor approximately 15 miles east of the CA/AZ border. The projects have been proposed on BLM administered-land in the Yuma and Kingman Field Offices and have requested use of approximately 75,000 acres.
Paradise Valley "New Town" Development		Approximately 30 miles west of Desert Center (7 miles east of the city of Coachella)	Glorious Land Company	Notice of Preparation of an EIR published in December of 2005. Still under environmental review.	6,397	Company proposed to develop a planned community as an international resort destination with residential, recreational, commercial, and institutional uses and facilities. The project is planned as a self-contained community with all public and quasi-public services provided. The project is located outside the Coachella Valley Water District (CVWD) boundaries and the applicant has entered into an agreement with the CVWD to manage artificial recharge of the Shaver's Valley groundwater. The proponent has purchased a firm water supply from Rosedale-Rio Bravo Water District in Kern County. In-kind water will be transferred to the MWD which will release water from the Colorado River Aqueduct to a 38 acre percolation pond on the project site. The MWD will deliver approximately 10,000 AFY to the percolation pond and over the long term, no net loss of groundwater in storage is anticipated.

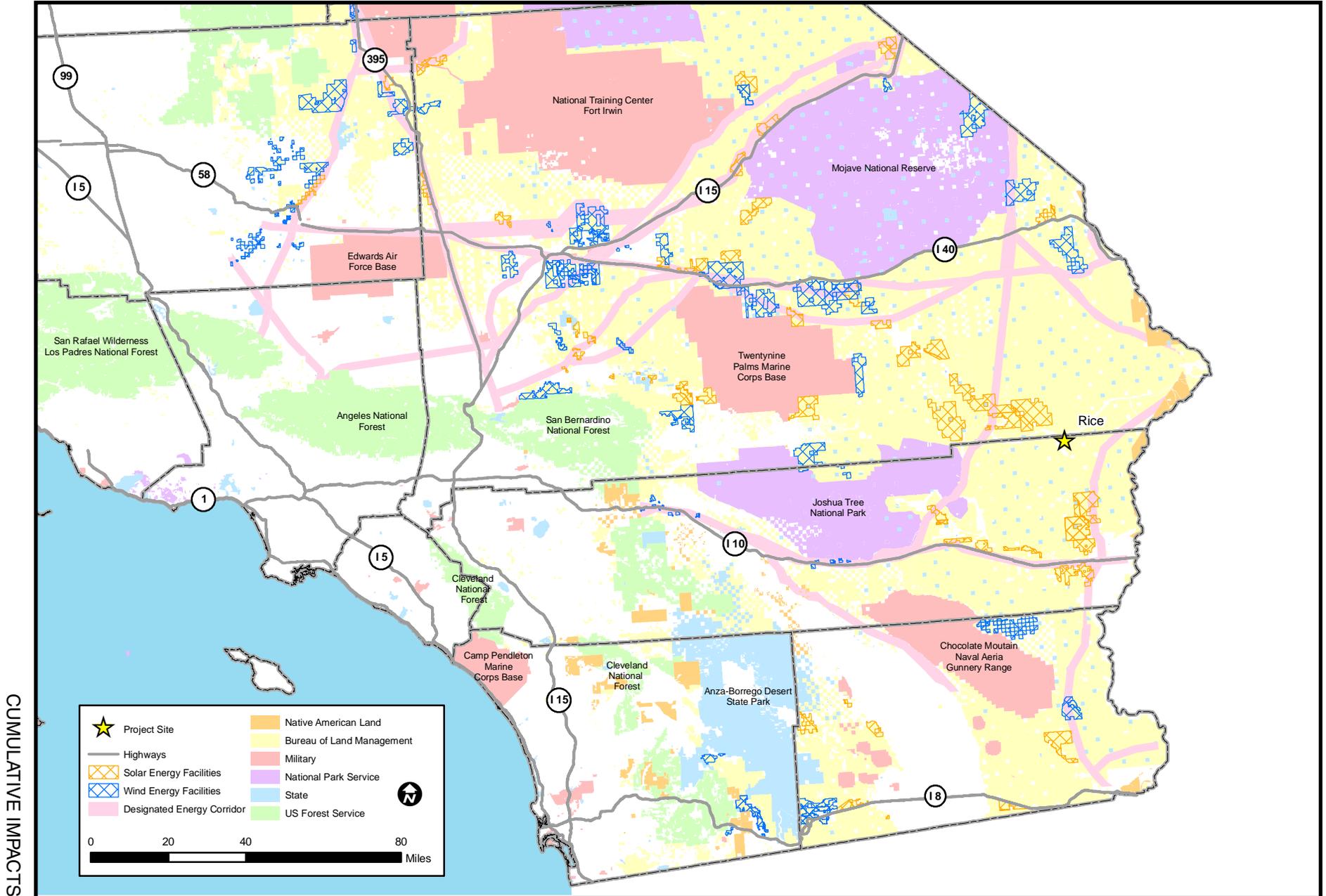
1. Water usage for the Eagle Mountain Pumped Storage Project was based on the information provided to FERC by the Eagle Crest Energy Company in the Responses to Deficiency of License Application and Additional Information Request dated October 26, 2009.

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CUMULATIVE IMPACTS - FIGURE 1

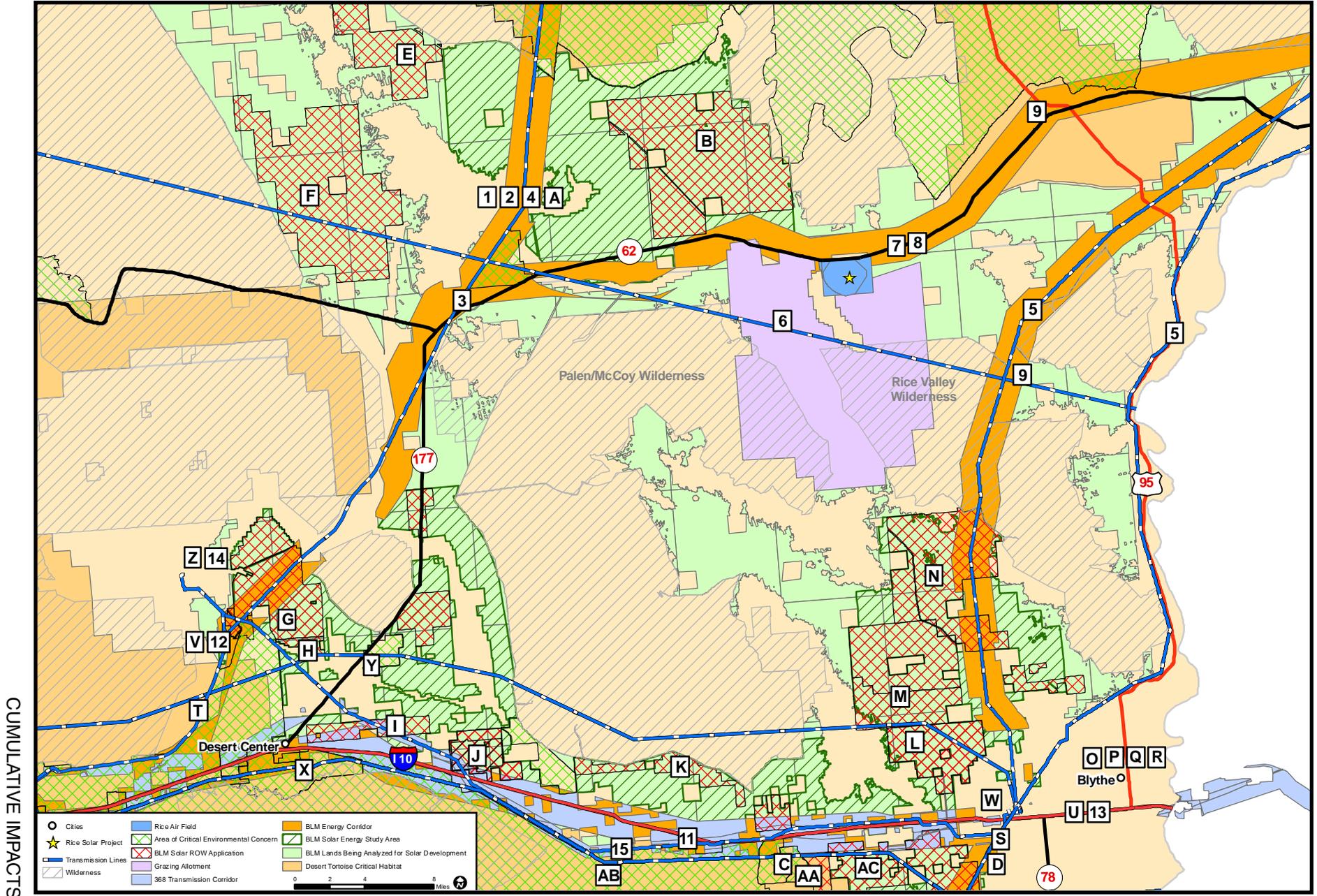
Rice Solar Energy Project - Renewable Energy Applications in the California Desert District



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: California Energy Commission, Bureau of Land Management

CUMULATIVE IMPACTS - FIGURE 2
 Rice Solar Energy Project - Existing and Future/Foreseeable Projects



ENVIRONMENTAL ASSESSMENT

AIR QUALITY

Testimony of Brenner Munger, Ph.D., P.E., William Walters, P.E., and Jacquelyn Leyva

SUMMARY OF CONCLUSIONS

California Energy Commission staff (hereinafter referred to as “staff”) find that with the adoption of the attached Conditions of Certification the proposed Rice Solar Energy Project (RSEP) would comply with all applicable laws, ordinances, regulations, and standards and would not result in any significant California Environmental Quality Act (CEQA) air quality impacts. These Conditions of Certification meet the Energy Commission’s responsibility to comply with CEQA and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and assure conformance with applicable laws, ordinances, regulations and standards (LORS). The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for U.S. Bureau of Reclamation’s (BLM’s) and Western Area Power Administration’s (Western’s) analysis that can be considered in its Record of Decision.

Staff has concluded that the proposed project would not have the potential to exceed Prevention of Significant Deterioration emission threshold levels during direct source operation and the facility is not considered a major stationary source with potential to cause adverse National Environmental Policy Act air quality impacts.

The Rice Solar Energy Project would emit substantially lower greenhouse gas¹ emissions per megawatt-hour than fossil fueled generation resources in California. The Rice Solar Energy Project, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]).

INTRODUCTION

This analysis has been prepared by staff and serves as staff’s testimony in the Energy Commission’s RSEP licensing proceeding in accordance with CEQA. This analysis also serves as BLM’s and Western’s assessment of the proposed RSEP in accordance with NEPA. The analysis evaluates air quality impacts associated with the proposed RSEP’s construction, operating and decommissioning activities. Rice Solar Energy, LLC (applicant) submitted an Application for Transmission and Utility Systems and Facilities on Federal Lands to the Bureau of Land Management (BLM) on May 12, 2009 (CACA 051022) and an Application for Certification (AFC) (SR 2009a) on October 13, 2009, to construct and operate a solar power plant located in unincorporated eastern Riverside County, California, approximately fifteen miles southwest of the rural crossroads community of Vidal Junction, California. The project site is approximately 40 miles northwest of Blythe, 65 miles west of Needles, and 75 miles east of Twentynine Palms.

¹ Greenhouse gas emissions are not criteria pollutants, but they affect global climate change. In that context, staff evaluates the GHG emissions from the proposed project (Appendix Air-1), presents information on GHG emissions related to electricity generation, and describes the applicable GHG standards and requirements.

State Route 62 is immediately adjacent to the northern boundary of the proposed solar generation facility and would be the primary access during construction and operation. The applicant proposes to develop a 150-MW solar-powered electrical generation facility located within a private land holding that totals 3,324 acres, which would be subdivided to create a project parcel of 2,560 acres. Within this project parcel will be the administration buildings area, heliostat field with power block, and evaporation pond areas, (collectively, the project site or facility site) totaling 1,410 acres, that will be surrounded by a security fence.

This analysis evaluates the expected air quality impacts from the emissions of criteria air pollutants associated with the construction, salt system conditioning and operation of the Rice Solar Energy Project (RSEP or proposed project). Criteria air pollutants are defined as air contaminants for which the state and/or federal governments, per the California Clean Air Act and federal Clean Air Act, have established ambient air quality standards to protect public health.

The criteria pollutants analyzed within this section are nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), ozone (O₃), and particulate matter (PM). Lead is not analyzed as a criteria pollutant, but lead and other toxic air pollutant emissions impacts are analyzed in the Public Health Section of this document. Two subsets of particulate matter are inhalable particulate matter (less than 10 microns in diameter, or PM₁₀) and fine particulate matter (less than 2.5 microns in diameter, or PM_{2.5}). Nitrogen oxides (NO_x, consisting primarily of nitric oxide [NO] and NO₂) and volatile organic compound (VOC) emissions readily react in the atmosphere as precursors to ozone and, to a lesser extent, particulate matter. Sulfur oxides (SO_x) readily react in the atmosphere to form particulate matter and are major contributors to acid rain. Global climate change and greenhouse gas (GHG) emissions from the proposed project are discussed in Appendix Air-1 and analyzed in the context of cumulative impacts.

In carrying out this analysis, the California Energy Commission (Energy Commission) staff evaluated the following four major issues:

- whether the proposed project is likely to conform with applicable federal, state, and Mojave Desert Air Quality Management District (MDAQMD or District) air quality laws, ordinances, regulations and standards (Title 20, California Code of Regulations, section 1744 (b));
- whether the proposed project is likely to cause new violations of ambient air quality standards or contribute substantially to existing violations of those standards (Title 20, California Code of Regulations, section 1743);
- whether mitigation measures proposed for the proposed project are adequate to lessen potential impacts under the California Environmental Quality Act (CEQA) to a level of insignificance (Title 20, California Code of Regulations, section 1742 (b)); and
- whether the proposed project would exceed regulatory benchmarks identified by and used by staff to analyze National Environmental Policy Act (NEPA) air quality impacts, before or after implementation of recommended mitigation measures.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

The federal, state, and local laws and policies applicable to the control of criteria pollutant emissions and mitigation of air quality impacts for the RSEP are summarized in **Air Quality Table 1**. Staff's analysis examines the project's compliance with these requirements.

Air Quality Table 1
Laws, Ordinances, Regulations, and Standards

Applicable LORS	Description
Federal	
40 Code of Federal Regulations (CFR) Part 52	Nonattainment New Source Review (NSR) requires a permit and requires Best Available Control Technology (BACT) and Offsets. Permitting and enforcement is delegated to Mojave Desert Air Quality Management District (MDAQMD). Prevention of Significant Deterioration (PSD) requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The RSEP is a new source that does not have a rule listed emission source thus the PSD trigger levels are 250 tons per year for NO _x , VOC, SO _x , PM ₁₀ , PM _{2.5} and CO.
40 CFR Part 60	New Source Performance Standards (NSPS), Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for compression ignition internal combustion engines, including emergency generator and fire water pump engines.
40 CFR Part 93 General Conformity	Requires determination of conformity with State Implementation Plan for projects requiring federal approvals if project annual emissions are above specified levels.
State	
Health and Safety Code (HSC) Section 40910-40930	Permitting of source needs to be consistent with Air Resource Board (ARB) approved Clean Air Plans.
HSC Section 41700	Restricts emissions that would cause nuisance or injury.
California Code of Regulations (CCR) Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the types of fuels allowed, establishes maximum emission rates, establishes recordkeeping requirements on stationary compression ignition engines, including emergency generator and fire water pump engines.
Local (Mojave Desert Air Quality Management District, MDAQMD)	
Rule 201 and 203 Permits Required	Requires a Permit to Construct before construction of an emission source occurs. Prohibits operation of any equipment that emits or controls air pollutant without first obtaining a Permit to Operate.
Rules 401, 402, and 403 Nuisance, Visible Emissions, Fugitive Dust	Limits the visible, nuisance, and fugitive dust emissions and would be applicable to the construction period of the project.
Rule 404 Particulate Matter - Concentration	Limits the particulate matter concentration from stationary source exhausts.
Rule 405 Solid Particulate Matter Weight	Limits the discharge of solid particulate matter based on weight of material processed.
Rule 406 Specific Contaminants	The rule prohibits sulfur compound emissions in excess of 500 ppmv.
Rule 407 Liquid and Gaseous Air Contaminants	The rule prohibits carbon monoxide emissions in excess of 2,000 ppmv.
Rule 409 Combustion Contaminants	Limits the emissions from fossil fuel combustion.
Rule 431 Sulfur Content of Fuels	Limits the sulfur content of liquid fuels to no more than 0.5% by weight.

Applicable LORS	Description
Rule 900 Standard of Performance for New Stationary Source	Incorporates the Federal NSPS (40 CFR 60) rules by reference.
Rule 1303 New Source Review	Specifies BACT/Offsets technology and requirements for a new emissions unit that has potential to emit any regulated pollutants.
Rule 1306 Electric Energy Generating Facilities	Describes actions to be taken for permitting of power plants that are within the jurisdiction of the Energy Commission.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The analysis of proposed project effects must comply with both CEQA and NEPA requirements given the respective power plant licensing authority of the California Energy Commission, land use jurisdictions of BLM and electrical interconnection authority of Western. Because this document is intended to meet the requirements of both NEPA and CEQA, the methodology used for determining environmental impacts of the proposed project includes a consideration of guidance provided by both laws. A significant impact is defined under CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (Cal.Code Regs., tit.14 [hereinafter CEQA Guidelines] Section 15382). Questions used in evaluating significance of air quality impacts are based on Appendix G of the CEQA Guidelines (CCR 2006). The specific approach used by Energy Commission staff in determining CEQA significance is discussed in more detail below.

Similarly, NEPA states that “‘Significantly’ as used in NEPA requires considerations of both context and intensity...” (40 CFR 1508.27). Under NEPA, the agency considers three regulatory benchmarks in determining whether a project action would result in an adverse environmental impact when evaluated against the baseline. NEPA requires that an Environmental Impact Statement (EIS) be prepared when the proposed federal action (project) as a whole has the potential to “significantly affect the quality of the human environment.” The three regulatory benchmarks that are used to assess-impacts under NEPA are discussed in more detail below.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Energy Commission staff assessed five kinds of primary and secondary² impacts: construction, salt commissioning, operation, closure and decommissioning, and cumulative. Construction impacts result from the onsite and offsite emissions occurring during site preparation and construction of the proposed project. Salt commissioning impacts result from the NOx emissions from the oxidation of the magnesium nitrate impurity in the potassium and sodium nitrate salts. Salt conditioning does not directly involve combustion of fossil fuels. However, fossil fuels are used during this time period to provide on-site power using portable, temporary generators due to the remote location of the facility. Operation impacts result from the emissions of the proposed project during operation, which includes the onsite auxiliary equipment emissions (auxiliary cooling units, emergency engines, etc.), the onsite maintenance vehicle

2 Primary impacts potentially result from facility emissions of NOx, SOx, CO and PM10/2.5. Secondary impacts result from air contaminants that are not directly emitted by the facility but formed through reactions in the atmosphere that result in ozone, and sulfate and nitrate PM10/PM2.5.

emissions, and the offsite employee commute and material delivery trip emissions. Closure and decommissioning impacts occur from the onsite and offsite emissions that would result from dismantling the facility and restoring the site. Cumulative impacts analysis assesses the impacts that result from the proposed project's incremental effect viewed over time, together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project. (Public Resources Code § 21083; Cal. Code Regs., tit. 14, §§ 15064(h), 15065(c), 15130, and 15355.)

METHOD AND THRESHOLD FOR DETERMINING CEQA SIGNIFICANCE

Energy Commission staff evaluates potential impacts per Appendix G of the CEQA Guidelines (CCR 2006). A CEQA significant adverse impact is determined to occur if potentially significant CEQA impacts cannot be mitigated through the adoption of Conditions of Certification. Specifically, Energy Commission staff uses health-based ambient air quality standards (AAQS) established by the ARB and the U.S.EPA as a basis for determining whether a project's emissions will cause a significant adverse impact under CEQA. The standards are set at levels that include a margin of safety and are designed to adequately protect the health of all members of the public, including those most sensitive to adverse air quality impacts such as the aged, people with existing illnesses, children, and infants. Staff evaluates the potential for significant adverse air quality impacts by assessing whether the project's emissions of criteria pollutants and their precursors (NO_x, VOC, PM₁₀ and SO₂) could create a new AAQS exceedance (emission concentrations above the standard), or substantially contribute to an existing AAQS exceedance.

Staff evaluates both direct and cumulative impacts. Staff will find that a project or activity will create a direct adverse impact when it causes an exceedance of an AAQS. Staff will find that a project's effects are cumulatively considerable when the project emissions in conjunction with ambient background, or in conjunction with reasonably foreseeable future projects, substantially contribute to ongoing exceedances of an AAQS. Factors considered in determining whether contributions to ongoing exceedances are substantial include:

1. the duration of the activity causing adverse air quality impacts;
2. the magnitude of the project emissions, and their contribution to the air basin's emission inventory and future emission budgets established to maintain or attain compliance with AAQS;
3. the location of the project site, i.e., whether it is located in an area with generally good air quality where non-attainment of any ambient air quality standard is primarily or solely due to pollutant transport from other air basins;
4. the meteorological conditions and timing of the project impacts, i.e., do the project's maximum modeled pollutant impacts occur when ambient background concentrations are high (such as high wind-blown fugitive dust levels occurring during high wind periods, or seasonally);

5. the modeling methods, and how refined or conservative the impact analysis modeling methods and assumptions were and how that may affect the determined adverse impacts;
6. the project site location and nearest receptor locations; and whether the identified adverse impacts would also occur at the maximum impacted receptor location; and,
7. potential for future cumulative impacts; and whether appropriate mitigation is being recommended to address the potential for impacts associated with likely future projects.

NEPA AIR QUALITY ANALYSIS METHODOLOGY

The National Environmental Protection Act (NEPA) air quality analysis³ considers the following three regulatory benchmarks:

1. The project would exceed General Conformity applicability thresholds for federal nonattainment pollutants. This regulatory threshold applies to both project construction and operation emissions.
2. The project would exceed PSD permit applicability thresholds for federal attainment pollutants. This regulatory threshold only applies to project operation.
3. The project would cause, for federal attainment pollutants, air quality impacts in exceedance of the NAAQS.

If the proposed project were to exceed either of the first two of these regulatory benchmarks then the impacts would be considered potentially adverse and would require a further refined impact and mitigation analysis in order to demonstrate that the proposed project would not result in an adverse impact based on the potential to cause exceedances of the NAAQS. A refined impact and mitigation analysis has been conducted per CEQA requirements, and that analysis is described in detail in this document.

IMPACTS FROM CLOSURE AND DECOMMISSIONING

Impacts from closure and decommissioning, as a one-time limited duration event, are evaluated with the same methods as construction emissions as discussed above.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

Climate and Meteorology

The proposed project is located in California's Sonoran Desert adjacent to the southern border of the Mojave Desert; with the nearest Class I area being Joshua Tree National Park which is approximately 25 miles west of the project site. The project site is approximately 850 feet above mean sea level. The RSEP is in the Mojave Desert Air Basin, which is classified as a dry-hot desert climate. This area is characterized by hot,

³ This is CEC staff's analysis approach that goes beyond the minimum procedural requirements of NEPA.

dry summers and mild winters, with annual rainfall averaging three to seven inches per year. Relatively high daytime temperatures, large variations in relative humidity, large and rapid diurnal temperature changes, occasional high winds, and sand, dust, and thunderstorms characterize the climate of the northeastern Sonoran Desert area. The aridity of the region is influenced by a Pacific sub-tropical high-pressure system typically off the coast of California and topographical barriers that effectively block the flow of moisture to the region. The Mojave Desert Air Basin experiences prevailing winds out of the west and southwest, resulting in a general west-to-east flow across the MDAB.

The highest monthly average high temperature in Vidal is 108°F in July and the lowest average monthly low temperature is 41°F in January and December (WC 2010). Total rainfall in Vidal averages just more than five inches per year with about 50% of the total rainfall occurring during the December through March winter rainy season, and about 30% occurring during the July to September summer monsoon season. Staff reviewed wind data available from the Rice Valley meteorological monitoring station (WRCC 2010), which is located approximately six miles east of the project site. Prevalent winds are out of the west northwest to south during daytime hours and the wind speeds drop and the prevalent direction turns around to be from the north northeast to northeast during nighttime hours.

The applicant also provided a wind rose from the Blythe Airport for the year 2008. This wind data, which is from the same source as the meteorological data used by the applicant in their air dispersion modeling impact analysis, indicates the highest wind direction frequencies for the annual, winter, spring, and fall periods are from the north and the south. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses (MDAQMD 2009).

The most recent meteorological (weather) data, collected from the Blythe Airport Meteorological Site located approximately 40 miles southeast of the project site, was for 2008. The measured wind data are graphically represented by Blythe Airport wind roses, provided in the AFC Figure 5.1-C-1b (SR 2009a). These wind roses show that for most of the year, the winds are from the south and the north. Mixing heights in the area, which represent the altitudes where different air masses mix together, are estimated to be on average 230 feet (70 meters) in the morning to as high as 5,250 feet (1,600 meters) above ground level in the afternoon.

Sensitive Receptors

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a large bearing on health risk. The nearest residences are at Vidal Junction, approximately 15 miles northeast. A small cluster of residences is located at the Iron Mountain Pumping Plant, 17 miles west. The nearest

town with significant services is Parker, Arizona, approximately 32 miles east. Blythe, California, is approximately 40 miles south. Twentynine Palms, California, is approximately 75 miles west. There are no sensitive receptors identified within a six-mile radius of the project site.

Existing Ambient Air Quality

The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of air pollutants, called ambient air quality standards (AAQS). The state AAQS, established by the California Air Resources Board, are typically lower (more protective) than the federal AAQS, which are established by the United States Environmental Protection Agency (U.S.EPA). The state and federal air quality standards are listed in **Air Quality Table 2**. The averaging times for the various air quality standards, the times over which they are measured, range from one-hour to an annual average. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant in a cubic meter of air (mg/m^3 or $\mu\text{g}/\text{m}^3$, respectively).

Air Quality Table 2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Standard	California Standard
Ozone (O ₃)	8 Hour	0.075 ppm ^a (147 µg/m ³)	0.070 ppm (137 µg/m ³)
	1 Hour	—	0.09 ppm (180 µg/m ³)
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m ³)	9.0 ppm (10 mg/m ³)
	1 Hour	35 ppm (40 mg/m ³)	20 ppm (23 mg/m ³)
Nitrogen Dioxide (NO ₂)	Annual	0.053 ppm (100 µg/m ³)	0.03 ppm (57 µg/m ³)
	1 Hour	0.100 ppm (188 µg/m ³) ^b	0.18 ppm (339 µg/m ³)
Sulfur Dioxide (SO ₂)	Annual	0.030 ppm (80 µg/m ³)	—
	24 Hour	0.14 ppm (365 µg/m ³)	0.04 ppm (105 µg/m ³)
	3 Hour	0.5 ppm (1300 µg/m ³)	—
	1 Hour	—	0.25 ppm (655 µg/m ³)
Particulate Matter (PM ₁₀)	Annual	—	20 µg/m ³
	24 Hour	150 µg/m ³	50 µg/m ³
Fine Particulate Matter (PM _{2.5})	Annual	15 µg/m ³	12 µg/m ³
	24 Hour	35 µg/m ³	—
Sulfates (SO ₄)	24 Hour	—	25 µg/m ³
Lead	30 Day Average	—	1.5 µg/m ³
	Calendar Quarter	1.5 µg/m ³	—
Hydrogen Sulfide (H ₂ S)	1 Hour	—	0.03 ppm (42 µg/m ³)
Vinyl Chloride (chloroethene)	24 Hour	—	0.01 ppm (26 µg/m ³)
Visibility Reducing Particulates	8 Hour	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70%.

Source: ARB 2010a.

Notes:

^a The 2008 standard is shown above, but as of September 16, 2009 this standard is being reconsidered. The 1997 8-hour standard is 0.08 ppm.

^b The U.S. EPA is in the process of implementing this new standard, which became effective April 12, 2010. This standard is based on the 3-year average of the 98th percentile of the yearly distribution of the daily 1-hour maximum concentrations.

In general, an area is designated as attainment if the ambient concentration of a particular air contaminant does not exceed the standard. Likewise, an area is designated as non-attainment for an air contaminant if that contaminant standard is violated. In circumstances where there is not enough ambient data available to support designation as either attainment or non-attainment, the area can be designated as unclassified. The unclassified area is normally treated the same as an attainment area for regulatory purposes. An area could be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same air contaminant.

The project site is located in the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The Riverside County portion of the MDAB is designated as non-attainment for the state ozone and PM10 standards. The project site is designated as attainment or unclassified for all federal criteria pollutant ambient air quality standards and the state CO, NO₂, SO₂, and PM2.5 standards. **Air Quality Table 3** summarizes the project site's attainment status for various applicable state and federal standards.

Air Quality Table 3
Federal and State Attainment Status
Project Site Area within Riverside County

Pollutant	Attainment Status ^a	
	Federal	State
Ozone	Unclassified/Attainment ^b	Moderate Nonattainment
CO	Unclassified/Attainment	Unclassified ^b
NO ₂	Attainment ^c	Attainment
SO ₂	Attainment	Attainment
PM10	Unclassified ^b	Nonattainment
PM2.5	Unclassified/Attainment	Unclassified

Source: ARB 2010c, U.S.EPA 2010a.

^a Unclassified is treated the same as Attainment for regulatory purposes.

^b Unclassified/Attainment status for the project site, not the entire MDAB.

^c Attainment status for the new federal 1-hour NO₂ standard is scheduled to be determined by January 2012.

Ambient air quality monitoring data for ozone, PM10, PM2.5, CO, NO₂, and SO₂, compared to most restrictive applicable standards for the years between 2005 through 2009 at the most representative monitoring stations for each pollutant are shown in **Air Quality Table 4**. The 2009 data are preliminary and are not available for all pollutants. Ozone data are from the Blythe-445 West Murphy Street monitoring station. PM10, PM2.5, and CO data are from the Palm Springs-Fire Station monitoring station. The NO₂ data are from the Alamo Lake State Park monitoring station in Arizona. SO₂ data are from the Victorville-14306 Park Avenue monitoring station. **Air Quality Figures 1** and **2** show trends for the 1-hour and 8-hour ozone data for the years 1999 through 2009, and 24-hour PM10 and PM2.5 data for the years 1999 through 2008, respectively.

Ozone

Ozone is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted nitrogen oxides (NO_x) and hydrocarbons (Volatile Organic Compounds [VOCs]) in the presence of sunlight to form ozone. Pollutant transport from the South Coast Air Basin (Los Angeles Area) is one source of the pollution experienced in the eastern Riverside County portion of the MDAB (SCAQMD 2007, p. 1-2).

As **Air Quality Figure 1** indicates, the maximum 1-hour ozone concentrations measured at the eastern border of Riverside County decreased from 1998 to 2003. From 2003 to 2009, the 1-hour and 8-hour maximum ozone concentrations have been relatively stable. The collected air quality data (not shown) indicate that the ozone

violations occurred primarily during the sunny and hot periods typical during May through September.

Air Quality Table 4
Criteria Pollutant Summary
Maximum Ambient Concentrations (ppm or $\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Period	Units	2005	2006	2007	2008	2009 ^g	Limiting AAQS ^c
Ozone	1 hour	ppm	0.084	0.078	0.092	0.074	0.072	0.09
Ozone	8 hours	ppm	0.072	0.059	0.071	0.071	0.066	0.07
PM10 ^{a,b}	24 hours	$\mu\text{g}/\text{m}^3$	66	73	83	75	--	50
PM10 ^{a,b}	Annual	$\mu\text{g}/\text{m}^3$	25.9	28	30	27	--	20
PM2.5 ^a	24 hours	$\mu\text{g}/\text{m}^3$	25	15.8	20.5	17.3	--	35
PM2.5 ^a	Annual	$\mu\text{g}/\text{m}^3$	8.4	7.8	8.6	5.2	--	12
CO	1 hour	ppm	2.1	2.3	1.5	1.0	2.3	20
CO	8 hours	ppm	0.80	0.85	0.79	0.54	0.67	9.0
NO ₂ ^{d,e}	1 hour	ppm	0.011	0.013	--	--	--	0.180
NO ₂ ^{e,f}	1 hour 98 th Percentile	ppm	0.011	0.013	--	--	--	0.100
NO ₂ ^e	Annual	ppm	0.0024	0.0026	--	--	--	0.03
SO ₂	1 hour	ppm	0.012	0.018	0.009	0.006	0.028	0.25
SO ₂	3 hour	ppm	0.008	0.012	0.006	0.005	0.006	0.5
SO ₂	24 hours	ppm	0.003	0.005	0.005	0.002	0.005	0.04
SO ₂	Annual	ppm	0.0013	0.0015	0.0013	0.0011	0.0012	0.03

Source: ARB 2010a; ARB 2010b; U.S.EPA 2009; ADEQ 2006; ADEQ 2007

Notes:

^a Exceptional PM concentration events, such as those caused by wind storms are not shown where excluded by U.S.EPA; however, some exceptions events may still be included in the data presented.

^b The PM10 data source is in the Coachella Valley (Palm Springs – Fire Station monitoring station) which is classified as a serious PM10 nonattainment area.

^c The limiting AAQS is the more stringent of the CAAQS or NAAQS for that pollutant and averaging period.

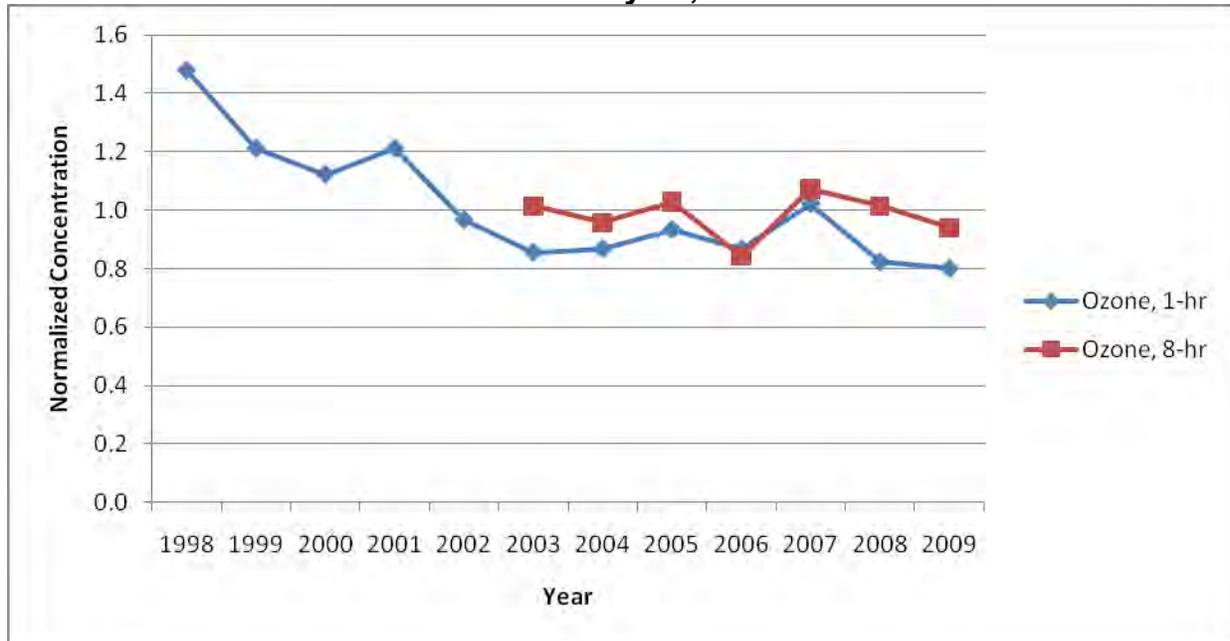
^d The State 1-hour NO₂ standard is based on the annual maximum 1-hour value.

^e The 2005 and 2006 NO₂ data are from the Alamo Lake State Park monitoring station operated by the Arizona Department of Environmental Quality. This station was in operation from May 20 to September 29, 2005, and from April 1 to October 31, 2006.

^f The federal 1-hour NO₂ NAAQS is based on the three-year average of the annual 98th percentile value of daily maximum 1-hour values. Due to the partial coverage for 2006, the annual maximum 1-hour value for the Alamo Lake State Park station is used.

^g Air quality data for 2009 are incomplete and preliminary. The 2009 data were not used to establish background concentrations. Use of the 2006 through 2008 data yield higher background concentrations except for the 1-hour SO₂ value which is suspect.

Air Quality Figure 1
1998-2009 Historical Air Quality Data
For Eastern Riverside County
Ozone Data for Blythe, California^{a,b}



Source: ARB 2009; ARB 2010b; U.S.EPA 2009

Notes:

^a The highest measured ambient concentration for a year was divided by the applicable standard to provide a data point for that year. A data point greater than 1.0 means that the measured concentration exceeded the standard. A data point that is less than one means that the respective standard was not exceeded for that year. For example the 8-hour ozone data point in 2008 is 71 ppb/70 ppb standard = 1.01.

^b All ozone data are from Blythe-445 West Murphy Street monitoring station. 8-hr ozone data were not available for this station before 2003.

Particulate Matter (PM10) and Fine Particulate Matter (PM2.5)

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere.

The project site is non-attainment for state PM10 standards and unclassified for the federal PM10 standard. **Air Quality Figure 2** shows PM10 and PM2.5 data for the Palm Springs – Fire Station monitoring station. This figure shows large variations from year to year in the maximum measured concentrations and clear exceedances of the state 24-hour PM10 standard. It should be noted that an exceedance does not necessarily mean a violation or nonattainment, as exceptional events do occur and some of those events, which do not count as violations, may be included in the data. The eastern portion of Riverside County where the project site is located is designated as unclassified for the PM10 NAAQS. The San Bernardino County portion of the MDAB which is located immediately north of the project site is designated as nonattainment for the PM10 NAAQS.

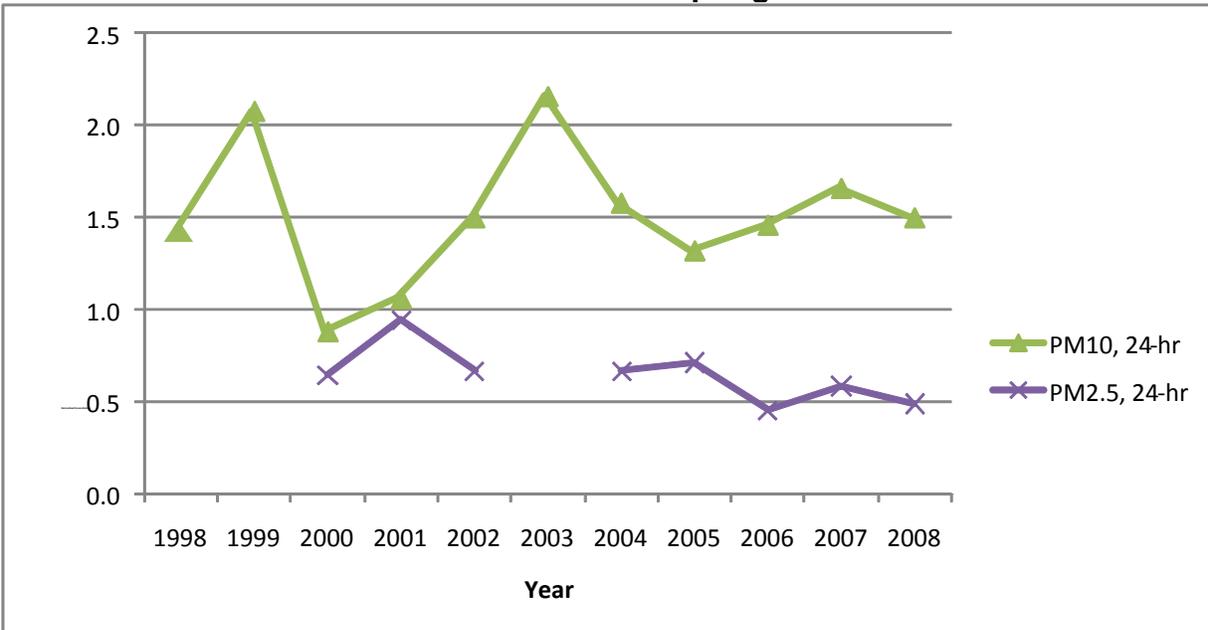
Fine particulate matter, or PM2.5, is produced directly through combustion or indirectly through complex reactions in the atmosphere that involve precursor gases such as SO_x,

NO_x and VOC. PM_{2.5} consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds.

The entire MDAB is classified as unclassified/attainment for the federal 24-hour and annual PM_{2.5} standards. The project area is designated unclassified for the state annual PM_{2.5} standard. The differences in the PM₁₀ and PM_{2.5} concentrations indicate that a substantial fraction of the ambient PM₁₀ levels is most likely due to localized fugitive dust sources, such as wind-blown dust, vehicle travel on unpaved roads, or agricultural operations.

Fugitive dust, unlike combustion source particulate and secondary particulate, is composed of a much higher fraction of larger particles than smaller particles, so the PM_{2.5} fraction of fugitive dust is much smaller than the PM₁₀ fraction. Therefore, when PM₁₀ ambient concentrations are significantly higher than PM_{2.5} ambient concentrations, this tends to indicate that a large proportion of the PM₁₀ concentrations are from fugitive dust emission sources, rather than from combustion particulate or secondary particulate emission sources.

Air Quality Figure 2
1998-2008 Historical Air Quality Data
For Riverside County
PM 10 and PM2.5 Data for Palm Springs – Fire Station^{a,b}



Source: ARB 2009, U.S.EPA 2009

Notes:

^a The highest measured ambient concentration for a year was divided by the applicable standard and to determine the data point for the year. A data point on the chart that is greater than 1.0 means that the measured concentration exceeded the standard, and a point that is less than one means that the respective standard was not exceeded for that year. For example the 24-hour PM10 data point in 2008 is 1,5 which means the measured concentration was 1.5 times the 50 µg/m³ standard or 75 µg/m³.

^b All PM data are from Palm Springs – Fire Station monitoring station. 24-hr PM2.5 data were not available for this station before 2000.

Nitrogen Dioxide

The entire air basin is classified as attainment for the state 1-hour and annual NO₂ standards and the federal annual NO₂ standard. The new federal short-term NO₂ NAAQS was effective as of April 12, 2010 and is based on the three-year average of the annual 98th percentile of the daily maximum 1-hour concentrations. The NO₂ attainment status could change due to the new federal short-term NO₂ standard although a review of the air basin wide monitoring data suggest this would not occur for the MDAB (ARB 2010d). The attainment status review is scheduled to be completed by July 2012.

Approximately 90% of the NO_x emitted from combustion sources is nitric oxide (NO), while the balance is NO₂. NO is oxidized in the atmosphere to NO₂, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO₂ typically occur during the fall. The winter atmospheric conditions can trap emissions near the ground level, but lacking substantial photochemical activity (sun light), NO₂ levels are relatively low. In the summer the conversion rates of NO to NO₂ are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO₂.

Carbon Monoxide

The area is classified as unclassified or attainment for the state and federal 1-hour and 8-hour CO standards. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. The project area has a lack of significant mobile source emissions and has CO concentrations that are well below the state and federal ambient air quality standards.

Sulfur Dioxide

The entire air basin is classified as attainment for the state and federal SO₂ standards. Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Sources of SO₂ emissions within the MDAB come from a wide variety of fuels: gaseous, liquid and solid; however, the total SO₂ emissions within the eastern MDAB are limited due to the limited number of major stationary sources and California's and U.S. EPA's substantial reduction in motor vehicle fuel sulfur content. The project area's SO₂ concentrations are well below the state and federal ambient air quality standards.

Summary

In summary, staff recommends the background ambient air concentrations in **Air Quality Table 5** for use in the modeling and impacts analysis. The recommended background concentrations are based on the maximum criteria pollutant concentrations measured at the most representative monitoring stations closest to the project site.

Where possible, staff prefers that the recommended background concentration measurements come from nearby monitoring stations located in areas with characteristics similar to the project site and that the data cover three years. However, the air quality monitoring network in the MDAB is very sparse. There are relatively few air quality monitoring stations in the MDAB and there are no monitoring stations in proximity to the project site. For this proposed project, the Blythe monitoring station (ozone only), at approximately 40 miles southeast of the project site, is the closest monitoring station. The Alamo Lake State Park monitoring station (NO₂) is located approximately 74 miles to the east in Arizona. The Palm Springs - Fire Station monitoring station (PM₁₀, PM_{2.5}, and CO) is located approximately 100 miles west of the project site. The Victorville monitoring station (SO₂) is located approximately 150 miles west northwest of the project site. In general, the Palm Springs and Victorville monitoring stations are considered to provide very conservative estimates of the worst case background concentrations due to their proximity to the South Coast Air Basin (Metropolitan Los Angeles). As noted earlier, the 2009 air quality data are preliminary and were not used in the determination of background concentrations for the project. If the 2009 data were used, only the 1-hour SO₂ background value would be changed. However, the 2009 maximum 1-hour SO₂ value for Victorville is suspect since it is more than three times the 2009 maximum 3-hour SO₂ value reported for Victorville.

AIR QUALITY TABLE 5
Staff Recommended Background Concentrations ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Period	Background	State	Federal	Percent of	Percent of
		Concentration ($\mu\text{g}/\text{m}^3$)	Standard ($\mu\text{g}/\text{m}^3$)	Standard ($\mu\text{g}/\text{m}^3$)	State Standard	Federal Standard
NO ₂	1-hour State ^a	29.4	339	---	7%	---
	1-hour National ^b	29.4	---	188	---	13%
	Annual	4.9	57	100	33%	19%
SO ₂	1-hour	47	655	—	7%	---
	3-hour	31	—	1,300	---	2%
	24-hour	13	105	365	12%	4%
	Annual	4	—	80	---	5%
CO	1-hour	2,645	23,000	40,000	12%	7%
	8-hour	944	10,000	10,000	9%	9%
PM ₁₀	24-hour	83	50	150	166%	55%
	Annual	30.5	20	—	153%	---
PM _{2.5}	24-hour	20.5	—	35	---	59%
	Annual	8.7	12	15	73%	58%

Sources: ARB 2010a; ARB 2010b; U.S.EPA 2010a; U.S.EPA 2010b; ADEQ 2006; ADEQ 2007

a) State 1-hour NO₂ AAQS based on maximum measured 1-hour value

b) National 1-hour NO₂ AAQS based on 3-year average of annual 98th percentile of the daily maximum 1-hour values

Due to the partial coverage of the NO₂ data from the Alamo Lake State Park monitoring station, the applicant was requested to provide additional information supporting the use of these data to represent the background NO₂ concentrations for the project site. In the supplemental information (CH2MHill 2010I), the applicant analyzed several factors relevant to the representativeness of the Alamo Lake data for the project site. These factors included relative proximity of the monitoring stations to the project site, similarity of surrounding land uses, likely stationary and mobile sources of NO_x emissions in proximity to the project site compared to the monitoring stations, seasonal climatology, geography (i.e., terrain) and data quality (i.e., compliance with applicable quality assurance protocols). To address the partial year coverage of the Alamo data, the applicant applied seasonal adjustment factors to increase the measured 1-hour values from the Alamo Lake monitoring station. This adjustment resulted in a 1-hour background NO₂ value to be used in the air quality impact assessment that is approximately 22% higher than the maximum measured 1-hour value. Based on this additional analysis, staff concurs with the applicant's proposed use of the Alamo Lake NO₂ data as the most representative NO₂ data available for the project site.

Monitoring stations located in Imperial County were not considered representative for the project site due to the predominant air flow patterns and due to air pollution from Mexico that creates a significant local influence for the worst-case pollutant concentration readings within Imperial County.

The recommended background concentrations for PM₁₀ in **Air Quality Table 5** are above the most restrictive existing ambient air quality standards, while the recommended background concentrations for the other pollutants are all below the most restrictive existing ambient air quality standards.

The pollutant modeling analysis was limited to the pollutants listed above in **Air Quality Table 5**; therefore, recommended background concentrations were not determined for the other criteria pollutants (ozone, lead, visibility, etc.).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff provided a number of data requests regarding the construction and operations emissions estimates and air dispersion modeling analysis (CEC 2010b), which the applicant responded to by providing revised emissions estimates and substantially revised and more robust dispersion modeling analysis (CH2MHill 2010a; CH2MHill 2010l; CH2M-Hill 2010m). Staff has reviewed the revised emission estimates and air dispersion modeling analysis and finds them to be reasonable considering the level of emissions mitigation now stipulated to by the applicant.

Project Description

The RSEP is a 150MW concentrating solar thermal power plant with a central receiver tower, sun-tracking heliostat field and an integral thermal storage system using liquid salt as the heat transfer and storage medium. Hot liquid salt is routed to a steam generation system which generates steam for use in a high efficiency reheat steam turbine.

The RSEP site is a privately owned parcel of land located in eastern Riverside County. The site is adjacent to State Route (SR) 62, which parallels a portion of the Arizona-California Railroad and the Colorado River Aqueduct, near the junction of SR 62 and Blythe-Midland Road, and near the sparse remains of the abandoned town of Rice, California. The nearest occupied residences are approximately 15 miles northeast at the rural crossroads community of Vidal Junction, California. A small residential settlement is located at the Metropolitan Water District of Southern California's Iron Mountain Pumping Plant, approximately 17 miles west. The nearest town is Parker, Arizona located approximately 32 miles east of the RSEP site. The town of Blythe, California is located approximately 40 mile to the southeast.

The RSEP would use an air cooled condenser (ACC) to remove waste heat for the steam cycle. Total maximum water consumption would be approximately 180 acre feet per year and would be supplied from on-site wells. Major water uses would be for boiler water makeup and for washing of the heliostats. Smaller volumes of water would be used for an auxiliary cooling system, general plant service water and sanitary uses.

The RSEP steam turbine generator would tie into an on-site, 161/230kV-capable switchyard. From the switchyard, a 10.0 mile, 161/230kV-capable generation tie-line would connect the RSEP to the Western Area Power Administration's existing Parker-Blythe transmission line. The generation tie-line would be constructed partly on federal land and partly on private lands, and would require construction of 4.6 miles of new unpaved access roads and the use of 5.4 miles of existing dirt roads.

No fossil fuels would be used in normal operation of the solar thermal power plant. The RSEP would have no connection to the natural gas pipeline network. Fossil fuel use for normal facility operation would be limited to emergency equipment and plant vehicles, primarily heliostat washing trucks. Fossil fuel (propane or natural gas) would be trucked to the site for use in the salt system commissioning process which would be completed prior to plant commissioning.

Project Emissions

Project Construction

The total duration of project construction for RSEP is estimated to be approximately 27 months. Construction of the RSEP would include the solar receiving tower, the steam turbine power block, up to 17,500 heliostats, molten salt storage tanks, various auxiliary equipment and ancillary structures, and the 10.0-mile long generation tie line. Approximately 1500 acres of the total land holding of 3,324 acres would experience temporary disturbance during construction, resulting in 1,410 acres of permanently disturbed land area which will be enclosed within a security fence.

Onsite and offsite project emissions during construction were divided into three categories: vehicle and construction equipment exhaust, fugitive dust generated by vehicles and construction equipment, and windblown fugitive dust. Construction equipment exhaust emissions were estimated using URBEMIS2007 emission factors. Fugitive dust emissions were estimated using EPA-approved emission factors and methodology published in AP-42 (U.S.EPA 2006a, U.S.EPA 2006b). The EPA-approved emission factors were reduced by 68% based on the South Coast Air Quality Management District (SCAQMD) CEQA handbook (SCAQMD 1993). Per the SCAQMD handbook, the reduction would be achieved by watering traveled roads twice a day. Fugitive dust emissions from soil disturbance (e.g., grading activities) were estimated based on the controlled emission factor published in URBEMIS. The controlled emission factor assumed 50% control of fugitive dust emissions by applying water to the disturbed surface. Fugitive dust emissions from wind-erosion of material stockpiles were estimated using the SCAQMD CEQA handbook. On-road exhaust emissions were estimated using EMFAC2007 (version 2.3) emission factors. On-road and off-road exhaust emissions also were calculated assuming construction fleets would use ultra low sulfur diesel (ULSD) fuel, the only diesel fuel approved for sale in California. Due to the remote location of the project site, the applicant proposed to use small diesel engine-powered electrical generators and water pump during construction. These diesel engines would be temporary sources permitted by the MDAQMD and would be required to meet the applicable NSPS and ARB emission limits.

Offsite construction emissions would also occur during the 6 months of construction for the 10.0-mile-long generator tie-line. Offsite emission sources include the exhaust emissions from construction equipment, motor vehicles traveling to and from the planned work sites and fugitive dust from construction activities and vehicle travel on roadways. The emission calculation methodology for the offsite construction activities was similar to the methodology for estimating onsite construction emissions.

The maximum daily emissions were estimated based on the month with the projected maximum operations of construction equipment, heavy-duty truck operations, fugitive dust, and projected roundtrip workforce commuting trips, divided by the number of days of operation within that month. Maximum annual emissions were estimated based on the number and type of construction equipment, the number of heavy-duty trucks, fugitive dust, and the roundtrip workforce commutes projected for each month of construction. The maximum annual construction emissions were estimated as the sum of the maximum monthly emissions over a 12-month period.

The maximum daily and annual construction emissions are presented in **Air Quality Tables 6 and 7**.

AIR QUALITY TABLE 6
Maximum Daily Construction Emissions With Mitigation
(lbs/day)

Construction Emission Source	NOx	CO	VOC	SO2	PM10	PM2.5
Onsite construction emissions	412	189	52	0.5	302	59
Offsite vehicle emissions	684	381	37	1.1	376	59
Offsite construction emissions	104	53	11	0.1	44	8

Source: CH2MHill 2010a

AIR QUALITY TABLE 7
Maximum Annual Construction Emissions With Mitigation
(tons per year)

Construction Emission Source	NOx	CO	VOC	SO2	PM10	PM2.5
Onsite construction emissions	37.0	18.9	6.6	0.055	31.3	5.0
Offsite vehicle emissions	72.2	44.6	4.0	0.1	43.3	6.5
Offsite construction emissions	2.9	1.7	0.3	0.004	2.3	0.3

Source: CH2MHill 2010a

Commissioning of Salt System

The commissioning process for the salt system would involve the melting, heating, and conditioning of approximately 70 million pounds (35,000 tons) of sodium nitrate and potassium nitrate salts. The salt commissioning process would take approximately 140 days and would begin in Month 18 of the construction schedule. The other construction activities and their associated emissions would continue during the salt system commissioning activities.

The salt melting and heating phases of the commissioning process would produce emissions of criteria pollutants from the combustion of gaseous fuels in two temporary, gas-fired convection heaters with rated capacities of 55 million British thermal units per hour (MMBtu/hr) and 20 MMBtu/hr. Propane and natural gas (compressed or liquefied) are the candidate gaseous fuels. The highest emission rates among the candidate fuels were used to estimate emissions. The estimates for NOx emissions from the two heaters assume use of ultra-low NOx burners and flue gas recirculation. Fugitive emissions from the handling, milling and conveying of the solid salts would be collected and exhausted through a fabric filter baghouse unit and salt handling and milling

equipment would be located in an enclosure. The salt melting and heating operations would run 24 hours per day and 7 days a week until the 35,000 tons of salt have been processed.

The salt conditioning phase of the salt commissioning process would result in NO_x emissions (as NO₂) from the oxidation of magnesium nitrate that is present as a trace impurity in the potassium nitrate and sodium nitrate salts. The salt conditioning phase does not directly involve combustion of fossil fuels. The NO_x emissions estimate for the salt conditioning phase assumes that the amount of magnesium nitrate impurity in the potassium and sodium nitrate salts would be at the maximum amount allowed in the vendor guarantee and that all of the magnesium nitrate would be oxidized and released as NO₂ during the conditioning phase. To reduce NO_x emissions from the oxidation of the magnesium nitrate impurity, the vent streams from the salt heater and the hot storage tank would be routed through a multi-stage chemical wet scrubber with an assumed control efficiency of 85%. The analysis assumes a constant NO_x emission rate from the magnesium nitrate oxidation but the actual NO_x emission rate is expected to be lower since the average magnesium nitrate content is likely to be lower than the vendor guarantee and the overlap of the melting, heating and conditioning phases of the commissioning process.

After salt system commissioning is completed, the salt handling system, the baghouse, the two fossil fuel-fired heaters and the NO_x scrubber system would be dismantled and removed from the project site. Barring a catastrophic event, the applicant has stated that there would be no need to add additional salt to the molten salt system after the initial commissioning of the system. The design for the molten salt system provides a “volume margin” of 2% to cover nominal leaks and releases over the 30-year life of the molten salt system. Consequently, there would be no future salt treatment required and no future emissions from fossil-fueled heaters.

The criteria pollutant emissions estimated for the salt commissioning process are presented in **Air Quality Table 8**. The emissions from the melting and heating phases are from the combustion of the gaseous fuel in the heaters. The emissions from the conditioning phase are from the oxidation of the magnesium nitrate trace contaminant. The estimated durations of the melting, heating and conditioning phases are 91, 36 and 69 days, respectively.

AIR QUALITY TABLE 8
RSEP Salt System Commissioning Emissions

	NO _x	CO	VOC	SO ₂	PM ₁₀	PM _{2.5}
Maximum hourly, lb/hr						
Melting	0.59	5.64	0.75	1.13	0.53	0.53
Heating	0.21	2.05	0.27	0.41	0.19	0.19
Conditioning*	10.9	—	—	—	—	—
Maximum daily, lb/day						

Melting	14.1	135.2	18.0	27	12.6	12.6
Heating	5.11	49.2	6.56	9.84	4.59	4.59
Conditioning*	261	—	—	—	—	—
Salt system commissioning period, lb/period						
Melting	1,282	12,327	1,644	2,465	1,151	1,151
Heating	186	1,790	239	358	167	167
Conditioning*	17,901	—	—	—	—	—
Total salt system commissioning period, tons (all phases)	9.7	7.1	0.9	1.4	0.7	0.7

*Conditioning emissions represent post-control emissions.

lb/hr = pound(s) per hour

lb/period = pound(s) per duration of the commissioning activities

Source: SR 2009a

Salt Trace Contaminants

The dry potassium nitrate and sodium nitrate salts contain trace contaminants including several metals and metal salts, most notably magnesium nitrate. The applicant proposes to limit the trace contaminants by using maximum allowable (i.e., “not to exceed”) specifications for the specific, detectable contaminants when procuring the salts. The applicant states that the only metal contaminants present at levels above the detection allowance (i.e., detection threshold) are magnesium and iron. Both of these metals would be oxidized during the salt conditioning phase to form magnesium oxide and iron oxide. Both of these oxides would be non-volatile and would remain in solid form in the molten salt system throughout the life of the system. For those metals below the detection threshold, the applicant states that the metals are also non-volatile and would remain in the salt system. (CH2MHill 2010a; CH2Mhill 2010m)

During the salt conditioning process, the magnesium nitrate is oxidized to form magnesium oxide, nitrogen dioxide (NO₂) and oxygen. The emissions of NO₂ would be controlled with a multi-stage wet scrubber during the salt conditioning.

Overlap of Construction and Salt Commissioning

To assess the impacts during the salt commissioning period, the applicant assumed that the individual melting, heating, and conditioning steps in the overall salt system commissioning process would occur concurrently. In addition, since the salt commissioning would be done during months 18 to 21 of construction, the applicant modeled the maximum construction emissions that would occur concurrently with the salt commissioning emissions.

Initial Project Commissioning

The initial project commissioning would occur during the final months of construction and would follow the salt system commissioning activities. Project commissioning would include the power block commissioning work such as steam blows and steam turbine startup activities. The power block commissioning activities would not result in the combustion of fossil fuels, nor would the wet surface air cooler (WSAC) unit be in

operation. As a result, no additional emissions of air pollutants would occur during the power block commissioning phase.

Project Operation

The RSEP facility would be a nominal 150 MW concentrating solar thermal electrical generating facility. The direct air pollutant emissions from power generation would be negligible; however, there would be emissions from auxiliary equipment, routine testing of emergency equipment and various maintenance activities necessary to operate and maintain the facility.

The following are the stationary and mobile emission source operating assumptions that were used to develop the operation emissions estimates for RSEP:

Stationary emission sources

- Emergency fire water pump engines (2 total): 600 hp diesel-fired engines. Operation for testing and maintenance not to exceed 30 minutes per test, and not to exceed 26 hours per year. The applicant must conduct weekly, 30-minute test runs of the diesel engine fire pumps to comply with the requirements of the National Fire Protection Association for this equipment (NFPA 25, Chapter 5)
- Emergency generator engines (2 total): 4,020 hp diesel-fired engines. Operation for testing and maintenance not to exceed 60 minutes per test, and not to exceed 26 hours per year. The applicant must conduct regular testing and maintenance of the emergency generators to comply with the manufacturer's maintenance guidelines. Due to several factors including the larger size of the diesel engines used for the emergency generators, a longer test run (60 minutes vs. 30 minutes) is recommended by the manufacturer.
- Wet surface air cooling system (Two two-cell units): Total recirculation rate of 2,736 gallons per minute. Used to remove residual heat from balance of plant (BOP) equipment. The WSAC system would have a maximum run time of 4,400 hours per year and a maximum drift rate of 0.0005%.

Mobile emissions sources

Mobile emissions sources required for operation and maintenance were estimated by the applicant based on vehicle miles traveled (VMT) and operating hours. Each mobile source category has a different basis for emissions estimates as provided in the applicant's estimate spreadsheets (SR 2009a: Appendix 5.1B and CH2MHill 2010a)

The daily and annual emissions for the RSEP onsite stationary and onsite and offsite mobile sources for the Operations phase are summarized in **Air Quality Tables 9 and 10**.

Salt losses during operations

The molten salt system includes two large molten salt storage tanks. Normal operations involve the transfer of molten salt from the "cold" storage tank (nominal temperature 550°F) through the solar receiver to the "hot" storage tank (nominal temperature 1050°F). The hot salt would be routed through a heat exchanger to generate steam and then

back to the cold storage tank. For normal operations of the RSEP, this transfer of molten salt would occur on a daily basis. As the volume of the molten salt in a storage tank increases, the space above the molten salt is exhausted through vents to the atmosphere. As the volume of molten salt in a storage tank decreases, ambient air is drawn into the tank through vents. The applicant analyzed the potential for emissions to the atmosphere from this “cycling” of the ullage space above the molten salt in the storage tanks and has stated that there would be no salt loss and no “fumes” from these normal venting operations.

As noted above, barring a catastrophic event, the applicant has stated that there would be no need to add additional salt to the molten salt system after the initial commissioning of the system. The design for the molten salt system provides a “volume margin” of 2% to cover nominal leaks and releases over the 30-year life of the molten salt system.

Air Quality Table 9
RSEP Operations - Maximum Daily Emissions (lbs/day)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Operation Emissions						
Emergency Fire Pump Engines	3.82	0.06	0.74	0.14	0.14	0.007
Emergency Generators	90.2	1.78	11.18	0.54	0.54	0.09
Auxiliary Cooling Unit	---	---	---	0.36	0.36	---
Onsite Maintenance Vehicles	2.21	0.60	0.99	46.43	4.52	0.003
Subtotal of Onsite Emissions	96.23	2.44	12.91	47.47	5.56	0.10
Offsite Emissions						
Delivery Vehicles	8.44	0.43	1.95	0.60	0.38	0.02
Employee Vehicles	1.91	0.45	17.62	2.61	0.79	0.03
Subtotal of Offsite Emissions	10.35	0.87	19.57	3.21	1.16	0.04
Total Maximum Daily Emissions	106.58	3.31	32.48	50.68	6.72	0.14

Source: SR 2009a: Tables 5.1-14 and Appendix 5.1B; CH2MHill 2010a: Table DR5-3; CH2MHill 2010l: Table SII2-1)

Air Quality Table 10
RSEP Operations - Maximum Annual Emissions (tons/year)

	NOx	VOC	CO	PM10	PM2.5	SOx
Onsite Operation Emissions						
Emergency Fire Pump Engines	0.099	0.002	0.019	0.004	0.004	0.0002
Emergency Generators	1.174	0.023	0.145	0.007	0.007	0.001
Auxiliary Cooling Unit	---	---	---	0.034	0.034	---
Onsite Maintenance Vehicles	0.288	0.078	0.129	5.878	0.600	0.001
Subtotal of Onsite Emissions	1.561	0.102	0.293	5.922	0.644	0.002
Offsite Emissions						
Delivery Vehicles	0.294	0.069	2.704	0.402	0.402	0.005

Employee Vehicles	1.098	0.056	0.254	0.078	0.078	0.002
Subtotal of Offsite Emissions	1.391	0.124	2.957	0.479	0.479	0.007
Total Maximum Annual Emissions	2.95	0.23	3.25	6.40	1.12	0.01

Source: SR 2009a: Tables 5.1-14 and Appendix 5.1B; CH2MHill 2010a: Table DR5-3; CH2MHill 2010l: Table SII2-1)

Dispersion Modeling Assessment

The emissions from a proposed project are the actual mass of pollutants that would be emitted from the project to the atmosphere. The impacts for a proposed project are the concentration of pollutants that would occur at ground level due to the emissions from the project. When pollutants are emitted at a high temperature and velocity through a relatively tall stack, the pollutants would be greatly diluted by the time they reach ground level. For the proposed Rice project there are no very tall emission stacks, but the construction and maintenance vehicles and emergency engines do have relatively high-temperature and high-velocity exhausts. The heaters used for the salt system commissioning also have relatively high exhaust temperatures and velocities. The emissions from the proposed project, both stationary source and onsite mobile source emissions, were analyzed through the use of air dispersion models to determine the probable impacts at ground level.

Air dispersion models provide a means of predicting the ground level magnitude of the impacts of the emissions from a proposed project at locations around the project site. These dispersion models consist of a set of complex mathematical equations, which are repeatedly solved by a computer for many ambient conditions to provide an estimate of the maximum offsite pollutant concentrations. The model results are generally described as maximum concentrations, in units of mass per volume of air, such as micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

The applicant used the U.S.EPA guideline model ISCST3 (version 02035) and the SCREEN3 meteorological set and local terrain to estimate ambient impacts from project construction, salt system commissioning and operation. The SCREEN3 meteorological data set contained a matrix of 54 different combinations of wind speed and stability classes designed to evaluate a full range of possible 1-hour average meteorological conditions. The additional short-term and annual concentrations at each receptor were then calculated based on the 3-hour, 8-hour, 24-hour, and annual persistence factors outlined in EPA's *Screening Procedures for Estimating the Air Quality Impact of Stationary Sources* (EPA, 1992).

The construction emission sources for the site were grouped into three categories: vehicle and construction equipment exhaust, fugitive dust from vehicle and construction equipment, and windblown fugitive dust. Due to the remote location of the project site, the applicant is proposing the use of temporary, diesel engine-powered electrical generators to provide onsite power. The exhaust emissions from these temporary generators were also included in the construction emissions. The exhaust emissions

and the fugitive dust emissions from vehicles and equipment were modeled as volume sources. Wind-blown fugitive dust emissions were modeled as an area source.

To assess the impacts during the salt commissioning period, the applicant assumed that the individual melting, heating, and conditioning processes would occur concurrently. In addition, since the salt commissioning would be done during months 18 to 21 of construction, the applicant modeled the maximum construction emissions along with the salt commissioning emissions. The two heaters used to melt and heat the salt were modeled as point sources. The NO_x emissions from the multi-stage wet chemical scrubber were modeled as a point source. Because the commissioning phase is a one-time activity and is expected to be completed within a 5-month period, annual impacts were not assessed. The emissions from the emergency generators and diesel fire pumps also were not included as part of the RSEP salt commissioning assessment.

The impact assessment for the RSEP operations addressed the four, permanent diesel-fired emergency engines, the wet surface air cooler and the exhaust and fugitive dust emissions from the maintenance vehicles. The four emergency diesel engines (two diesel engine-powered fire water pumps and two diesel engine-powered emergency electrical generators) and the WSAC were modeled as point sources and the exhaust and fugitive dust emissions from the maintenance vehicles were modeled as volume sources.

The inputs for the air dispersion models included stack information (exhaust flow rate, temperature, and stack dimensions), specific engine and vehicle emission data, site elevation data and meteorological data, such as wind speed, wind direction and atmospheric conditions.

The results from the screening modeling showed 1-hour NO₂ impacts below but close to the state 1-hour NO₂ standard. Due to these relatively high 1-hour NO₂ impacts from the screening analysis and to assess compliance with the new federal 1-hour NO₂ ambient air quality standard that became effective on April 12, 2010, the applicant remodeled the construction, salt commissioning, and operation emissions using more sophisticated modeling techniques based on the EPA AERMOD dispersion model (version 09292) and the ozone limiting method (OLM).

NO_x emissions from internal combustion sources, such as diesel engines, are primarily in the form of nitric oxide (NO) rather than NO₂. The NO oxidizes into NO₂ in the atmosphere, primarily through the reaction with ambient ozone. The NO_x OLM calculates ambient NO₂ concentrations based on the assumption that all ambient ozone reacts with the stack NO emissions to form NO₂. The applicant used the default assumption of an initial NO₂/NO_x ratio of 0.1 for all NO_x emission from combustion sources. Hourly ozone monitoring data from Niland, California were used for all of 2002 and January through April of 2003, and from Blythe for May 2003 through 2004, to correspond with the hourly meteorological data from the Blythe Airport. The applicant used these hourly ozone and meteorological data and the maximum hourly NO_x emission rates to estimate maximum hourly NO₂ impacts.

For the 1-hour NO₂ re-modeling, the receptor locations were consistent with the receptor locations used for previous screening modeling analysis. Source locations,

parameters, and emission rates for the construction and salt commissioning remodeling were also consistent with those used in the previous screening modeling. As the project planning progressed, the applicant determined that larger emergency generators were needed so the applicant replaced the two 3,600 hp Caterpillar diesel generators with two 4,020 hp Caterpillar units to provide the higher rated electrical output required for the RSEP emergency electrical power. Based on manufacturer's requirements, the applicant increased the run time for routine testing and maintenance of the emergency generators to 60 minutes per test. The emission rates and exhaust parameters for the operations scenario were updated to reflect the new, larger engines and longer run time for the maintenance testing for the emergency diesels (CH2MHill 2010l).

Staff reviewed the background concentrations provided by the applicant and made some minor adjustments to arrive at the ambient background concentrations shown in **Air Quality Table 5**. As noted above, based on the additional analysis completed by the applicant, staff concurs with the use of the NO₂ data from the Alamo Lake State Park monitoring station. Staff added the modeled impacts to these background concentrations, and then compared the results with the ambient air quality standards for each respective air contaminant to determine whether the proposed project's emission impacts would cause a new exceedance of an ambient air quality standard or would contribute to an existing exceedance.

To assess compliance with the state 1-hour NO₂ standard, the maximum estimated 1-hour impact from the three-year period 2002 through 2004 was added to the background 1-hour NO₂ value from **Air Quality Table 5**. To evaluate compliance with the national 1-hour NO₂ standard, the three year average of the annual eighth highest modeled impact from the three years 2002, 2003 and 2004 was added to the adjusted maximum 1-hour NO₂ value measured at the Alamo Lake State Park site.

The following sections discuss the proposed project's direct air quality impacts from construction, salt commissioning and operation, as estimated by the applicant, and appropriate mitigation.

Construction Impacts and Mitigation

Using estimated peak hourly construction equipment exhaust emissions and fugitive emissions, the applicant modeled the proposed project's maximum 1-hour impacts due to construction emissions. The additional short-term and annual concentrations at each receptor were then calculated based on the 3-hour, 8-hour, 24-hour, and annual persistence factors (U.S.EPA 1992). To determine the construction impacts relative to the ambient air quality standards (i.e., 1-hour through annual), the predicted off-site impacts were added to a conservatively estimated background concentration levels (**Air Quality Table 5**) to determine the total impacts. The results of the applicant's modeling analysis for the construction impacts are presented in **Air Quality Table 11**. The construction modeling analysis includes both the onsite fugitive dust and vehicle tailpipe emission sources estimated by the applicant which are summarized in **Air Quality Tables 6 and 7**, and which include the applicant's proposed control measures. The 1-hour NO₂ impacts were assessed using the more sophisticated remodeling protocol described above.

This modeling analysis indicates, with the exception of PM10 that the proposed project would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. The conditions that would create worst-case project modeled PM10 impacts (low wind speeds) are not the same conditions when worst-case background PM10 is expected. Additionally, the worst-case project PM10 impacts occur at the fence line and drop quickly with distance from the fence line. Therefore, staff concludes that the construction impacts, when considering staff's mitigation measures would not contribute significantly to exceedances of PM10 standards.

However, in light of the existing PM10 and ozone non-attainment status for the project site area, staff considers the construction NOx, VOC, and PM emissions to be potentially CEQA significant and recommends that the off-road equipment and fugitive dust emissions be mitigated pursuant to CEQA.

The modeling analysis shows that, after implementation of the recommended emission mitigation measures, the proposed project's construction is not predicted to cause new exceedances of the NAAQS. Therefore, it has been determined that no adverse NEPA impacts would occur after implementation of the recommended mitigation measures.

AIR QUALITY TABLE 11

Maximum Modeled Impacts for Construction Phase and the Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum						
		Modeled Concentration ^a (µg/m ³)	Background Concentration ^b (µg/m ³)	Total Predicted Concentration (µg/m ³)	State Standard (µg/m ³)	Federal Standard (µg/m ³)	Percent of State Standard	Percent of Federal Standard
NO ₂	1-hour State ^c	162	29.4	191	339	---	56%	---
	1-hour National ^d	141	29.4	170	---	188	---	90%
	Annual	13	4.9	18	57	100	32%	18%
SO ₂	1-hour	0.33	47	47.3	655	—	7%	---
	3-hour	0.29	31	31.3	—	1,300	---	2%
	24-hour	0.14	13	13.1	105	365	13%	4%
	Annual	0.028	4	4.0	—	80	---	5%
CO	1-hour	136	2645	2781	23,000	40,000	12%	7%
	8-hour	95	944	1039	10,000	10,000	10%	10%
PM ₁₀	24-hour	29	83	112	50	150	224%	75%
	Annual	5	30.5	35.5	20	—	178%	---
PM _{2.5}	24-hour	5.8	20.5	26.3	—	35	---	75%
	Annual	0.91	8.7	9.6	12	15	80%	64%

a) Source: SR 2009a; CH2MHill 2010a; CH2MHill 2010m; CH2MHill 2010l

b) Source: Air Quality Table 5

c) State 1-hour NO₂ AAQS based on maximum 1-hour value

d) National 1-hour NO₂ AAQS based on 3-year average of annual 98th percentile maximum daily 1-hour values

Construction Mitigation

Applicant's Proposed Mitigation

To mitigate the impacts due to construction of the facility, the applicant proposed several construction mitigation measures (SR 2009a, Section 5.1.6.1)

Adequacy of Proposed Mitigation

Staff generally concurs with the applicant's proposed construction mitigation measures but has determined that additional mitigation is needed to achieve mitigation comparable to other larger solar projects, to maintain impacts below levels of significance, and to conform to LORS.

Staff Proposed Mitigation

Staff recommends the applicant's proposed construction mitigation be formalized, with additions and modifications to meet current staff recommendations, in staff Conditions of Certification **AQ-SC1** through **AQ-SC5**. Staff has determined that the proposed conditions of certification would mitigate the construction air quality impacts for the proposed project air quality impacts to less than significant pursuant to CEQA.

Staff has considered the minority population surrounding the site (see Socioeconomics Figure 1). Since the proposed project's direct air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

Salt Commissioning Impacts and Mitigation

The current project schedule calls for the commissioning of the salt system to be completed during months 18 through 21. The applicant estimated the potential 1-hour air quality impacts resulting from simultaneous construction and salt commissioning activities by modeling the maximum predicted emissions from construction activities during months 18 through 21 with the maximum estimated emissions from the salt commissioning. The additional concentrations at each receptor were then calculated based on the 3-hour, 8-hour, 24-hour and annual persistence factors (U.S.EPA 1992). Estimates of the annual average impacts were developed even though the emissions specific to the salt commissioning activities would occur only once during the project lifetime and would be completed within a 5-month period. To determine the salt commissioning impacts relative to the ambient air quality standards except for the 1-hour NO₂ standards, the predicted project impacts were added to conservatively estimated background concentration levels (**Air Quality Table 5**) to determine the total impacts. The 1-hour NO₂ impacts were assessed using the more sophisticated Ozone Limiting Method (OLM) modeling protocol described above. As summarized in **Air Quality Table 12**, the maximum predicted NO₂, CO, SO₂, and PM_{2.5} concentrations combined with the background concentrations are less than the AAQS. Therefore, NO₂, CO, SO₂, and PM_{2.5} impacts from commissioning would be less than significant.

For PM10, the 24-hour and annual background concentrations exceed the state AAQS without adding the modeled concentrations. As a result, the predicted impacts also would be greater than the AAQS. However, the salt commissioning activity would be of limited duration and the use of clean-burning fuels (natural gas or propane) would meet the best available control technology requirements for particulate emissions from the two heater units.

Therefore, the salt commissioning phase of the proposed project would result in minimal PM10 impacts that are not expected to contribute significantly to existing violations of the PM10 AAQS. With implementation of best available fugitive dust emission control techniques and other proposed mitigation measures as required in staff conditions **AQ-SC1** through **AQ-SC5** to minimize construction impacts, the combined PM10 impacts from the construction and salt commissioning activities are not expected to be significant.

Staff has considered the minority population surrounding the site (see **Socioeconomics Figure 1**). Since the proposed project's direct air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

AIR QUALITY TABLE 12
Maximum Modeled Impacts for Construction/Salt Commissioning Phase and the Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum						
		Modeled Concentration ^a (µg/m ³)	Background Concentration ^b (µg/m ³)	Total Predicted Concentration (µg/m ³)	State Standard (µg/m ³)	Federal Standard (µg/m ³)	Percent of State Standard	Percent of Federal Standard
NO ₂	1-hour State ^c	210	29.4	239	339	---	71%	---
	1-hour National ^d	155	29.4	184	---	188	---	98%
	Annual	16.8	4.9	22	57	100	38%	22%
SO ₂	1-hour	32.00	47	79	655	—	12%	---
	3-hour	29.00	31	60	—	1,300	---	5%
	24-hour	13.00	13	26	105	365	25%	7%
	Annual	2.60	4	6.6	—	80	---	8%
CO	1-hour	217	2645	2862	23,000	40,000	12%	7%
	8-hour	152	944	1096	10,000	10,000	11%	11%
PM ₁₀	24-hour	23.2	83	106	50	150	212%	71%
	Annual	4.6	30.5	35	20	—	176%	---
PM _{2.5}	24-hour	8	20.5	29	—	35	---	81%
	Annual	1.6	8.7	10	12	15	73%	69%

a) Source: SR 2009a; CH2MHill 2010a;CH2MHill 2010m; CH2MHill 2010l

b) Source: Air Quality Table 5

c) State 1-hour NO₂ AAQS based on maximum measured 1-hour value

d) National 1-hour NO₂ AAQS based on 3-year average of annual 98th percentile maximum daily 1-hour values

Operation Impacts and Mitigation

The following section discusses the proposed project's direct operating ambient air quality impacts, as estimated by the applicant, and evaluated by staff. Additionally, this section discusses the recommended mitigation measures.

Operation Modeling Analysis

Using estimated peak hourly operations equipment exhaust emissions and fugitive and exhaust emissions from maintenance vehicles, the applicant modeled the proposed project's maximum 1-hour impacts due to operations emissions. The additional short-term and annual concentrations at each receptor were then calculated based on the 3-hour, 8-hour, 24-hour, and annual persistence factors (U.S.EPA 1992). The 1-hour NO₂ impacts were assessed per the more sophisticated remodeling protocol based on the EPA AERMOD dispersion model (version 09292) and the ozone limiting method (OLM) described above. To determine the operations impacts relative to the ambient air quality standards (i.e., 1-hour through annual), the predicted off-site impacts were added to conservatively estimated background concentration levels (**Air Quality Table 5**) to determine the total impacts. The results of the applicant's modeling analysis for the operations impacts are presented in **Air Quality Table 13**. The operations modeling analysis includes both the onsite fugitive dust and vehicle tailpipe emission sources estimated by the applicant which are summarized in **Air Quality Tables 9 and 10**, and which include the applicant's proposed control measures.

This modeling analysis indicates, with the exception of the 24-hour and annual PM₁₀ impacts that the proposed project would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. The conditions that would create worst-case project modeled PM impacts (low wind speeds) are not the same conditions when worst-case background is expected for PM₁₀. Additionally, the worst-case PM₁₀ impacts from the project occur at the fence line and drop quickly with distance from the fence line. Therefore, staff concludes that the operation impacts, when considering the proposed mitigation measures would not contribute substantially to exceedances of the PM₁₀ CAAQS.

AIR QUALITY TABLE 13
Maximum Modeled Impacts for Operations Phase and the Ambient Air Quality Standards

Pollutant	Averaging Period	Maximum Modeled Concentration^a (µg/m³)	Background Concentration^b (µg/m³)	Total Predicted Concentration (µg/m³)	State Standard (µg/m³)	Federal Standard (µg/m³)	Percent of State Standard	Percent of Federal Standard
NO ₂	1-hour State ^c	179	29.4	208.4	339	---	61%	---
	1-hour National ^d	126	29.4	155.4	---	188	---	83%
SO ₂	Annual	0.33	4.9	5.2	57	100	9%	5%
	1-hour	0.60	47	47.6	655	—	7%	---
	3-hour	0.39	31	31.4	—	1,300	---	2%
	24-hour	0.01	13	13.0	105	365	12%	4%
CO	Annual	0.00038	4	4.0	—	80	---	5%
	1-hour	80	2645	2725	23,000	40,000	12%	7%
PM ₁₀	8-hour	13	944	957	10,000	10,000	10%	10%
	24-hour	8.2	83	91.2	50	150	182%	61%
PM _{2.5}	Annual	1.2	30.5	31.7	20	—	159%	---
	24-hour	1.7	20.5	22.2	—	35	---	63%
	Annual	0.1	8.7	8.8	12	15	73%	59%

a) Source: SR 2009a; CH2MHill 2010a;CH2MHill 2010e; CH2M-Hill 2010l

b) Source: Air Quality Table 5

c) State 1-hour NO₂ AAQS based on maximum measured 1-hour value

d) National 1-hour NO₂ AAQS based on 3-year average of annual 98th percentile maximum daily 1-hour values

However, in light of the existing PM10 and ozone non-attainment status for the project site area, staff considers the operation NOx, VOC, and PM emissions to be potentially CEQA significant and recommends that the off-road equipment and fugitive dust emissions be mitigated pursuant to CEQA.

The modeling analysis shows that, after implementation of the recommended emission mitigation measures, the proposed project's operation is not predicted to cause new exceedances of the NAAQS. Therefore, it has been determined that no adverse NEPA impacts would occur after implementation of the recommended mitigation measures.

Operation Mitigation

Applicant's Proposed Mitigation

Emission Controls

As discussed in the air quality section of the AFC and Data Responses (SR 2009a; CH2MHill 2010a; CH2M-Hill 2010m), the applicant proposes the following Best Available Control Technology (BACT) emission controls on the stationary equipment associated with the RSEP:

Emergency Generator Engines

The applicant has proposed two 4,020 brake horsepower (bhp) diesel engine emergency generators, which would be fired on ARB diesel fuel. The applicant has proposed ARB/EPA Tier 2 engines, compliant with the New Source Performance Standards, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, for the emergency generators. This is the lowest emitting Tier for this size of emergency generator engine. The proposed ARB/EPA Tier 2 engines would have the following emission guarantees:

- NOx: 5.09 gram/bhp-hour
- NMHC: 0.10 gram/bhp-hour
- CO: 0.63 gram/bhp-hour
- PM10/PM2.5: 0.03 gram/bhp-hour
- SOx: ARB diesel fuel (15 ppm sulfur)

Fire Water Pump Engines

The applicant has proposed two 600 bhp fire water pump engines, which would be fired on ARB diesel fuel. The applicant has proposed ARB/EPA Tier 3 engines, compliant with the New Source Performance Standards, Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, for the fire water pumps. The proposed ARB/EPA Tier 3 engines would have the following emission guarantees:

- NMHC + NOx: 3.0 gram/bhp-hour
- CO: 2.6 gram/bhp-hour
- PM10/PM2.5: 0.15 gram/bhp-hour

- SO_x: ARB diesel fuel (15 ppm sulfur)

Cooling Towers

The applicant has proposed a wet surface air cooling (WSAC) system comprising two two-cell units which would be used for auxiliary cooling. The WSAC system would have a high efficiency drift eliminator guaranteed to control drift to 0.0005% of the water recirculation rate. Additionally, the cooling tower recirculating water would be controlled to have a maximum total dissolved solids content of 2,000 ppm. The cooling unit would have the following emission limits, each:

- PM₁₀/PM_{2.5}: 0.014 lb/hour, 0.36 lb/day, 0.034 tons/year

Operation and Maintenance Vehicles

Staff recommends additional mitigation measures for operation and maintenance vehicles for the RSEP to be consistent with the mitigation measures for other recent large solar power projects. These measures include the following requirements:

- Only new on-road and off-road vehicles meeting California on-road vehicle and U.S. EPA and California off-road emission standards would be purchased for use at the site.
- Fugitive dust control measures for operation are recommended that include the same mitigation measures as required during construction, as appropriate.

Adequacy of Proposed Mitigation

Staff concurs with the District's preliminary determination that the proposed project's stationary source proposed emission controls/emission levels for criteria pollutants meet regulatory requirements and that the proposed stationary source emission levels are reduced adequately.

Additionally, staff generally agrees that the applicant's proposed fugitive dust mitigation measures and the additional fugitive dust mitigation measures recommended by staff would provide adequate fugitive dust emission control.

Staff Proposed Mitigation

As mentioned earlier in the discussions of the ozone and PM₁₀ impacts, staff concludes that the proposed project's direct stationary source ozone precursor and PM₁₀ emissions are minimal, but when combined with the maintenance vehicles emissions could be significant. Additionally, staff believes that a solar renewable project, which would have a 30-year life in a setting likely to continue to be impacted by both local and upwind emission sources, should address its contribution to the potentially ongoing nonattainment of the PM₁₀ and ozone standards. Staff concludes that the applicant's proposed mitigation measures the staff's recommended mitigation measures are consistent with current mitigation requirements for other large solar projects and would adequately mitigate the proposed project's stationary source, mobile equipment, and fugitive dust emissions. Therefore, staff recommends the operating mitigation be formalized, with minor modifications to meet current staff recommendations, in staff Conditions of Certification **AQ-SC6** and **AQ-SC7**.

Staff is also proposing Condition of Certification **AQ-SC8** to ensure that the Energy Commission license is amended as necessary to incorporate changes to the air quality permits.

Operation of the molten salt system involves routine venting to the atmosphere of the headspace in the molten salt storage tanks. Staff recommends **AQ-SC9** which requires a source test plan to quantify the NO_x and PM emissions from the tank venting and an analysis to confirm that these emissions are negligible.

Staff has determined that the proposed emission controls and emission levels, along with the applicant proposed and staff recommended emission mitigation measures, would mitigate all proposed project air quality impacts to less than significant pursuant to CEQA.

Staff has considered the minority population surrounding the site (see **Socioeconomics Figure 1**). Since the proposed project's direct air quality impacts have been reduced to less than significant, there is no environmental justice issue for air quality.

Indirect Pollutant and Secondary Pollutant Impacts

Project would have direct emissions of chemically reactive pollutants (NO_x, SO_x, and VOC), but would also have indirect emission reductions associated with the reduction of fossil-fuel fired power plant emissions due to the proposed project displacing the need for their operation, since solar renewable energy facilities would operate on a must-take basis⁴. However, the exact nature and location of such reductions is not known. It is reasonable to assume that some of the reductions would occur at power plants within the Mojave Desert Air Basin (MDAB), such as at the Blythe Energy Project facility, but most reductions would occur outside of the MDAB including upwind areas such as the South Coast Air Basin since the electricity supplied by this proposed project would be directed to Southern California Edison (SCE) transmission lines. However, estimates of local emission reductions or the downwind impact of the upwind emission reductions would be speculative, so the discussion below focuses on the direct emissions from the proposed project within the Riverside County portion of the MDAB.

Ozone Impacts

There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of sources are input into the model to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NO_x and VOC emissions to ozone formation, it can be said that the emissions of NO_x and VOC from the RSEP would have the potential (if left unmitigated) to contribute to higher ozone levels in the region. These impacts would be cumulatively significant under CEQA because they would contribute to ongoing violations of the state ozone ambient air quality standards.

⁴ This refers to the fact that the contract between the owner of this solar power facility and the utility will require that the utility take all generation from this facility with little or no provisions for the utility to direct turn down of generation from the facility.

PM2.5 Impacts

Secondary particulate formation, which is assumed to be 100% PM2.5, is the process of conversion from gaseous reactants to particulate products. The process of gas-to-particulate conversion, which occurs downwind from the point of emission, is complex and depends on many factors, including local humidity and the presence of air pollutants.

The Riverside County portion of the Mojave Desert Air Basin has not undergone the rigorous secondary particulate studies that have been performed in other areas of California, such as the San Joaquin Valley, that have more serious fine particulate pollution problems. However, because of the known relationship of NOx and SOx emissions to PM2.5 formation it can be said that the emissions of NOx and SOx from RSEP do have the potential (if left unmitigated) to contribute to higher PM2.5 levels in the region; however, the region is designated unclassified/attainment for the PM2.5 standards and the low level of NOx and SOx emissions from the proposed project would not significantly impact that status.

Impact Summary

The applicant is proposing to mitigate the proposed project's stationary source NOx, VOC, SO₂, and PM10/PM2.5 emissions through the use of Best Available Control Technology (BACT). With the staff recommended mitigation measure for vehicle emissions, which is formalized in Staff Condition of Certification **AQ-SC6**, staff concludes that the proposed project would not cause significant secondary pollutant impacts.

CEQA LEVEL OF SIGNIFICANCE

Project Construction

Staff considers the unmitigated construction NOx, VOC, and PM emissions to be potentially CEQA significant and, therefore, staff is recommending that the NOx, VOC, and PM emission be mitigated pursuant to CEQA. Staff is recommending several mitigation measures (**AQ-SC1** through **AQ-SC5**), that include the applicant's proposed construction mitigation measures, to limit exhaust emissions and fugitive dust emissions during project construction to the extent feasible. Staff concurs with the District mitigation measures (**AQ-T1** through **AQ-T42**). These conditions limit exhaust emissions from temporary stationary sources during construction.

Therefore, while there would be adverse CEQA air quality impacts during construction, they are expected to be less than significant after implementation of the applicant's proposed and staff's recommended mitigation measures.

Salt System Commissioning

Staff considers the unmitigated salt system commissioning NOx, VOC, and PM emissions to be potentially CEQA significant and, therefore, staff is recommending that the NOx, VOC, and PM emissions be mitigated pursuant to CEQA. Staff concurs with the District mitigation measures (**AQ-T12** through **AQ-T42**). These conditions limit exhaust emissions and fugitive dust emissions during salt system commissioning through the required use of Best Available Control Technology and Best Management

Practices, they cover the salt handling and milling, the two heaters for salt melting and heating, and the NOx emissions from the salt conditioning.

Therefore, while there would be adverse CEQA air quality impacts during salt system commissioning, they are expected to be less than significant after implementation of the applicant's proposed and staff's and District's recommended mitigation measures.

Project Operation

Staff considers the unmitigated operation and maintenance NOx, VOC, and PM emissions to be potentially CEQA significant and, therefore, staff is recommending that the NOx, VOC, and PM emissions be mitigated pursuant to CEQA. Staff is recommending two mitigation measures (**AQ-SC6** and **AQ-SC7**), that also include the applicant's proposed operations emission mitigation measures, to limit exhaust emissions and fugitive dust emissions during project operation to the extent feasible.

Operation of the molten salt system involves routine venting to the atmosphere of the headspace in the molten salt storage tanks. Staff recommends **AQ-SC9** which requires a source test plan to quantify the NOx and PM emissions from the tank venting and an analysis to confirm that these emissions are negligible.

Staff concurs with the District mitigation measures (**AQ-1** through **AQ-29**). These conditions limit exhaust emissions from the permanent emission sources.

Therefore, while there would be adverse CEQA air quality impacts during operation, they are expected to be less than significant after implementation of the applicant's stipulated and staff's recommended mitigation measures.

Closure and Decommissioning

Eventually the facility would close, either at the end of its useful life or due to some unexpected situation such as a natural disaster or catastrophic facility breakdown. When the facility closes, all sources of air emissions would cease to operate and thus impacts associated with those emissions would no longer occur. The only other expected emissions would be equipment exhaust and fugitive particulate emissions from the dismantling activities. These activities would be of much a shorter duration than construction of the proposed project, equipment are assumed to have much lower comparative emissions due to technology advancement, and fugitive dust emissions would be required to be controlled in a manner at least equivalent to that required during construction. Therefore, while there would be adverse CEQA air quality impacts during decommissioning, they are expected to be less than significant.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller in acreage than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the

edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW (or 1.3%). Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker-Blythe 161 kV transmission line.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

Under the Reduced Acreage Alternative, the agencies would approve a facility with a 7.2% heliostat field reduction and corresponding 148 MW generating capacity, not the 150 MW project that is proposed.

SETTING AND EXISTING CONDITIONS

The setting for the Reduced Acreage Alternative is the same as for the proposed project except that the heliostat field would occupy 1,270 acres within the 1,370-acre footprint of the proposed project. The existing ambient air quality does not change and the facility would still be within the same air basin and subject to the same air quality LORS.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The Reconfigured Alternative would require approximately the same amount of construction and would have the same operating equipment and nearly identical operating maintenance requirements. The applicant did not provide criteria pollutant emission estimates for the construction and operation of this alternative but staff assumes that the construction and operation emissions are approximately the same or just slightly lower due to the reduction in heliostat construction area, as those for the proposed project. Therefore, the construction, salt commissioning and operation emissions would be similar to those shown in **Air Quality Tables 6 and 7**, **Air Quality Table 8** and **Air Quality Tables 9 and 10**, respectively.

The maximum daily and maximum annual construction and operation emissions and emission impacts for the Reconfigured Alternative are likely to be as high as that estimated for the proposed project, assuming the same maximum daily and annual construction activities, the same amount of salt conditioning, and the same number and type of stationary sources. Staff assumes that the incremental impact of the reconfigured project site would essentially be the same as the impacts estimated for the proposed project. Therefore, the worst-case short-term and annual construction and operation pollutant concentration impacts for this alternative are likely to be similar to those shown for the proposed project in **Air Quality Tables 11, 12 and 13**, respectively.

The results of the Reconfigured Alternative would be the following:

- The worst-case short-term construction emissions and ground level pollutant concentration impacts would be the same as the proposed project and would require the same level of mitigation. The total construction period and total construction emissions and long-term ground level pollutant concentration impacts would be similar to those required to construct the proposed project.
- The operation emissions and ground level pollutant concentration impacts would be essentially identical to the proposed project and would require the same level of mitigation.
- The benefits of the proposed project in displacing fossil fuel fired generation and reducing associated criteria pollutant emissions from fossil fuel-fired generation would be minimally reduced due to the 1.3% drop in generating capacity for this alternative.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10 and is about 40 miles southwest of the applicant's proposed original site. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

The North of Desert Center Alternative is evaluated in this SA/DEIS because it would reduce impacts to cultural resources; the applicant-proposed RSEP is located on the historic Rice Army Airfield. This alternative would also reduce impacts to ephemeral washes and impacts associated with the loss of land considered habitat for the state and federally listed threatened desert tortoise. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

SETTING AND EXISTING CONDITIONS

The setting for the North of Desert Center Alternative is different in certain ways from that of the proposed project. This alternative would be located within the same air basin, but would be under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD has different air quality regulations and requirements than the MDAQMD and is likely to require additional mitigation for this alternative in comparison with the proposed project. Specifically, the salt conditioning NO_x emissions, which are over the SCAQMD offset trigger of 4 tons per year, would require offsets to be obtained for the project. Currently, the quantity of NO_x emission reduction credits

available within the SCAQMD is extremely limited, so this permitting requirement would make this alternative very difficult if not impossible to permit.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The North of Desert Center Alternative would require essentially the same amount of construction and would be assumed to have the same operating equipment and essentially identical operating maintenance requirements. Therefore, the construction, salt commissioning and operation emissions would be similar to those shown in **Air Quality Tables 6 and 7**, **Air Quality Table 8** and **Air Quality Tables 9 and 10**, respectively.

The maximum daily and maximum annual construction and operation emissions and emission impacts for the North of Desert Center Alternative are likely to be nearly the same as those estimated for the proposed project, assuming the same maximum daily and annual construction activities, the same amount of salt conditioning, and the same number and type of stationary sources during operation. There is some potential for differences due to different terrain, meteorological conditions and ambient background concentrations. As discussed in the Dispersion Modeling Assessment section, the applicant used the SCREEN3 meteorological data set for the screening assessment of the proposed project. These data are assumed to also be applicable to the North of Desert Center site. Therefore, staff assumed that the incremental impact of the North of Desert Center Alternative would essentially be the same as the impacts estimated for the proposed project and that the worst-case short-term and annual construction and operation pollutant concentration impacts for this alternative are likely to be similar to those shown for the proposed project in **Air Quality Tables 11, 12 and 13**, respectively.

The results of the North of Desert Center Alternative would be the following:

- The worst-case short-term construction emissions and ground level pollutant concentration impacts would be the similar to those determined for the proposed project and would require the same level of mitigation. The total construction period and total construction emissions and long-term ground level pollutant concentration impacts would be similar to those required to construct the proposed project.
- The operation emissions and ground level pollutant concentration impacts would be similar to those determined for the proposed project and would require the same level of mitigation.
- The benefits of displacing fossil fuel fired generation and reducing associated criteria pollutant emissions from fossil fuel-fired generation would be essentially identical to those of the proposed project.

If this site becomes the preferred site for this facility, these conclusions should be verified using site-specific analysis.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe transmission line at the same location as the proposed project transmission line. This alternative tie line would exit the power block

directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new transmission line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe transmission line. The SR 62/Rice Valley Road Transmission Line Alternative route is illustrated in **Alternatives Figure 4**.

The SR 62/Rice Valley Road Transmission Line Alternative is evaluated in this SA/DEIS because it would avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise. This alternative would also avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

SETTING AND EXISTING CONDITIONS

The setting and existing conditions for this alternative are the same as the proposed project. The existing ambient air quality does not change and the facility would still be within the same air basin and subject to the same air quality LORS.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The SR 62/Rice Valley Road Transmission Line Alternative would require essentially the same amount of construction and would be assumed to have the same operating equipment and essentially identical operating maintenance requirements. Therefore, the construction, salt commissioning and operation emissions would be similar to those shown in **Air Quality Tables 6 and 7**, **Air Quality Table 8** and **Air Quality Tables 9 and 10**, respectively.

The maximum daily and maximum annual construction and operation emissions and emission impacts for the SR 62/Rice Valley Road Transmission Line Alternative are likely to be nearly the same as those estimated for the proposed project. There is some potential for differences due to small differences in the transmission connection construction requirements. However, staff assumes that the incremental impact of the SR 62/Rice Valley Road Transmission Line Alternative would essentially be the same as the impacts estimated for the proposed project. Therefore, the worst-case short-term and annual construction and operation pollutant concentration impacts for this alternative are likely to be similar to those shown for the proposed project in **Air Quality Tables 11, 12 and 13**, respectively.

The results of the SR 62/Rice Valley Road Transmission Line Alternative would be the following:

- The worst-case short-term construction emissions and ground level pollutant concentration impacts would be the similar to those determined for the proposed project and would require the same level of mitigation. The total construction period and total construction emissions and long-term ground level pollutant concentration impacts would be similar to those required to construct the proposed project.
- The operation emissions and ground level pollutant concentration impacts would be identical to those determined for the proposed project and would require the same level of mitigation.
- The benefits of displacing fossil fuel fired generation and reducing associated criteria pollutant emissions from fossil fuel-fired generation would be identical to those of the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the generation tie line ROW application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker-Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the direct air quality emission impacts from construction, salt conditioning, and operation from the proposed project would occur and none of the indirect Western States emission reduction benefits of the proposed project from displacing fossil-fuel fired generation would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates⁵, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACTS

Cumulative impacts are defined by CEQA as “two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts.” (CEQA Guidelines, § 15355.) A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts.” (CEQA Guidelines, §

⁵ Such as the State of California 33% Renewable Portfolio Standard (RPS) mandated under Executive Order S-14-08.

15130(a)(1).) Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects.

Cumulative effects are defined by the Council on Environmental Quality NEPA regulations as "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions" (40 CFR 1508.7).

This analysis is concerned with criteria air pollutants. Such pollutants have impacts that are usually (though not always) cumulative by nature. Rarely would a project by itself cause a violation of a federal or state criteria pollutant standard. However, a new source of pollution may contribute to violations of criteria pollutant standards because of the existing background sources or foreseeable future projects. Air districts attempt to attain the criteria pollutant standards by adopting attainment plans, which comprise a multi-faceted programmatic approach to such attainment. Depending on the air district, these plans typically include requirements for air offsets and the use of Best Available Control Technology (BACT) for new sources of emissions, and restrictions of emissions from existing sources of air pollution.

Thus, much of the preceding discussion is concerned with cumulative impacts. The "Existing Ambient Air Quality" subsection describes the air quality background in the Riverside County portion of the Mojave Desert Air Basin, including a discussion of historical ambient levels for each of the significant criteria pollutants. The "Construction Impacts and Mitigation" subsection discusses the proposed project's contribution to the local existing background caused by project construction. The "Operation Impacts and Mitigation" subsection discusses the proposed project's contribution to the local existing background caused by project operation. The following subsection includes two additional analyses:

- a summary of projections for criteria pollutants by the air district and the air district's programmatic efforts to abate such pollution⁶; and
- an analysis of the proposed project's *localized cumulative impacts*⁷, the proposed project's direct operating emissions combined with other local major emission sources.

SUMMARY OF PROJECTIONS

The Riverside County portion of the MDAB⁸ is designated as attainment or unclassified for all federal ambient air quality standards and the state CO, NO₂, SO₂ and PM_{2.5}

⁶ This cumulative impact assessment covers potential cumulative impacts to the entire air basin.

⁷ This cumulative impact assessment covers potential cumulative impacts near the project site, including potential cumulative impacts to receptors near the project site.

⁸ The project site is wholly within Riverside County but is adjacent to San Bernardino County. The area of San Bernardino County just north of the project site has the same federal and state attainment status as the project site within Riverside County except for the PM₁₀ NAAQS for which San Bernardino County is nonattainment and that portion of Riverside County is unclassified.

standards, but is designated as non-attainment for State ozone and PM10 standards. (See **Air Quality Table 3**)

Ozone

Since a portion of San Bernardino County in the Mojave Desert Air Basin, west northwest of the project site, is currently classified as non-attainment for the federal 8-hour ozone standard, the District is required to prepare and adopt an ozone attainment plan for submittal to the U.S. EPA describing how it will attain the federal 8-hour standard. The District completed this plan in 2008. The project is not specifically subject to the provisions in the federal attainment plan and the site is outside of the non-attainment area.

The District is required to prepare and adopt a state ozone attainment plan for submittal to ARB. The latest state ozone attainment plan was adopted by MDAQMD in 2004. The MDAQMD 2004 Ozone Attainment Plan contains attainment plans for both federal (for areas within San Bernardino County) and state ozone standards. The MDAQMD did not propose to adopt any additional control measures as part of the 2004 Plan. Additionally, while there are no additional control measures for direct ozone precursor reduction as part of the federal 2008 attainment plan, MDAQMD is committed to adopt all applicable Federal Reasonably Available Control Technology (RACT) rules that the MDAQMD proposed in the 8-hour Reasonably Available Control Technology – State Implementation Plan Analysis (RACT SIP Analysis) completed in 2006 (MDAQMD 2006). In addition, the MDAQMD updated and identified new measures in 2007, which will be adopted through 2014, as the State of California mandates all feasible measures. The RACT rules and other new measures do not impact the Rice Solar emission sources as proposed.

Particulate Matter

Since San Bernardino County is currently classified as non-attainment for the federal PM10 standards, the District is required to prepare and adopt an attainment plan for submittal to the U.S. EPA describing how it will achieve attainment with the federal PM10 standards. However, since the proposed project site is in Riverside County and is outside of the non-attainment area, the proposed project is not subject to the provisions in the federal attainment plan. There is no legal requirement for air districts to provide plans to attain the state PM10 standards, so air districts have not developed such plans. Therefore, there are no air quality management plan particulate emission control measures that are applicable to the proposed project.

As a solar power generation facility, the direct air pollutant emissions from power generation are negligible and the emission sources would be limited to auxiliary and emergency equipment and maintenance activities. The emissions from the proposed project would be minimal compared to other conventional fossil-fueled power generation facilities, and with staff's recommended construction and operation mitigation measures it is unlikely that the proposed project would have significant impact on particulate matter emissions.

Summary of Conformance with Applicable Air Quality Plans

The applicable air quality plan does not outline any new control measures applicable to the proposed project's operating emission sources. Therefore, compliance with existing District rules and regulations would ensure compliance with those air quality plans. However, there are several pending solar and wind projects in the Rice Valley area, in areas surrounding Rice Valley in Eastern Riverside or San Bernardino Counties, and surrounding the I-10 corridor area in Riverside County between Desert Center and Blythe (see **Table 3** and **Figure 2** in the **Cumulative Analysis Section**) including three thermal solar projects, the Blythe Solar Power Project, the Palen Solar Power Project, and the Genesis Solar Energy Project siting cases, which are currently being evaluated by the Energy Commission and BLM. Additionally there are a few other proposed projects including transmission projects and private developer projects (residential/landfill/racetrack) located in the general project area. This potential for significant additional development within the air basin and corresponding increase in air basin emissions is a major part of staff's rationale for recommending Conditions of Certification **AQ-SC6** and **AQ-SC7** that are designed to mitigate the proposed project's cumulative impacts by reducing the dedicated on-site vehicle emissions and fugitive dust emissions during site operation.

LOCALIZED CUMULATIVE IMPACTS

Since the power plant air quality impacts can be reasonably estimated through air dispersion modeling (see the "Operation Modeling Analysis" subsection) the proposed project's contributions to localized cumulative impacts can be estimated. To represent *past* and, to an extent, *present projects* that contribute to ambient air quality conditions, the Energy Commission staff recommends the use of ambient air quality monitoring data (see the "Existing Ambient Air Quality" subsection), referred to as the *background*. The staff takes the following steps to estimate what are additional appropriate "present projects" that are not represented in the background and "reasonably foreseeable projects":

- First, the Energy Commission staff (or the applicant) works with the air district to identify all projects that have submitted, within the last year of monitoring data, new applications for an authority to construct (ATC) or permit to operate (PTO) and applications to modify an existing PTO within six miles of the project site. Based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for non-reactive pollutant concentrations between two stationary emission sources.
- Second, the Energy Commission staff (or the applicant) works with the air district and local counties to identify any new area sources within six miles of the project site. As opposed to point sources, area sources include sources like agricultural fields, residential developments or other such sources that do not have a distinct point of emission. New area sources are typically identified through draft or final Environmental Impact Reports (EIRs) that are prepared for those sources. The initiation of the EIR process is a reasonable basis on which to determine what is "reasonably foreseeable" for new area sources.
- The data submitted, or generated from the applications with the air district for point sources or initiating the EIR process for area sources, provides enough information

to include these new emission sources in air dispersion modeling. Thus, the next step is to review the available EIR(s) and permit application(s), determine what sources must be modeled and how they must be modeled.

- Sources that are not new, but may not be represented in ambient air quality monitoring are also identified and included in the analysis. These sources include existing sources that are co-located with or adjacent to the proposed source (such as an existing power plant). In most cases, the ambient air quality measurements are not recorded close to the proposed project, thus a local major source might not be well represented by the background air monitoring. When these sources are included, it is typically a result of there being an existing source on the project site and the ambient air quality monitoring station being more than two miles away.
- The modeling results must be carefully interpreted so that they are not skewed towards a single source, in high impact areas near that source's fence line. It is not truly a cumulative impact of Rice Solar if the high impact area is the result of high fence line concentrations from another stationary source and Rice Solar is not providing a substantial contribution to the determined high impact area.

Once the modeling results are interpreted, they are added to the background ambient air quality monitoring data and thus the modeling portion of the cumulative assessment is complete. Due to the use of air dispersion modeling programs in staff's cumulative impacts analysis, the applicant must submit a modeling protocol, based on information requirements for an application, prior to beginning the investigation of the sources to be modeled in the cumulative analysis. The modeling protocol is typically reviewed, commented on, and eventually approved in the Data Adequacy phase of the licensing procedure. Staff typically assists the applicant in finding sources (as described above), characterizing those sources, and interpreting the results of the modeling. However, the actual modeling runs are usually left to the applicant to complete. There are several reasons for this: modeling analyses take time to perform and require significant expertise, the applicant has already performed a modeling analysis of the proposed project alone (see the "Operation Modeling Analysis" subsection), and the applicant can act on its own to reduce stipulated emission rates and/or increase emission control requirements as the results warrant. Once the cumulative project emission impacts are determined, the necessity to mitigate the proposed project emissions can be evaluated, and the mitigation itself can be proposed by staff and/or the applicant (see the "Operation Mitigation" subsection).

The applicant, in consultation with MDAQMD, confirmed that there are no projects within a six miles radius from the Rice Solar project site that are under construction or have received permits to be built or operate in the foreseeable future. Therefore, it has been determined that no stationary sources requiring a cumulative modeling analysis exist within a six mile radius of the proposed project site. However, as noted previously there is the potential for the development of several solar and wind projects within or surrounding the Rice Valley or within the eastern MDAB that could eventually create cumulative air quality impacts if these projects are not adequately mitigated. This potential for significant additional development within the air basin and corresponding increase in air basin emissions is a major part of staff's rationale for recommending Conditions of Certification **AQ-SC6** and **AQ-SC7** that are designed to mitigate the proposed project's cumulative impacts by reducing the dedicated on-site vehicle

emissions and fugitive dust emissions during site operation. With these recommended CEQA-only mitigation measures, staff has concluded that the CEQA cumulative air quality impacts are less than significant.

Staff has considered the minority population surrounding the site (see **Socioeconomics Figure 1**). Since the proposed project's cumulative air quality impacts have been mitigated to less than significant, there is no environmental justice issue for air quality.

COMPLIANCE WITH LORS

The Mojave Desert Air Quality Management District issued the Preliminary Determination of Compliance (PDOC) for the RSEP on June 10, 2010 (MDAQMD 2010), and will issue a Final Determination of Compliance after a 30 day public notice period. Compliance with all District rules and regulations was demonstrated to the District's satisfaction in the PDOC. The District's PDOC conditions are presented in the Conditions of Certification (**AQ-1** to **AQ-29** for the permanent sources and **AQ-T1** to **AQ-T43** for the temporary sources).

Staff submitted an official PDOC comment letter and expects that the FDOC may contain revisions to conditions due to Energy Commission, applicant, or third party comments, and staff will provide a Staff Assessment addendum with any revised FDOC findings or conditions of certification.

FEDERAL

The District is responsible for issuing the federal New Source Review (NSR) permit and has been delegated enforcement of the applicable New Source Performance Standards. However, the proposed project does not require a federal NSR or Title V permit and would not require a PSD permit from U.S.EPA prior to initiating construction.

The proposed project requires the approval of a federal agency (BLM), but is located in an area that is in attainment or unclassified with all federal ambient air quality standards. Therefore, the proposed project is not subject to the general conformity regulations (40 CFR Part 93).

STATE

The project owner will demonstrate that the proposed project will comply with Section 41700 of the California State Health and Safety Code, which restricts emissions that would cause nuisance or injury, with the issuance of the District's Final Determination of Compliance and the Energy Commission's affirmative finding for the project.

The emergency generator and fire water pump engines are also subject to the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines. This measure limits the types of fuels allowed, establishes maximum emission rates, and establishes recordkeeping requirements. The proposed Tier 2 emergency generator engines and Tier 3 fire water pump engines meet the current emission limit requirements of this measure. This measure would also limit the engines' testing and maintenance operation to no more than 50 hours per year. Please note that the MDAQMD has proposed permit conditions specific to this project that would limit the

annual operating hours for testing and maintenance to no more than 26 hours per year per engine.

LOCAL

The District rules and regulations specify the emissions control and offset requirements for new sources such as the RSEP. Best Available Control Technology would be implemented, and emission reduction credits (ERCs) are not required to offset the proposed project's emissions by District rules and regulations based on the permitted stationary source emission levels for the proposed project. Compliance with the District's new source requirements would ensure that the proposed project would be consistent with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans.

The applicant provided an air quality permit application to the MDAQMD and the District issued a PDOC on June 10, 2010 (MDAQMD 2010). The PDOC states that the proposed project is expected to comply with all applicable District rules and regulations. The DOC evaluates whether and under what conditions the proposed project would comply with the District's applicable rules and regulations, as described below.

Regulation II – Permits

Rule 201 and 203 – Permit to Construct and Permit to Operate

Rule 201 establishes the emission source requirements that must be met to obtain a Permit to Construct. Rule 203 prohibits use or operation of any equipment which may emit air contaminants without first obtaining a Permit to Operate. The applicant has complied with this rule by submitting the AFC and District permit applications materials.

Regulation IV – Prohibitions

Rule 401 - Visible Emissions

This rule limits visible emissions from emissions sources, including stationary source exhausts and fugitive dust emission sources. Compliance with this rule is expected. In the PDOC, the District has determined that the facility is expected to comply with this rule.

Rule 402 - Nuisance

This rule restricts discharge of emissions that would cause injury, detriment, annoyance, or public nuisance. The facility is expected to comply with this rule (identical to California Health and Safety Code 41700).

Rule 403 - Fugitive Dust

This rule limits fugitive emissions from certain bulk storage, earthmoving, construction and demolition, and manmade conditions resulting in wind erosion. With the implementation of recommended staff conditions **AQ-SC3**, **AQ-SC4**, and **AQ-SC7** the facility is expected to comply with this rule.

Rule 404 - Particulate Matter Concentration

The rule limits particulate matter (PM) emissions based on the volume discharge rate. The RSEP stationary sources subject to this rule (emergency engines) would comply with the PM concentration limits of this regulation.

Rule 405 - Solid Particulate Matter Weight

This rule limits the discharge of solid particulate matter into the atmosphere based on the weight of material being processed. The salt handling and milling activities during the salt system commissioning would be subject to this rule. Compliance with this rule is expected.

Rule 406 - Specific Contaminants

The rule prohibits sulfur emissions, calculated as SO₂, in excess of 500 ppmv. Compliance with this rule is assured with the required use of pipeline quality natural gas for the boilers and heaters and California low sulfur diesel fuel for the emergency generator and fire pump engines.

Rule 407 - Liquid and Gaseous Air Contaminants

The rule prohibits carbon monoxide emissions in excess of 2,000 ppmv. The emergency generators and fire pump engines would have CO emissions well below this concentration limit. Compliance with this rule is expected.

Rule 409 - Fuel Burning Equipment - Combustion Contaminants

This rule limits discharge into the atmosphere from fuel burning equipment combustion contaminants exceeding in concentration at the point of discharge, 0.1 grain per cubic foot of gas calculated to 12% of carbon dioxide (CO₂) at standard conditions. The RSEP stationary sources would have particulate concentrations below limit of this rule.

Rule 431 - Sulfur Content of Fuels

The rule prohibits the burning of gaseous fuel with a sulfur content of more than 800 ppm and liquid fuel with a sulfur content of more than 0.5% sulfur by weight. Compliance with this rule is assured with the required use of pipeline quality natural gas and California low sulfur diesel fuel for the emergency engines.

Regulation IX – Standards of Performance for New Stationary Sources

Rule 900 – Standard of Performance for New Stationary Source (NSPS)

This rule incorporates the Federal NSPS (40 CFR 60) rules by reference. The District conditions would ensure compliance with the requirements of this rule.

The proposed Tier 2 and Tier 3 engines meet the current emission limit requirements of NSPS Subpart IIII that apply to the proposed RSEP equipment. The exact model and size of the engines are only estimated at this time. It is uncertain exactly when the emergency engines would be purchased and whether Tier 4 engine emission limits may apply at that time. District Conditions of Certification (**AQ-13** and **AQ-23**) require that the applicant comply with this NSPS standard.

Regulation XIII – New Source Review

Rule 1303 – New Source Review

This rule requires implementation of BACT for any emission source unit which emits or has the potential to emit 25 lbs/day or more and requires offsets if specific annual emission limits are exceeded. The PDOC concluded that the emergency engines trigger BACT and the engines complied. The other stationary sources did not trigger BACT but would meet BACT requirements based on the applicant's proposed controls. The PDOC concluded that offsets were not required for the proposed project.

Rule 1306 – Electric Energy Generating Facilities

Describes actions to be taken for permitting of power plants; Compliance with this rule would be achieved with the completion of the FDOC.

NOTEWORTHY PUBLIC BENEFITS

Renewable energy facilities, such as RSEP, are needed to meet California's mandated renewable energy goals. While there are no local area air quality public benefits⁹ resulting from the proposed project, it would indirectly reduce criteria pollutant emissions within the Southwestern U.S. by reducing fossil fuel fired generation.

CONCLUSIONS

Staff has made the following conclusions about the Rice Solar Energy Project:

- The proposed project would not have the potential to exceed PSD emission levels during direct source operation and the facility is not considered a major stationary source with potential to cause adverse air quality impacts.
- The proposed project would comply with applicable District Rules and Regulations and staff recommends the inclusion of the District's FDOC conditions as Conditions of Certification **AQ-1** through **AQ-29** for the permanent emission sources and Conditions of Certification **AQ-T1** through **AQ-T43** for the temporary emission sources.
- If left unmitigated, the proposed project's construction activities would likely contribute to significant CEQA adverse PM10 and ozone impacts. Staff recommends **AQ-SC1** to **AQ-SC5** to mitigate the potential impacts.
- The proposed project's operation would not cause new violations of any NO₂, SO₂, PM_{2.5} or CO ambient air quality standards. Therefore, the project-direct operation NO_x, SO_x, PM_{2.5} and CO emission impacts are not CEQA significant.
- The proposed project's direct and indirect (i.e., secondary) emissions contribution to existing violations of the ozone and PM10 ambient air quality standards are likely CEQA significant if unmitigated. Therefore, staff recommends **AQ-SC6** to mitigate the onsite maintenance vehicle emissions and **AQ-SC7** to mitigate the operating

⁹ Air quality benefits should not be confused with greenhouse gas/climate change benefits, which are discussed in Appendix AIR-1.

fugitive dust emissions to ensure that the potential ozone and PM10 CEQA impacts are mitigated to less than significant over the life of the project.

- Operation of the molten salt system involves routine venting to the atmosphere of the headspace in the molten salt storage tanks. Staff recommends **AQ-SC9** which requires a source test to quantify the NOx and PM emissions from the tank venting and an analysis to confirm that these emissions are negligible.
- The proposed project would be consistent with the requirements of SB 1368 and the Emission Performance Standard for greenhouse gases (see **Appendix Air-1**).

MITIGATION MEASURES/ PROPOSED CONDITIONS OF CERTIFICATION

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and to assure conformance with LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for U.S. Bureau of Reclamation's (BLM's) and Western Area Power Administration's (Western's) analysis that can be considered in its Record of Decision.

STAFF CONDITIONS OF CERTIFICATION

Note that the term "CPM" refers to the Energy Commission's Compliance Project Manager.

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with Conditions of Certification **AQ-SC3**, **AQ-SC4** and **AQ-SC5** for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the Compliance Project Manager (CPM).

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with Conditions of Certification **AQ-SC3**, **AQ-SC4**, and **AQ-SC5**.

Verification: At least 30 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The AQCMP shall include effectiveness and environmental data for the proposed soil stabilizer. The CPM will notify the project owner of any necessary modifications to the plan within 15 days from the date of receipt.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report that demonstrates compliance with the Air Quality Construction Mitigation Plan (AQCMP) mitigation measures for the purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes that would not comply with the performance conditions identified in **AQ-SC4** from leaving the project site. The following fugitive dust mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**, and any deviation from the following mitigation measures shall require prior CPM notification and approval.

- a. The main access roads through the facility to the power block areas will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main power block area, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved or treated prior to taking initial deliveries.
- b. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading (consistent with **BIO-7**); and after active construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods, in order to comply with the dust mitigation objectives of Condition of Certification **AQ-SC4**. The frequency of watering can be reduced or eliminated during periods of precipitation.
- c. No vehicle shall exceed 10 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
- d. Visible speed limit signs shall be posted at the construction site entrances.

- e. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.
- f. Gravel or paved ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.
- g. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.
- h. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.
- i. Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently effective measures to prevent run-off to roadways, or other similar run-off control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that this condition does not conflict with the requirements of the SWPPP.
- j. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.
- k. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.
- l. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.
- m. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two (2) feet of freeboard.
- n. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Verification: The AQCM shall provide the CPM a Monthly Compliance Report to include the following to demonstrate control of fugitive dust emissions:

- A. a summary of all actions taken to maintain compliance with this condition;
- B. copies of any complaints filed with the District in relation to project construction; and
- C. any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner or (B) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include:

- A. a summary of all actions taken to maintain compliance with this condition;
- B. copies of any complaints filed with the District in relation to project construction; and
- C. any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a construction mitigation report that

demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. The following off-road diesel construction equipment mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**, and any deviation from the following mitigation measures shall require prior CPM notification and approval.

- a. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCM showing that the engine meets the conditions set forth herein.
- b. All construction diesel engines with a rating of 50 hp or higher shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 3 engine is not available for any off-road equipment larger than 50 hp, that equipment shall be equipped with a Tier 2 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 2 levels unless certified by engine manufacturers or the on-site AQCM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is “not practical” for the following, as well as other, reasons.
 1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 2 equivalent emission levels and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or
 2. The construction equipment is intended to be on site for 10 days or less.
 3. The CPM may grant relief from this requirement if the AQCM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical.
- c. The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within 10 working days of the termination and that a replacement for the equipment item in question meeting the controls required in item “b” occurs within 10 days of termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following conditions exists :
 1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive

- increase in back pressure.
2. The retrofit control device is causing or is reasonably expected to cause engine damage.
 3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.
 4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.
- d. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.
 - e. All diesel heavy construction equipment shall not idle for more than five (5) minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.
 - f. Construction equipment will employ electric motors when feasible.

Verification: The AQCMM shall include in the Monthly Compliance Report the following to demonstrate control of diesel construction-related emissions:

- A. A summary of all actions taken to control diesel construction-related emissions;
- B. A list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and
- C. Any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 The project owner, when obtaining dedicated on-road or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the latest model year available when obtained.

Verification: At least 30 days prior to the start of commercial operation, the project owner shall submit to the CPM a copy of the plan that identifies the size and type of the on-site vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report.

AQ-SC7 The project owner shall provide a site Operations Dust Control Plan, including all applicable fugitive dust control measures identified in the verification of **AQ-SC3** that would be applicable to minimizing fugitive dust emission creation from operation and maintenance activities and preventing all fugitive

dust plumes that would not comply with the performance standards identified in **AQ-SC4** from leaving the project site; that:

- A. describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind anywhere within the project boundaries; and
- B. identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed shall be limited to no more than 10 miles per hour on these unpaved roadways, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

The site Operations Fugitive Dust Control Plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads and disturbed off-road areas, or alternative methods for stabilizing disturbed off-road areas, within the project boundaries, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The soil stabilizer used shall be a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient, or more efficient for fugitive dust control as ARB-approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control.

The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of condition **AQ-SC4**. The measures and performance requirements of **AQ-SC4** shall also be included in the operations dust control plan.

Verification: At least 30 days prior to start of commercial operation, the project owner shall submit to the CPM for review and approval a copy of the site Operations Dust Control Plan that identifies the dust and erosion control procedures, including effectiveness and environmental data for the proposed soil stabilizer, that will be used during operation of the project and that identifies all locations of the speed limit signs. Within 60 days after commercial operation, the project owner shall provide to the CPM a report identifying the locations of all speed limit signs, and a copy of the project employee and contractor training manual that clearly identifies that project employees and contractors are required to comply with the dust and erosion control procedures and on-site speed limits.

AQ-SC8 The project owner shall provide the CPM copies of all District issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) documents for the facility.

The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project federal air permit. The project owner shall submit to the CPM any modification to any federal air

permit proposed by the District or U.S. Environmental Protection Agency (U.S. EPA), and any revised federal air permit issued by the District or U.S. EPA, for the project.

Verification: The project owner shall submit any ATC, PTO, and proposed federal air permit modifications to the CPM within 5 working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified ATC/PTO documents and all federal air permits to the CPM within 15 days of receipt.

AQ-SC9 The project owner shall perform source testing on the two molten salt tanks, at the vents, within the tank headspace or at other locations to be determined, within one year of the start of commercial operation to confirm that the emissions of NO_x from salt decomposition and particulate salt fume emissions from these tanks are negligible (defined for the purposes of this condition as, for each pollutant, less than 0.1 lbs/day, or the detection limits of the approved source test methodologies if higher). In the event that the source tests establish that the emissions of either or both of these pollutants are not negligible then the applicant shall establish emission factors for use to determine annual emissions that shall be reported in the annual compliance reports.

Verification: The project owner shall submit a molten salt tank NO_x and particulate source test plan for review and approval to the CPM at least 60 days prior to conducting the source tests. The source testing plan shall rely, to the extent practical, on existing USEPA/CARB source test methods and shall include the following information:

1. The proposed source test methods and their technical descriptions and proposed source sampling locations.
2. The proposed facility operating parameters and time of day for the tests. These source tests should be performed during periods of maximum tank venting emissions potential.
3. The proposed operating parameter (heat input, tank temperature, salt pumping rates, etc.) recordkeeping that will accompany the source test data.

The project owner shall provide the source test report as well as any determined salt tank emission factors to the CPM for review and approval within 60 days of the completion of the source tests.

DISTRICT CONDITIONS

DISTRICT PRELIMINARY DETERMINATION OF COMPLIANCE CONDITIONS (MDAQMD 2010)

The District Conditions of Certification are based on the Preliminary Determination of Compliance (PDOC) for the Rice Solar Energy Project issued by the Mojave Desert Air Quality Management District (MDAQMD) on June 10, 2010. The MDAQMD will accept public comments on the PDOC through July 19, 2010, after which the MDAQMD will issue a Final Determination of Compliance (FDOC). After the

MDAQMD issues the FDOC, staff will revise the following District conditions as appropriate.

The PDOC contains conditions applicable to the entire facility, permanent emission sources and temporary emission sources. The following District conditions are organized based on that grouping. Condition **AQ-1** is for the facility and covers both permanent and temporary emission sources. Condition **AQ-2** is for the facility and covers temporary emission sources. Conditions **AQ-3** through **AQ-29** cover the permanent emission sources. Conditions **AQ-T1** through **AQ-T43** cover the temporary emission sources.

District condition AQ-1 applies to the entire facility and covers both permanent and temporary emission sources.

AQ-1 The owner of this facility must submit an accurate emissions inventory data to the District, in a format approved by the District, on a yearly basis, which is to be received by the District no later than April 30 of each year.

Facility Calendar Year Emissions shall be less than the following:

PM10: 15 tpy
NOx: 25 tpy
SOx: 25 tpy
ROC: 25 tpy

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this condition.

District condition AQ-2 applies to the entire facility and covers only temporary emission sources.

AQ-2 This entire facility shall not emit more than 9.9 t/y of a single HAP and not more than 24.9 t/y of all HAP's. To ensure compliance, the owner/operator shall calculate and record the annual emissions of Federal Hazardous Air Pollutants (HAP's) in tons per year (t/y) on a calendar year basis (January 1 through December 31). The list of HAP's can be found in Section 112(b)(1) of the Federal Clean Air Act or at web site: <http://www.epa.gov/ttn/atw/188polls.html>

Verification: As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this condition.

District conditions AQ-3 through AQ-29 apply to the permanent emission sources.

District conditions AQ-3 to AQ-13 apply to the following equipment permits:

Permit No. E010812 and E010813 (Two (2) Emergency Fire Water Pumps; rated at 600 BHP each)

EQUIPMENT DESCRIPTION:

Caterpillar, Model C18 Dita (or equivalent), a CARB Certified Tier 3 engine, serial number unknown, Year of manufacture unknown, 600 bhp, Turbo Charged, After Cooled, operating at 1750 rpm, fueled on CARB diesel, with a maximum rated fuel consumption of 31.4 gallons per hour, each powering a Fire Pump.

AQ-3 This system shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles, which produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-4 Each engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engines are located or expects to order such outages at a particular time, the engines are located in the area subject to the rotating outage, the engines are operated no more than 30 minutes prior to the forecasted outage, and the engines are shut down immediately after the utility advises that the outage is no longer imminent or in effect.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-5 Each engine may operate in response to fire suppression requirements and needs.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-6 Each unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15) on a weight per weight basis per CARB Diesel or equivalent requirements.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-7 This facility shall not perform testing of more than one Emergency internal combustion engine at a time.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-8 A non-resettable four-digit (9,999) hour timer shall be installed and maintained on each unit to indicate elapsed engine operating time. (17 CCR §93115(e)(4)(G)1).

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the hour timer.

AQ-9 Each unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted or may be interrupted per **AQ-4**. In addition, this unit shall be operated no more than 26 hours per year, no more than thirty (30) minutes per day for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 26 hour per year limit.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-10 The 30-minute limit of **AQ-9** can be exceeded when the emergency fire pump assemblies are driven directly by the stationary diesel fueled CI engine when operated per and in accord with the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 2006 edition or the most current edition approved by the CARB Executive Officer. {Title 17 CCR 93115(c)16}

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-11 The project owner shall maintain a operations log for each unit current and on-site (or at a central location) for a minimum of five (5) years, with records kept on-site for two (2) years, and be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:

- a. Date of each use and duration of each use (in hours);
- b. Reason for use (testing & maintenance, emergency, required emission testing);
- c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
- d. Fuel sulfur concentration (the project owner may use the supplier's certification of sulfur content if it is maintained as part of this log).
- e. Documentation of maintenance as per manufacturer's recommendations and good maintenance practices.

Verification: The project owner shall submit records required by this condition that demonstrating compliance with the sulfur content and engine use limitations of conditions **AQ-6** and **AQ-9** in the Annual Compliance Report, including a photograph showing the annual reading of engine hours. The project owner shall make the site

available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-12 Each fire protection unit is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the more stringent requirements shall govern.

Verification: The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet ATCM emission limit requirements at the time of engine purchase.

AQ-13 Each unit is subject to the requirements of the Federal New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII).

Verification: The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet NSPS emission limit requirements at the time of engine purchase.

District conditions AQ-14 to AQ-23 apply to the following equipment permits:

Permit No. E010814 and E010815 (Two (2) Emergency Generators; rated at 4020 BHP each)

EQUIPMENT DESCRIPTION:

Caterpillar, Model C175-16 (or equivalent), a CARB Certified Tier 2 engine, serial number unknown, year of manufacture unknown, 4020 bhp, Turbo Charged, After Cooled, operating at **TBD** rpm, fueled on CARB diesel with a maximum rated fuel consumption of 213.3 gallons per hour, powering an electrical generator.

AQ-14 This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants. Unless otherwise noted, this equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-15 Each engine may operate in response to notification of impending rotating outage if the area utility has ordered rotating outages in the area where the engine is located or expects to order such outages at a particular time, the engine is located in the area subject to the rotating outage, the engine is operated no more than 30 minutes prior to the forecasted outage, and the engine is shut down immediately after the utility advises that the outage is no longer imminent or in effect.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-16 Each unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 0.0015% (15ppm) on a weight per weight basis per CARB Diesel or equivalent requirements.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-17 A non-resettable four-digit (9,999) hour timer shall be installed and maintained on each unit to indicate elapsed engine operating time.

Verification: At least 30 days prior to the installation of the engine, the project owner shall provide the District and the CPM the specification of the hour timer.

AQ-18 This facility shall not perform testing of more than one Emergency internal combustion engine at a time.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-19 Each unit shall be limited to use for emergency power, defined as in response to a fire or when commercially available power has been interrupted or may be interrupted per **AQ-15**. In addition, this unit shall be operated no more than 26 hours per year, and no more than one (1) hour per day for testing and maintenance, excluding compliance source testing. Time required for source testing will not be counted toward the 26 hour per year limit.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-20 The project owner shall maintain a operations log for each unit current and on-site (or at a central location) for a minimum of five (5) years, with records kept on-site for two (2) years, and be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:

- a. Date of each use and duration of each use (in hours);
- b. Reason for use (testing & maintenance, emergency, required emission testing);
- c. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
- d. Fuel sulfur concentration (the project owner may use the supplier's certification of sulfur content if it is maintained as part of this log).
- e. Documentation of maintenance as per manufacturer's recommendations and good maintenance practices.

Verification: The project owner shall submit records required by this condition that demonstrating compliance with the sulfur content and engine use limitations of

conditions **AQ-16** and **AQ-19** in the Annual Compliance Report , including a photograph showing the annual reading of engine hours. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-21 Each genset is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115). In the event of conflict between these conditions and the ATCM, the more stringent requirements shall govern.

Verification: The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet ATCM emission limit requirements at the time of engine purchase.

AQ-22 Each unit shall not be used to provide power during a voluntary agreed to power outage and/or power reduction initiated under an Interruptible Service Contract (ISC); Demand Response Program (DRP); Load Reduction Program (LRP) and/or similar arrangement(s) with the electrical power supplier.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-23 Each unit is subject to the requirements of the Federal New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII).

Verification: The project owner shall submit the engine specifications at least 30 days prior to purchasing the engines for review and approval demonstrating that the engines meet NSPS emission limit requirements at the time of engine purchase.

District conditions AQ-24 to AQ-29 apply to the following equipment permit:

Permit No. B010889 (Wet Surface Air Cooler (WSAC))

EQUIPMENT DESCRIPTION:

Manufacturer, and model **TBD**; system shall be equipped with drift elimination system rated at 0.0005%.

AQ-24 Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-25 This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-26 The drift rate shall not exceed 0.0005% of the maximum circulation rate. The vendor performance specifications will be provided prior to the installation of this unit.

Verification: The manufacturer guarantee data for the drift eliminator, showing compliance with this condition, shall be provided to the CPM and the District 30 days prior to WSAC operation. As part of the Annual Compliance Report the project owner shall include information on operating emission rates to demonstrate compliance with this condition.

AQ-27 The project owner shall conduct water quality testing for total dissolved solids content for the WSAC recirculation water at least once per calendar quarter when the unit is operated.

Verification: The cooling tower recirculation water TDS content test results shall be provided to representatives of the District, ARB, and the Energy Commission upon request.

AQ-28 The project owner shall estimate annual PM₁₀ emissions from this unit using the quarterly water quality testing data and the WSAC design specifications for drift and recirculation rate. Facility calendar year PM₁₀ emissions shall be less than the PM₁₀ offset threshold of 15 ton per year.

Verification: The project owner shall provide an emissions calculation and water sample testing protocol to the District for approval and CPM for review at least 30 days prior to the first WSAC water test.

AQ-29 A log shall be kept of all inspections, repairs, and maintenance on equipment. This log shall be maintained current and on-site for a minimum of five (5) years, and be provided to District, State and Federal personnel upon request.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

District conditions AQ-T1 through AQ-T43 apply to the temporary (i.e., construction) emission sources.

Temporary conditions AQ-T1 to AQ-T10 apply to the following equipment permits:

Permit Nos. B010803, B010804, B0010806, and B0010807

Four (4) Diesel Powered Electrical Generators; each rated at 98 BHP

EQUIPMENT DESCRIPTION:

Isuzu (or Equivalent) Model BI-4HK1X (or Equivalent), serial number unknown, Year of manufacture unknown, Certified Tier 3 Engine, CARB Executive Order U-R-006-0285, Family 8SZXL03.0JXB 98 bhp, Direct Injected, Turbo Charged, After Cooled, Inter

Cooled, operating at unknown rpm, fueled on CARB diesel, with a maximum rated fuel consumption of 4.3 gallons per hour, powering an Electrical Generator.

Permit Nos. B010808, B010809, B010810, and B010811

Four (4) Diesel IC Engines; each rated at 173 BHP

EQUIPMENT DESCRIPTION:

Isuzu (or Equivalent) Model BI-4HK1X (or Equivalent), serial number unknown, Year of manufacture unknown, Certified Tier 3 Engine, CARB Executive Order U-R-006-0273, Family 8SZXL05.21 X B. 173 bhp, Direct Injected, Turbo Charged, After Cooled, Inter Cooled, operating at unknown rpm, fueled on CARB diesel, with a maximum rated fuel consumption of 7.3 gallons per hour.

AQ-T1 All equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants. Unless otherwise noted, all equipment shall also be operated in accordance with all data and specifications submitted with the application for this permit.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T2 All equipment shall only be fired on ultra-low sulfur diesel fuel, with sulfur concentration less than or equal to 0.0015% (15 ppm) on a weight per weight basis per CARB Diesel or equivalent requirements. (17 CCR §93115(e)(1)(A))

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T3 A non-resettable four-digit (9,999) hour timer shall be installed and maintained on each unit to indicate elapsed engine operating time. (17 CCR §93115(e)(4)(G)1.)

Verification: At least 30 days prior to the installation of each engine, the project owner shall provide the District and the CPM the specification of the hour timer.

AQ-T4 The project owner shall maintain an operations log for each unit current and on-site for two (2) years, and be provided to District, State and Federal personnel upon request. The log shall include, at a minimum, the information specified below:

- a. Monthly hours of use (in hours) for each engine; total calendar year hours of operation for all four engines combined covered by **AQ-T11**, and total calendar year hours of operation for all four engines combined covered by **AQ-T12**;
- b. Calendar year operation in terms of fuel consumption (in gallons) and total hours; and,
- c. Fuel sulfur concentration (the project owner may use the supplier's certification of sulfur content if it is maintained as part of this log).

Verification: The project owner shall submit records required by this condition demonstrating compliance with the fuel sulfur content limitations of condition **AQ-T2** and the engine use limitations of conditions **AQ-T11** and **AQ-T12** in the Annual Compliance Report, including a photograph showing the annual reading of engine hours for each engine. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T5 Pursuant to the Diesel ATCM section (17 CCR §93115(e)(1)(D)1.a.), Diesel Particulate Matter (DPM) emission from each ICE diesel equipment unit shall emit no more than 0.01 g/Bhp-hr or 85% reduction from Tier 3 emission levels for DPM at the time of installation.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T6 Each diesel fired ICE is subject to the requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (17 CCR 93115). In the event of conflict between these Conditions and the ATCM, the more stringent requirements shall govern.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T7 Each engine shall not operate unless the exhaust is vented through a properly functioning Diesel Particulate trap.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T8 Each engine shall not operate unless equipped with a Verified Level 3 Control Device for 85%+ Diesel Particulate Reduction consistent with **AQ-T5** above. At present this add on control device has not been identified. Once information is available it shall be communicated to the District for incorporation into this Permit.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T9 All engines shall not be operated once line power is available to replace the electrical demand supported by such engine, and shall be removed from the site within 60 days of connection completion. The owner/operator shall request permit cancelation concurrent with engine removal.

Verification: The project owner shall submit to the CPM as part of the last Monthly Compliance Report or within 30 days of equipment removal confirmation of the date of equipment removal in compliance with the requirements of this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T10 These engines are subject to the requirements of the Federal New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines (40 CFR Part 60 Subpart IIII).

Verification: The project owner shall submit the engine specifications at least 30 days prior to purchasing or leasing the engines for review and approval demonstrating that the engines meet NSPS applicable emission limit requirements.

Temporary condition AQ-T11 applies to the following equipment permits:

Permit Nos. B010803, B010804, B0010806, and B0010807 (Four (4) Diesel Powered Electrical Generators; each rated at 98 BHP)

AQ-T11 The aggregated total hours accumulated from engines permitted as; B010803, B010804, B0010806 and B0010807 shall not exceed a combined total of 11,440 hours in any single calendar year period.

Verification: As part of the Annual Compliance Report the project owner shall include information on operating hours to demonstrate compliance with this condition.

Temporary condition AQ-T12 applies to the following equipment permits:

Permit Nos. B010808 and B010809, B010810, and B010811 (Four (4) Diesel IC Engines; each rated at 173 BHP each)

AQ-T12 The aggregated total hours accumulated from engines permitted as; B010808, B010809, B010810, and B010811 shall not exceed a combined total of 22,200 hours in any single calendar year period.

Verification: As part of the Annual Compliance Report the project owner shall include information on operating hours to demonstrate compliance with this condition.

Temporary conditions AQ-T13 to AQ-T22 applies to the following equipment permit:

Permit Nos. B010848 (Salt Handling System, Temporary)

EQUIPMENT DESCRIPTION:

Material handling and mixing equipment, enclosed mechanical screw conveyor located in an enclosed building and vented through a fabric filter baghouse.

AQ-T13 This equipment shall be properly maintained and kept in good operating condition in strict accord with the recommendations of the manufacturer/supplier and/or sound engineering principles.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T14 Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T15 This equipment and associated operations shall not discharge an exhaust stream that exhibits opacity greater than 20% (Ringelmann 1).

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T16 This equipment shall not be operated unless vented through properly functioning air pollution control equipment under valid District permit C010850.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T17 This equipment shall not process more than 480 tons of material in any one day and a total of 35,000 tons of product during the salt commissioning period.

Verification: The project owner shall submit to the CPM records on the amount of material processed on a daily basis to demonstrate compliance with this condition as part of the Annual Operation Report.

AQ-T18 The project owner shall maintain a log of all material throughput amounts so as to verify compliance with **AQ-T17**. Additionally, a log shall be kept of all inspections, repairs, and maintenance on equipment. Such logs or records shall be maintained at the facility for two (2) years, and be provided to District, State and Federal personnel upon request.

Verification: The project owner shall submit records required by this condition to demonstrate compliance with processing limitations condition **AQ-T17** in the Monthly Compliance Report. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T19 The project owner shall maintain this equipment in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of air contaminants.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T20 All open material transfer points, such as conveyor drops, hopper and bin loading, shall be operated to minimize emissions of particulate matter.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T21 The Owner/Operator shall maintain the equipment to preclude violations of District rules 401, 402 and 403.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T22 Salt blending and commissioning operations are temporary and expected to be in service 24 hours per day, and up to 140 days during the salt system

commissioning phase. Subsequently, the salt milling and handling equipment shall be removed from the site within 60 days subsequent to power plant start up.

Verification: As part of the Monthly Compliance Report the project owner shall include information as required by **AQ-T18** to demonstrate compliance with this condition and shall submit as part of the last Monthly Compliance Report or within 30 days of equipment removal confirmation of the date of equipment removal in compliance with the requirements of this condition.

Temporary conditions AQ-T23 to AQ-T30 apply to the following equipment permits:

Permit No. B010792 (Heater, Salt Commissioning, Temporary)

EQUIPMENT DESCRIPTION:

Manufacturer **TBD** Model **TBD**, Serial Number **TBD** with a maximum heat input of 20 MMBtu/hr, equipped with Burner Model **TBD**.

Permit No. B010801 (Heater, Salt Commissioning, Temporary)

EQUIPMENT DESCRIPTION:

Manufacturer **TBD** Model **TBD**, Serial Number **TBD** with a maximum heat input of 55 MMBtu/hr, equipped with Burner Model **TBD**.

AQ-T23 Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T24 This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T25 The operator shall maintain a log for this equipment, which, at a minimum, contains the information specified below. This log shall be maintained current and on-site for a minimum of two (2) years, and be provided to District, State and Federal personnel upon request:

- a. Monthly fuel use; and,
- b. Cumulative total fuel usage.

Verification: As part of the Monthly Compliance Report the project owner shall include information on operating hours of operation and fuel use to demonstrate compliance with this condition.

AQ-T26 This heater may be fired using liquefied petroleum gas (LPG), natural gas (NG) or liquefied natural gas (LNG).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T27 This heater shall only be used to liquefy and condition the heat transfer mixture during start up procedures associated with salt commissioning (excluding start-up of the heater).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T28 This heater shall be limited to the melting and conditioning of up to 35,000 tons of salt (excluding start-up of the heater).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T29 This equipment shall be removed from this facility within 60 days subsequent to power plant start up; the owner/operator shall within 60 days of power plant start up request that this permit be cancelled.

Verification: The project owner shall submit to the CPM as part of the last Monthly Compliance Report or within 30 days of equipment removal confirmation of the date of equipment removal in compliance with the requirements of this condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T30 Pursuant to District Rule 401, visible emissions associated with operation of this heater shall not exceed 20% opacity or Ringelmann 1.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

Temporary conditions AQ-T31 to AQ-T38 apply to the following equipment permit:

Permit No. C010830 (Wet Chemical Scrubber, Temporary; flow rate of approximately 3,000 acfm)

EQUIPMENT DESCRIPTION:

Temporary salt conditioning multi-stage chemical wet scrubbers with a 50 foot tall stack and a 1.13 foot diameter, operating with an exhaust temperature of 120 degrees F and a flow rate of 3,000 acfm.

AQ-T31 This equipment shall only be operated and maintained in strict accord with manufacturers and/or supplier's recommendations and/or sound engineering principles.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T32 An operating air lock device shall be fitted in each material and/or liquid discharge port.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T33 The overall water flow to this scrubbing system shall be kept at levels designed and recommended by system supplier.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T34 The scrubbing system shall be equipped with a pressure gauge and water flow meter to allow for the measurements of the water flow and pressure to the venturi and impingement tray scrubbers.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T35 The pressure drop across this scrubbing system shall be within the manufacturer's or design recommended range of **TBD** inches water column (WC) or greater.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T36 The project owner shall maintain a log of all material throughput amounts so as to record the values referenced in the above condition. Additionally, a log shall be kept of all inspections, repairs, and maintenance on equipment. Such logs or records shall be maintained at the facility for two (2) years, and be provided to District, State and Federal personnel upon request.

Verification: As part of the Monthly Compliance Report the project owner shall include information on operating hours of operation demonstrate compliance with this condition.

AQ-T37 This equipment shall be operated concurrently with the salt blending and heating process associated with District Permits B010848, B010792, and B010801.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T38 Salt blending and salt conditioning operations are temporary and expected to be in service 24 hours per day, and up to 140 days during the salt commissioning phase. Subsequently, the salt milling and handling equipment, salt heaters and wet chemical scrubber shall be removed from the site within 60 days subsequent to the power plant start up; the owner/operator shall within 60 days of power plant start up request that this permit be cancelled.

Verification: The project owner shall submit to the CPM as part of the last Monthly Compliance Report or within 30 days of equipment removal confirmation of the date of equipment removal in compliance with the requirements of this condition. The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

Temporary conditions AQ-T39 to AQ-T43 apply to the following equipment permit:

Permit No. C010850 (Baghouse, Temporary)

EQUIPMENT DESCRIPTION:

Temporary Model **TBD**; airflow of **TBD** acfm at powered with a **TBD** hp motor, **TBD** Bags, **TBD** ft² of cloth area and Air-to-Cloth ratio of **TBD**.

AQ-T39 This equipment shall only be operated and maintained in strict accord with manufacturers and/or supplier's recommendations and/or sound engineering principles.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T40 The project owner shall maintain, on-site, an inventory of replacement bags sufficient to ensure compliance with applicable rules of District Regulation IV.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T41 This baghouse shall operate as part of the process known as the RSEP salt handling process, permitted by MDAQMD permit B010848.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-T42 Salt blending and commissioning operations are temporary and expected to be 24 hours per day, and up to 140 days during the salt system commissioning phase. Subsequently, the salt milling and handling equipment, including this baghouse, shall be removed from the site within 60 days subsequent to power plant start up; the owner/operator shall within 60 days of power plant start up request that this permit be cancelled.

Verification: The project owner shall submit to the CPM as part of the last Monthly Compliance Report or within 30 days of equipment removal confirmation of the date of

equipment removal in compliance with the requirements of this condition. The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-T43 The project owner shall maintain a log of all material throughput amounts so as to record the values referenced in the above condition. Additionally, a log shall be kept of all inspections, repairs, and maintenance on equipment. Such logs or records shall be maintained at the facility for two (2) years, and be provided to District, State and Federal personnel upon request.

Verification: As part of the Monthly Compliance Report the project owner shall include information on operating hours of operation demonstrate compliance with this condition.

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ACRONYMS

AAQS	Ambient Air Quality Standard
AERMOD	ARMS/EPA Regulatory Model
AFC	Application for Certification
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMD	Air Quality Management District
ARB	California Air Resources Board
ATC	Authority to Construct
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
bhp	brake horsepower
BLM	Bureau of Land Management
RSEP	Rice Solar Energy Project
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CPM	(CEC) Compliance Project Manager
DPM	Diesel Particulate Matter
dscf	dry standard cubic feet
EIS	Environmental Impact Statement
ERC	Emission Reduction Credit
FDOC	Final Determination Of Compliance
FID	Flame Ionization Detector
GHG	Greenhouse Gas
gpm	gallon per minute
H ₂ S	Hydrogen Sulfide
hp	Horsepower
HSC	Health and Safety Code
ISC	Interruptible Service Contract
kV	Kilovolt

lbs	Pounds
LORS	Laws, Ordinances, Regulations and Standards
LRP	Load Reduction Program
µg/m ³	microgram per cubic meter
mg/m ³	milligrams per cubic meter
MDAB	Mojave District Air Basin
MDAQMD	Mojave District Air Quality Management District
MW	Megawatts (1,000,000 Watts)
MWh	Megawatt-hour
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Protection Act
NMHC	non-methane-hydrocarbons
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen or Nitrogen Oxides
NSPS	New Source Performance Standard
NSR	New Source Review
O ₂	Oxygen
O ₃	Ozone
OLM	Ozone Limiting Method
PDOC	Preliminary Determination Of Compliance
PID	photoionization detector
PM	Particulate Matter
PM ₁₀	Particulate Matter less than 10 microns in diameter
PM _{2.5}	Particulate Matter less than 2.5 microns in diameter
ppm	Parts Per Million
ppmv	Parts Per Million by Volume
ppmvd	Parts Per Million by Volume, Dry
PSD	Prevention of Significant Deterioration
PTO	Permit to Operate
RACT	Reasonably Available Control Technology
SA	Staff Assessment (this document)
SCE	Southern California Edison
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SO ₄	Sulfate
SO _x	Oxides of Sulfur

SWPPP	Storm Water Pollution Prevention Plan
TDS	total dissolved solids
tpy	tons per year
U.S.EPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WAPA	Western Area Power Administration

Appendix AIR-1 - Greenhouse Gas Emissions

Testimony of William Walters, P.E.

SUMMARY OF CONCLUSIONS

The Rice Solar Project is a proposed addition to the state's electricity system. Rice Solar is a solar concentrating thermal power plant with thermal storage that uses heliostat mirrors to heat molten salt which is then used to generate steam that powers a steam turbine. The use of molten salt for thermal storage would allow this facility, unlike most thermal solar designs, to store heat and generate a limited amount of electricity (limit is based on size of "hot" storage tank) on demand at any time during the day or night. As a solar project, its greenhouse gas (GHG) emissions would be considerably less than the existing statewide average GHG emissions per unit of generation and considerably less than the GHG emissions from existing fossil fuel fired power plants providing generation to California, and thus would contribute to continued reduction of GHG emissions in the interconnected California and the western United States electricity systems.

While Rice Solar would emit some GHG emissions, the contribution to the system build-out of renewable resources to meet the goals of the Renewable Portfolio Standard (RPS) in California would result in a net cumulative reduction of energy generation and GHG emissions from new and existing fossil-fired electricity resources. Electricity is produced by operation of inter-connected generation resources. Operation of one power plant, like Rice Solar, affects all other power plants in the interconnected system. Rice Solar would be a must-take facility and its operation would affect the overall electricity system operation and GHG emissions in several ways:

- Rice Solar would provide low-GHG, renewable generation.
- Rice Solar's thermal storage design would provide dispatchable and flexible power that would ease its integration into the power distribution system and could help integrate the growing generation from intermittent renewable sources without power storage, such as wind and other types of solar generation.
- Rice Solar would facilitate to some degree the replacement of high GHG emitting (e.g., out-of-state coal) electricity generation that must be phased out to meet the State's 2006 Emissions Performance Standard.
- Rice Solar could facilitate to some extent the replacement of generation provided by aging fossil-fired power plants that use once-through cooling.

These system impacts would result in a net reduction in GHG emissions across the electricity system providing energy and capacity to California. Thus, staff concludes that the proposed project would result in a cumulative overall reduction in GHG emissions from power plants, does not worsen current conditions, and would not result in impacts that are cumulatively CEQA significant.

Staff concludes that the short-term minor emission of greenhouse gases during construction that are necessary to create this new, low GHG-emitting power generating facility would be sufficiently reduced by "best practices" and would be more than offset

by GHG emission reductions during operation. Thus, construction GHG emissions would not be CEQA significant.

The Rice Solar Project, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]).

The California Air Resources Board (ARB) has promulgated regulations for mandatory GHG emission reporting to comply with the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Safety Code sections 38500 et seq.) (ARB 2008a). The Rice Solar Project, which solely generates electricity from solar power, is exempt from the mandatory GHG emission reporting requirements for electricity generating facilities [CCR Title 17 §95101(c)(1)]. However, the proposed project may be subject to future reporting requirements and GHG reductions or trading requirements as additional state or federal GHG regulations are developed and implemented.

INTRODUCTION

Greenhouse gas (GHG) emissions are not criteria pollutants, but they are discussed in the context of cumulative impacts. However, on April 2, 2007, the U.S. Supreme Court found that GHGs are pollutants that must be covered by the federal Clean Air Act. In response, on September 30, 2009, the U.S. Environmental Protection Agency proposed to apply Prevention of Significant Deterioration (PSD) requirements to facilities whose carbon dioxide-equivalent emissions exceed 25,000 tons per year (U.S.EPA 2009c). The rule making is not finalized, but the GHG emissions for Rice Solar are not expected to exceed this amount.

The federal and state governments have demonstrated a clear willingness to address global climate change through research, adaptation and inventory reductions. In that context, the agencies evaluate the GHG emissions from the proposed project, present information on GHG emissions related to electricity generation, and describe the applicable GHG standards and requirements. This analysis has been prepared by staff and serves as staff's testimony in the Energy Commission's RSEP licensing proceeding in accordance with CEQA. This analysis also serves as BLM's and Western's assessment of the proposed RSEP in accordance with NEPA. The analysis evaluates greenhouse gas impacts associated with the proposed RSEP's construction, operating and decommissioning activities.

Generation of electricity can produce greenhouse gases with the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. For fossil fuel-fired power plants, the GHG emissions include primarily carbon dioxide, with much smaller amounts of nitrous oxide (N₂O, not NO or NO₂, which are commonly known as NO_x or oxides of nitrogen), and methane (CH₄ – often from unburned natural gas). For solar energy generation projects the stationary source GHG emissions are much smaller than fossil fuel-fired power plants, but the associated maintenance vehicle emissions are higher. Other sources of GHG emissions include sulfur hexafluoride (SF₆) from high voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons

(PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO₂ emissions from carbon-based fuels; other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds have very high global warming potentials.

Global warming potential is a relative measure, compared to carbon dioxide, of a compound's residence time in the atmosphere and ability to warm the planet. Mass emissions of GHGs are converted into carbon dioxide equivalent (CO₂E) metric tonnes (MT) for ease of comparison.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local laws and policies in **Greenhouse Gas Table 1** pertain to the control and mitigation of greenhouse gas emissions. Staff's analysis examines the proposed project's compliance with these requirements.

GLOBAL CLIMATE CHANGE AND ELECTRICITY PRODUCTION

There is general scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Man-made emissions of greenhouse gases, if not sufficiently curtailed, are likely to contribute further to continued increases in global temperatures. Indeed, the California Legislature finds that "[g]lobal warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California" (Cal. Health & Safety Code, sec. 38500, division 25.5, part 1).

Greenhouse Gas Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
40 Code of Federal Regulations (CFR) Part 98	This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO ₂ equivalent emissions per year.
State	
California Global Warming Solutions Act of 2006, AB 32 (Stats. 2006; Chapter 488; Health and Safety Code sections 38500 et seq.)	This act requires the California Air Resources Board (ARB) to enact standards that will reduce GHG emission to 1990 levels by 2020. Electricity production facilities will be regulated by the ARB.
California Code of Regulations, tit. 17, Subchapter 10, Article 2, sections 95100 et. seq.	These ARB regulations implement mandatory GHG emissions reporting as part of the California Global Warming Solutions Act of 2006 (Stats. 2006; Chapter 488; Health and Safety Code sections 38500 et seq.)
Title 20, California Code of Regulations, section 2900 et seq.; CPUC Decision D0701039 in proceeding R0604009	The regulations prohibit utilities from entering into long-term contracts with any base load facility that does not meet a greenhouse gas emission standard of 0.5 metric tonnes carbon dioxide per megawatt-hour (0.5 MTCO ₂ /MWh) or 1,100 pounds carbon dioxide per megawatt-hour (1,100 lbs CO ₂ /MWh).

In 1998, the Energy Commission identified a range of strategies to prepare for an uncertain climate future, including a need to account for the environmental impacts associated with energy production, planning, and procurement (CEC 1998, p.5). In 2003, the Energy Commission recommended that the state require reporting of greenhouse gases (GHG) or global climate change¹⁰ emissions as a condition of state licensing of new electric generating facilities (CEC 2003, IEPR p. 42). In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). It requires the California Air Resources Board (ARB) to adopt standards that will reduce statewide GHG emissions to statewide GHG emissions levels in 1990, with such reductions to be achieved by 2020.¹¹ To achieve this, ARB has a mandate to define the 1990 emissions level and achieve the maximum technologically feasible and cost-effective GHG emission reductions.

The ARB adopted early action GHG reduction measures in October 2007, adopted mandatory reporting requirements and the 2020 statewide target in December 2007, and adopted a statewide scoping plan in December 2008 to identify how emission reductions will be achieved from major sources of GHG via regulations, market mechanisms, and other actions. ARB staff is developing regulatory language to implement its plan and holds ongoing public workshops on key elements of the recommended GHG reduction measures, including market mechanisms (ARB 2006). The regulations must be effective by January 1, 2011 and mandatory compliance commences on January 1, 2012. The mandatory reporting requirements are effective for electric generating facilities with a nameplate capacity equal or greater than one megawatt (MW) capacity if their emissions exceed 2,500 metric tonnes per year. The due date for initial reports by existing facilities was June 1, 2009.

Examples of strategies that the state might pursue for managing GHG emissions in California, in addition to those recommended by the Energy Commission and the Public Utilities Commission, were identified in the California Climate Action Team's Report to the Governor (CalEPA 2006). The scoping plan approved by ARB in December 2008 builds upon the overall climate policies of the Climate Action Team report and shows the recommended strategies to achieve the goals for 2020 and beyond. Some strategies focus on reducing consumption of petroleum across all areas of the California economy. Improvements in transportation energy efficiency (fuel economy), land use planning, and alternatives to petroleum-based fuels are slated to provide substantial reductions by 2020 (CalEPA 2006). The scoping plan includes a requirement for 33% of California's electrical energy to be provided from renewable sources by 2020 (implementing California's 33% RPS goal), aggressive energy efficiency targets, and a cap-and-trade system that includes the electricity sector (ARB 2008b).

It is likely that GHG reductions mandated by ARB will not be uniform across emitting sectors, in that reductions will be based on cost-effectiveness (i.e., the greatest effect for the least cost). For example, the ARB proposes a 40% reduction in GHG from the

¹⁰ Global climate change is the result of greenhouse gases, or air emissions with global warming potentials, affecting the global energy balance, and thereby, climate of the planet. The term greenhouse gases (GHG) and global climate change (GCC) gases are used interchangeably.

¹¹ Governor Schwarzenegger has also issued Executive Order S-3-05 establishing a goal of 80% below 1990 levels by 2050.

electricity sector, even though that sector currently only produces about 25% of the state's GHG emissions. In response, in September 2008 the Energy Commission and the Public Utilities Commission provided recommendations (CPUC 2008) to ARB on how to achieve such reductions through both programmatic and regulatory approaches, and identified points of regulation should ARB decide that a multi-sector cap and trade system is warranted.

The Energy Commission's *2007 Integrated Energy Policy Report* (IEPR) also addressed climate change within the electricity, natural gas, and transportation sectors (CEC 2007). For the electricity sector, it recommended such approaches as pursuing all cost-effective energy efficiency measures and meeting the Governor's stated goal of a 33% renewable portfolio standard. The Energy Commission's *2009 Integrated Energy Policy Report* continues to emphasize the importance of meeting greenhouse gas emissions reduction goals along with other important statewide issues such as reducing the use of once-through cooling in coastal California power plants (CEC 2009d).

SB 1368¹², enacted in 2006, and regulations adopted by the Energy Commission and a Public Utilities Commission decision ((D. 07-01-039; January 25, 2007) pursuant to the bill, prohibits California utilities from entering into long-term commitments with any base load facilities that exceed the Emission Performance Standard of 0.500 metric tonnes CO₂ per megawatt-hour¹³ (1,100 pounds CO₂/MWh). Specifically, the SB 1368 Emission Performance Standard (EPS) applies to power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California.¹⁴ If a project that is designed or intends to provide base load energy (instate or out of state) plans to sell electricity to a California utility, that utility will have to demonstrate that the project meets the EPS. *Base load* units are defined as units that operate at a capacity factor higher than 60%. As a renewable electricity generating facility, Rice Solar is determined by rule to be compliant with the SB 1368 EPS.

In addition to these programs, California is involved in the Western Climate Initiative, a multi-state and international effort to establish a cap and trade market to reduce greenhouse gas emissions in the Western United States and the Western Electricity Coordinating Council (WECC). The timelines for the implementation of this program are similar to those of AB 32, with full roll-out beginning in 2012. And as with AB 32, the electricity sector has been a major focus of attention.

ELECTRICITY PROJECT GREENHOUSE GAS EMISSIONS

Electricity use can be as simple as turning on a switch to operate a light or fan. The system to deliver adequate and reliable electricity supply is complex and variable. But it operates as an integrated whole to meet demand, such that the dispatch of a new source of generation generally curtails or displaces one or more less efficient or less competitive existing sources. Within the system, generation resources provide

¹² Public Utilities Code § 8340 et seq.

¹³ The Emission Performance Standard only applies to carbon dioxide, and does not include emissions of other greenhouse gases converted to carbon dioxide equivalent.

¹⁴ See Rule at http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/64072.htm

electricity, or energy, generating capacity, and ancillary services to stabilize the system and facilitate electricity delivery, or movement, over the grid. *Capacity* is the instantaneous output of a resource, in megawatts. It is also the potential output of a resource; hence Rice Solar has a capacity of 150 MW. *Energy* is the capacity output over a unit of time, for example an hour or year, generally reported as megawatt-hours or gigawatt-hours (GWh). Ancillary services¹⁵ include regulation, spinning reserve, non-spinning reserve, voltage support, and black start capability. Individual generation resources can be built and operated to provide only one specific service. Alternatively, a resource may be able to provide one or all of these services, depending on its design and constantly changing system needs and operation.

California is actively pursuing policies to reduce GHG emissions that include adding non-GHG emitting renewable generation resources to the system mix. The generation of electricity using fossil fuels, even in a back-up generator at a thermal solar plant, produces air emissions known as greenhouse gases in addition to the criteria air pollutants that have been traditionally regulated under the federal and state Clean Air Acts. Greenhouse gas emissions contribute to the warming of the earth's atmosphere, leading to climate change.

PROJECT CONSTRUCTION

Construction of industrial facilities such as power plants requires coordination of numerous equipment and personnel. The concentrated on-site activities result in short-term, unavoidable increases in vehicle and equipment emissions that include greenhouse gases. Additionally, for this facility there are GHG emissions from the salt conditioning process that are a one-time GHG emission source prior to commercial operation. The greenhouse gas emissions estimate, determined for the entire construction and salt conditioning period one-time emission sources, are presented below in **Greenhouse Gas Table 2**.

Greenhouse Gas Table 2
Estimated Rice Solar Construction/Commissioning Greenhouse Gas Emissions

Construction Element	CO2-Equivalent (MTCO2E) ^{a,b}
On-Site Construction Equipment	6,333
On-Site Motor Vehicles	104
Off-Site Motor Vehicles	9,116
Transmission Line Construction Equipment	599
Construction Subtotal	16,152
Salt Conditioning Element	
Salt Melting	9,489
Temporary Salt Heater	1,374
Temporary Electrical Heating Indirect Emissions	1,595
Conditioning Subtotal	12,458
Construction and Salt Conditioning Total	28,610

Sources: SR 2009a and CH2MHill 2010a

^a One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms

^b The vast majority of the CO2E emissions, over 99%, are CO₂ from these combustion sources.

¹⁵ See CEC 2009b, page 95.

PROJECT OPERATIONS

Operations GHG emissions are shown in **Greenhouse Gas Table 3**. Operation of the proposed Rice Solar Project would cause GHG emissions from the facility maintenance fleet and employee trips, two emergency generator engines, two fire water pump engines, and sulfur hexafluoride leaks, hydrofluorocarbons leaks, and perfluorocarbons leaks from new electrical component and other equipment. These emissions include the ongoing operating emission sources that would be active during the initial commissioning phase.

Greenhouse Gas Table 3
Estimated Rice Solar Operating Greenhouse Gas Emissions

	Annual CO ₂ -Equivalent (MTCO ₂ E) ^a
On-site Stationary Equipment Combustion ^b	129
Heliostat Washing Trucks ^b	16
Employee Commute ^b	640
Material Deliveries ^b	172
Equipment Leakage (SF ₆)	30
Equipment Leakage (HFC -134a)	4
Equipment Leakage (PFC-14)	3
Total Project GHG Emissions – MTCO₂E^b	994
Facility Net MWh per year ^c	450,000
Facility GHG Performance (MTCO ₂ E/MWh)	0.0022

Sources: SR 2009a; CH2MHill 2010a; CH2M-Hill 2010e; and CH2M-Hill 2010l

^a One metric tonne (MT) equals 1.1 short tons or 2,204.6 pounds or 1,000 kilograms.

^b The vast majority of the CO₂E emissions, over 99%, are CO₂ from these emission sources.

^c This represents net MWh including the reduction in total net generation from direct parasitic load and the use of grid power, where the net GHG emissions for grid power use is also assumed to be netted out by the reduction in gross facility MWh generation needed to cover the grid power use.

Greenhouse Gas Table 3 shows what the proposed project, as permitted, could potentially emit in greenhouse gases on an annual basis. All emissions are converted to CO₂-equivalent and totaled. Electricity generation GHG emissions are generally dominated by CO₂ emissions from the carbon-based fuels; other sources of GHG are typically small and also are more likely to be easily controlled or reused/recycled. For this solar project the primary fuel, solar energy, is greenhouse gas free, but there is direct and indirect gasoline and diesel fuel use in the maintenance vehicles, offsite delivery vehicles, staff and employee vehicles, and the two emergency generator engines and two emergency fire pump engines. Another GHG emission source for the proposed project is the leakage of SF₆ from electrical equipment and the leakage of HFCs and PFCs from refrigeration and fire suppression equipment leakage, respectively.

The proposed project is estimated to emit, directly from primary and secondary emission sources on an annual basis, nearly 1,000 metric tonnes of CO₂-equivalent GHG emissions per year. The Rice Solar Project, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]). Regardless, Rice Solar

has an estimated GHG emission rate of 0.0022 MTCO₂E/MWh, well below the Greenhouse Gas Emission Performance Standard of 0.500 MTCO₂/MWh.

Solar Project Energy Payback Time

The beneficial energy and greenhouse gas impacts of renewable energy projects can also be measured by the *energy payback time*¹⁶. **Greenhouse Gas Tables 2 and 3** provide an estimate of the onsite construction and operation emissions, employee transportation emissions, and the final segment of offsite materials and consumables transportation. However, there are additional direct transportation and indirect manufacturing GHG emissions associated with the construction and operation of the proposed project, which are all considered in the determination of the energy payback time. A document sponsored by Greenpeace estimates that the energy payback time for concentrating solar power plants, such as Rice Solar, to be on the order of 5 months (Greenpeace 2005, Page 9); and the project life for Rice Solar is estimated to be 30 years (SR 2009a, p. 2-51). Therefore, the proposed project's GHG emissions reduction potential from energy displacement would be substantial¹⁷.

Natural Carbon Uptake Reduction

This proposed project would cause the clearing of land and removal of vegetation, which would reduce the ongoing natural carbon uptake by vegetation. A study of the Mojave Desert indicated that the desert may uptake carbon in amounts as high as 100 grams per square meter per year (Wohlfahrt et. al. 2008). This would equate to a maximum reduction in carbon uptake, calculated as CO₂, of 1.48 MT of CO₂ per acre per year for areas with complete vegetation removal. For this 1,410 acre proposed project the maximum equivalent loss in carbon uptake assuming complete vegetation removal would be 2,087 MT of CO₂ per year, which would correspond to 0.005 MT of CO₂ per MWh generated. Therefore, the natural carbon uptake loss is negligible in comparison with the reduction in fossil fuel CO₂ emissions, which can range from 0.35 to 1.0 MT of CO₂ per MWh depending on the fuel and technology, that is enabled by this proposed project.

CLOSURE AND DECOMMISSIONING

Closure and decommissioning, as a one-time limited duration event, would have emissions that are similar in type and magnitude, but likely lower than, the construction emissions as discussed above.

¹⁶ The energy payback time is the time required to produce an amount of energy as great as what was consumed during production, which in the context of a solar power plant includes all of the energy required during construction and operation.

¹⁷ The GHG displacement for the project would be similar to, but not exactly the same as, the amount of energy produced after energy payback is achieved multiplied by the average GHG emissions per unit of energy displaced. The average GHG emissions for the displaced energy over the project life is not known but currently fossil fuel fired power plants have GHG emissions that range from 0.35 MT/MWh CO₂E for the most efficient combined cycle gas turbine power plants to over 1.0 MT/MWh for coal fired power plants.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff assesses four kinds of impacts: construction, operation, closure and decommissioning, and cumulative effects. As the name implies, construction impacts result from the emissions occurring during the construction of the proposed project. The operation impacts result from the emissions of the proposed project during operation. Cumulative impacts analysis assesses the impacts that result from the proposed project's incremental effect viewed over time. The impact of GHG emissions caused by this solar facility is characterized by considering how the power plant would affect the overall electricity system. The integrated electricity system depends on non-fossil and fossil-fueled generation resources to provide energy and satisfy local capacity needs. As directed by the Energy Commission's adopted order initiating an informational (OII) proceeding (08-GHG OII-1) (CEC 2009a), staff is refining and implementing the concept of a "blueprint" that describes the long-term roles (i.e., retirements and displacement) of fossil-fueled power plants in California's electricity system as we move to a high-renewable, low-GHG electricity system, which would include projects like Rice Solar.

PROPOSED PROJECT

Construction/Salt System Commissioning Impacts

Staff concludes that the GHG emission increases from the construction and one-time salt system commissioning activities would not be CEQA significant for several reasons. First, the period of construction would be short-term and the emissions intermittent during that period, not ongoing during the life of the proposed project. Second, best practices control measures that staff recommends, such as limiting idling times and requiring, as appropriate, equipment that meet the latest emissions standards, would further minimize greenhouse gas emissions since the use of newer equipment would increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. And lastly, these temporary GHG emissions are necessary to create this renewable energy source that would provide power with a very low GHG emissions profile, and the construction emissions would be more than offset by the reduction in fossil fuel fired generation that would be enabled by this proposed project. If the proposed project construction and one-time salt conditioning GHG emissions were distributed over the 30 year life of the proposed project they would only increase the project life time annual facility GHG emissions rate by 0.0021 MT CO₂-eq per MW.

Direct/Indirect Operation Impacts and Mitigation

The proposed Rice Solar project promotes the state's efforts to move towards a high-renewable, low-GHG electricity system, and, therefore, reduces both the amount of natural gas used by electricity generation and greenhouse gas emissions.

Net GHG emissions for the integrated electric system will decline when new renewable power plants are added to: 1) move renewable generation towards the 33% target; 2) improve the overall efficiency, or GHG emission rate, of the electric system; or 3) serve load growth or capacity needs more efficiently, or with fewer GHG emissions.

The Role of Rice Solar in Renewables Goals/Load Growth

As California moves towards an increased reliance on renewable energy by implementing the Renewables Portfolio Standard (RPS), non-renewable energy resources will be displaced. These reductions in non-renewable energy, shown in **Greenhouse Gas Table 4**, could be as much as 36,500 GWh. These assumptions are conservative in that the forecasted growth in electricity retail sales assumes that the impacts of planned increases in expenditures on (uncommitted) energy efficiency are already embodied in the current retail sales forecast¹⁸. Energy Commission staff estimates that as much as 18,000 GWh of additional savings due to uncommitted energy efficiency programs may be forthcoming.¹⁹ This would reduce non-renewable energy needs by a further 12,000 GWh given a 33% RPS.

Greenhouse Gas Table 4
Estimated Changes in Non-Renewable Energy Potentially Needed to Meet California Loads, 2008-2020

California Electricity Supply	Annual GWh	
Statewide Retail Sales, 2008, estimated ^a	264,794	
Statewide Retail Sales, 2020, forecast ^a	289,697	
Growth in Retail Sales, 2008-20	24,903	
Growth in Net Energy for Load ^b	29,840	
California Renewable Electricity	GWh @ 20% RPS	GWh @ 33% RPS
Renewable Energy Requirements, 2020 ^c	57,939	95,600
Current Renewable Energy, 2008	29,174	
Change in Renewable Energy-2008 to 2020 ^c	28,765	66,426
Resulting Change in Non-Renewable Energy ^d	176	(36,586)

Source: Energy Commission staff 2010.

Notes:

- a. 2009 IPER Demand Forecast, Form 1.1c. Excludes pumping loads for entities that do not have an RPS.
- b. 2009 IEPD Demand Forecast, Form 1.5a.
- c. RPS requirements are a percentage of retail sales.

The Role of Rice Solar in Retirements/Replacements

Rice Solar would be capable of annually providing 450 GWh of renewable generation energy to replace resources that are or will likely be precluded from serving California loads. State policies, including GHG goals, are discouraging or prohibiting new contracts and new investments in high GHG-emitting resources such as coal-fired generation, generation that relies on water for once-through cooling, and aging power

¹⁸ Energy efficiency savings are already represented in the current Energy Commission demand forecast adopted December 2009 (CEC 2009c).

¹⁹ See *Incremental Impacts of Energy Efficiency Policy Initiatives Relative to the 2009 Integrated Energy Policy Report Adopted Demand Forecast* (CEC-200-2010-001-D, January, 2010), page 2. Table 1 indicates that additional conservation for the three investor-owned utilities may be as high as 14,374 GWh. Increasing this value by 25% to account for the state's publicly-owned utilities yields a total reduction of 17,967 GWh.

plants (CEC 2007). Some of the existing plants that are likely to require substantial capital investments to continue operation in light of these policies may be unlikely to undertake the investments and will retire or be replaced.

Replacement of High GHG-Emitting Generation

High GHG-emitting resources, such as coal, are effectively prohibited from entering into new long-term contracts for California electricity deliveries as a result of the Emissions Performance Standard adopted in 2007 pursuant to SB 1368. Between now and 2020, more than 18,000 GWh of energy procured by California utilities under these contracts will have to reduce GHG emissions or be replaced; these contracts are presented in **Greenhouse Gas Table 5**.

**Greenhouse Gas Table 5
Expiring Long-term Contracts with Coal-fired Generation 2009 – 2020**

Utility	Facility ^a	Contract Expiration	Annual GWh Delivered to CA
PG&E, SCE	Miscellaneous In-state Qualifying Facilities ^a	2009-2019	4,086
LADWP	Intermountain	2009-2013	3,163 ^b
City of Riverside	Bonanza, Hunter	2010	385
Department of Water Resources	Reid Gardner	2013 ^c	1,211
SDG&E	Boardman	2013	555
SCE	Four Corners	2016	4,920
Turlock Irrigation District	Boardman	2018	370
LADWP	Navajo	2019	3,832
TOTAL			18,522

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings.

Notes:

- a. All facilities are located out-of-state except for the Miscellaneous In-state Qualifying Facilities.
- b. Estimated annual reduction in energy provided to LADWP by Utah utilities from their entitlement by 2013.
- c. Contract not subject to Emission Performance Standard, but the Department of Water Resources has stated its intention not to renew or extend.

This represents almost half of the energy associated with California utility contracts with coal-fired resources that will expire by 2030. If the State enacts a carbon adder²⁰, all the coal contracts (including those in **Greenhouse Gas Table 5**, which expire by 2020 and, other contracts that expire beyond 2020 and are not shown in the table) may be divested at an accelerated rate as coal-fired energy becomes uncompetitive due to the carbon adder or the capital needed to capture and sequester the carbon emissions. Also shown are the approximate 500 MW of in-state coal and petroleum coke-fired capacity that may be unlikely to contract with California utilities for baseload energy due to the SB1368 Emission Performance Standard. As these contracts expire, new and existing generation resources will replace the lost energy and capacity. Some will come

²⁰ A carbon adder or carbon tax is a specific value added to the cost of a project for per ton of associated carbon or carbon dioxide emissions. Because it is based on, but not limited to, actual operations and emission and can be trued up at year end, it is considered a simple mechanism to assign environmental costs to a project.

from renewable generation such as the proposed project; some will come from new and existing natural gas fired generation. All of these new facilities will have substantially lower GHG emissions rates than coal and petroleum coke-fired facilities, which typically averages about 1.0 MTCO₂/MWh without carbon capture and sequestration. Thus, new renewable facilities will result in a net reduction in GHG emissions from the California electricity sector.

Retirement of Generation Using Once-Through Cooling

The State Water Resource Control Board (SWRCB) has proposed significant restrictions on the operation of once-through cooling (OTC) units, shown in **Greenhouse Gas Table 6**, which will likely require extensive capital to retrofit, or retirement, or substantial curtailment of dozens of generating units. In 2008, these units collectively produced almost 58,000 GWh. While the more recently built OTC facilities may well install dry or wet cooling towers and continue to operate, the aging OTC plants are not likely to be retrofit to use dry or wet cooling towers without the power generation also being retrofit or replaced to use a more efficient and lower GHG emitting combined cycle gas turbine technology. Most of these existing OTC units operate at low capacity factors, suggesting a limited ability to compete in the current electricity market and reliance on capacity contracts offered to these OTC facilities since they are needed for reliability. Although the timing would be uncertain, new resources are expected to be more competitive than aging plants and would displace the energy provided by OTC facilities and likely facilitate if not accelerate their retirements.

Any additional costs associated with complying with the SWRCB regulation would be amortized over a limited revenue stream today and into the foreseeable future. Their energy and much of their dispatchable, load-following capability will have to be replaced. These units constitute over 15,000 MW of merchant capacity and 17,800 GWh of merchant energy. Of this, much but not all of the capacity and energy are in local reliability areas, requiring a large share of replacement capacity – absent transmission upgrades – to locations in the same local reliability area. **Greenhouse Gas Table 6** provides a summary of the utility and merchant energy supplies affected by the OTC regulations.

New renewable generation resources will emit substantially less GHG emissions on average than other energy generation sources. Existing aging and OTC natural gas facility generation typically averages 0.6 to 0.7 MTCO₂/MWh, which is much less efficient, higher GHG emitting than a renewable energy project like Rice Solar. A project like Rice Solar, located far from the coastal load pockets like the Los Angeles Local Reliability Area (LRA), would more likely provide energy support to facilitate the retirement of some aging and/or OTC power plants, but would not likely provide any local capacity support at or near the coastal OTC units. Regardless, due to its being both dispatchable and having very low greenhouse gas emissions, Rice Solar would serve to reduce GHG emissions from the electricity sector.

Greenhouse Gas Table 6
Aging and Once-Through Cooling Units: 2008 Capacity and Energy Output ^a

Plant, Unit Name	Owner	Local Reliability Area	Aging Plant?	Capacity (MW)	2008 Energy Output (GWh)	GHG Emission Rate(MTCO2/MWh)
Diablo Canyon 1, 2	Utility	None	No	2,232	17,091	Nuclear
San Onofre 2, 3	Utility	L.A. Basin	No	2,246	15,392	Nuclear
Broadway 3 ^b	Utility	L.A. Basin	Yes	75	90	0.648
El Centro 3, 4 ^b	Utility	None	Yes	132	238	0.814
Grayson 3-5 ^b	Utility	LADWP	Yes	108	150	0.799
Grayson CC ^b	Utility	LADWP	Yes	130	27	0.896
Harbor CC	Utility	LADWP	No	227	203	0.509
Haynes 1, 2, 5, 6	Utility	LADWP	Yes	1,046	1,529	0.578
Haynes CC	Utility	LADWP	No	560	3,423	0.376
Humboldt Bay 1, 2 ^a	Utility	Humboldt	Yes	107	507	0.683
Olive 1, 2 ^b	Utility	LADWP	Yes	110	11	1.008
Scattergood 1-3	Utility	LADWP	Yes	803	1,327	0.618
Utility-Owned				7,776	39,988	0.693
Alamitos 1-6	Merchant	L.A. Basin	Yes	1,970	2,533	0.661
Contra Costa 6, 7	Merchant	S.F. Bay	Yes	680	160	0.615
Coolwater 1-4 ^b	Merchant	None	Yes	727	576	0.633
El Segundo 3, 4	Merchant	L.A. Basin	Yes	670	508	0.576
Encina 1-5	Merchant	San Diego	Yes	951	997	0.674
Etiwanda 3, 4 ^b	Merchant	L.A. Basin	Yes	666	848	0.631
Huntington Beach 1, 2	Merchant	L.A. Basin	Yes	430	916	0.591
Huntington Beach 3, 4	Merchant	L.A. Basin	No	450	620	0.563
Mandalay 1, 2	Merchant	Ventura	Yes	436	597	0.528
Morro Bay 3, 4	Merchant	None	Yes	600	83	0.524
Moss Landing 6, 7	Merchant	None	Yes	1,404	1,375	0.661
Moss Landing 1, 2	Merchant	None	No	1,080	5,791	0.378
Ormond Beach 1, 2	Merchant	Ventura	Yes	1,612	783	0.573
Pittsburg 5-7	Merchant	S.F. Bay	Yes	1,332	180	0.673
Potrero 3	Merchant	S.F. Bay	Yes	207	530	0.587
Redondo Beach 5-8	Merchant	L.A. Basin	Yes	1,343	317	0.810
South Bay 1-4	Merchant	San Diego	Yes	696	1,015	0.611
Merchant-Owned				15,254	17,828	0.605
Total In-State OTC				23,030	57,817	

Source: Energy Commission staff based on Quarterly Fuel and Energy Report (QFER) filings.

- a. OTC Humboldt Bay Units 1 and 2 are included in this list. They must retire in 2010 when the new Humboldt Bay Generating Station (not ocean-cooled), currently under construction, enters commercial operation.
- b. Units are aging but are not OTC.

Closure and Decommissioning

Eventually the facility would close, either at the end of its useful life or due to some unexpected situation such as a natural disaster or catastrophic facility breakdown. When the facility closes, all sources of air emissions would cease to operate and thus impacts associated with those greenhouse gas emissions would no longer occur. The only other expected, albeit temporary, GHG emissions would be equipment exhaust (off-road and on-road) from dismantling activities. These activities would be of much a shorter duration than construction of the proposed project, equipment used to dismantle

the facility are assumed to have lower comparative GHG emissions due to technology advancement, and would be required to be controlled in a manner at least equivalent to that required during construction. It is assumed that the beneficial GHG impacts of this facility, displacement of fossil fuel fired generation, would be replaced by the construction of newer more efficiency renewable energy or other low GHG generating technology facilities. Also, the recycling of the facility components (steel, concrete, etc.) could indirectly reduce GHG emissions from decommissioning activities. Therefore, while there would be temporary adverse greenhouse gas CEQA impacts during decommissioning they are determined to be less than significant.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be an approximately 148 MW project, with a 7.2% smaller heliostat field. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. However, the heliostat field would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 1**. The site layout (e.g. administration/shop building and evaporation ponds); 653-foot total height of the solar tower and receiver; and transmission interconnection to WAPA's Parker-Blythe transmission line would be the same as the proposed project.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

The results of the Reduced Acreage Alternative would be the following:

- The impacts of the proposed project would not occur on the lands not used due to the smaller project size. However, the land on which the project is proposed would become available to other uses, including another solar project.
- The benefits of the proposed project in displacing fossil fuel fired generation and reducing associated greenhouse gas emissions from gas-fired generation would be minimally reduced due to the 1.3% drop in generating capacity. Both State and Federal law support the increased use of renewable power generation.

If the Reduced Acreage Alternative were approved, other renewable projects would likely be developed that would compensate for the small loss of generation compared to the proposed project on other sites in Riverside County, the Mojave Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are several pending solar and wind projects in the I-10 corridor that would be located south of the Rice Solar project site, and there are dozens of other wind and solar projects that have applications pending with the Bureau of Land Management (BLM) in the California Desert District.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

The North of Desert Center Alternative is evaluated in this SA/DEIS because it would reduce impacts to cultural resources; the RSEP is located on the historic Rice Army Airfield. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

The results of the North of Desert Center Alternative would be the following:

- There could be a very small increase or decrease in the loss of natural carbon uptake depending on the total amount of disturbed acres and carbon update quality of those acres used for this alternative in comparison with those of the proposed project.
- The benefits of the proposed project in displacing fossil fuel fired generation and reducing associated greenhouse gas emissions from gas-fired generation would not be impacted by this alternative assuming that this alternative would use the same molten salt thermal storage technology.

SR 62/RICE VALLEY ROAD TRANSMISSION LINE ALTERNATIVE

The SR 62/Rice Valley Road Transmission Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe transmission line at the same location as the proposed project transmission line. This alternative transmission line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new transmission line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe transmission line. The SR 62/Rice Valley Road Transmission Line Alternative route is illustrated in **Alternatives Figure 3**.

The SR 62/Rice Valley Road Transmission Line Alternative is evaluated in this SA/DEIS because it would avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise, and it would avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

The results of the SR 62/Rice Valley Road Transmission Line Alternative would be the following:

- The impacts of the proposed project would not occur on the lands not used due to the revised transmission route, including a small lessening in the loss of natural carbon uptake that would otherwise occur from the lands proposed to be disturbed for the proposed project's transmission route.
- The benefits of the proposed project in displacing fossil fuel fired generation and reducing associated greenhouse gas emissions from gas-fired generation would not be impacted by this alternative.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. The results of this alternative would be the following:

- The impacts of the proposed project would not occur. However, the land on which the project is proposed would become available to other uses, including another renewable energy project.
- The benefits of the proposed project in displacing fossil fuel fired generation and reducing associated greenhouse gas emissions from gas-fired generation would not occur. Both State and Federal law support the increased use of renewable power generation.

If the proposed project is not approved, renewable energy projects would likely be developed on other sites in Riverside County, the Mojave Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates.

CUMULATIVE IMPACTS

Cumulative impacts are defined as “two or more individual effects which, when considered together, are considerable or . . . compound or increase other environmental impacts” (CEQA Guidelines § 15355). “A cumulative impact consists of an impact that is created as a result of a combination of the project evaluated in the EIR together with other projects causing related impacts” (CEQA Guidelines § 15130[a][1]). Such impacts may be relatively minor and incremental, yet still be significant because of the existing environmental background, particularly when one considers other closely related past, present, and reasonably foreseeable future projects. This definition is consistent with NEPA cumulative impact assessment requirements/guidance.

This entire GHG assessment is a cumulative impact assessment and the findings described elsewhere in this section are cumulative impact findings. The proposed project alone would not be sufficient to change global climate, but would emit greenhouse gases and therefore has been analyzed as a potential cumulative impact in the context of existing GHG regulatory requirements and GHG energy policies.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Rice Solar, as a solar energy generation project, is exempt from the mandatory GHG emission reporting requirements for electricity generating facilities as currently required by the California Air Resources Board (ARB) for compliance with the California Global Warming Solutions Act of 2006 (AB 32 Núñez, Statutes of 2006, Chapter 488, Health and Safety Code sections 38500 et seq.) (ARB 2008a).

The Rice Solar Project, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]).

Since the proposed project would have emissions that are below 25,000 MT/year of CO₂E, the proposed project would not be subject to federal mandatory reporting of greenhouse gases. It would also be exempt from the state’s greenhouse gas reporting requirements.

NOTEWORTHY PUBLIC BENEFITS

Greenhouse gas related noteworthy public benefits include the construction of renewable and low-GHG emitting generation technologies and the potential for successful integration into the California and greater WECC electricity systems. Additionally, the Rice Solar project would contribute to meeting the state’s AB 32 goals.

CONCLUSIONS

The Rice Solar Project would emit considerably less greenhouse gases (GHG) than existing power plants and most other generation technologies, and thus would contribute to continued improvement of the overall western United States, and specifically California, electricity system GHG emission rate average. The proposed project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. Additionally, the proposed project's thermal storage allows for a limited amount of dispatchable power generation, which would allow power generation at the most desired times of the day that would increase the GHG emission reduction potential over other non-dispatchable renewable energy projects, and which would also help integrate non-dispatchable renewable power into the power distribution system. Thus, staff concludes that the proposed project's operation would result in a cumulative overall reduction in GHG emissions from the state's power plants that would create a beneficial effect, would not worsen current conditions, and would thus not result in CEQA impacts that are cumulatively significant.

Staff concludes that the GHG emission increases typical from construction and decommissioning activities would not be CEQA significant for several reasons. First, the periods of construction and decommissioning would be short-term and not ongoing during the life of the proposed project. Second, the best practices control measures that staff recommends, such as limiting idling times and requiring, as appropriate, equipment that meets the latest emissions standards, would further minimize greenhouse gas emissions since the use of newer equipment would increase efficiency and reduce GHG emissions and be compatible with low-carbon fuel (e.g., bio-diesel and ethanol) mandates that will likely be part of the ARB regulations to reduce GHG from construction vehicles and equipment. Finally, the construction and decommissioning emissions are miniscule when compared to the reduction in fossil-fuel power plant greenhouse gas emissions during project operation. For all these reasons, staff would conclude that the short-term emission of greenhouse gases during construction would be sufficiently reduced and would be offset during proposed project operations and would, therefore, not be CEQA significant.

The Rice Solar Project, as a renewable energy generation facility, is determined by rule to comply with the Greenhouse Gas Emission Performance Standard requirements of SB 1368 (Chapter 11, Greenhouse Gases Emission Performance Standard, Article 1, Section 2903 [b][1]).

MITIGATION MEASURES/PROPOSED CONDITIONS OF CERTIFICATION

No Conditions of Certification related to project greenhouse gas emissions are proposed because the proposed project would create beneficial GHG impacts. The project owner would have to comply with any future applicable GHG regulations formulated by the ARB or the U.S.EPA, such as GHG reporting or emissions cap and trade markets.

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ACRONYMS

ARB	California Air Resources Board
BLM	Bureau of Land Management
CalEPA	California Environmental Protection Agency
CCR	California Code of Regulations
CEC	California Energy Commission (or Energy Commission)
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH ₄	Methane
CO ₂	Carbon Dioxide
CPUC	California Public Utilities Commission
EIR	Environmental Impact Report (CEQA)
EIS	Environmental Impact Statement (NEPA)
EPS	Emission Performance Standard
GHG	Greenhouse Gas
GWh	Gigawatt-hour
HFCs	Hydrofluorocarbons
IEPR	Integrated Energy Policy Report
kV	KiloVolt
LADWP	Los Angeles Department of Water and Power
lbs	Pounds
LORS	Laws, Ordinances, Regulations and Standards
MT	Metric Tonnes
MTCO ₂ E	Carbon dioxide equivalent metric tonnes
MW	Megawatts (1,000,000 Watts)
MWh	Megawatt-hour
N ₂ O	Nitrous Oxide
NEPA	National Environmental Policy Act
NO	Nitric Oxide
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen or Nitrogen Oxides
OII	Order Initiating an Informational
OTC	Once-Through Cooling
PFCs	Perfluorocarbons
PG&E	Pacific Gas and Electric Company
PSD	Prevention of Significant Deterioration
QFER	Quarterly Fuel and Energy Report

RPS	Renewables Portfolio Standard
SA	Staff Assessment (this document)
SCE	Southern California Edison
SDG&E	San Diego Gas and Electric
SF ₆	Sulfur hexafluoride
SWRCB	State Water Resource Control Board
U.S.EPA	United States Environmental Protection Agency
WECC	Western Electricity Coordinating Council

BIOLOGICAL RESOURCES

Testimony of Scott D. White

SUMMARY OF CONCLUSIONS

This section summarizes the California Energy Commission staff (staff), Western Area Power Administration (Western), and the Bureau of Land Management (BLM) (hereafter jointly referred to as “agencies”) analysis and staff’s conclusions about the biological impacts of the Rice Solar Energy Project (RSEP). This section also includes Mitigation Measures/Conditions of Certification that meet the Energy Commission’s responsibility to comply with CEQA and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and assure conformance with applicable laws, ordinances, regulations and standards (LORS). The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM’s and Western’s analysis that can be considered in its Record of Decision. This section provides a summary of the analyses contained in this document but is not the decision document for BLM, Western, or the Energy Commission.

The RSEP is a 150-MW solar generation plant, proposed for construction on private land in eastern Riverside County, California. Electrical power generated by the project would be delivered to the transmission grid through an interconnection with the existing Western Parker-Blythe #2 transmission line, southwest of the project site. The facility would consist of a roughly circular solar heliostat field, administrative facilities, and stream channel diversions on approximately 1,470 acres of private land; a 10-mile generator tie-line crossing public and private land; and an interconnection substation (termed ‘switchyard’ in Western documents) on approximately three acres at the tie-in point with Western’s existing transmission line, on public land. A fiber optic overhead ground wire (OPGW) would be installed along the length of the existing Western Parker-Blythe #2 transmission line. Public land on the tie-line alignment and substation site, and throughout the area, is managed by BLM. The solar generator would consist of as many as 17,500 solar-tracking heliostats, or mirrors, that would reflect solar energy to a central solar receiver tower. Each heliostat would be approximately 24 by 28 feet in size. The central receiver tower, including all components, would be 653 feet tall. Electricity would be generated by heating molten salt within the receiver tower; and then pumping it through a steam turbine generator.

The summary provides a general overview of the project impacts to each of the biological resources that are present on the project site, have the potential to be present on the site, or are present off-site and have potential to be indirectly affected by the proposed project. This summary also describes potential mitigation measures that may be employed to avoid or reduce or potentially significant project impacts.

Native Vegetation and Habitat: The RSEP would eliminate or degrade native vegetation and wildlife habitat on the proposed solar generator and interconnector substation sites, and would cause temporary or long-term effects to contiguous habitat north of the solar generator site and along the generator tie-line and Parker-Blythe transmission line alignments. These impacts would affect all plant and wildlife species on the site,

including special status species. Construction of the project would result in the permanent land use conversion of approximately 1,770 acres of habitat to support operation of the solar generator, appurtenant structures, and other project components. The majority of this habitat is creosote bush scrub. There are no data available on vegetation types along the Parker-Blythe #2 transmission line. Staff believes that the majority of the alignment crosses creosote bush scrub similar to that on the project site, but it also appears to cross dunes in Rice Valley and numerous washes, some of which may support desert riparian or microphyll wash woodland.

Although construction would not result in the complete loss of vegetation on the solar generator site, staff considers the construction of security and exclusion fencing (designed to prevent desert tortoise from entering the project site), vegetation mowing, introduction of shade and added moisture from mirror washing, maintenance activity, and risk of invasion by weedy annuals to eliminate or degrade the habitat function of the site for all but the most disturbance-tolerant native species. Disturbance to native vegetation along the transmission line alignments would be limited to access routes, pull sites and tower sites, but mechanical access would cause long-term degradation to affected vegetation and habitat. To minimize project effects on vegetation and habitat, staff has proposed Conditions of Certification **BIO-1** through **BIO-9** (Designated Biologist Selection, Designated Biologist Duties, Biological Monitor Qualifications, Biological Monitor Duties, Designated Biologist and Biological Monitor Authority, Worker Environmental Awareness Program, Biological Resources Mitigation Implementation and Monitoring Plan, Impact Avoidance and Minimization Measures, and Compliance Verification), **BIO-10** (Revegetation and Compensation for Impacts to Native Vegetation), and **BIO-11** (Weed Management Plan). To address specific construction-related impacts to native vegetation and habitat loss, staff has incorporated measures proposed by the applicant and has proposed supplemental measures in Condition of Certification **BIO-16** (Desert Tortoise Habitat Compensation). Staff concludes these measures would reduce impacts of the solar generator facility, generator tie-line, and interconnector substation to vegetation and habitat to a level less than significant. Staff has not determined potential significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Rare Plants: One special-status species, chaparral sand verbena, was reported on the RSEP solar generator site and another, Harwood's milk vetch, was reported on the generator tie-line alignment. Other late-season special status species may also occur on the site. There are no available data on special status plant occurrence along the Parker-Blythe #2 transmission line. Staff believes that impacts to chaparral sand verbena would be less than significant under CEQA, and that potentially significant impacts to Harwood's milk vetch can be reduced below a level of significance with the implementation of staff's proposed impact avoidance and minimization measures. These measures are detailed in staff's proposed Conditions of Certification **BIO-1** through **BIO-11**, **BIO-12** (Special-Status Plant Impact Avoidance and Minimization), and **BIO-16**. In addition, **BIO-12** would require additional special-status plant surveys on the Parker-Blythe #2 transmission line and late-season surveys on all project component sites. **BIO-12** provides a strategy to evaluate significance of potential impacts to any special status plants that may be affected by the project, and a series of mitigation measures to reduce those impacts, if any, below a level of significance. Staff concludes that, with mitigation as recommended, impacts of the solar generator site, generator tie-

line, and interconnector substation to rare plants would not be significant. Staff has not determined potential significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Common Wildlife and Nesting Birds: Construction of the RSEP would adversely affect common wildlife and nesting birds due to ground disturbance, operation, and permanent exclusion fencing around the perimeter of the solar generator site. Species unable to disperse to surrounding areas will be confined within the project boundaries by the exclusionary fencing, and would be subject to increased risks of road kill and repeated disturbance from human activities during construction and operation. Off-site effects would include noise, lighting, and other disturbance, as well as potential for introduction and spread of weeds and altered off-site hydrology. Transmission line construction and upgrades would degrade habitat at access points (above) and would cause short-term noise and disturbance impacts to wildlife in the construction area. To reduce project effects on common wildlife and nesting birds, staff has proposed Conditions of Certification **BIO-1** through **BIO-11** (above). Among their other requirements, these conditions would require construction scheduling, pre-construction nesting surveys, and other measures to avoid impacts to nesting birds at all construction sites. In addition, staff has recommended Condition of Certification **BIO-16** (Tortoise Habitat Compensation), which also would serve to compensation habitat for common wildlife species and impacts to nesting birds would be avoided by the application of **BIO-13** (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds). Staff concludes that, with mitigation as recommended, impacts of the solar generator site, generator tie-line, and interconnector substation to common wildlife would not be significant. Staff has not determined potential significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Based on research at a smaller project site using similar technology, operation of the project is expected to result in bird collisions with the heliostat mirrors and incineration at or near focused solar heat at the central tower. Staff cannot quantify the expected impact or assess its significance. Staff has proposed Condition of Certification **BIO-25** (Avian and Bat Protection Plan / Monitoring Operational Impacts Of Solar Collection Facility On Birds), which would require an Avian Protection Plan and a Bird Monitoring Study to monitor the death and injury of birds, and to develop and implement adaptive management measures if those impacts are substantial.

Desert Tortoise: Implementation of the RSEP would result in adverse effects to desert tortoise (federally and State listed as a threatened species). Construction of the proposed project would result in the permanent loss of approximately 1,770 acres of occupied desert tortoise habitat. One desert tortoise was located on the solar generator site during field surveys, and staff estimates that about four tortoises (two adults and one or two juveniles) may live on the site. In addition, about ten tortoise eggs may be expected on the site in a typical year. The transmission line corridors and interconnector substation also are in occupied desert tortoise habitat. To mitigate project impacts to desert tortoises and habitat, staff proposes Conditions of Certification **BIO-1** through **BIO-11** (above), which apply to protection of desert tortoise and other biological resources, and Conditions of Certification **BIO-14** through **BIO-17**, which are specific to desert tortoise. **BIO-14** requires pre-construction clearance surveys and exclusion

fencing, to remove desert tortoises from the solar generator site and prevent tortoises from entering the site in the future. **BIO-15** requires implementing a translocation plan in accordance with US Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) guidelines, to translocate tortoises to suitable off-site habitat and monitor them. **BIO-16** requires acquisition, protection, and enhancement of compensation desert tortoise habitat. Staff's proposed compensation ratio is 1:1 for habitat loss at the solar generator site and 3:1 for habitat loss on the transmission lines and interconnector substation site, so that a total of 1,988 acres of compensation land would be required. In large part, this requirement may be met through dedication and protection of applicant-owned lands contiguous to the solar generator site. These lands, or other compensation lands, would be protected under a conservation easement and managed in perpetuity as desert tortoise habitat. BLM's requirement for mitigation at a 1:1 ratio, which may include funding for BLM to implement desert tortoise habitat enhancement projects on public land, would also serve to satisfy a portion of the compensation mitigation. Staff recommends a security in the amount \$5,213,088.41 to ensure completion of the habitat compensation requirement. This security includes costs to acquire, protect, and manage the compensation lands in perpetuity, as described in the analysis below and in **BIO-16**. Staff's recommended Condition of Certification **BIO-17** requires management actions to prevent any project-related increase in common raven predation on desert tortoises, as well as contribution on a per-acre basis to a region-wide raven management strategy. This suite of mitigation measures was developed cooperatively by Energy Commission, Western, USFWS, CDFG, and BLM staff. Staff concludes that, with mitigation as recommended, impacts of the solar generator site, generator tie-line, and interconnector substation to desert tortoises would be less than significant pursuant to CEQA and would be fully mitigated as required under the California Endangered Species Act (CESA). Staff has not determined potential significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Couch's spadefoot: Couch's spadefoot, a toad-like amphibian, is a BLM sensitive species and CDFG Species of Special Concern that breeds in summer rain pools and burrows below ground throughout most of the year. Its potential for occurrence on the solar generator site is low, but suitable habitat may be found on the Parker-Blythe #2 transmission line alignment. Staff's recommended Condition of Certification **BIO-23** (Couch's Spadefoot Surveys and Breeding Habitat Avoidance) would require seasonal breeding habitat surveys and, as applicable, avoidance of breeding pools during construction of any portion of the project. Staff concludes that this measure would reduce potential project impacts below a level of significance.

Mojave Fringe-Toed Lizard: The Mojave fringe-toed lizard is a BLM sensitive species and California Species of Special Concern. Its primary habitat is fine wind-blown (aeolian) sand deposits such as dunes and sandy patches within scrubby vegetation. It is not expected to occur on the solar generator site, but may occur on the generator tie-line alignment or interconnector substation site, and probably occurs on portions of the Parker-Blythe #2 transmission line alignment. Construction impacts to habitat along the transmission lines would be temporary because aeolian habitat is only sparsely vegetated and post-construction habitat recovery would occur naturally in only a short time. Proposed Condition of Certification **BIO-8** requires that generator tie-line construction and fiber optic OPGW installation on the existing Parker-Blythe #2

transmission line shall avoid any aeolian sand habitat wherever feasible, and, if avoidance is infeasible, site-specific measures will be developed and implemented. Staff concludes that project impacts to Mojave fringe-toed lizard would not be significant.

Burrowing Owl: Construction of the RSEP would result in direct loss of habitat for the burrowing owl (a BLM sensitive species and a California Species of Special Concern). The applicant estimates up to seven burrowing owls occur on the solar generator site and generator tie line alignment. Staff's proposed Condition of Certification **BIO-19** (Burrowing Owl Impact Avoidance and Compensation Measures) provides measures to avoid take or direct impacts to burrowing owls, and to compensate for habitat loss based on the number of single owls or nesting pairs on the site. Habitat compensation may be "nested" within compensation lands required for desert tortoise habitat compensation (**BIO-16**, above). Staff concludes that project impacts of the solar generator site, generator tie-line, and interconnector substation to burrowing owl would be less than significant with incorporation of recommended mitigation. Staff has not determined potential significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Golden Eagle: Golden eagle is a BLM sensitive species, and also is protected under the federal Bald and Golden Eagle Protection Act and is ranked as Fully Protected under the California Fish and Game Code. No suitable nesting habitat is found on the solar generator site or generator tie-line alignment; potential nesting habitat along the existing Parker-Blythe #2 transmission line is unknown. Staff has proposed Conditions of Certification **BIO-18** (Pre- Construction Surveys for Golden Eagles) and **BIO-25** (Avian Protection Plan / Monitoring Operational Impacts Of Solar Collection Facility On Birds), to avoid construction-related disturbance to nesting golden eagles along the transmission line. The generator tie-line could present a new collision or electrocution threat to golden eagles. Staff's recommended Condition of Certification **BIO-8** requires that transmission lines, fiber optic lines, and all electrical components shall be designed, installed, and maintained in accordance with guidelines and practices as recommended by the Avian Power Line Interaction Committee's publications to reduce the likelihood of large bird electrocutions and collisions. Project construction would eliminate or degrade approximately 1,770 acres of foraging habitat in the region. This loss could interfere with normal behavior, causing golden eagles to forage more widely and therefore spend less time at or near their nests. This effect could be considered "take," pursuant to the Bald and Golden Eagle Protection Act. Staff's recommended Condition of Certification **BIO-16** (above) requires acquisition, protection, and enhancement of compensation desert tortoise habitat; this habitat also would serve as golden eagle foraging habitat. The solar generator may present a collision or incineration hazard to golden eagles. Staff's recommended Condition of Certification **BIO-25** (above) would evaluate that hazard and implement adaptive management measures as determined necessary. Staff concludes that project impacts of the solar generator site, generator tie-line, and interconnector substation to golden eagle would be less than significant with incorporation of recommended mitigation. Staff has not determined potential significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Burrowing mammals: American badgers and desert kit foxes occur throughout the Project area, and construction activities could crush or entomb these burrowing species. Staff's proposed Condition of Certification **BIO-19**, which requires preconstruction surveys and avoidance measures to protect badgers and kit foxes, would avoid these potential impacts.

State and Federal Jurisdictional Waters: The project would directly or indirectly affect numerous state-jurisdictional desert washes and ephemeral channels on the solar generator site and along transmission line corridors. The US Army Corps of Engineers (ACOE) has determined that streambeds on the solar generator and generator tie-line alignment are not within federal jurisdiction as Waters of the US. Streambeds on the Parker-Blythe #2 transmission line have not been delineated and no ACOE jurisdictional determination has been made. Staff's proposed Condition of Certification **BIO-22** (Streambed Impact Minimization and Compensation Measures) requires the acquisition and protection of offsite streambed habitat at a 1:1 ratio for streambed acreage lost on the solar generator site and generator tie-line alignment, and implementation of Best Management Practices to minimize impacts on the site. Habitat compensation for impacts to state-jurisdictional waters may be "nested" within compensation lands required for desert tortoise habitat compensation (**BIO-16**, above). With implementation of staff's proposed Conditions of Certification **BIO-22** staff concludes that project impacts of the solar generator site, generator tie-line, and interconnector substation to state-jurisdictional waters would be less than significant. ACOE has not indicated whether it holds federal jurisdiction over streambeds potentially impacted along the Western Parker-Blythe 161-Kv OPGW Transmission Line or whether such impacts would be authorized under a Nationwide General Permit. Staff has not determined potential state jurisdiction or CEQA significance of project impacts along that alignment, pending additional data.

Wildlife Movement: Construction of the proposed RSEP would have the potential to interrupt wildlife movement through the area. The solar generator site could interrupt potential north-south movement at two suitable wildlife crossings over the nearby California Aqueduct, and the project's perimeter fence could direct animals travelling east-west in the area onto State Highway 62 where risk of vehicle strike would be increased. Staff concludes that the potential impacts to north-south movement would be less than significant and that implementation of staff's recommended Condition of Certification **BIO-21** (Fence locations: Logistics, Lay-down Area and Access Road) would reduce potential impacts to east-west movement below a level of significance.

Cumulative Impacts: Staff concludes that without mitigation, the RSEP would contribute to the cumulatively significant loss of regional resources, including the State and federally threatened desert tortoise and other special status species. Impact avoidance and minimization measures described in staff's analysis and included in the conditions of certification would help reduce impacts to these resources. These compensatory measures are necessary to offset project-related losses, and to assure compliance with State and federal laws such as the federal and State Endangered Species Acts. With the implementation of these measures, staff concludes that the solar generator site, generator tie-line, and interconnector substation contributions to cumulative significant impacts to biological resources would not be considerable. Staff has not determined

potential cumulative significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Staff concludes that, with the incorporation of recommended Conditions of Certification **BIO-1** through **BIO-26**, the proposed RSEP solar generator site, generator tie-line, and interconnector substation would be in compliance with applicable Laws, Ordinances, Regulations, and Standards (LORS). Staff has not determined whether the Western Parker-Blythe 161-Kv OPGW Transmission Line, would comply with applicable LORS, pending additional biological data. The assessment of RSEP's effects to Biological resources associated with the telecommunications option to attach a fiber optic cable on the Parker-Blythe #2 Transmission Line will be updated for the CEC's record and the FEIS when additional information is received from the applicant.

INTRODUCTION

This section of the Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) provides staff's analysis of the RSEP's potential impacts to biological resources, including vegetation communities, wildlife and wildlife habitat, and special-status species. This analysis describes the biological resources at the project site and at the locations of ancillary facilities, and evaluates the project's expected impacts to them. This section explains the need for mitigation, evaluates the adequacy of mitigation proposed by the applicant, and specifies additional mitigation measures designed to reduce impacts. It also describes compliance with applicable laws, ordinances, regulations, and standards (LORS) and includes staff's proposed conditions of certification.

This analysis is based, in part, upon information provided in the Rice Solar Energy Project Application for Certification (SR 2009a) and other submittals (SR 2009b; CH2MHill 2010e); responses to staff data requests (CH2MHill 2010a, 2010b, 2010c, and 2010f; Sycamore Environmental Consultants, Inc. 2010), and staff workshops and informational hearings (CH2MHill 2010d); scoping comments (USFWS 2010b); site visits by staff in February and April 2010; communications with representatives from the California Department of Fish and Game (CDFG), Bureau of Land Management (BLM), Western, and the U. S. Fish and Wildlife Service (USFWS); and staff's independent research.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

The applicant will need to abide by the laws, ordinances, regulations, and standards (LORS) during project construction and operation, as listed in **Biological Resources Table 1**.

**Biological Resources Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable LORS	Description
FEDERAL	
Federal Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species and their critical habitat. Take of a federally-listed species, as defined in the Act, is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan.
Migratory Bird Treaty Act (Title 16, United States Code, sections 703 through 711)	Makes it unlawful to take or possess any migratory bird (or any part of such migratory bird including active nests) as designated in the Migratory Bird Treaty Act unless permitted by regulation (e.g., duck hunting).
Clean Water Act (Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a)(26))	Requires the permitting and monitoring of discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge from dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from a regional water quality control board (RWQCB) for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request State certification that the proposed activity will not violate State and federal water quality standards.
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	Provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the act.
Eagle Act (Title 50, Code of Federal Regulations, section 22.26)	Would authorize limited take of bald and golden eagles under the Eagle Act, where the taking is associated with, but not the purpose of activity, and cannot practicably be avoided.
Eagle Act (Title 50, Code of Federal Regulations, section 22.27)	Would provide for the intentional take of eagle nests where necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure, or; the activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests would be allowed to be taken except in the case of safety emergencies.
California Desert Conservation Area Plan 1980, as amended (reprinted in 1999)	Administered by the BLM, the California Desert Conservation Area (CDCA) Plan requires that proposed development projects are compatible with policies that provide for the protection, enhancement, and sustainability of fish and wildlife species, wildlife corridors, riparian and wetland habitats, and native vegetation resources.
California Desert Protection Act of 1994	An Act of Congress which established 69 wilderness areas, the Mojave National Preserve, expanded Joshua Tree and Death Valley National Monuments and redefined them as National Parks. Lands transferred to the National Park Service were formerly administered by the BLM and included significant portions of grazing allotments, wild horse and burro Herd Management Areas, and Herd Areas.

Applicable LORS	Description
Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)	The BLM produced the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) as an amendment to the 1980 CDCA Plan (BLM 2002). The NECO is a federal land use plan amendment that resolves issues of resource demands, use conflicts, and environmental quality in the 5.5-million acres planning area located primarily within the Sonoran Desert in the southeastern corner of California. NECO provides reserve management for the desert tortoise, integrated ecosystem management for special status species and natural communities for all federal lands, and regional standards and guidelines for public land health for BLM lands (BLM and CDFG 2002).
Executive Order 11312	Prevent and control invasive species.
Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994) and Draft Revised Recovery Plan (USFWS 2008a)	Describes a strategy for recovery and delisting of the desert tortoise.
STATE	
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California's rare, threatened, and endangered species. Take of a State-listed species, as defined in the Act, is prohibited without an Incidental Take Permit.
Protected furbearing mammals (California Code of Regulations, Title 14, section 460)	Fisher, marten, river otter, desert kit fox and red fox may not be taken at any time.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered.
Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations, Title 14, section 670.7).
Nest or Eggs (Fish and Game Code section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.
Birds of Prey (Fish and Game Code section 3503.5)	Birds of prey are protected in California making it "unlawful to take, possess, or destroy any birds of prey (in the order Falconiformes or Strigiformes)."
Migratory Birds (Fish and Game Code section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.
Nongame mammals (Fish and Game Code section 4150)	Makes it unlawful to take or possess any non-game mammal or parts thereof except as provided in the Fish and Game Code or in accordance with regulations adopted by the commission.
Significant Natural Areas (Fish and Game Code section 1930 et seq.)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.
Designated Ecological Reserves (Fish and Game Code section 1580 et seq.)	The CDFG commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study.

Applicable LORS	Description
California Environmental Quality Act (CEQA), CEQA Guidelines section 15380	CEQA defines rare species more broadly than the definitions for species listed under the State and federal Endangered Species Acts. Under section 15830, species not protected through State or federal listing but nonetheless demonstrable as “endangered” or “rare” under CEQA should also receive consideration in environmental analyses. Included in this category are many plants considered rare by the California Native Plant Society (CNPS) and some animals on the CDFG’s Special Animals List.
Warren Alquist Act of 2005 (Public Resources Code sections 25000 et seq.)	A CEQA-equivalent process implemented by the Energy Commission.
Streambed Alteration (Fish and Game Code sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.
California Native Plant Protection Act of 1977 (Fish and Game Code section 1900 et seq.)	Designates State rare, threatened, and endangered plants.
California Desert Native Plants Act of 1981 (Food and Agricultural Code section 80001 et seq. and California Fish and Game Code sections 1925-1926)	Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.
Porter-Cologne Water Quality Control Act	Regulates discharges of waste and fill material to waters of the State, including “isolated” waters and wetlands.
LOCAL	
Riverside County General Plan: Land Use and Multipurpose Open Space Elements of the County General Plan (County of Riverside 2003)	Contains specific policies to preserve the character and function of open space that benefits biological resources. It also contains specific policies and goals for protecting areas of sensitive plant, soils and wildlife habitat and for assuring compatibility between natural areas and development. The RSEP area and most of eastern Riverside County is designated as Open Space Conservation in the General Plan. Although the RSEP is not within one of the 19 area plans contained within the General Plan, it is addressed in the Eastern Riverside County Desert Areas (Non-Area Plan).

DESERT RENEWABLE ENERGY CONSERVATION PLAN – INTERIM PLANNING

In addition to the federal, state, and local LORS summarized above, federal and state agencies are currently collaborating to establish joint policies and plans to expedite development of California’s utility scale renewable energy projects. On October 12, 2009, the State of California and the U.S. Department of Interior entered into a Memorandum of Understanding (MOU) on renewable energy, building on existing efforts by California and its federal partners to facilitate renewable energy development in the state. The MOU stems from California and Department of Interior energy policy directives, and California’s legislative mandate to reduce greenhouse gases to 1990

levels by 2020, and meet the goal of 33% of California's electricity production from renewable energy sources by 2020.

The California-Department of Interior MOU expands on several MOUs issued in 2008 to establish the activities of the California Renewable Energy Action Team (REAT). The REAT was established with California Executive Order S-14-08 (issued November 18, 2008), to *“establish a more cohesive and integrated statewide strategy, including greater coordination and streamlining of the siting, permitting, and procurement processes for renewable generation....”*

The Energy Commission and CDFG are the primary state collaborators in the REAT, operating under a November 18, 2008 MOU between the two agencies to create a “one-stop process” for permitting renewable energy projects under their joint permitting authority. The BLM and the USFWS also participate in the REAT under a separate MOU signed in November 2008, which outlines the state and federal cooperation of the group. The October 12, 2009 MOU between California and the Department of Interior reiterates several tasks of the REAT provided for in S-14-08 and the Energy Commission-Fish and Game MOU.

The REAT's primary mission is to streamline and expedite the permitting processes for renewable energy projects in the Mojave and Colorado Desert ecoregions within the State of California, while conserving endangered species and natural communities at the ecosystem scale. To accomplish this goal the REAT Agencies are developing a Desert Renewable Energy Conservation Plan (DRECP), a science-based process for reviewing, approving, and permitting renewable energy applications in California. Once the DRECP is complete, anticipated in late 2012, the plan will provide tools to expedite coordination of federal and state endangered species act permitting. The DRECP will also offer a unified framework for state and federal agencies to oversee mitigation actions, including land acquisitions, for listed species. The REAT Agencies recognize that some renewable energy projects are scheduled to be approved prior to completion of the DRECP. Section 8.9 of the October 2009 Draft Planning Agreement for the DRECP <www.energy.ca.gov/2009publications/...2009.../REAT-1000-2009-034.PDF> provides explicit guidance for such interim projects, and directs the REAT Agencies to ensure that permitting for these projects:

- Be consistent with the preliminary conservation objectives for the DRECP;
- Not compromise successful completion and implementation of the DRECP;
- Facilitate Federal Endangered Species Act, California Endangered Species Act, National Environmental Policy Act, and California Environmental Quality Act compliance; and
- Not be unduly delayed during preparation of the DRECP.

REAT Account and SB 34

The REAT agencies recently signed a Memorandum of Agreement (MOA) to establish a REAT Account that may be used by project developers to deposit funding for specified mitigation for approved renewable energy projects in the Mojave and Colorado Desert region of southern California (the MOA is available at <www.energy.ca.gov/33by2020>).

For each project using the REAT Account an individual subaccount would be established for project specific tracking, compliance and accounting purposes. The subaccount would include a list of the specific mitigation actions, the cost, a timeframe for carrying out the actions, and identify which of the REAT agencies would be responsible for requiring and coordinating the mitigation actions. The National Fish and Wildlife Foundation (NFWF) would manage the subaccount on behalf of the REAT agencies, and at their direction would disburse mitigation funding to satisfy mitigation requirements for impacts to biological resources. NFWF is a charitable non-profit corporation established in 1984 by the federal government to accept and administer funds to further the conservation and management of fish, wildlife, plants and other natural resources <www.nfwf.org>. Use of the REAT Account would not change any of the requirements a project proponent must fulfill in order to comply with applicable State and Federal environmental laws governing the permitting of the projects.

The REAT Account will also aid project proponents in carrying out contracting and construction activities in a timely manner per requirements for American Recovery and Reinvestment Act of 2009 (ARRA) funding. The SBX8 34 legislation that was recently signed into law by the Governor created a \$10 million loan that provides for advanced mitigation habitat purchases. This advanced mitigation can be used by a qualifying solar renewable energy project to receive credit for implemented mitigation after a project proponent pays into the Renewable Energy Development Fee Trust Fund that was created by the SBX8 34 legislation (SBX8 34 Trust Fund). Funds in the MOA REAT Account and the SBX8 34 Trust Fund are similar in that renewable energy project proponents pay into accounts set up to receive project-specific mitigation funds, and a third party entity implements the mitigation actions. Staff's proposed Condition of Certification **BIO-26** provides an opportunity for the Applicant to fulfill their mitigation obligations by depositing funds into the SB 34 Trust Fund.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The analysis of proposed Project effects must comply with both CEQA and NEPA requirements given the respective power plant licensing and land jurisdictions of the Energy Commission and Western. CEQA requires that the significance of individual effects be determined by the Lead Agency, but the use of specific significance criteria is not required by NEPA.

CEQA requires a list of criteria that are used to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (State CEQA Guidelines Section 15382).

The following are the Energy Commission's significance criteria for biological resources. These criteria are based on Appendix G of the CEQA Guidelines (CCR 2006) and performance standards or thresholds identified by Energy Commission staff. The determination of whether a project has a significant effect on biological resources is based on the best scientific and factual data that staff could review for the project. In

this analysis the following impacts to biological resources are considered significant if the project would result in:

- A substantial adverse effects to plant species considered by the California Native Plant Society (CNPS), CDFG, or USFWS to be rare, threatened, or endangered in California or with strict habitat requirements and narrow distributions; a substantial impact to a sensitive natural community (i.e., a community that is especially diverse; regionally uncommon; or of special concern to local, state, and federal agencies);
- A substantial adverse effect to wildlife species that are federally-listed or state-listed or proposed to be listed; a substantial adverse effect to wildlife species of special concern to CDFG, candidates for state listing, or animals fully protected in California;
- Substantial adverse effects on habitats that serve as breeding, foraging, nesting, or migrating grounds and are limited in availability or that serve as core habitats for regional plant and wildlife populations;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Substantial adverse effect on important riparian habitats or wetlands and any other “Waters of the U.S.” or state jurisdictional waters; and
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

In contrast to CEQA, “significantly” as used in NEPA requires considerations of both context and intensity (40 CFR 1508.27). According to the NEPA Regulations adopted by the President’s Council on Environmental Quality (CEQ) (40 CFR 1500-1508), context means the affected environment in which a proposed action would occur; it can be local, regional, national, or all three, depending upon the circumstances. In determining the intensity of an impact, the following factors are considered:

- Adverse effects of a project even though the overall proposed action is beneficial;
- Effects on public health or safety;
- Unique characteristics of the geographic area, such as historic resources, park lands, prime farmland, wetlands, wild and scenic rivers, ecologically critical areas;
- Degree of controversy;
- Degree of highly uncertain effects or unique or unknown risks;
- Precedent-setting effects;
- Cumulative effects;
- Adverse effects on scientific, cultural, or historical resources;
- Adverse effects on endangered or threatened species or designated critical habitat (pursuant to the Endangered Species Act); and
- Violations of federal, state, or local environmental law.

For NEPA, thresholds serve as a benchmark for determining if a project action would result in a significant adverse environmental impact when evaluated against the baseline. NEPA requires that an Environmental Impact Statement (EIS) be prepared when the proposed federal action (project) as a whole has the potential to “significantly affect the quality of the human environment.”

PROPOSED ACTION ALTERNATIVE / PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

Regional Setting

The proposed RSEP project site is located approximately 34 miles northwest of the city of Blythe, just south of State Route 62 (SR-62). The project consists of a solar generation site on private land and a generator tie-line and interconnection substation, primarily on BLM-managed lands within the Northern and Eastern Colorado Desert (NECO) planning area. Several designated wilderness areas managed by the BLM occur near the project area. The proposed solar site is located approximately 2 miles south of the Turtle Mountains Wilderness, 5 miles northeast of the Palen/McCoy Wilderness, 3 miles north of the Rice Valley Wilderness, 6 miles west of the Chemehuevi Desert Wildlife Management Area (DWMA) and the Chemehuevi desert tortoise critical habitat unit, and 9 miles northwest of the Riverside Mountains Wilderness. The proposed generator tie-line interconnection point is within a mile from the Rice Wilderness and immediately adjacent to the Riverside Mountains Wilderness.

The project site is located within the Rice Wildlife Habitat Management Area (WHMA) established in BLM's 2002 Northern and Eastern Colorado Desert Coordinated Management Plan (NECO). This WHMA was designated to provide management for the sand dune habitat for the Mojave fringe-toed lizard and to provide wildlife connectivity between the Chemehuevi Desert Wildlife Management Area/Turtle Mountains Wilderness to the north and Palen-McCoy and Rice Valley wildernesses to the south. This designation applies formally only to BLM-managed lands (i.e., the generator tie-line alignment) but reflects biological resource values that also are applicable to the proposed solar generator site, on private land.

The project area lies in the Rice Valley within the northern portion of the Colorado Desert, which is part of the larger Sonoran Desert that encompasses portions of California, Arizona, and the Mexican states of Sonora, Baja California, and Baja California Sur. The project area lies in a transition zone between the Colorado Desert and the Mojave Desert. The Colorado Desert is often referred to as California's “Low Desert.” This desert experiences more summer precipitation than the northern deserts, and although annual precipitation is low overall, a significant portion of it falls during August and September, usually as flashy thunderstorms (Schoenherr 1992). In contrast, the Mojave Desert is referred to as California's “High Desert” and experiences a slightly different climatic regime than the Colorado Desert. It lies in the rain shadow of the Sierra Nevada and Transverse Mountain ranges, and receives most precipitation during winter months, although summer thunderstorms also occur (Schoenherr 1992). The average annual precipitation recorded at Iron Mountain, approximately 18 miles to the

northwest of the proposed solar field, is 3.4 inches and average monthly temperatures at this location generally range between 43 and 108°F (WRCC 2010).

The Rice Valley is a dry, shallow basin with a north-south orientation, bounded by the Turtle Mountains to the north and the Big Maria Mountains to the south. The edges of the Valley are more weakly defined to the west by the Arica Mountains and to the east by the West Riverside Mountains. These mountain ranges are rugged and provide habitat for special-status species such as Nelson's bighorn sheep (*Ovis canadensis nelsoni*), and various plant communities including desert dry wash woodlands (SR 2009a). The rugged mountain areas, lowland valleys, and dunes provide a diversity of topographical features and habitat for a variety of plant and animal species. Dune areas are often occupied by rare and endemic plant and animal species. The sand dunes along the southern end of the Valley support specialists such as the Mojave fringe-toed lizard (*Uma scoparia*), and the entire valley provides foraging habitat for a number of species including golden eagle (*Aquila chrysaetos*) and prairie falcon (*Falco mexicanus*). The Valley is dominated by Sonoran desert scrub interrupted by a large sand dune complex that stretches from Cadiz to Ward Valley.

Although considered within the West Basin of the Colorado River, which drains primarily into the Salton Sea Trough, Rice Valley is a sink with no broader hydrological connectivity. Rice Valley has a small watershed and lacks any major washes. There are no perennial surface water sources within the sink and there is no evidence that a lake ever formed in the Valley during wetter climatic periods (SR 2009a).

Current human activity in the Rice Valley is primarily concentrated at the north end of the Valley, where an east-west linear corridor of transportation and infrastructure features, the Colorado River Aqueduct, the Arizona-California Railroad, and SR-62, are located. These three parallel features present a major north-south barrier to wildlife passage and interrupt local hydrology (SR 2009a).

Other than the development in the northern part of the Valley and ephemeral domestic sheep grazing, today the Rice Valley appears to be subject to light use by humans. Much of the Valley is now contained within the Rice Valley Wilderness Area, but the Valley presents few recreational opportunities other than self-contained day use or camping, vehicle recreation, or spring season wildflower viewing due to the lack of water, developed recreational sites, sparse vegetation, and mostly level topography (SR 2009a).

Project Area

The project area as addressed throughout this section consists of sites proposed for use as RSEP solar fields; all associated buildings and other permanent site facilities within or adjacent to the solar field footprint; the 10-mile generator tie-line; the interconnection substation; and all areas to be temporarily disturbed by construction or other aspects of the project. The solar field, solar receiver tower, power generation equipment, and associated facilities are collectively termed the solar generator site throughout this section. The project area, including the solar generator site, generator tie-line, and interconnection substation, is primarily open, undeveloped or historically developed land within the Colorado Desert. The applicant owns a 3,324-acre holding in

Rice Valley, consisting of six parcels. Within this holding, the RSEP solar field site would be located on a new 2,560-acre square-shaped parcel that would be created by merging four existing assessor's parcels (CH2MHill 2010c). The heliostat field and most other permanent facilities would be located in a circular area encompassing 1,410 acres of the property, to be enclosed within a permanent boundary fence (SR 2009a). During operation, most project facilities, including parking areas, administration buildings, water treatment system, a 230-kV switchyard, the approximately 1,316-acre heliostat field and associated power generation structures, and evaporation ponds would be contained within this fenced boundary. This entire solar generator site would be permanently disturbed by project construction and operation.

Other project facilities, including the generator tie-line, distribution line, drainage diversion channels surrounding the north side of the solar field, temporary logistics and lay-down area to be located between the heliostat field and SR-62, the fiber optic (OPGW) along the Western Parker-Blythe #2 transmission line, and a short portion of the site's main access road, would be outside the security fence. Some of these areas would be permanently disturbed by the proposed project, while others, including the logistics/lay-down areas and transmission line tower construction sites, would be temporarily disturbed during construction. However, due to the slow post-disturbance recovery of desert soils and vegetation, staff considers these temporary disturbances to be long-term.

The proposed logistics and lay-down area is on 60 acres, immediately south of SR-62 and outside the proposed heliostat field. During construction, all logistics, laydown, and parking would be contained within this temporarily fenced area. This area would be temporarily disturbed, though staff regards temporary construction disturbances in the desert environment as having long-term impacts to vegetation and habitat values (see **Construction Impacts to Vegetation**, below). Additional long-term disturbance areas would include transmission tower construction sites, pull sites, and other logistics, staging, and lay-down areas along the proposed new transmission line, distribution line, and the Western Parker-Blythe #2 transmission line. Staff estimates total long-term disturbance resulting from temporary construction impacts as 287 acres. Staff estimates the total long-term and permanent project disturbance would be approximately 1,760 acres. Acreages of these project facilities are summarized below in **Biological Resources Table 2**.

**Biological Resources Table 2.
Summary of Project Components and Acreages¹**

Project component	Applicant-owned land	Private land (other)	Public (BLM) land	Total
Total contiguous applicant holdings (six parcels)	3,324 acres	n/a	n/a	3324 acres
Project site (four parcels, to be merged into one)	2,560 acres	n/a	n/a	2560 acres
Solar generator site, including permanent facilities within perimeter fence	1,410 acres	0	0	1410 acres
Permanent stream channel diversions (outside perimeter fence) ²	35-60 acres			35-60 acres
Long-term construction-phase disturbance (parking, lay-down, workforce RV camp, and logistics)	60 acres	0	0	60 acres
Permanent new access and maintenance road for transmission line (24 ft. wide x 4.6 or 5.4 miles) ³	0		14-16 acres	14-16 acres
Long-term disturbance for new distribution line (existing line to perimeter of solar generator site)	Unkn.		Unkn.	Unkn.
Long-term disturbance for new transmission line towers and pull sites ⁴	10 acres	10 acres	80 acres	100 acres
Permanent disturbance for interconnector substation			3 acres	3 acres
Long-term disturbance for ground line construction on existing Western 161 kV Transmission Line ⁵		Unkn.	Unkn.	127 acres
Total Project disturbance area	1,515-1,540 acres	10 acres +	97-99 acres +	1,749-1,776 acres

1. Data from the Application for Certification (SR 2009a) unless otherwise noted.

2. Staff estimate based on CH2MHill 2010g.

3. Total generator tie- line right of way = 150 acres (Rice Solar Energy 2010). Staff estimates road disturbance as 24-foot width x length of road; length is reported as 4.6 miles in SR 2009a, and as 5.4 miles in CH2MHill 2010d.

4. Staff estimates 90 towers and 10 pull sites, each site approximately one acre; approximately 80% of tower and pull sites would be on BLM land.

5. Estimate provided by Western (pers. comm. W. Werner).

The proposed project site is located on a gently sloping alluvial fan, ranging in elevation from approximately 750 to 920 feet (229 to 280 m) above mean sea level (SR 2009a). The proposed solar field is bordered at the north by SR-62. North of the highway, and parallel to it, are the Arizona-California Railroad line and the Colorado River Aqueduct. Adjacent land to the west is owned by the applicant, and BLM-managed lands abut the project site to the south and east (SR 2009a).

The proposed RSEP solar field site was used as a military supply and training base during World War II. The former Rice Army Airfield was constructed as part of the Desert Training Center and used as a military training airfield from 1942 to 1944. The

airfield originally consisted of two oiled 5,000-foot runways and numerous aircraft hardstands extending beyond the runways to the southeast and southwest. Although the aboveground structures have been removed and some vegetation has become reestablished, the “V”-shaped runway and general layout of the former Rice Army Airfield remain apparent in aerial photography. Following military use between 1942 and 1944, the land has been in private holding and was subsequently used as a private airport; however, the site was abandoned sometime between 1954 and 1958 (SR 2009a).

A new 230-kV generator tie-line with a fiber optic communication cable would interconnect to Western’s 161-kV/230-kV Parker-Blythe #2 transmission line. The generator tie-line would extend for 10.0 miles from the RSEP fenceline southeast to a new interconnection substation (termed ‘switchyard’ in Western documents). The new generator tie-line would be located primarily on BLM land and would include the establishment of approximately 5.4 miles of new dirt service roadway (CH2MHill 2010d) and a new 300 x 400 foot substation at the point of interconnection. The remaining 4.6 miles of generator tie-line would be located adjacent to an existing dirt road (Rice Valley Road), which would serve as its access road (CH2MHill 2010d). The fiber optic OPGW would be installed along the length of the existing Western Parker-Blythe #2 transmission line, necessitating access road improvements along the alignment; construction equipment access to 489 existing wooden transmission line towers in undeveloped (largely BLM) land; and 21 two-acre tensioning (pull) sites (Western 2010).

Proposed Project

The proposed project consists of the construction and operation of a 150-MW solar generation plant and associated facilities on private land. The permanent facility would encompass approximately 1,445 to 1,470 acres (based on information provided by the applicant and additional staff estimates; see **Biological Resources Table 2**), and an additional 60 acres would be disturbed on site for temporary construction-related facilities. A 10-mile generator tie-line would be constructed to connect to Western’s existing Parker-Blythe #2 transmission line. The tie-line would be located primarily on public land managed by the BLM, and an interconnection substation would be constructed on approximately 2.8 acres BLM-managed land at the point of interconnection to the Parker-Blythe #2 transmission line. The design rating of Western’s existing system is for 230 kilovolts (kV), though it currently operates at only 161 kV. The new generator tie-line and interconnection substation would be operated at the present voltage level of Western’s system, with flexibility to be upgraded to 230 kV in the future. The generator tie-line would require construction of 5.4 miles of new unpaved access road and use of 4.6 miles of existing dirt roads.

Major components of the proposed project include the following:

- As many as 17,500 solar-tracking heliostats, or mirrors, each 672 square feet in area, in a circular array that will reflect solar energy to the solar receiver tower. Each heliostat would be approximately 24 by 28 feet in size, and each would be mounted on a 12-foot-tall pedestal;
- A 538-foot-high concrete solar receiver tower with a 100-foot-tall solar receiver and 15-foot crane (for a total height of 653 feet);

- A liquid salt circulation and storage system consisting of hot (approximately 1,050°F) and “cold” (approximately 550°F) salt storage tanks, capable of storing 70 million pounds (4.4 million gallons) of liquid salt (sodium nitrate/potassium nitrate mixture);
- Three evaporation ponds, approximately 5 acres each, to process wastewater discharge from the water treatment system, steam turbine cooling system, other on-site industrial uses, and oil/water separator
- Related generation equipment and administrative facilities on the solar generator site;
- A 30-acre-foot capacity stormwater detention basin consisting of the portion of the heliostat field along its southern boundary and the southern boundary road berm;
- West and east diversion channels around the upslope (north) perimeter of the solar field, to be located outside the perimeter fence, with dissipaters at the downstream ends (from preliminary drawings, staff estimates total acreage at 35-60 acres);
- Extension of the existing 12-kV electrical distribution line from a location 175 feet east of the project parcel boundary for approximately 1.1 miles to the facility fenceline to supply electrical power to project ancillary facilities ;
- Perimeter and internal access roads;
- Perimeter fencing;
- A 10.0-mile long generator tie-line to connect with Western’s existing Parker-Blythe #2 transmission line;
- A new interconnection substation (estimated as approximately 2.8 acres) to be located at the point of interconnection with Western’s existing transmission line; and
- A fiber optic overhead ground wire (OPGW) along the length of the existing Western Parker-Blythe #2 transmission line (see **Transmission System Engineering Appendix A Figure 1**).

Water Supply

The applicant proposes to obtain water for project use from two onsite wells. One of the onsite wells is an existing well that would be modified for use. A second new well would be drilled. RSEP’s maximum total project water consumption would be approximately 180 acre-feet per year (SR 2009a).

Drainage, Erosion, and Sediment Control

The proposed RSEP would include the construction of a water diversion and sediment control facility to divert water and limit runoff and erosion on the project site. Offsite stormwater would be directed around the solar site and onsite runoff would be directed toward detention basins located in the southern portion of the heliostat field. A dirt, gravel, or paved perimeter access road would surround the heliostat field. It would be built on a raised berm which would serve to protect the heliostat field from scouring flows originating upslope and to impound runoff originating on-site. On the northern (upslope) perimeter, an unlined diversion channel would surround the site and perimeter road to direct stormwater around the solar site. Run-off originating within the heliostat

field would be impounded onsite in an approximately 30-acre-foot detention basin behind the perimeter road berm at the southern (downslope) margin of the heliostat field. The detention basin would be designed to percolate, evaporate, or drain the flows (at pre-existing flow rates) from the site as well as act as a sediment control location (SR 2009a, Appendix 5.15B).

Evaporation Ponds

Three evaporation ponds, approximately 5 acres each, would be required to process wastewater discharge from the water treatment system, cooling system, other on-site industrial uses, and oil/water separator. Each evaporation pond would have an average basin depth of six feet, with side slopes of 3:1 (horizontal: vertical) and a minimum freeboard (i.e., basin depth above maximum operational waterline) of two feet (CH2MHill 2010a; Appendix 5.15B of SR 2009a). The evaporation ponds would be located just south of the detention basin on the south end of the heliostat field, and would be surrounded by berms to prevent stormwater from entering the ponds (Appendix 5.15B of SR 2009a).

Construction Schedule, Workforce, Access, and Laydown Areas

Construction of the RSEP from site preparation and grading to commercial operation is expected to require approximately 30 months, and is expected to take place from the first quarter of 2011 to the third quarter of 2013 (SR 2009a). Construction activities would generally be scheduled between 0500 and 1900, Monday through Saturday. Additional hours, up to 24 hours per day, 7 days per week, may be necessary to make up schedule deficiencies, to work around extreme mid-day heat during summer months and other extreme weather, or to complete critical construction activities. The size of the onsite construction workforce would range from a minimum of 29 to a maximum of 438 (SR 2009a).

The project would have one temporary logistics and lay-down area, located at the north end of the project site between SR-62 and the heliostat field. This area would contain a temporary 11-acre parking area, 31-acre RV trailer park for workers, and an 18-acre construction office, laydown, and heliostat assembly area. This temporary logistics area would be contained within temporary fencing during construction. The project site would be accessed directly from SR-62 (SR 2009a).

Operations/Maintenance Activities

The RSEP is designed for an operating life of 30 years and is expected to operate (generate electricity) an average of 8.4 hours per day, 7 days a week throughout the year, with the exception of scheduled shut-downs for maintenance. The applicant expects that the project would be operated with a staff of approximately 47 full-time employees. Operations activities would occur 7 days per week, 24 hours per day. Maintenance activities would occur Monday through Friday, up to 10 hours per day, with additional days and hours as needed to support plant outages (SR 2009a).

The heliostats would be regularly washed to keep mirror surfaces free of dust buildup to optimize solar energy potential. Heliostat washing would require the use of approximately 31 acre-feet of water per year, based on washing each heliostat 37 times

per year. Heliostat washing would occur on a 5 day per week schedule using 2 crews operating 8 hours per day (SR 2009a).

RSEP’s maximum total projected water consumption would be approximately 180 acre-feet per year, and would mainly be used to provide water for washing heliostats, steam cycle makeup, water treatment system discharge, and other uses such as wet surface air cooler, service water, and quench water (SR 2009a).

Vegetation and Wildlife

Plant Communities

Most of the solar generator site is covered by creosote bush scrub. A few small portions of the site support white bursage scrub (**Biological Resources Figure 1**). Near the northern margin of the project site, outside the proposed project footprint, there are linear patches of smoke tree woodland, along ephemeral channels immediately downstream from breaches in the unmaintained levees that protected the former Rice Airfield. The descriptions below are based on staff’s field visits to the site and the applicant’s vegetation maps and descriptions, which covered the entire 2,560 acre parcel proposed for the solar generator site, as well as a 1000-foot wide corridor along the generator tie-line alignment (of CH2MHill 2010a). **Biological Resources Table 3** (below) summarizes project disturbance acreage by vegetation type.

**Biological Resources Table 3.
Summary of Project Disturbance Acreage by Vegetation Type¹**

Vegetation Type	Solar Generator Site and Contiguous Facilities	Transmission lines and Interconnector Substation	Total
Creosote bush scrub	1,422-1,447 acres	107-109 acres	1,529-1,556 acres
White bursage scrub	87 acres	0	87 acres
Smoke tree woodland	0	0	0
Unvegetated (concrete pad)	6 acres	0	6 acres
Unmapped disturbance (existing 161-kv Parker-Blythe #2 transmission line)	0	127 acres	127 acres
Total Project disturbance area¹	1,515-1,540 acres	234-236 acres	1,749-1,776 acres

1. Does not include Distribution Line or Fiber Optic OPGW

Creosote bush scrub (*Larrea tridentata*-*Ambrosia dumosa* shrubland, per. Sawyer et al. 2009) covers most of the site (see Figure DR70-1 of CH2MHill 2010a). It is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). In many areas of the study area, white bursage has greater absolute cover than creosote bush, but not sufficient for these areas to be classified as *Ambrosia dumosa* shrubland (see below). Other shrubs present at low abundance are burrobrush (*Hymenoclea salsola* var. *salsola*), brittlebush (*Encelia farinosa*), and white rhatany (*Krameria grayi*). Common species in the herb layer are white tackstem (*Calycoseris wrightii*), pebble pincushion (*Chaenactis carphoclinia* var. *carphoclinia*), desert dandelion (*Malacothrix glabrata*), devil’s lettuce (*Amsinckia tessellata*), Nevada cryptantha (*Cryptantha nevadensis*), broad-fruited comb-bur (*Pectocarya platycarpa*), Sahara mustard

(*Brassica tournefortii*), rattlesnake weed (*Chamaesyce albomarginata*), desert lantern (*Camissonia boothii* ssp. *condensata*), desert plantain (*Plantago ovata*), and Mediterranean grass (*Schismus barbatus*). Creosote bush scrub is not ranked by CDFG (2003) as a special-status vegetation community.

White bursage scrub (*Ambrosia dumosa* shrubland, per. Sawyer et al. 2009) covers approximately 87 acres in the northwestern portion of the proposed solar generator site (see Figure DR70-1 of CH2MHill 2010a). This vegetation is dominated by white bursage, although creosote bush is also common. It is distinguished from creosote bush scrub by relative greater cover of white bursage (Sawyer et al. 2009). Burrobrush is also present at low cover levels in the community. The herb layer is similar to that described above for creosote bush scrub. White bursage scrub is not ranked by CDFG (2003) as a special-status vegetation community.

Smoke tree woodland (*Psorothamnus spinosus* woodland, per. Sawyer et al. 2009) covers just over 5 acres adjacent to the solar generator site (see Figure DR70-1 of CH2MHill 2010a). It is characterized by smoke tree (*Psorothamnus spinosus*), although smaller shrubs may have greater cover (Sawyer et al. 2009). In the project area, burrobrush cover is approximately equal to smoke tree cover in this woodland. Blue palo verde (*Cercidium floridum*) is also present in the tree layer and white bursage and creosote bush are present in the shrub layer. The nonnative, invasive annual, Sahara mustard, is common in the herb layer. This community is ranked by CDFG (2003) as a special-status vegetation type, with state rarity ranking of S3. It is one of several communities included within broader vegetation types called desert wash woodland or microphyll woodland (Holland 1986; Schoenherr and Burk 2007). Project construction would not directly affect smoke tree woodland.

Vegetation on the proposed solar generation site has largely recovered from removal or crushing during the site's historic use as an airfield. However, soils throughout much of the project site remain somewhat compacted and remnants of pavement, tar, or oil are evident on the soil surfaces throughout much of the site. Recovering vegetation is visually similar to surrounding undisturbed desert lands, though shrubs tend to be smaller and overall diversity is lower on the former airfield site.

Vegetation on the proposed generator tie-line alignment is also predominantly creosote bush scrub, as described above. The alignment crosses several broad sandy washes where blue palo verde is common, though these areas were not mapped as distinct vegetation types due either to the 5-acre minimum mapping unit or to relatively greater cover of creosote bush (see Figure DR70-1 of CH2MHill 2010a). Staff notes that soils along the proposed generator tie-line alignment are essentially undisturbed, by comparison with the proposed solar generation site. That is, soils on the tie-line alignment were not compacted, paved, or oiled during the 1940s. Thus, native shrublands are generally more diverse and more mature than shrublands on the proposed solar generation site.

Field surveys of the Western Parker-Blythe #2 transmission line have not been provided for staff's review. Staff reviewed aerial images of the transmission line alignment on Google Earth and found that the majority of the alignment appears to cross creosote bush shrubland. In addition, portions of the existing alignment appear to cross riparian,

microphyll woodland, and sand dune habitats. Washes and streambeds occur intermittently along the length of the alignment, and appear to vary from intermittent dry washes to perennial riparian areas. The most prominent of these washes are in two general locations described below.

The first is located near the northern end of the alignment, at the Parker Dam Substation and continues to just south of U.S. Highway 95 (34°06'10"N 114°30'31"W). This area contains many washes, including Eureka Wash (34°17'29"N 114°09'03"W) and Copper Basin Wash (34°15'16"N 114°12'19"W), which both appear to support riparian vegetation. The second general area that appears to support riparian vegetation is south of the Big Maria Mountains southward to the area south of the McCoy Wash (33°51'41"N 114°42'08"W to 33°40'05"N 114°41'01"W). The McCoy Wash appears to support riparian vegetation and there are numerous additional sandy washes throughout this area which could contain additional riparian habitat.

One area along the Western Parker-Blythe #2 transmission line appears to contain sand dune habitat that could provide suitable habitat for Mojave fringe-toed lizard (described below). This area is part of a larger sand dune area north of the Big Maria Mountains (33°57'02"N, 114°40'15"W).

The following descriptions of desert wash and desert dune vegetation are based on a review of published works, but not on site-specific field work on the 161-kV transmission line alignment. Desert riparian vegetation is found along the banks of the Colorado River and some of its tributaries. Where surface or shallow subsurface water is available, these sites may support any of several different woodland or shrubland riparian communities. Examples of these include Fremont cottonwood (*Populus fremontii*) or velvet ash (*Fraxinus velutina*) woodlands, and shrubby willow (*Salix* spp.), mulefat (*Baccharis salicifolia*), or arrow-weed (*Pluchea sericea*) stands (Holland and Kiel 1995; Laudenslayer 1988). Where surface water is available only during storms and subsurface water is deeper, washes in the Colorado Desert support shrubby woodlands described as "microphyll woodland," "desert dry wash woodlands," vegetation, (Thorne 1976; Holland 1986; Laudenslayer 1988; Holland and Keil 1995; Schoenherr and Burk 2007). Smoke tree woodland (described above) is one example of a dry wash microphyll woodland. Other typical species include catclaw acacia (*Acacia greggii*), mesquite (*Prosopis* spp.), desert willow (*Chilopsis linearis*), desert ironwood (*Olneya tesota*), indigo bush (*Psoralea* spp.), blue palo verde, and desert-lavender (*Hyptis emoryi*).

The existing 161-kV Parker-Blythe transmission line crosses sand dune habitat in the Rice Valley. Vegetation on desert sand dunes is typically sparse and dominated by scattered shrubs such as creosote bush, mesquite, numerous tap-rooted annual wildflowers, and deep-rooted perennial herbs such as big galleta (*Pleuraphis rigida*), dicoria (*Dicoria canescens*) and dune-mat (*Tiquilia palmeri*).

Wildlife

The project area supports a broad diversity of wildlife species, briefly described in the following paragraphs. Special-status species mentioned here are discussed in greater detail in the sections that follow. Although the heliostat field would be located largely on

an abandoned, previously disturbed airfield, desert scrub vegetation has recolonized the area and there are no barriers to wildlife usage at the site. During a reconnaissance-level field visit, staff noted that the density of small mammal burrows and abundance of scat seemed low compared with surrounding undisturbed desert lands. This may be due to soil compaction or other alterations, or to reduced native shrub diversity on the site (above).

The proposed tie-line and substation locations would be on open, relatively undisturbed desert scrub habitat. Wind-blown sand dune habitats are found south of the proposed solar site, and fine sandy substrates extend into the project footprint via numerous sandy washes. These types of features increase the biodiversity of the site, as some habitat specialist species use these areas exclusively (whereas generalist species occur in more common habitats ranging throughout the region). For example, the Mojave fringe-toed lizard is closely associated with sand dunes, sand sheets, and fine sandy soils, but generally not on nearby alluvial fans and bajadas. The Mojave fringe-toed lizard is known from the Rice Valley (BLM and CDFG 2002), and was detected 0.75 mile from the project site during surveys for the RSEP (SR 2009a).

Some of the reptile species reported on the site include State and federally listed threatened desert tortoise (*Gopherus agassizii*), side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), western whiptail (*Aspidoscelis tigris*), zebra-tailed lizard (*Callisaurus draconoides*), desert horned lizard (*Phrynosoma platyrhinos*), long-nosed leopard lizard (*Gambelia wislizenii*), and sidewinder (*Crotalus cerastes*) (Appendix 5.2C of SR 2009a). Mammals recorded during the surveys include black-tailed jackrabbit (*Lepus californicus*), coyote (*Canis latrans*), and desert kit fox (*Vulpes macrotis*) (Appendix 5.2C of SR 2009a). Burro deer (*Odocoileus hemionus crooki*) or Nelson's bighorn sheep (*Ovis canadensis nelson*) may also move through the area for forage or dispersal. The Yuma mountain lion (*Felis concolor browni*), a California Species of Special Concern and a predator of the burro deer and bighorn sheep, may also move through the project area.

Despite the moderate to low shrub density, the project area provides forage, cover, roosting, and nesting habitat for a variety of bird species. In addition, many species, such as golden eagle and prairie falcon (*Falco mexicanus*), nest in the adjacent mountains and are likely to forage over the project area, but there are no large trees on the solar generator site suitable for large raptor nesting or roosting. Both of these are special status species, addressed in further detail below. These and other raptors also are expected to forage over the site outside the breeding season. Many raptors from more northern latitudes winter in the regional deserts where they forage over very wide areas. Common resident and migratory birds detected in and near the RSEP site in 2009 by the applicant include lesser nighthawk (*Chordeiles acutipennis*), white-winged dove (*Zenaida asiatica*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), and barn swallow (*Hirundo rustica*). Common raven (*Corvus corax*), brown-headed cowbird (*Molothrus ater*), northern mockingbird (*Mimus polyglottos*), great-tailed grackle (*Quiscalus mexicanus*), western tanager (*Piranga ludoviciana*), and common poorwill (*Phalaenoptilus nuttallii*) were also observed. Raptors and owls detected at the site include red-tailed hawk (*Buteo jamaicensis*), burrowing owl (*Athene cunicularia*), a

special status species), and turkey vulture (*Cathartes aura*) (Appendix 5.2C of SR 2009a).

No field surveys of the Western Parker-Blythe #2 transmission line have been provided for staff's review. Staff believes that the majority of construction-related disturbance along that transmission line for fiber optic OPGW installation would be within creosote bush scrub vegetation, providing wildlife habitat similar to that described above. In addition, however, some segments of the transmission line appear to cross sand dunes and desert washes, including riparian and microphyll woodland habitats. A variety of additional special status plants and animals not addressed below could occur in these habitats. Desert riparian habitat, if present on the alignment, may support breeding habitat for several special status bird species including listed threatened or endangered species (least Bell's vireo or southwestern willow flycatcher). Desert microphyll woodland is a more productive habitat than surrounding uplands and supports breeding desert bird species in higher densities (Laudenslayer 1988). During migration seasons, is important as stopover habitat for large numbers of migratory songbirds. Desert dunes support several specialized species, including the BLM-sensitive Mojave fringe-toed lizard (below).

Special-Status Species

The project area supports a variety of special-status plant and wildlife species. In addition, habitat on the site and generator tie-line appears to be suitable for several additional special-status species. **Biological Resources Table 4** lists all special-status species evaluated during the analysis that occur or could occur in the project area and vicinity. Special-status plant¹ and wildlife² species detected or considered possible or likely to occur based on geographic distribution and habitat suitability within the project area are discussed in more detail below. Special-status species observed on the project site are indicated by bold-face type. Potential for occurrence is defined as follows:

- Present:** Species or sign of their presence observed on the site during surveys conducted for the proposed project (species that are present are noted in **bold text** in **Biological Resources Table 4**).
- High:** Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records (generally within approximately 20 years and 10 miles of project site, depending on the species' life history).
- Moderate:** Species or sign not observed on the site, but conditions suitable for occurrence, site is within or near known distribution, and/or an historical record (generally greater than 20 years old) exists in the vicinity (generally

¹ Baldwin et al. (2001), California Native Plant Society (CNPS 2010), the Consortium of California Herbaria (2010), California Natural Diversity Database (CDFG 2010a, 2010b); Munz (1974); Turner et al. (1995); Shreve and Wiggins (1964)

² Occurrence probability based on literature reports, including: Barbour & Davis 1969; Bolster 1998; CDFG 2009, 2010a; Feldhamer et al. 2003; Garrett & Dunn 1981; Grinnell & Miller 1944; Grismer 2002; Hall 1981; Ingles 1965; Jennings and Hayes 1994; National Geographic Society 2002; Shurford & Gardili 2008; Small 1994; Stebbins 2003; Williams 1976; US Fish and Wildlife Service 2009; Wilson & Ruff 1999; Zeiner et al. 1988-1990.

within approximately 10 miles of project site, depending on the species' life history).

Low: Species or sign not observed on the site, and conditions marginal for occurrence.

Not Likely to Occur: Species or sign not observed on the site, outside of the known geographic and/or elevational range, and conditions unsuitable for occurrence.

Biological Resources Table 4
Special-Status Species, Their Status, and Potential Occurrence
at the Rice Solar Energy Solar Generator, Generator Tie-Line, and Interconnector
Substation Project Site

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
PLANTS			
<i>Abronia villosa</i> var. <i>aurita</i>	Chaparral sand verbena	CNPS 1B.1 BLM S S 2.1	Present. Two individuals were observed within the solar generation site in 2009 (Appendix 5.2B of SR 2009a).
<i>Acleisanthes longiflora</i>	Angel trumpets	CNPS 2.3 S 1.3	Not Likely to Occur. Apparently limited to carbonate outcrops; no suitable habitat on plant site or transmission line.
<i>Ammoselinum giganteum</i>	Desert sand parsley	CNPS 2.3 SH	Low. Not found during field surveys; no suitable soils. Occurs in heavy soils of desert basins; only historic Calif. occurrences near Hayfield.
<i>Androstephium breviflorum</i>	Pink funnel-lily, Small-flowered androstephium	CNPS 2.2 S 1.2	Low potential in washes or sandy sites of transmission line corridor; Not Likely to Occur on plant site; occurs in aeolian sand.
<i>Astragalus insularis</i> var. <i>harwoodii</i>	Harwood's milk-vetch	CNPS 2.2 S 2.2?	Present. A total of 30-40 individuals were observed at 5 separate locations along the transmission line corridor in 2009 (Appendix 5.2B of SR 2009a).
<i>Astragalus lentiginosus</i> var. <i>borreganus</i>	Borrego milk-vetch	CNPS: 4.3 S 3.3	Low potential in washes or sandy sites of transmission line corridor; Not Likely to Occur on plant site; occurs in aeolian sand.
<i>Astragalus lentiginosus</i> var. <i>coachellae</i>	Coachella Valley milk-vetch	FE CNPS 1B.2 BLM S S 2.1	Not Likely to Occur. No suitable aeolian soils on plant site; marginally suitable soils on transmission line; all known occurrences well to west.
<i>Astragalus tricarinatus</i>	Triple-ribbed milk-vetch	FE CNPS 1B.2 BLM S S 2.1	Not Likely to Occur. All known occurrences well to west in canyons and washes of eastern San Bernardino, Little San Bernardino, and San Jacinto mtns.
<i>Ayenia compacta</i>	California ayenia	CNPS 2.3 S 3.3	Not Likely to Occur. All known occurrences well to west; generally occurs in rocky canyons; no such habitat on project site.
<i>Bouteloua trifida</i>	Three-awned grass	CNPS 2.3 S 2?	Low. Spring-blooming annual, generally occurs rocky foothills; habitat on-site is marginally suitable; not seen during field surveys.

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Calliandra eriophylla</i>	Pink fairy duster	CNPS 2.3 S 2.3	Low. Conspicuous perennial species, flowers during late winter or early spring; not seen during field surveys.
<i>Camissonia arenaria</i>	Sand evening-primrose	CNPS 2.2 S 2	Low. All known occurrences well to south; not located during field surveys.
<i>Cassia</i> – see <i>Senna</i>			
<i>Castela emoryi</i>	Emory's crucifixion thorn	CNPS: 2.3 S 2.2	Low. Conspicuous shrub, gen. occurring in washes or playas; habitat marginal on plant site; suitable on transmission line route; not seen during field surveys.
<i>Chamaesyce abramsiana</i> (<i>Euphorbia abramsiana</i>)	Abram's spurge	CNPS 2.2 S 1.2	Low potential in washes or sandy sites of transmission line corridor; Not Likely to Occur on plant site; occurs in aeolian sand.
<i>Chamaesyce arizonica</i> (<i>Euphorbia arizonica</i>)	Arizona spurge	CNPS 2.3 S 1.3	Low potential in washes or sandy sites of transmission line corridor; Not Likely to Occur on plant site; occurs in aeolian sand. Not seen during field surveys.
<i>Chamaesyce platysperma</i> (<i>Euphorbia platysperma</i>)	Flat-seeded spurge	CNPS 1B.2 BLM S S 1.2?	Low potential in washes or sandy sites of transmission line corridor; Not Likely to Occur on plant site; occurs in aeolian sand. Not seen during field surveys.
<i>Colubrina californica</i>	Las Animas colubrina	CNPS 2.3 S2S2.3	Low. Conspicuous shrub, not located during field surveys.
<i>Condalia globosa</i> var. <i>pubescens</i>	Spiny abrojo	CNPS 4.2 S 3.2	Low. Conspicuous shrub, not located during field surveys.
<i>Coryphantha alversonii</i> (<i>Escobaria vivipara</i> var. <i>alversonii</i>)	Foxtail cactus	CNPS: 4.3 S 3.2	Low. Generally on rocky foothills sites; habitat on-site is marginal; not located during field surveys.
<i>Cryptantha costata</i>	Ribbed cryptantha	CNPS: 4.3 S 3.3	Low potential in washes or sandy sites of transmission line corridor; Not Likely to Occur on plant site; occurs in aeolian sand. Not seen during field surveys.
<i>Cryptantha holoptera</i>	Winged cryptantha	CNPS: 4.3 S 3?	Low. Potential habitat is present, but not located during field surveys.
<i>Cylindropuntia wigginsii</i> (<i>Opuntia wigginsii</i>)	Wiggins' cholla	CNPS 3.3 S 1.2?	Not Likely to Occur. Small form of the common silver cholla; current understanding among specialists is that recognition of this form as a distinct species or subspecies is "untenable."
<i>Cynanchum utahense</i>	Utah cynanchum, Utah vine milkweed	CNPS: 4.2 S 3.2	Moderate. Reported in desert tortoise survey, perhaps from tortoise zone of influence transects; not reported on-site by botanical survey; suitable habitat present.
<i>Ditaxis claryana</i>	Glandular ditaxis	CNPS: 2.2 S1S2	Moderate on transmission line route, low on solar generation site. Perennial herb, seasonality varies; not seen during field surveys.
<i>Ditaxis serrata</i> var. <i>californica</i>	California ditaxis	CNPS: 3.2 S 2.2	Moderate on transmission line route, low on solar generation site. Perennial herb, seasonality varies; not seen during field surveys.
<i>Eriastrum harwoodii</i>	Harwood's phlox	CNPS: 1B.2 BLM S S 2	Not Likely to Occur. Occurs on aeolian dunes. Not located during field surveys.

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Escobaria</i> – see <i>Coryphantha</i>			
<i>Euphorbia</i> – see <i>Chamaesyce</i>			
<i>Gilia</i> – see <i>Linanthus</i>			
<i>Horsfordia alata</i>	Pink velvet mallow	CNPS: 4.3 S 3.3	Low. Occurs in canyons and washes; suitable habitat present but not located during field surveys.
<i>Hymenoxys odorata</i>	Bitter hymenoxys	CNPS 2 S 2	Not Likely to Occur. Occurs in desert riparian shrubland and adjacent desert scrub. All known occurrences closely associated with Colorado River.
<i>Imperata brevifolia</i>	California satintail	CNPS 2.1 S 2.1	Not Likely to Occur. Occurs in desert riparian or seep habitats; no suitable habitat on-site.
<i>Linanthus maculatus</i>	Little San Bernardino Mountains linanthus	CNPS: 1B.2 BLM S	Not Likely to Occur. All known occurrences well to west; generally occurs in fine-sandy alluvial benches; little or no such habitat on project site.
<i>Matelea parvifolia</i>	Spearleaf	CNPS: 2.3 S 2.2	Moderate on transmission line route, low on solar generation site. Perennial herb, seasonality mid-spring.
<i>Mentzelia puberula</i>	Argus blazing star	n/a ³	Not Likely to Occur. Occurs in rocky cliffs and slopes. Not located during field surveys, no suitable habitat on site.
<i>Nemacaulis denudata</i> var. <i>gracilis</i>	Slender woolly-heads	CNPS: 2.2 S2S3	Not Likely to Occur. Occurs on aeolian dunes. Not located during field surveys.
<i>Opuntia</i> – see <i>Cylindropuntia</i>			
<i>Penstemon albomarginatus</i>	White-margined beardtongue	CNPS: 1B.1 BLM S S1	Not Likely to Occur. Occurs on aeolian dunes; all known California occurrences well to north or northwest. Not located during field surveys.
<i>Pholistoma auritum</i> var. <i>arizonicum</i>	Arizona pholistoma	CNPS: 2.3 S 1.3	Low. Occurs in desert shrublands; only known California occurrences are in Whipple Mtns. Flowers early spring; not located during field surveys.
<i>Physalis lobata</i>	Lobed ground-cherry	CNPS: 2.3 S 1.3?	Not Likely to Occur. Occurs on dry lake margins and playas; no suitable habitat on the project site.
<i>Proboscidea althaeifolia</i>	Desert unicorn plant	CNPS 4.3 S 3.3	Low on solar generation site, moderate on transmission line route. Sandy habitats. Spring or summer-flowering perennial herb; not located during early-season field surveys.
<i>Psoralea fremontii</i> var. <i>attenuatus</i>	Narrow-leaved psoralea	CNPS: 2.3 S 2.3	Low. Margin of geographic range; marginal habitat; not located during early-season field surveys.
<i>Salvia greatae</i>	Orocopia sage	CNPS 1B.3 BLM S S 2.2	Low. Desert shrublands on alluvial slopes; known occurrences well to west; not located during field surveys.
<i>Senna covesii</i> (<i>Cassia covesii</i>)	Coves' cassia	CNPS: 2.2 S 2.2	Low on solar generation site, moderate on transmission line route. Spring-flowering perennial herb; not located during early-season field surveys.
<i>Stylocline sonorensis</i>	Mesquite nest straw	CNPS 1A BLM S S X	Not Likely to Occur. Historically occurred at Hayfield Dry Lake; now presumed extirpated in Calif.; no suitable lakebed / playa habitat, no local occurrences.

³ Proposed new addition to the CNPS Inventory (Andre, pers comm.)

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Teucrium cubense</i> ssp. <i>depressum</i>	Dwarf germander	CNPS: 2.2 S 2	Low. Generally occurs in aeolian sand or desert playas. Habitat on site is marginal. Not located during early-season field surveys.
<i>Teucrium glandulosum</i>	Desert germander	CNPS: 2.3 S 1.3	Low. Occurs in rocky foothill slopes and canyons; only known California occurrences are from Whipple Mtns. Habitat on site is marginal.
<i>Wislizenia refracta</i> ssp. <i>refracta</i>	Jackass-clover	CNPS: 2.2 S 1.2?	Low on solar generation site, moderate on transmission line route. Generally in dunes, playas, desert shrublands. Not located during early-season surveys.
<i>Wislizenia refracta</i> ssp. <i>palmeri</i>	Palmer's jackass clover	n/a ⁴	Low on solar generation site, moderate on transmission line route. Generally in dunes, playas, desert shrublands. Not located during early-season surveys.
INVERTEBRATES			
<i>Oliarces clara</i>	Cheeseweed owlfly (cheeseweed moth lacewing)	BLM S	Present. Reported by CNDDDB immediately adjacent to or within the generator tie-line corridor (CDFG 2010a) based on a 1978 record. Suitable habitat throughout project area.
<i>Eremarionta immaculata</i>	White desert snail	n/a	Not Likely to Occur. Apparently endemic to the Riverside Mountains, approximately 6.2 miles from the proposed solar site and 4 miles from the generator tie-line. No suitable habitat (rocky or talus areas) within project area.

⁴ Proposed new addition to the CNPS Inventory (Silverman, pers comm.)

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
AMPHIBIANS			
<i>Scaphiopus couchi</i>	Couch's spadefoot	BLM S CSSC	Low. Margin of geographic range (BLM and CDFG 2002) and unsuitable habitat. Site drainage, sandy soils, and topography are unlikely to provide sufficiently inundated pools or ditches on-site or in the general area to support breeding.
REPTILES			
<i>Gopherus agassizii</i>	Desert tortoise	FT ST	Present. Recorded during protocol surveys of solar site and transmission line route in 2009: 7 tortoises, 91 shell-skeletal remains, 66 burrows, 3 egg shell fragment locations, and 56 scat events were detected (SR 2009a).
<i>Heloderma suspectum cinctum</i>	Banded Gila monster	BLM S CSSC	Low. Site is at margin of geographic range and habitat generally only marginally suitable. Nearest reported occurrence is historic record (1943) in Granite Mountains, approximately 17 miles southwest of RSEP site (CDFG 2010a). More likely to occur in rocky areas in the surrounding mountains.
<i>Lichanura trivirgata</i>	Rosy boa	BLM S	Moderate. Potential marginal habitat occurs onsite, and the NECO distribution map for the rosy boa includes the entire RSEP area and only excludes the dune areas of the Rice Valley. More likely to occur in rocky areas in the surrounding mountains.
<i>Phrynosoma mcallii</i>	Flat-tailed horned lizard	BLM S CSSC	Not Likely to Occur. Outside of the known geographic range; habitat marginal. Outside mapped range (BLM and CDFG 2002).
<i>Sauromalus obesus</i>	Chuckwalla	n/a	Not Likely to Occur. No suitable habitat. Expected in rocky areas of surrounding mountains, but unlikely in the flat, exposed, and sparsely vegetated project site. Project site and transmission line lack appropriate rocky, talus, or scree habitat. Outside mapped range (BLM and CDFG 2002).
<i>Uma notata</i>	Colorado Desert fringe-toed lizard	BLM S CSSC	Not Likely to Occur. Project area outside of known geographic range. Fringe-toed lizards in Rice Valley are the similar Mojave fringe-toed lizard (below). Outside mapped range (BLM and CDFG 2002).
<i>Uma scoparia</i>	Mojave fringe-toed lizard	BLM S CSSC	High. Observed during the 2009 tortoise survey in dune habitat approximately 0.75 miles south of the site boundary, but not on the site or proposed transmission line alignment. Habitat on the proposed solar generation site is marginal; more suitable sandy washes are found on the proposed transmission line alignment. Within mapped range (BLM and CDFG 2002).
BIRDS			
<i>Accipiter cooperii</i>	Cooper's hawk	CDFG WL (nesting)	High (winter only). No breeding habitat and well outside breeding range; wide-ranging during winter, likely to forage on-site during winter or migratory seasons.

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Accipiter striatus</i>	Sharp-shinned hawk	CSSC (nesting)	High (winter only). No breeding habitat and well outside breeding range; wide-ranging during winter, likely to forage on-site during winter or migratory seasons.
<i>Aquila chrysaetos</i>	Golden eagle	BLM S FBCC SP CDFG WL	High (foraging only). There is known nesting habitat in the nearby mountains; suitable foraging habitat occurs throughout project site and transmission line alignment. Within mapped range (BLM and CDFG 2002). Protected under Federal Bald and Golden Eagle Protection Act.
<i>Asio otus</i>	Long-eared owl	CSSC (nesting)	Not Likely to Occur. Requires large trees for nesting, and forages in surrounding area, mainly meadows, grasslands, and agricultural lands. No suitable breeding habitat on-site or in nearby area.
<i>Athene cunicularia</i>	Western burrowing owl	BLM S FBCC CSSC	Present. Active burrows observed in project area during 2009 and 2010 (SR 2009a; CH2Mhill 2010e). Within mapped range (BLM and CDFG 2002).
<i>Buteo regalis</i>	Ferruginous hawk	BLM S FBCC CDFG WL	High (winter only). Suitable winter foraging habitat throughout site. Expected during migratory and winter seasons. Within mapped range (BLM and CDFG 2002).
<i>Circus cyaneus</i>	Northern harrier	CSSC (nesting)	Moderate (winter only). Outside breeding range and no suitable breeding habitat occurs in the region; there is potential for infrequent winter foraging throughout desert regions.
<i>Colaptes chrysoides</i>	Gilded flicker	FBCC SE	Not Likely to Occur. No suitable nesting habitat (saguaro cacti or large trees that would provide appropriate cavity nests).

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Falco columbarius</i>	Merlin	CDFG WL	High (winter only). Outside breeding range; potential foraging habitat throughout site during winter or migratory seasons.
<i>Falco mexicanus</i>	Prairie falcon	FBCC CDFG WL (nesting)	Present (foraging). Observed during April/May 2009 (SR 2009a). Nest sites are reported from the mountains surrounding Rice Valley (CDFG 2010a); suitable foraging habitat throughout the project site. Within mapped range (BLM and CDFG 2002).
<i>Lanius ludovicianus</i>	Loggerhead shrike	FBCC CSSC (nesting)	Present. Observed in project area during 2009 tortoise surveys. Likely nests in shrubs on proposed solar site and within generator tie-line corridor. Suitable habitat throughout the project site.
<i>Melanerpes uropygialis</i>	Gila woodpecker	FBCC SE	Not Likely to Occur. No suitable nesting habitat (saguaro cacti or large trees that would provide appropriate cavity nests). Habitat is identified immediately south of the proposed generator tie-line interconnection point (BLM and CDFG 2002).
<i>Polioptila melanura</i>	Black-tailed gnatcatcher	n/a	High. Suitable habitat in shrublands, especially around washes. Former species of concern. Common and populations apparently now stable.
<i>Toxostoma bendirei</i>	Bendire's thrasher	BLM S FBCC CSSC	Not Likely to Occur. Marginal habitat and outside known breeding range. Generally occurs with Joshua trees or other <i>Yucca</i> species, or high abundance of cholla cacti. Reported in 1920 approx. 4 miles north of the solar field site (CDFG 2010a). Outside mapped range (BLM and CDFG 2002).
<i>Toxostoma crissale</i>	Crissal thrasher	FBCC CSSC	High (transmission line only). Occurs throughout region in dense, scrubby desert wash habitats; suitable habitat occurs periodically along proposed transmission line alignment, but habitat on proposed solar facility generally poorly suitable due to open structure; only low occurrence probability on-site. Outside mapped range (BLM and CDFG 2002).
<i>Toxostoma lecontei</i>	LeConte's thrasher	BLM S FBCC CDFG WL	High. Reported in 1920 approx. 2 miles northwest of the solar field site (CDFG 2010a). Suitable habitat present throughout the project area. Desert populations are apparently stable; CDFG special concern ranking applies only to San Joaquin Valley population (Shuford and Gardali 2008). Within mapped range (BLM and CDFG 2002).
MAMMALS			
<i>Antrozous pallidus</i>	Pallid bat	BLM S CSSC	Moderate (foraging). Roosts in rock outcrops of shrublands; potential roosting in nearby mountains (offsite) and foraging through the Rice Valley. Within mapped range (BLM and CDFG 2002).
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	BLM S CSSC	Moderate (foraging). Roosts primarily in caves, tunnels, mines; feeds mainly on moths; may roost in nearby mountains and forage through the Rice Valley but activity is more likely concentrated along the Colorado River Valley (SR 2009a). Within mapped range (BLM and CDFG 2002).

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Euderma maculatum</i>	Spotted bat	BLM S CSSC	Low. Occurs in deserts during winter, but roosts in deep crevices in cliffs and feeds on moths captured over open water; project site lacks major habitat elements.
<i>Eumops perotis californicus</i>	Western mastiff bat	BLM S CSSC	Moderate (foraging). Roosts in deep rock crevices and forages over wide area; may roost in nearby mountains and forage through the Rice Valley. RSEP site out of range but habitat is mapped immediately south of proposed generator tie-line interconnection point (BLM and CDFG 2002).
<i>Felis concolor browni</i>	Yuma mountain lion	CSSC	High. Uncommon; occurs in Colorado Desert, Joshua Tree National Park to Colorado River. Primarily found in dense riparian habitats of Colorado River, and dense microphyll washes in mountainous areas, where water, shaded cover and prey are available. If present, project area likely used primarily for movement. Range includes southern half of the proposed generator tie-line corridor (BLM and CDFG 2002).
<i>Lasiurus xanthinaus (Nycteris ega xanthina)</i>	Western (southern) yellow bat	CSSC	Low. Occurs from Central America, north to southern Arizona; Riverside, Imperial, and San Diego Counties. Riparian and wash habitats; roosts in trees; evidently migrates from California during winter. No suitable roosting habitat on site.
<i>Macrotus californicus</i>	California leaf-nosed bat	BLM S CSSC	Moderate (foraging only). Roosts in mines or caves; expected in surrounding mountains and likely forage occasionally over the proposed project area. Within mapped range (BLM and CDFG 2002).
<i>Myotis occultus</i>	Occult little brown bat, Arizona myotis	CSSC	Low (foraging). Western North America, British Columbia to central Mexico; in the US, mostly occurs in the Pacific states. Roosts in buildings, bridges, caves, mines; feeds over open water. No suitable roosting or foraging habitat on site. The southern end of the proposed generator tie-line corridor is within the mapped range (BLM and CDFG 2002).
<i>Myotis thysanodes</i>	Fringed myotis	BLM S	Low (foraging). Occurs in the four-corners states west to California and the Pacific Northwest, and south through Mexico. Occurs in arid forests & woodlands, roosts in caves, mines, buildings, rock crevices. Scarce in low desert, though may occur along Colorado River where suitable roosting and foraging habitat exists. Range also includes Turtle Mountains north of RSEP and area immediately south of proposed generator tie-line interconnection point (BLM and CDFG 2002).
<i>Myotis velifer</i>	Cave myotis	BLM S CSSC	Low (foraging). Occurs in Mexico through Arizona to the Colorado River area, also southeast US. In California, largely restricted to the desert along the Colorado River. Generally roosts in caves; typically feeds over water or riparian vegetation. Known from the Riverside Mountains. The southern end of the proposed generator tie-line corridor is within the mapped range (BLM and CDFG 2002).

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Myotis yumanensis</i>	Yuma myotis	BLM S CSSC	Low (foraging). W N. America, British Columbia to cent. Mexico; in the US, mostly the Pacific states; roost in buildings, bridges, caves, mines; feed over open water
<i>Neotoma albigula venustra</i>	Colorado Valley woodrat	n/a	Low. Desert shrubland in southeastern California, southern corner of Nevada; southwest Arizona, adj. Mexico. Closely associated w/ beavertail or mesquite thickets; habitat on site marginal at best; not detected during the April/May 2009 desert tortoise surveys. The southern half of the proposed generator tie-line corridor is within the mapped range (BLM and CDFG 2002).
<i>Nyctinomops femorosaccus (Tadarida femorosaccus)</i>	Pocketed free-tailed bat	CSSC	Moderate (foraging). Occurs in deserts and arid lowlands; eastern Riverside and San Diego Counties, through southwest US, Baja California, mainland Mexico. Roosts mainly in crevices of high cliffs; may roost in nearby mountains and forage through the Rice Valley. Reported habitat immediately south of generator tie-line interconnection point (BLM and CDFG 2002).
<i>Nyctinomops macrotis (Tadarida macrotis)</i>	Big free-tailed bat	CSSC	Moderate (foraging). Occurs in the tropics north to North American deserts and coastal California; many scattered locations. Roosts in crevices of rock cliffs; may roost in nearby mountains and forage through the Rice Valley
<i>Odocoileus hemionus eremicus (= O. h. crooki)</i>	Burro deer, desert mule deer	n/a	High. Uncommon. Large home ranges, including montane and bajada habitat throughout Colorado Desert; mainly in scattered mountain ranges and near dependable water sources. If present, project area likely used primarily for movement.

Scientific Name	Common Name	Status	Potential For Occurrence On-Site
<i>Ovis canadensis nelsoni</i>	Nelson's bighorn sheep	BLM S	High. The Turtle Mountains to the north and the Maria Mountains to the south are likely occupied; the West Riverside and Riverside Mountains to the east and southeast may one day be repopulated. May occasionally forage on-site; movement among mountain ranges is important to regional population viability.
<i>Taxidea taxus</i>	American badger	CSSC	High. Uncommon; occurs in mountains, deserts, interior valleys where burrowing animals are available as prey and soil permits digging. Known from Vidal, approximately 17 miles northeast. Suitable habitat throughout the project site
<i>Vulpes macrotis arsipus</i>	Desert kit fox	n/a	Present. Detected during April/May 2009 desert tortoise surveys (SR 2009a).

FE	=	Federally listed Endangered
FT	=	Federally listed Threatened
FD	=	Federally Delisted
FC	=	Federal Candidate
FBCC	=	Federal Bird of Conservation Concern
BLM S	=	BLM Sensitive
SE	=	State listed Endangered
ST	=	State listed Threatened (wildlife)
SR	=	State listed Rare (plants)
CSSC	=	California Species of Special Concern (wildlife)
SP	=	State Fully Protected Species
CDFG WL	=	California Department of Fish and Game Watch List
n/a	=	None of above

CNPS (California Native Plant Society) Designations:

- List 1A = Plants presumed extinct in California
- List 1B = Plants considered by CNPS to be rare, threatened, or endangered in California, and throughout their range
- List 2 = Plants rare, threatened, or endangered in California, but more common elsewhere in their range
- List 3 = Plants about which we need more information – a review list.
- List 4 = Plants of limited distribution – a watch list

CNPS Threat Rank:

- .1 = Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)
- .2 = Fairly endangered in California (20-80% occurrences threatened)
- .3 = Not very endangered in California (<20% of occurrences threatened or no current threats known)

CDFG Natural Diversity Database Designations (Applied to special-status plants and sensitive plant communities; where correct category is uncertain, CDFG uses two categories or question marks):

- S1 = Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres
- S1.1 = Very threatened
- S1.2 = Threatened
- S1.3 = No current threats known
- S2 = 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above)
- S3 = 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above)
- S4 = Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
- S5 = Demonstrably secure or ineradicable in California. No threat rank.
- SH = All California occurrences historical (i.e., no records in > 20 years).

Special-Status Plants

Four special-status plant species are reported on the proposed solar generator site and generator tie-line alignment (SR 2009a; **Biological Resources Figures 2A, 2B**). Two of these species were located during botanical surveys conducted on the proposed solar generation site and transmission line alignment during March 2009 (Appendix 5.2B of SR 2009a); two others were reported in the desert tortoise survey report (Appendix 5.2C of SR 2009a). Staff notes that the seasonal and irregular nature of most plants' life histories and the scheduling of the field surveys provided in the AFC limit staff's ability to interpret the data as submitted for some later-flowering species. There is

a low to moderate probability that additional special-status plants may be discovered within the project area during late-season surveys, described in staff's recommended Condition of Certification **BIO-12** (Special-Status Plant Impact Avoidance and Minimization). **BIO-12** also describes avoidance or compensation measures to mitigate any impacts to those plants.

There have been no botanical surveys or habitat evaluation for special status plants on Western's existing 161 kV transmission line alignment, where new OPGW would be constructed. Potential occurrence or project impacts to special status plants along the length of that transmission line are not described in the SA/DEIS.

Chaparral Sand-Verbena (Abronia villosa var. aurita)

Chaparral sand-verbena is on CNPS List 1B.1. It is described in the literature as an annual herb, but A.C. Sanders (Herbarium, Dept. of Botany and Plant Science, University of California Riverside; pers. comm.) notes that it is perennial and that this is one of the important differences between this and the common desert sand-verbena (*Abronia villosa* var. *villosa*). Chaparral sand-verbena is found in sandy valley floors and alluvial benches in chaparral, coastal scrub, montane transition shrublands, or woodlands. It also is reported from dunes and washes throughout the Colorado Desert (CDFG 2010a; Consortium of California Herbaria 2010) but Sanders (pers. comm.) states that all purported specimens he has seen that were collected in the desert were misidentified. It is found at elevations ranging from about sea level (near the coast) and 5,250 feet elevation (in the San Jacinto Mountains). It blooms between January and September (CNPS 2010). Like most desert species, its above-ground growth and flowering season vary from year to year, depending on the amount and timing of seasonal rainfall. In California it is reported from Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. It also is reported from Arizona and Baja California (CNPS 2010). However, many of these reported locations are from the deserts and may represent misidentified specimens.

There are no CNDDDB records of chaparral sand-verbena on the Rice, Grommet, or Big Maria Mountains northwest quads (CDFG 2010a). The nearest CNDDDB record is based on a specimen collected in 1910, approximately 8.5 mi east of the project site, on the Vidal quad.

Chaparral sand-verbena's distribution and identification are unclear in published reference works, including Spellenberg (1993; 2002), CNPS (2010) and CNDDDB (CDFG 2010a). This plant was added to the CNPS Inventory based on recommendations by Andrew C. Sanders of the UC Riverside Herbarium. The primary conservation concern is for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert (see Roberts et al. 2004). These western plants appear to be distinct from the very common desert sand verbena, *Abronia villosa* var. *villosa*. The western plants are perennial; their flower tubes are longer; and their fruits are distinctly and broadly winged. All three features can be problematic in specimen identification. The perennial habit is rarely noted on herbarium labels and is not mentioned in Spellenberg (1993; 2002) or Murdock (2010). The flower tube lengths and the winged fruit characters vary widely throughout the range of *A. villosa*. While the western populations have longer tubes and broader wings, these overlap somewhat with desert

plants, especially around Whitewater Canyon in Riverside County. Plants in the Mojave Desert have ridges, but not wings, on the fruits. Plants in the low desert, which would include the RSEP site, often have relatively broad wings on their fruits, though not as broad as the western plants.

The chaparral sand-verbena plants reported on and near the RSEP site in the Botanical Inventory Report included in the AFC (Appendix 5.2B of SR 2009a) were identified by their winged fruits. Staff agrees that this determination is consistent with available published information. However, due to the plant's local distribution and abundance in the Colorado Desert, well outside the area where chaparral sand-verbena is considered rare, staff concludes that this plant is not regionally rare.

Harwood's Milk-Vetch (Astragalus insularis var. harwoodii)

Harwood's milk-vetch is on CNPS List 2.2. It is a perennial herb found in desert dunes and sandy or gravelly desert scrub from about sea level to 2,300 feet elevation. It flowers between January and May (CNPS 2010). Like most desert species, its above-ground growth and flowering season vary from year to year, depending on the amount and timing of seasonal rainfall. In California, Harwood's milk-vetch is known from Imperial, Riverside, and San Diego counties (CNPS 2010). It also occurs in Arizona and Mexico (CNPS 2010). There are no CNDDDB records for Harwood's milk-vetch from the Rice, Grommet, Big Maria Mountains northwest, or the 12 surrounding quads (CDFG 2010a). The closest CNDDDB record is approximately 25 miles south of the project site, on the Ripley quad.

Harwood's milk-vetch was observed at 5 locations along the proposed transmission line alignment corridor (Appendix 5.2B of SR 2009a). A total of 30 to 40 individual plants were observed along the alignment and three additional plants were observed north of and outside the proposed alignment corridor. They were growing in loose sandy/gravelly soils in small desert wash features. Harwood's milk-vetch was not observed within the proposed solar field site.

Utah Cynanchum (Cynanchum utahense)

Utah cynanchum (also called Utah vine milkweed) is on CNPS List 4. It was reported in the species list accompanying the applicant's Desert Tortoise Survey Report, but was not recorded on the site in the Botanical Inventory Report (Appendices 5.2B and 5.2C of SR 2009a). The applicant's response to Data Request No. 73 addresses this discrepancy (CH2MHill 2010a). Apparently, Utah cynanchum was located by desert tortoise biologists outside the proposed project site (e.g., on zone of influence tortoise transects) or was misreported in the desert tortoise survey report, perhaps based on a misidentification of trailing townula (*Sarcostemma hirtellum*, also called rambling milkvine). These two species are similar in that their stems closely resemble one another, although the flower inflorescences are distinct. Sycamore Environmental reexamined photographs and voucher specimens collected during the botanic surveys to determine whether the species previously identified as trailing townula might be Utah cynanchum. This re-analysis confirmed that plants observed on the site by field botanists, and reported as trailing townula in the Botanical Inventory Report, were correctly identified. Utah cynanchum has not been observed or reported on the site by the applicant's botanical consultant. However, the site is within its geographic range

(Bell 2009), and marginally suitable desert wash habitat may be present in desert washes, either on the proposed solar generation site or, more likely, the proposed generator tie-line alignment. Pending the results of ongoing follow-up botanical surveys, staff concludes that Utah cynanchum is not likely to occur on the solar generation site but is moderately likely to occur on the tie-line alignment.

Wiggins' Cholla (Opuntia wigginsii)

Wiggins' cholla is on CNPS List 3 (i.e., the review list of plants for which more information is needed). It was reported in the species list accompanying the applicant's Desert Tortoise Survey Report, but was not recorded on the site in the Botanical Inventory Report (Appendices 5.2B and 5.2C of SR 2009a). The applicant's response to Data Request No. 73 addresses this discrepancy (CH2MHill 2010a). Wiggins' cholla is not recognized by current or recent specialists, including Parfitt and Baker (1993, 2002), Pinkava (2003), and Baker et al. (2010). It is a small form of the common silver cholla (*Opuntia echinocarpa*, or *Cylindropuntia echinocarpa*). Wiggins' cholla has variously been recognized as a distinct species; a hybrid of silver cholla and pencil cholla, or an indistinct small variant of silver cholla. Current understanding among cactus specialists is that recognition of this form as a distinct species or subspecies is "untenable" Pinkava (2003).

During site visits in March and April 2010, staff noted small silver cholla plants occasionally throughout the project site. These may be the plants noted by desert tortoise biologists (above). Staff speculates that their small stature may be due to their young age, because they must have colonized the site since abandonment of the former Rice Army Airfield.

SPECIAL STATUS WILDLIFE

Text provided below evaluates potential occurrence of special status wildlife species on the proposed solar generator site and the associated generator tie-line alignment and substation. See **Biological Resources Figures 3A** and **3B**. No field surveys of the Western Parker-Blythe #2 transmission line have been provided for staff's review. Staff believes that the majority of construction-related disturbance along that transmission line for fiber optic OPGW installation would be within creosote bush scrub vegetation, which would likely provide additional suitable habitat for all special status species described below. The transmission line also crosses sand dunes and numerous washes, though vegetation and habitat at those crossings have not been described or evaluated for their suitability as special status species habitat. Staff believes that a variety of special status dune and riparian species could occur along the alignment, but lacks baseline data to evaluate occurrence or potential project impacts to those species.

Special-Status Invertebrates

Cheeseweed owlfly (Oliarces clara)

Cheeseweed owlfly (also called cheeseweed moth lacewing) has been reported from the proposed generator tie-line corridor (CDFG 2010a). Cheeseweed owflies occur on desert bajadas and canyons where creosote bush is present. Their larvae burrow into the ground and apparently feed on creosote bush roots for "probably upwards of one year" (Faulkner 1990; Arizona Game and Fish Dept. 2003). After metamorphosis, the

adult forms emerge from the soil during April or May. In some years, they may be locally abundant. The adult owlflies do not feed and die within only a few days. Documentation of their presence occurs only during this active flight period. During mating, the males and females aggregate at local high topographic features; this “hilltopping” behavior is common among many insects. After mating, the females lay eggs in sand downslope from the hilltop site. Specific soil requirements for suitable oviposition, if any, are unknown (Arizona Game and Fish Dept. 2003). Johnson (1992) reported that it is much more widespread and abundant than previously believed.

Creosote bush shrubland occurs throughout the RSEP and generator tie-line alignment. However, soil surfaces on much of the site have been hardened by paving or oiling, or compacted by vehicle use. In addition, the proposed solar generation site is several miles distant from suitable hilltop mating sites. The effects of soil hardening or compaction and distance from mating sites to cheeseweed owlfly habitat suitability are not known. The project area does not appear to provide specialized habitat or other resources for cheeseweed owlfly other than those resources widely available throughout the region. Staff believes that similar potentially suitable habitat would be found along the length of Western’s existing 161-kV Parker-Blythe transmission line.

Special-Status Amphibians

Couch’s spadefoot (Scaphiopus couchii)

Couch’s spadefoot, like other spadefoot species, is an amphibian with appearance and life history characteristics similar to the true toads (*Bufo* spp.) but distinguished from that genus by several characteristics, especially the thickened sharp-edged “spades” on the hind feet, used for burrowing (Stebbins 2003). Couch’s spadefoot is almost entirely terrestrial. It is dormant in burrows 20 to 90 cm deep for 8 to 10 months of the year (Jennings and Hayes 1994). It is active on the surface only during periods following warm summer rains, when it emerges to feed on insects and to reproduce. Successful reproduction requires warm rain pools which must hold water while the eggs hatch and the tadpoles develop, and then metamorphose into juvenile spadefoots. This has been reported to occur in as few as 7 to 10 days (Jennings and Hayes 1994; Grismer 2002).

In addition to summer rain pools, Couch’s spadefoot requires soft, sandy soils for burrowing and generally is found at the edges of arroyos or in open soil around the bases of shrubs (Grismer 2002). Adult spadefoots make seasonal movements to and from breeding pools, but movement distances are unknown for this and other spadefoot species (Morey 2005). Some true toads may move as far as 1.2 km between breeding habitat and their upland burrows (Holland and Sisk 2000).

Couch’s spadefoot is widespread in southwestern North America and Mexico. The Colorado Desert in California is at the western margin of its geographic range. Stebbins (2003) indicates that it is restricted in California to a corridor immediately adjacent to the Colorado River, though Morey (2005) indicates a much broader distribution in the California deserts. In California, Couch’s spadefoot is threatened by habitat conversion for other uses. It is ranked as a Species of Special Concern by CDFG and as a Sensitive Species by BLM.

Topography and drainage channel morphology on the proposed solar generation site and along the proposed generator tie-line alignment indicate that no suitable breeding pools would form or hold rain water long enough for spadefoot reproduction (Attachment DR60-1 of CH2MHill 2010a). Upland habitat on the proposed solar generation site may be suitable as winter dormancy/burrowing habitat, depending upon the project site's proximity to breeding pools, the species' movement distances between borrow and breeding sites, and any specific habitat requirements for burrowing sites. Staff believes that potentially suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe transmission line, particularly where the alignment crosses broad sandy washes.

Special-Status Reptiles

Desert Tortoise (Gopherus agassizii)

The desert tortoise is listed as threatened under the state Endangered Species Act and the Mojave population is listed as threatened under the federal ESA. The federally-listed Mojave population includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California (USFWS 1994a). Outside the listed Mojave population, its range extends into the Sonoran Desert, where tortoises occur in the lower Colorado River Valley, Arizona uplands, plains of Sonora (Mexico), and the central Gulf Coast. The two recognized populations are isolated from one another by the Colorado River. All desert tortoises in California are part of the Mojave population.

Desert tortoises are well adapted to living in a highly variable and often harsh desert environment. They spend much of their lives in burrows, even during their seasons of activity, which generally coincide with the greatest annual forage availability, between March and May. In late winter or early spring, they emerge from over-wintering burrows and typically remain active through fall. During their active periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (Berry 1974; Luckenbach 1982; Esque 1994).

Activity decreases in summer, but tortoises often emerge after summer rain storms to drink (Henen et al. 1998). During the summer activity period, tortoises retreat to burrows or shaded "palettes" or other shaded sites beneath shrubs or rocks during the most intense heat, or to rest at night. They may aestivate (summer dormancy) in burrows during extended periods of heat and dryness. A single tortoise may have a dozen or more burrows within its home range, and different tortoises may use these burrows at different times. Adult desert tortoises lose water at such a slow rate that they can survive for more than a year without access to free water of any kind and can apparently tolerate large imbalances in their water and energy budgets (Nagy and Medica 1986; Peterson 1996a, 1996b; Henen et al. 1998). During periods of inactivity, their metabolism and water loss are reduced. Tortoises enter brumation (the reptilian equivalent of hibernation) during autumn (September to November, depending on conditions).

Desert tortoise habitats include desert alluvial fans, washes, canyon bottoms, rocky hillsides, and other steep terrain. Tortoises are most common in desert scrub, desert

wash, and Joshua tree habitats, but occur in almost every desert habitat except on the most precipitous slopes. Friable soils, such as sand and fine gravel, are an important habitat component, particularly for burrow excavation and nesting. The presence of soil suitable for digging burrows is a limiting factor to desert tortoise distribution (USFWS 1994a). Vegetation cover of typical desert tortoise habitat is dominated by creosote bush, burrobush (*Ambrosia dumosa*), Mojave yucca (*Yucca schidigera*), or blackbrush (*Coleogyne ramosissima*). At higher elevations, Joshua trees and galleta grass are common plant indicators (USFWS 1994a).

The size of desert tortoise home ranges varies with respect to location and year (Berry 1986) and also serves as an indicator of resource availability and opportunity for reproduction and social interactions (O'Connor et al. 1994). Female tortoises have long-term home ranges that may be less than half that of the average male's home range, which can range to up to 200 acres (Burge 1977; Berry 1986; Duda et al. 1999; Harless et al. 2009). Core areas used within tortoises' larger home ranges depend on the number of burrows used within those areas (Harless et al. 2009). Over its lifetime, each desert tortoise may use more than 1.5 square miles of habitat and may make periodic forays of more than 7 miles at a time (Berry 1986).

Adult tortoises may reach an overall carapace (shell) length of 9 to 15 inches. Tortoises are long-lived and grow slowly. They require 13 to 20 years to reach sexual maturity. As adults, their reproductive rates are low, though their reproductive lifespan is long (Turner et al. 1984; Bury 1987; Germano 1994). Mating may occur both during spring and fall (Black 1976; Rostal et al. 1994). The number of clutches (set of eggs laid at a single time) and number of eggs that a female desert tortoise produces in a season is dependent on conditions including habitat quality, availability of forage and drinking water, and the animal's physiological condition (Turner et al. 1986, 1987; Henen 1997; McLuckie and Fridell 2002). Egg-laying occurs primarily between April and July (Rostal et al. 1994; USFWS 1994b); the female typically lays 2-14 eggs (average 5-6) eggs in an earthen chamber excavated near the mouth of a burrow or beneath a shrub (Woodbury and Hardy 1948; USFWS 1994b). The eggs typically hatch 90 to 120 days later, between August and October. The success rate of clutches has proven difficult to measure, but predation, while highly variable (Bjurlin and Bissonette 2004), appears to play an important role in clutch failure (Germano 1994).

Desert tortoise populations have declined for several reasons, each of which tends to be exacerbated by the others and most of which are associated with human land uses and other human activities. Most threats identified in the 1980s as the bases for state and federal listing continue to affect tortoise populations today (USFWS 2008a). Habitat degradation and loss due to land use conversion, grazing, mining, energy development, and highway construction and expansion have all contributed to declining numbers and fragmented desert tortoise populations. Off-road vehicle use causes direct mortality from vehicle collision or crushed burrows and destruction of habitat. Desert tortoises are also vulnerable to vehicle collisions on roads and highways. Drought, habitat degradation, and associated weed invasion decrease nutrients available to desert tortoises in their food; this makes them susceptible to upper respiratory tract disease, and possibly other diseases, which can be fatal and is transmittable among populations (Jacobson 1992). Tortoises also are vulnerable to predation by ravens and domestic and feral dogs. Infrastructure development and urbanization creates perch sites and

food and water sources for ravens, and increases numbers of dogs, all of which elevate predation pressure on juvenile tortoises. Other threats include illegal collecting, vandalism, livestock grazing, feral burros, non-native plants, changes to natural fire regimes, and environmental contaminants (USFWS 1994b). Habitat fragmentation and development can isolate tortoise populations, further increasing risk of disease and reducing genetic diversity. This range of threats can kill or indirectly affect desert tortoises and their habitat, but little is known about the relative contribution each threat makes to tortoise demography (Boarman 2002, USFWS 2008a). Current recovery planning (USFWS 2008a) focuses on expanding the knowledge of individual threats and places emphasis on understanding their multiple and combined effects on tortoise populations.

In 1994, tortoise densities in the Eastern Colorado Recovery Unit were estimated between 5 and 175 adult tortoises per square mile and threat level was ranked at 4 out of 5 (5 = extremely high) (USFWS 1994). More recent density estimates are lower (Luckenbach 1982; Berry 1984), though it is unclear whether the lower values reflect actual decline in tortoise numbers, or differences in data collection (USFWS 2006).

The USFWS published the *Desert Tortoise (Mojave Population) Recovery Plan* in 1994 and published a *Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise* in 2008. Since 1994, research indicates generally continuous variation in genetic structure and ecological biomes across the Mojave population's range. On the basis of this new information, the draft revised recovery plan redefines the recovery units to balance regional distinctiveness and variability within the population. It stresses geographic discontinuities or barriers that coincide with any observed variation among tortoise populations. The draft revised recovery plan reduces the number of recovery units from six to five, to reflect new analyses and ensure that local adaptations and genetic diversity are maintained. These analyses and conclusions are described in the draft revised recovery plan (USFWS 2008a).

The RSEP is located within the Eastern Colorado Recovery Unit (USFWS 1994), which would be merged with the adjacent Northern Colorado Recovery Unit upon finalization of the draft revised recovery plan. The new recovery unit will be referred to as the Colorado Desert Recovery Unit (USFWS 2008). Within this recovery unit desert tortoises are found primarily in "well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and blue palo verde-ironwood-smoke tree communities" (USFWS 1994). Habitat within this recovery unit was described as being in excellent condition despite declines in tortoise densities over the past several decades; disturbance was estimated at less than 1.3 percent throughout (USFWS 2005). The highest desert tortoise densities within this recovery unit are in Chemehuevi and Ward valleys, on the Chuckwalla Bench within the Chuckwalla Desert Wildlife Management Area (DWMA and associated Critical Habitat Unit) and in Joshua Tree National Park. Desert tortoise densities at the Chuckwalla Bench in 1992 were estimated between 22 and 49 adults per square kilometer (approximately 57–127 adults per square mile) but have shown declining trends (Berry 1997; Tracy et al. 2004).

Critical Habitat: The project site is not within designated critical habitat for the desert tortoise. The nearest designated desert tortoise critical habitat is the southeastern

portion of the Chemehuevi Valley Critical Habitat Unit adjacent to SR-62, about five miles east of the site (USFWS 1994a). The Pinto Mountains and Chuckwalla Critical Habitat Units are more distant, to the southwest.

Suitable desert tortoise habitat is present throughout the proposed solar generation site and generator tie-line alignment, and desert tortoises occur within the proposed RSEP footprint and in the adjacent desert areas (Appendix 5.2C of SR 2009a). One tortoise was found in the northwestern portion of the proposed solar generation site; three were found along zone-of-influence (ZOI) transects surrounding the solar field site; and three others were found along the proposed generator tie-line corridor and associated ZOI transects. In addition, a total of 91 shell or skeletal fragments were found during the surveys, indicating desert tortoise occupancy throughout the area in recent years. Three separate observations of eggshell fragments suggest a viable, if low-density population inhabits the project site and surrounding area. Staff believes that similar suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Banded Gila Monster (Heloderma suspectum cinctum)

The banded Gila monster is considered rare in California with only 26 credible records documented within the past 153 years (Lovich and Beaman 2007). This large and distinct lizard is difficult to observe even in areas where it has been recently recorded. As a result, little is known about its distribution, population status, and life history in California. Most historical observations in California have been in riparian areas or at moderate elevations of the higher desert mountain ranges, in rocky, incised topography (Lovich and Beaman 2007). In California, the Gila monster may be confined to the eastern deserts (east of 116° longitude) where summer rainfall makes up 25 percent of average annual precipitation (Lovich and Beaman 2007). There has been only one report from farther west (the Mojave River). Throughout its range, the Gila monster appears to be most active during or following summer rains.

The RSEP project site is at the western margin of the banded Gila monster's range, and habitat on the site appears to be only marginally suitable. However, its geographic range is poorly known and it often goes undetected even in occupied habitat. Its occurrence probability on the site is low. Staff believes that potentially suitable habitat may be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line, particularly where the alignment crosses rocky hills or mountain foothills.

Rosy Boa (Lichanura trivirgata)

The rosy boa occurs in rocky shrublands from sea level to about 6700 feet elevation. In the coastal regions, rosy boas occur south and west of the major mountain chains, in the interior valleys and mountains of Los Angeles, Riverside, San Bernardino, and Orange counties, southward to the coast in San Diego County and Baja California. In the deserts, rosy boas range throughout most of the Mojave Desert and much of the Colorado Desert, eastward into Arizona. They are active during warm seasons, and are primarily nocturnally. The CDFG Natural Diversity Data Base considers rosy boa a "special animal" but it has no formal status under state or federal Endangered Species Acts. It is managed as a Sensitive Species by the BLM.

Habitat on the RSEP site is only marginally suitable for rosy boa due to the relatively flat topography and lack of boulders or rock crevices where they typically take cover. However, the site is within their geographic range and could be occupied at low density. Staff believes that suitable habitat may be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line, particularly where the alignment crosses rocky slopes and foothills.

Mojave Fringe-Toed Lizard (Uma scoparia)

The Mojave fringe-toed lizard is known almost exclusively from California, primarily in San Bernardino and eastern Riverside Counties, but is also found to the north in southeastern Inyo County and historically to the west in eastern Los Angeles County (Jennings and Hayes 1994). Murphy et al. (2006) identified two genetic lineages of this species. The northern lineage, associated with the Amargosa River drainage system, is under review for federal listing as a threatened or endangered population (USFWS 2008d). The southern lineage is more widespread, ranging through the Mojave River drainage system, Bristol Trough, Clark's Pass (including Palen Lake and Pinto Wash), and the Colorado River sand transport systems (including Rice Valley).

The Mojave fringe-toed lizard is a California Species of Special Concern and BLM Sensitive Species found in arid, sandy, sparsely vegetated habitats and is associated with creosote bush scrub throughout much of its range (Norris 1958; Jennings and Hayes 1994). It is generally restricted to fine, loose, aeolian (windblown) sand habitat, typically with sand grain size no coarser than 0.375 mm in diameter (Turner et al. 1984; Jennings and Hayes 1994; Stebbins 1944). These sands are the most important element of its habitat. It burrows in the sand to avoid predators and to thermoregulate (Stebbins 1944), though it will also seek shelter in rodent burrows. Sand dunes provide its primary habitat, although it can also be found in the margins of dry lakebeds and washes and isolated blow-sand pockets against hillsides (BLM and CDFG 2002).

The Mojave fringe-toed lizard is primarily insectivorous, but also eats leaves, seeds, and buds (Stebbins 1944). It normally hibernates from November to February, and emerges from hibernacula in March or April. The breeding season is April to July, and adult Mojave fringe-toed lizards reach sexual maturity two summers after hatching. Females deposit 2 to 5 eggs in sandy hills or hummocks May through July (Mayhew 1964; Jennings and Hayes 1994). From April to May, while temperatures are relatively cool, it is active during mid-day; from May to September, it is active in mornings and late afternoon, but seeks cover during the hottest parts of the day. Common predators of the Mojave fringe-toed lizard include burrowing owls, leopard lizards, badgers, loggerhead shrikes, roadrunners, various snakes, and coyotes (Jennings and Hayes 1994).

In addition to the aeolian dunes and sandfields where Mojave fringe-toed lizard is best known, it is also found in mixed habitat such as hummocks or pockets of soft sand interspersed with hard-packed sand and less suitable densities and composition of vegetation (Calk and Heaton 2002).

The Mojave fringe-toed lizard is widespread geographically across the Mojave and northern Colorado deserts, but its distribution is highly fragmented because of its

requirement for loose sand, which is patchily distributed (Murphy et al. 2006). Many local populations occur on small patches of sand and consist of relatively few animals. This fragmented distribution leaves local populations vulnerable to extirpation from habitat disturbance, further fragmentation, or stochastic events (Murphy et al. 2006). Aeolian sand habitat is vulnerable to direct and indirect disturbances (Weaver 1981; Beatley 1994; Barrows 1996). Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors will, in turn, affect Mojave fringe-toed lizard habitat and populations (Turner et al. 1984; Jennings and Hayes 1994). Threats include habitat loss or damage from urban and agricultural development, vehicles, and indirect effects such as invasive weeds and increased habitat access by common ravens or other predators. Another important indirect disturbance is the potential disruption of sand source for the dune systems. Dune habitat that is cut off from its sand source will degrade over time as finer sands are blown away, leaving behind smaller dunes composed of coarser-textured sand.

The applicant reported that Mojave fringe-toed lizard is present in the Rice Valley Dunes, within about 0.75 mile of the proposed RSEP site (SR 9009a). The applicant reported no suitable habitat on the proposed solar generation site but noted that Mojave fringe-toed lizards may occur in marginal habitat of sandy washes on the RSEP site. A follow-up habitat assessment (Black 2010) indicated these areas were not conducive to Mojave fringe-toed lizard occupancy. Also, aeolian sand occurs in patches along the proposed generator tie-line alignment (SR 2009a; CH2MHill 2010a; Black 2010). Staff also notes that several sandy desert washes crossing the proposed generator tie-line alignment may provide marginally suitable Mojave fringe-toed lizard habitat. Habitat suitability on the existing 161-kV Parker-Blythe #2 transmission line alignment has not been evaluated, but staff believes that Mojave fringe-toed lizards would be found where the alignment crosses the Rice Valley Dunes and perhaps at other locations along the alignment.

Special-Status Birds

Golden Eagle (Aquila chrysaetos)

Golden eagles are year-round residents throughout most of their range in the western United States. In the southwest, they are more common during winter when eagles that nest in Canada migrate south into the western U.S. They breed from late January through August with peak activity between March and July (Kochert et al. 2002), depending on location. Breeding tends to be earlier in the California deserts than it is farther to the north (Pagel et al. 2010). Migratory patterns are usually fairly local in California where adults are relatively sedentary, but dispersing juveniles sometimes migrate south in the fall. Golden eagles are generally more common in southern California than in the northern part of the state (USFS 2008).

The range of the golden eagle extends throughout the Northern Hemisphere. It is rare in eastern North America and is most common in the west near open spaces that provide foraging opportunities within routine foraging range of cliffs that are used for nesting (Kochert et al. 2002). The golden eagle is a CDFG Fully Protected Species and is a BLM Sensitive Species. Additionally, it is provided federal protection under the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act and is listed as a

Bird of Conservation Concern by the USFWS. Threats include habitat loss or damage due to urbanization, agriculture, hunting, pesticide applications, and power line electrocution. The USFWS and others (USFWS 2009a; Kochert et al. 2002) estimate approximately 30,000 golden eagles in the western U.S., down from an estimated 100,000 in the late 1970s. Survey data from 2003 and 2006 to 2008 indicate a decline of 26 percent since 2003. Climate change is expected to impact golden eagle by increasing drought severity; CO₂ concentrations are expected to exacerbate the spread of invasive weeds, which displace native species and habitats, fuel wild fires, and alter fire regimes.

Golden eagle habitat includes rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional forest and shrub habitats. They prey primarily on lagomorphs and rodents but will also take other mammals, birds, reptiles, and some carrion (Kochert et al. 2002). Golden eagles generally nest in rugged, open habitats with canyons and escarpments, with overhanging ledges, cliffs or large trees as cover.

Absent interference from humans, breeding golden eagle density is limited by either prey density or nest site availability (USFWS 2009a). Breeding season home range sizes in the western United States studies showed an average home range of 20 to 33 square kilometers (7.7 to 12.7 square miles). Sizes varied regionally from 1.9 to 83.3 square kilometers (0.7 to 32.2 square miles; Kochert et al. 2002). Other studies have reported much larger upper limits of home range size. In San Diego County, a study of 27 nesting pairs found breeding ranges to be an average of 36 square miles with a range from 19 to 59 square miles (Dixon 1937). Other studies within and outside the United States include ranges from 9 to 74.2 square miles (McGahan 1968; Watson et al. 1992). The USFWS recommends that inventories for golden eagles should be conducted if suitable nesting, roosting, and foraging habitat are present on a proposed project site or within a 10-mile radius of the site (Pagel et al. 2010). Eagles and other raptors forage more widely outside of the nesting season, since they have no need to return daily to eggs or young at their nests.

The project site provides suitable golden eagle foraging habitat but no suitable nesting habitat. There are three golden eagle nesting territories within a 10-mile radius, in the Turtle, Arica, and West Riverside mountains surrounding the site (Bloom 2010). Nests within these territories were not active in May 2010 (Bloom 2010). However, golden eagles in the Colorado Desert may initiate nesting as early as January (Pagel et al. 2010). Thus, these results may be insufficient to conclude that eagles did not nest locally earlier in the year. Also, even if golden eagle territories may be inactive in one year, there is enough documentation available throughout the range of the species to suggest that territories may be vacant for more than a decade, but they may be used later by the same or different individuals as the habitat and prey species cycle through to more productive years. Therefore, unoccupied territories are considered potentially active in future years.

Golden eagles have not been reported over the project site (SR 2009a; CH2MHill 2010e), but the entire RSEP site, including the proposed generator tie-line alignment, provides suitable foraging habitat. Staff notes, however, that foraging habitat on the site has relatively sparse sign of rabbits, jackrabbits, and other small mammals. Previous

land uses or other unknown factors may cause lower productivity on the site than found more widely throughout the region. Staff expects that golden eagles could forage on the site at any time of year. Foraging birds could include mated pairs using the surrounding nesting territories; or, if the territories are inactive, unmated golden eagles or adult birds whose nests may have failed, could forage over the site during breeding season. Foraging would be somewhat more common during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges. Staff believes that similar suitable foraging habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line. The transmission line would be unlikely to cross potential nesting sites due to the rugged topography where they are found. However, parts of the alignment may be within visual range of nest sites.

Western Burrowing Owl (Athene cunicularia)

The burrowing owl is a small, terrestrial owl of open country. Burrowing owls favor flat, open annual or perennial grassland or gentle slopes and sparse shrub or tree cover (Clark and Plumpton 2005). They use the burrows of ground squirrels and other rodents for shelter and nesting (Martin 1973). In California, burrowing owls are found in close association with California ground squirrels (Coulombe 1971). The burrows serve as nesting and refuge sites for the owls, and ground squirrel activity maintains open, low vegetation conditions, which serve as foraging habitat and allow burrowing owls to see potential avian predators (Haug et al. 1993). Habitats lacking ground squirrel populations are usually less suitable for burrowing owls, although the owls can use alternate burrow sites or man-made features (such as drain pipes or debris piles) as burrows in suitable open habitat, even where no ground squirrels are present. Burrowing owls are semi-colonial nesters, and group size contributes significantly to site constancy by breeding burrowing owls (Haug et al. 1993). The nesting season, as recognized by the California Burrowing Owl Consortium (CBOC 1993), is 1 February through 31 August.

In the California deserts, burrowing owls generally occur at low densities in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant (Gervais et al. 2008). Suitable foraging habitat and potential nesting habitat occurs throughout the RSEP project area.

The burrowing owl is as a California Species of Special Concern and is a BLM Sensitive Species. Additionally, it is provided federal protection under the Migratory Bird Treaty Act and is listed as a Bird of Conservation Concern by the USFWS. Threats include habitat loss or damage and a reduction in prey base due to urbanization, mining, trash disposal, pesticide use, grazing activities, off-highway vehicle use, invasion of non-native plants, and brush control activities (BLM et al. 2005).

Burrowing owls occur on the RSEP solar generator site and proposed transmission line alignment. The applicant estimates that as many as seven single burrowing owls or nesting pairs may occur on the project site (five on the solar generator site and another two on the generator tie-line alignment) (CH2MHill 2010h). A total of nine burrows with burrowing owl sign were reported from surveys conducted for the RSEP in 2009 and 2010 (SR 2009a; CH2MHill 2010e). The burrows showed evidence of prior activity but

burrowing owls were not seen during the field surveys. These survey results found no evidence of breeding and suggest that burrowing owls use the RSEP area primarily for wintering, in the months prior to the field surveys. However, it is also possible that they breed there during some years. Staff believes that suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Prairie Falcon (*Falco mexicanus*)

Prairie falcons breed throughout most of California, with the exception of the northwest corner of the state and along the immediate coast (Steenhoff 1998). They are uncommon year-around residents, ranging from the southeastern deserts northwest through the Central Valley and along the inner Coast Ranges and Sierra Nevada. Prairie falcons are associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert shrublands (Polite and Pratt 2005). Prairie falcon biology is much like that described above for golden eagles, except that birds comprise a much larger proportion of prairie falcon prey (Johnsgard 1990).

The prairie falcon was a CDFG Species of Special Concern, but was removed from this list in 2008 in response to data indicating populations in California are stable or potentially increasing (Shuford and Gardali 2008). The prairie falcon is now on CDFG's watch list. Historic impacts have included eggshell thinning from pesticide residues, conversion of habitat to other uses, robbing of eyries by falconers, and shooting (BLM and CDFG 2002).

A prairie falcon was reported over the site during spring 2009 (Appendix 5.2C of SR 2009a) and prairie falcon nest sites are known from the Arica Mountains and Little Maria Mountains, bordering Rice Valley (CDFG 2010a; Bloom 2010). The date of the observation at the RSEP site suggests that this bird may have been foraging to feed young at a nest somewhere in the region. There is no suitable nesting habitat on the site; however, suitable prairie falcon foraging habitat occurs throughout the project site and surrounding area. Staff believes that similar suitable foraging habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line. The transmission line would be unlikely to cross potential nesting sites due to the rugged topography where they are found. However, parts of the alignment may be within visual range of nest sites.

Wintering Raptors

Several migratory raptor species, including Cooper's hawk, sharp-shinned hawk, ferruginous hawk, northern harrier, merlin, golden eagle, and Swainson's hawk spend winters in the southern California deserts or, (for Swainson's hawk) migrate through the region en route to wintering habitat farther south. Outside their breeding seasons, these raptors need not return to their nests to feed young or tend eggs. Thus, they are able to forage over wide areas, where they capture birds or small mammals. Suitable winter or migratory season foraging habitat for all of these raptors is available throughout the project site, and all are expected to forage there on a seasonal basis, though perhaps rarely. Staff believes that similar suitable foraging habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Loggerhead Shrike (Lanius ludovicianus)

Loggerhead shrikes are uncommon residents throughout most of the southern portion of their range, including southern California. In southern California they are generally more common in interior desert regions than along the coast (Humple 2008), though breeding bird survey data indicate a significant population decline in the Colorado Desert. In the deserts, they appear to be most numerous in flat or gently sloping bajadas and shrubland margins, especially along the eastern slopes of mountainous areas (Humple 2008). Loggerhead shrikes initiate breeding in February and may continue with raising a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood (Yosef 1996).

Loggerhead shrikes are found in lowland, open habitats where suitable perches are present (e.g., trees or shrubs or, where these are absent, fence posts or other substitutes). Typical habitats include creosote bush or sagebrush shrublands other desert habitats, grasslands, chaparral and riparian area margins, croplands, and areas characterized by open scattered trees and shrubs. In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef 1996).

A loggerhead shrike was observed onsite during the applicant's 2009 desert tortoise surveys (Appendix 5.2C of SR 2009a). Suitable habitat is found throughout the project site and surrounding area. Staff concludes that loggerhead shrike likely nests and forages throughout the site. Staff believes that suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Crissal Thrasher (Toxostoma crissale)

Crissal thrasher occurs throughout the Colorado Desert and much of the east Mojave Desert. It typically inhabits dense brush along desert washes, mesquite thickets, and low-desert chaparral. It is often found in desert riparian habitats, such as along the Colorado River, where its habitat is threatened by land use conversion and possibly by invasive species such as tamarisk (Fitton 2008a). It is a CDFG Species of Special Concern. No suitable habitat occurs on the proposed RSEP solar generation site, though the proposed generator tie-line alignment crosses numerous washes which may support Crissal thrashers. It is secretive and patchily distributed in California. It has not been reported on the site or the tie-line alignment but staff concludes that Crissal thrasher could nest and forage on the tie-line alignment. Staff believes that suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Le Conte's Thrasher (Toxostoma lecontei)

Le Conte's thrashers inhabit some of the hottest and driest habitats in the arid southwest, including the deserts of southeastern California where it occurs year-round. Its preferred habitats include sparse desert scrub, alkali desert scrub, and desert succulent scrub. Habitats generally are on gentle to rolling slopes associated with dry desert washes, such as found in the project area. Nests are typically placed in prickly vegetation such as cacti or thorny shrubs (Sheppard 1996). Le Conte's thrasher

population densities are among the lowest of passerine (perching) birds, estimated at fewer than five birds per square kilometer in optimal habitats (Fitton 2008b). Due to this low population density, Le Conte's thrashers often are not detected during field surveys, even on sites where they are present. The San Joaquin Valley population is a CDFG Species of Special Concern, though populations elsewhere in the state appear to be stable (Fitton 2008b). Le Conte's thrasher was not reported on the project site (SR 2009a), though suitable habitat is present throughout the site and surrounding area. Staff concludes that it may occur year-round on or adjacent to the project site. Staff believes that suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Black-Tailed Gnatcatcher (Poliioptila melanura)

Black-tailed gnatcatchers generally nest in mesquite thickets or desert riparian scrub (e.g., in smoke tree or catclaw acacia). It was not reported on the project site or transmission line alignment, though suitable habitat is present, particularly along the proposed generator tie-line alignment. It is considered common in the lower Colorado River watershed (most of Arizona and easternmost California; Rosenberg et al. 1991). Black-tailed gnatcatcher is on CDFG's list of Special Animals (CDFG 2009b), but its Natural Diversity Data Base ranking of S4 indicates that it is apparently secure in California. Staff concludes that it may occur year-round on or adjacent to the project site. Staff believes that suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Special-Status Mammals

Special-Status Bats

Knowledge of bat distributions and occurrences is sparse. Several special-status bats (pallid bat, western mastiff bat, California leaf-nosed bat, pocketed free-tailed bat, big free-tailed bat, and Townsend's big-eared bat) could use the site for foraging. Roosting habitat for these species varies, but all roost in habitats not available on the project site, such as caves, tunnels, buildings, crevices, foliage of trees, or crevices in cliffs and rock outcrops (see **Biological Resources Table 4**). The majority of adverse impacts to bat populations in the region result from disturbance of roosting or hibernation sites, especially where large numbers of bats congregate; physical closures of old mine shafts, which eliminates roosting habitat; elimination of riparian or desert wash microphyll vegetation which is often productive foraging habitat; more general habitat loss or land use conversion; and agricultural pesticide use which may poison bats or eliminate their prey-base (Pierson & Rainey 1998; Gannon 2003). Bat life histories vary widely. Some species hibernate during winter, or migrate south. During the breeding season, bats generally roost during the day, either alone or in communal roost sites, depending on species. All bats addressed in **Biological Resources Table 4** are insectivorous, catching their prey either on the wing or on the ground. Some species feed mainly over open water where insect production is especially high, but others forage over open shrublands such as found on the project site. Staff saw no evidence of roosting bats at the railroad crossings just north of the project site. No special-status bats are expected to roost on-site, but several species could forage over the site. Staff believes that suitable habitat for special status bats could be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Colorado Valley Woodrat (*Neotoma albigula venusta*)

Colorado Valley woodrats are found in arid regions of southwestern Arizona and extreme southeastern California (Ingles 1965). Their habitats include creosote bush and other arid shrublands and cactus flats in desert areas, including some areas with lava substrates. Dens are usually constructed of cactus pads and woody material from trees and shrubs; they may also nest in rock crevices or burrows under boulders (Mares 1999). In California, this woodrat is closely associated with dense patches of beavertail cactus (*Opuntia basilaris*) and mesquite (*Prosopis* spp.) (Williams 1986), and often digs burrows under mesquite trees (Ingles 1965). Colorado Valley woodrat is not listed or proposed for listing as threatened or endangered and is not ranked as a species of special concern by CDFG. Furthermore, no evidence indicating that the species was threatened was found by Williams (1986), and no Colorado Valley woodrat account is included in a more recent compilation of California mammals of special concern or watch list (Bolster 1998). However, the CDFG status S1S2 indicates that Colorado Valley woodrat distribution is very restricted in California, possibly to the point of endangerment. No dense stands of mesquite or beavertail cactus were noted on the project site and the probability that Colorado Valley woodrat may occur there is low. Staff believes that suitable habitat could be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line, particularly at wash crossings.

Nelson's Bighorn Sheep (*Ovis canadensis nelsoni*)

Historically, bighorn sheep ranged widely throughout western North America and were found as far east as Nebraska. Nelson's bighorn sheep, one of three recognized subspecies, are known from the Transverse Ranges, California Desert Ranges, Nevada, northern Arizona, and Utah. It is a BLM Sensitive Species. Threats to Nelson's bighorn sheep include habitat loss or degradation; barriers to local or regional movement such as fencing, drainage canals, highways, and aqueducts; and competition for water with burros and livestock (BLM et al. 2005). Disease spread by domestic livestock has also impacted bighorn sheep in the California desert and continue to threaten populations (BLM and CDFG 2002). Small, isolated populations are at risk of unsustainable predation by mountain lions.

Bighorn sheep are typically found on open, rocky, steep areas used for escape cover and shelter, with available water and herbaceous vegetation for forage. Bighorn sheep are agile in steep, rocky terrain, allowing them to escape predators such as coyotes, golden eagles, and mountain lions (Wehausen 1992). Most Nelson's bighorn sheep populations live between 300 and 4,000 feet in elevation where the annual precipitation is less than 4 inches and daily high temperatures average 104 °F in the summer (Beacham 2000).

Bighorn sheep primarily browse shrubs and graze on native grasses throughout the year. The pulp and fruits of various cacti are eaten during the dry season (Beacham 2000). Bighorn sheep have large rumens relative to their body size, which allow digestion of grasses, even in a dry state (Hanly 1982). This gives them flexibility to select diets that optimize nutrient content from available forage. Consequently, bighorn sheep feed on a large variety of plant species and diet composition varies seasonally and among locations. Nutritional quality of available forage varies greatly during the year; it is most predictably high in late winter and spring (Wehausen 1992), and this period

coincides with the peak of lambing. The lambing season of Nelson's bighorn sheep is typically between January and April (BLM and CDFG 2002).

Surface water is an essential habitat component for Nelson's bighorn sheep. The sheep congregate near dependable water sources from May through October, due to a combination of breeding activities and diminishing water sources (Beacham 2000). It is common for males and females to segregate and occupy different habitats outside the breeding season (Bleich et al. 1997). Females tend to choose particularly steep, safe areas for bearing and initial rearing of lambs. Areas associated with ridge benches or canyon rims adjacent to steep slopes or escarpments are commonly preferred lambing areas if available. Males frequently occupy much less precipitous habitat during the lamb-rearing season (Bleich et al. 1997). Alluvial fan areas are also used for breeding and feeding activities (Beacham 2000).

In the California deserts, Nelson's bighorn sheep occur in partially isolated, localized populations associated with particular mountain ranges. Taken together, these local populations are considered a "metapopulation." A metapopulation is a group of subpopulations that are connected, meaning that animals move from one subpopulation to another. This interchange prevents the subpopulations from being completely isolated; however, these local populations may be comprised of only a few animals and are always vulnerable to local demographic fluctuation and extinction. While individual populations may suffer periodic significant declines, they also may be repopulated as bighorn sheep disperse among mountain ranges by crossing the intermittent valleys. Male bighorn (rams) may disperse among mountain ranges (thus, among subpopulations) during the breeding season (Krausman et al. 1999). Females (ewes) also move among subpopulations, though not as often as the rams. In the California desert, bighorn sheep must remain within access of drinking water during summer. But extensive cool-seasonal dispersal among subpopulations, across valleys, alluvial fans, and bajadas, has been well documented (e.g., Bleich et al. 1990). These dispersal events can serve to recolonize locally extinct populations. Fragmentation of habitat and the loss of movement corridors among partially isolated mountain ranges, including the 37 recognized sub-populations within the NECO planning area, can lead to extirpation of individual subpopulations. The Turtle Mountains to the north of the project site, and the Maria Mountains to the south, are probably occupied by Nelson's bighorn sheep populations, and smaller ranges in the area may become reoccupied by natural immigration or restocked by CDFG (BLM 2007). Conservation and management of habitat corridors is necessary to the Nelson's bighorn sheep's metapopulation biology.

The proposed RSEP project site is on a lower bajada where Nelson's bighorn sheep may range during cool seasons, but it provides no onsite water supply, nor is it near enough to a surface water source for regular warm-season foraging. Vegetation on the site is generally open, and no suitable dense thickets for shaded escape cover are available. Thus, the RSEP site is unlikely to serve as important bighorn sheep habitat. However, Nelson's bighorn sheep are likely to use habitat on the site intermittently during winter, especially as a movement corridor among regional mountain ranges. Wildlife movement is discussed further under **Impacts to Wildlife Movement**, below. Staff believes that suitable foraging and movement habitat for Nelson's bighorn sheep would be found along portions of the length of Western's existing Parker-Blythe #2 transmission line.

Burro Deer (Odocoileus hemionus eremicus)

The burro deer (also known as the desert mule deer) is a subspecies of mule deer endemic to southeastern California, through southern Arizona and New Mexico, and desert regions of mainland Mexico (Mackie et al. 2003). Burro deer tend to have larger home ranges than mule deer in other areas, probably because their desert habitat produces less food. Their home ranges contract during summer, probably because the deer must remain fairly near dependable water sources. Their habitats include desert mountain ranges, bajadas, and flats. The mountainous areas provide favored fawning habitat and more reliable water sources (springs and bedrock sinks) than the flats (Fox and Krausman 1994). Further, montane vegetation provides greater nutritional value than creosote scrub on the flats and bajadas. Dense vegetation is an important habitat element year-round for shaded cover and protection from predators (Tull et al. 2001).

Burro deer require drinking water and generally drink daily during summer. Thus their summer range is limited to areas within a few kilometers of water sources. The proposed RSEP project site is on a lower bajada where burro deer may range during cool seasons, but it provides no onsite water supply, nor is it near enough to a surface water source for regular warm-season foraging. Vegetation on the site is generally open, and no suitable dense thickets for shaded escape cover are available. Thus, the RSEP site is unlikely to serve as important burro deer habitat. However, burro deer are likely to use habitat on the site intermittently during winter, especially as a movement corridor among regional mountain ranges. Wildlife movement is discussed further under **Impacts to Wildlife Movement**, below. Staff believes that suitable foraging and movement habitat for Burro deer would be found along portions of the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Yuma Mountain Lion (Felis concolor browni)

The Yuma mountain lion is recognized by some authors, but not all, as a distinct subspecies of the widespread North American mountain lion (Pierce and Bleich 2003). It is recognized by CDFG as a Species of Special Concern (CDFG 2009b). Interpretations of its geographic range vary, but by any account it is limited to the Sonoran Desert in southern California and perhaps east into Arizona and south into Mexico (Kucera 1998). The Yuma mountain lion's life history is poorly documented. It is known largely from the bottomlands and foothills of the Colorado River Valley. Its principal prey are burro deer and bighorn sheep, described above and its range and habitat generally coincide with theirs (Cashman et al. 1992). Mountain lions are rare in the lower Colorado River Valley. For example, Germaine et al. (2000) were able to confirm sign of only three individuals during 687 person-days of field survey effort in southwestern Arizona.

There is some concern that the Colorado Desert region may not support a viable mountain lion population, and that lions found in the eastern low desert have dispersed there from surrounding areas. Habitat loss is a serious concern for Yuma mountain lion, for two reasons. First, declining habitat availability and increasing habitat fragmentation affect its long-term population viability. Second, as habitat loss and fragmentation affect burro deer and bighorn sheep, any reduction of the available prey could lead to an insufficient prey base for a viable mountain lion population (Kucera 1998).

As described above for burro deer and Nelson's bighorn sheep, the RSEP site is unlikely to serve as important Yuma mountain lion habitat. However, mountain lions may use habitat on the site intermittently during winter, especially as a movement corridor among regional mountain ranges. Wildlife movement is discussed further under **Impacts to Wildlife Movement**, below. Staff believes that suitable foraging and movement habitat for Yuma mountain lion would be found along portions of the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

American Badger (Taxidea taxus)

American badgers are now uncommon, permanent residents throughout most of the state, including the Colorado Desert. It is recognized by CDFG as a Species of Special Concern. Badger numbers have declined drastically in California in the 20th century due largely to agricultural and urban development, direct and secondary poisoning, and shooting and trapping for control (Williams 1986), though these factors probably have not been important threats to badgers in the Colorado Desert. They are found in open shrubland, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush and sagebrush shrublands. They drink surface water where available but apparently do not require drinking water (Laudenslayer 2007). Mating occurs in late summer or early fall and two to three young are born in March or April (Long 1973). Badgers are fossorial, digging large burrows in dry, friable soils and will use multiple dens/cover burrows within their home range. They have several dens within their home range and move among them daily, although they can use a den for a few days at a time (Sullivan 1996). Cover burrows are an average of 30 feet in length and are approximately 3 feet in depth. Natal dens are larger and more complex than cover dens. Badger home range sizes are dependent upon prey availability and other habitat characteristics. In general, home ranges are several hundred acres in size, though they would likely be larger in the Colorado Desert due to low prey densities. American badger is not known from the project site and, if an active den were to occur on-site, it presumably would have been detected during desert tortoise surveys (Appendix 5.2C of SR 2009a). Even so, badgers could occur in the area, at least during dispersal, and suitable desert scrub habitat is present throughout the project area. Staff believes that suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Desert Kit Fox (Vulpes macrotis arsipus)

The desert kit fox can be found in much of the same habitats as the badger. Desert kit fox is not listed as a special-status species by the State of California or the USFWS, but it is protected under Title 14, California Code of Regulations (Title 14, Section 460). Kit foxes are primarily nocturnal, and inhabit open level areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and rearing pups. Kit foxes typically produce one litter of about four pups per year, with most pups born February through April (Ahlborn 2000). Desert kit fox is present within the project site (Appendix 5.2C of SR 2009a), and would be expected throughout the site. Estimates of kit fox home range size vary widely, and population densities fluctuate drastically depending on the prey availability, predation pressures, and other factors (Zoellick and Smith 1992; White and Garrott 1999; Arjo et al. 2003). In addition, many kit fox home ranges overlap considerably, often by 20 percent or more (Zoellick and Smith 1992). Therefore, it is

difficult to estimate the actual number of desert kit foxes that may occupy the project site. Staff believes that suitable habitat would be found along the length of Western's existing 161-kV Parker-Blythe #2 transmission line.

Jurisdictional Waters

The following text describes jurisdictional streambeds on the proposed solar generator site and associated generator tie-line alignment and substation. No field surveys or streambed delineation of the Western Parker-Blythe #2 transmission line have been provided for staff's review. Based on a review of online aerial images, staff believes that the transmission line crosses numerous desert washes and that project activities such as road widening, pole access, and OGHW installation that may occur within those washes may be subject to regulation under Section 1600 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act. Absent baseline data for this project component, staff does not evaluate potential project impacts to those resources here.

The project site is located on a bajada on the north side of Rice Valley that supports numerous drainages that flow from the surrounding mountains. Rice Valley is a drainage sink with no broader hydrological connectivity. Streams, washes, and playas are dry most of the year with surface water present only after storm events. There are no perennial surface water sources and there is no evidence that a lake ever formed in the valley during wetter climatic periods (SR 2009a; Attachment DR60-1 of CH2MHill 2010a).

Due to the arid conditions of the area, most of the surface waters in the region are ephemeral streams. All channels observed in the RSEP site and crossed by the proposed transmission line are ephemeral (SR 2009a; Attachment DR60-1 of CH2MHill 2010a). These ephemeral streams are typically dry washes that only flow briefly, in response to precipitation. Regional storms, which generally occur in the winter months, are typically of low intensity, but can create short-lived ephemeral streams and cause significant flooding in the valley. Intense summer thunderstorms can also produce flooding in the low-lying valleys. During most storms, ephemeral streams may only run surface water for a couple of hours, though some may run for several days during an uncommon series of several heavy winter storms.

Wetlands are not present on the solar generator site or along the proposed generator tie-line alignment. U.S. Geological Survey (USGS) maps of the project area show four intermittent, blue-line channels in the project area. Two blue-line channels enter the property from north of the RSEP site, one at the northwest corner and one near the northeast corner. These drainages were rerouted to the west and east, respectively, by levees to protect the airfield. These levees have breached since then, now allowing runoff to flow across the property. Two additional blue-line ephemeral channels originate in the RSEP facility boundary and flow south towards the bottom of Rice Valley (Attachment DR60-1 of CH2MHill 2010a).

In addition to the four ephemeral, blue-line channels, there are numerous other desert washes that originate on-site and drain southward across the RSEP site. All of these channels are ephemeral (Attachment DR60-1 of CH2MHill 2010a). In total there are

75.4 acres of state-jurisdictional streambeds (i.e., ephemeral washes) within the 1410 acre solar generator site. Staff concludes all of this streambed acreage would be directly or indirectly affected by project construction and operation. In addition, there are 2.1 acres of state-jurisdictional streambeds outside the perimeter fence that would be directly affected by permanent or long-term project components (i.e., channel diversions, access road, and temporary logistics /laydown area).

The generator tie-line corridor crosses two intermittent blue-line channels within the RSEP facility boundary and seven between the boundary and where the line intersects Rice Valley Road (Attachment DR60-1 of CH2MHill 2010a). These channels flow in a south-southwest direction until they lose definition near the bottom of Rice Valley. In total there are approximately 5.3 acres of state-jurisdictional streambeds (i.e., ephemeral washes) within the generator tie-line alignment that could be affected by project construction. Acreage and character of any jurisdictional waters on Western's existing Parker-Blythe #2 transmission line are unknown.

Field studies conducted by the applicant found that the USGS mapping accurately reflects conditions on the solar generator site, generator tie-line alignment, and substation site. None of the drainage features are tributary to a traditionally navigable water. They do not cross state lines or Tribal lands. The applicant concluded that the drainage features that cross through and originate on the RSEP project site, as well as those crossed by the transmission line route, are isolated intrastate waters with no apparent interstate or foreign commerce connection. As such, the Army Corps of Engineers (USACE) has determined that there are no waters of the US subject to jurisdiction under the Clean Water Act on the project site (USACE 2010). The applicant has submitted a Lake and Streambed Alteration Notification to CDFG and Energy Commission staff (CH2MHill 2010f) for proposed alterations at the solar generator site, generator tie-line, and interconnector substation. State or federally jurisdictional streambeds or wetlands that may be located along the existing 161-kV Parker-Blythe transmission line have not been delineated and are not evaluated in this SA/DEIS.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Biological Resources Table 5 summarizes the impacts to biological resources resulting from construction and operation of the RSEP solar generator, generator tie-line, and interconnector substation, and provides conditions of certification to mitigate these impacts. Staff's recommended conditions of certification are discussed in more detail later in this analysis.

Biological Resources Table 5
Summary of Solar Generator, Generator Tie-Line, and Interconnector Substation Impacts/Mitigation

Biological Resource	Impact/Mitigation
Colorado Desert Plant Communities and Wildlife Habitat	<p>Impact: Permanent and long-term loss and fragmentation of a total of approximately 1,770 acres of native vegetation; potential direct impacts to terrestrial wildlife by heavy equipment and grading; increased risk of road kill; increased disturbance/dust to nearby vegetation and wildlife; spread of non-native invasive weeds.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); revegetation (BIO-10); weed management (BIO-11); desert tortoise compensatory mitigation (BIO-16).</p>
Special-Status Plants	<p>Impact: Potential loss and fragmentation of habitat, potential loss of individuals.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); weed management (BIO-11); surveys for rare plants prior to ground disturbance and avoidance of rare plants (BIO-12); compensation if needed for rare plant habitat (BIO-12).</p>
Common Wildlife, including Migratory and Resident Birds	<p>Impact: Potential mortality or disturbance during construction and operation, loss or fragmentation of habitat, displacement, disruption of movement, poisoning or drowning at evaporation ponds.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); weed management (BIO-11); indirect benefit from desert tortoise compensatory mitigation (BIO-16); Evaporation Pond Design, Monitoring, and Management Plan (BIO-24).</p>
Waters of the State / Waters of the US	<p>Impact: Permanent and long-term impacts to approximately 82.8 acres of waters of the State (excluding additional jurisdictional waters on the Parker-Blythe #2 Transmission Line); no jurisdictional waters of the US are present on the solar generator site, generator tie-line alignment, or interconnector substation site. Locations and potential impacts to state or federally jurisdictional waters on the Parker-Blythe #2 transmission line are unknown.</p> <p>Mitigation: Acquisition of offsite State jurisdictional waters, the implementation of Best Management Practices to protect drainages, elimination of proposed detention basins, and nonnative vegetation removal (BIO-22); conservation and enhancement of waters of the State occurring on desert tortoise compensatory mitigation lands (BIO-16).</p>
Special-Status Wildlife	
Cheeseweed Owlfly	<p>Impact: Loss or fragmentation of habitat, if present.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16).</p>

Biological Resource	Impact/Mitigation
Couch's Spadefoot	<p>Impact: Loss or fragmentation of habitat, if present.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16).</p>
Mojave Fringe-Toed Lizard	<p>Impact: Loss or fragmentation of habitat, if present in project area.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10).</p>
Gila Monster and Rosy Boa	<p>Impact: Potential mortality and disturbance; loss of habitat and habitat fragmentation, if present.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); capture and relocation if found within work areas (BIO-14); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16).</p>
Desert Tortoise	<p>Impact: Habitat loss and fragmentation; disruption of movement corridors; potential take of individuals during operation and construction; increased risk of predation from ravens and other predators; increased road kill hazard from construction and operations traffic.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); clearance surveys and exclusion fencing (BIO-14); Translocation Plan (BIO-15); off-site habitat acquisition and conservation (BIO-16); Raven Monitoring, Management, and Control Plan (BIO-17).</p>
Golden Eagle	<p>Impact: Loss of foraging habitat; disruption of foraging activities; collisions or incineration; electrocution.</p> <p>Mitigation: General avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16); golden eagle nest site surveys (BIO-18); Avian Protection Plan and monitoring bird impacts from solar technology (BIO-25).</p>
Prairie Falcon	<p>Impact: Loss of foraging habitat; disruption of foraging activities; collisions or incineration; electrocution.</p> <p>Mitigation: General avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16); Avian Protection Plan and monitoring bird impacts from solar technology (BIO-25).</p>

Biological Resource	Impact/Mitigation
Burrowing Owl	<p>Impact: Loss of wintering burrow sites; potential loss of nest, eggs, or young if owls breed onsite; potential loss of breeding and/or foraging habitat; potential disturbance of nesting and foraging activities for populations on and near the project site; exposure to toxins in the evaporation ponds</p> <p>Mitigation: Implement burrowing owl impact avoidance and mitigation measures; pre-construction surveys; detection and avoidance of active burrows and, if necessary passive relocation measures, including creation of artificial burrows for displaced individuals; and burrowing owl habitat compensation (BIO-19); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16).</p>
Other Migratory/Special-Status Birds Loggerhead Shrike Le Conte's Thrasher Crissal Thrasher Black-Tailed Gnatcatcher	<p>Impact: Disturbance of nesting activities; potential loss of nest, eggs, or young; loss of breeding and foraging habitat; potential mortality due to collisions and/or incineration with solar infrastructure; exposure to toxins in the evaporation ponds.</p> <p>Mitigation: General avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); conduct pre-construction nesting surveys, implement avoidance measures (BIO-13); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16); Avian Protection Plan and monitoring bird impacts from solar technology (BIO-25); Evaporation Pond Design, Monitoring, and Management Plan (BIO-24).</p>
Bird Collisions, Electrocution, Incineration	<p>Impact: Avian species, including special-status species, could be subject to mortality due to collisions and/or electrocution on project transmission lines and collisions and/or incineration with heliostats and the central receiving tower.</p> <p>Mitigation: Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) <i>Suggested Practices for Avian Protection on Power Lines</i> (APLIC 2006) and <i>Mitigating Bird Collisions with Power Lines</i> (APLIC 2004) (BIO-8); Avian Protection Plan and monitoring bird impacts from solar technology (BIO-25).</p>
Nelson's Bighorn Sheep, Burro Deer, and Yuma Mountain Lion	<p>Impact: Habitat loss and fragmentation; disturbance from construction activities, noise, and lighting; interference with movement and behavioral modifications due to human presence.</p> <p>Mitigation: Avoidance and minimization measures (BIO-1 through BIO-9); restoration/compensation (BIO-10); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16).</p>
American Badger and Desert Kit Fox	<p>Impact: Potential loss and fragmentation of habitat, loss of foraging grounds, crushing or entombing of animals during construction.</p> <p>Mitigation: Conduct pre-construction surveys and implement avoidance measures for American badger and desert kit fox (BIO-20); potential indirect benefit through desert tortoise compensatory mitigation (BIO-16).</p>

Biological Resource	Impact/Mitigation
Special-Status Bats	<p>Impact: No significant impact.</p> <p>Mitigation: None recommended; anticipated benefit through Avian and Bat Protection Plan and monitoring bird impacts from solar technology (BIO-25).</p>
Wildlife Movement Corridors	<p>Impact: Interference with wildlife movement across project site due to permanent exclusion fencing.</p> <p>Mitigation: Redesign logistics and lay down area to provide buffer between project fence and SR-62 during construction (BIO-21).</p>

Four of staff's recommended Conditions of Certification would require the Project owner to acquire compensation lands to mitigate the Project's impacts to biological resources. Detailed discussion of compensation habitat is provided in text that follows and in Conditions of Certification cited here. The most significant of these is **BIO-16**, Desert Tortoise Compensatory Mitigation. The others are **BIO-12**, **BIO-19**, and **BIO-22**. **BIO-12** (Special-Status Plant Impact Avoidance and Minimization) provides the option of mitigating impacts to rare plants that may be discovered on the site during late-season botanical surveys through habitat compensation. **BIO-19** (Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures) would require compensation for Project impacts to this animal. **BIO-22** (Streambed Impact Minimization and Compensation Measures) would require compensation for state-jurisdictional streambed acreage impacted by the project. In each of these conditions, staff recommends a financial security to ensure adequate funding to acquire and manage the compensation lands. Staff recommends that this security should be equal to staff's estimated costs for habitat compensation and management. Staff recognizes that some potential compensation lands may support more than one of these resources, and staff recommends that, wherever applicable, the Project owner should seek compensation lands meeting selection criteria for more than one of these resources, as described in these Conditions of Certification, below. However, pending acquisition of compensation lands, staff recommends separate securities for each resource.

Staff has calculated the acreage and estimated costs for desert tortoise compensation lands, as described in Condition of Certification **BIO-16**. Staff provides estimates of acreage and costs for burrowing owl habitat compensation in **BIO-19** and for streambed compensation in **BIO-22**. Any potential compensation acreage for rare plants, pursuant to **BIO-12**, would be determined upon completion of late-season field surveys and cannot be estimated at this time. Staff anticipates that compensation lands for burrowing owls, rare plants, and streambeds would be "nested" within desert tortoise compensation lands, avoiding necessity for additional compensation lands. However, further compensation lands may be required dependent upon the extent of state jurisdictional waters on the desert tortoise compensation lands. Therefore, staff does not recommend "nesting" financial securities for these compensation lands. **Biological Resources Table 6**, below, presents the basis for staff's compensatory cost estimates in each of these recommended conditions of certification.

Biological Resources Table 6
Habitat Compensation Cost Estimates: Conditions of Certification: BIO-12,
BIO-16, BIO-19 and BIO-22 ¹

	Task	Cost
1.	Land Acquisition	\$500 per acre ²
2.	Level 1 Environmental Site Assessment	\$3,000 per parcel ³
3.	Appraisal	\$5,000 per parcel
4.	Initial site work - clean-up, enhancement , restoration	\$250 per acre ⁴
5.	Closing and Escrow Costs – 2 transactions at \$2,500 each; landowner to 3 rd party and 3 rd party to agency	\$5,000 per parcel
6.	Biological survey for determining mitigation value of land (habitat based with species specific augmentation)	\$20,000 per parcel
7.	3 rd party administrative costs - includes staff time to work with agencies and landowners; develop management plan; oversee land transaction; organizational reporting and due diligence; review of acquisition documents; assembling acres to acquire....	10% of land acquisition cost (#1)
8.	Agency costs to review and determine accepting land donation - includes 2 physical inspections; review and approval of the Level 1 ESA assessment; review of all title documents; drafting deed and deed restrictions; issue escrow instructions; mapping the parcels....	15% of land acquisition costs (#1) × 1.17 (17% of the 15% for overhead)
<i>SUBTOTAL A - Acquisition & Initial Site Work</i>		
9.	Long-term Management and Maintenance (LTMM) Fund - includes land management; enforcement and defense of easement or title [short and long term]; monitoring....	\$1,450 per acre ⁵
<i>SUBTOTAL B - Acquisition, Initial Site Work, & LTMM</i>		
NFWF Fees		
10.	Establish the project specific account	\$12,000
11.	Pre-proposal Modified RFP or RFP processing ⁶	\$30,000
12.	NFWF management fee for acquisition & initial site work	3% of SUBTOTAL A
13.	NFWF Management fee for LTMM Fund	1% of LTMM Fund
<i>TOTAL for deposit in REAT-NFWF Project Specific Account</i>		

1. Estimates prepared in consultation with CDFG, USFWS, and BLM. All costs are best estimates as of summer 2010. Actual costs will be determined at the time of the transactions and may change the funding needed to implement the required mitigation obligation. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.

2. Generalized estimate taking into consideration a likely jump in land costs due to demand, and an 18-24 month window to acquire the land after agency decisions are made. If the agencies, developer, or 3rd party has better, credible information on land costs in the specific area where project-specific mitigation lands are likely to be purchased, that data overrides this general estimate. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.

3. For the purposes of determining costs, a parcel is 160 acres (based on input from CDD).

4. Based on information from CDFG.

5. Estimate for purposes of calculating general costs. The actual long term management and maintenance costs will be determined using a Property Assessment Report (PAR) tailored to the specific acquisition.

6. If determined necessary by the REAT agencies if multiple 3rd parties have expressed interest; for transparency and objective selection of 3rd party to carry out acquisition.

Overview of Impacts to Vegetation and Wildlife

Construction of the RSEP would result in the permanent land use conversion of native vegetation communities and potential loss of special-status plant and animal species. Permanent and long-term habitat loss as defined by staff involves impacts that would not recover within 5 years. The RSEP would have long-term impacts associated with project features (e.g., solar generator site, new interconnector substation, upgrades to the existing 161-kV Parker-Blythe #2 transmission line, new generator tie-line construction, new access roads, altered drainage features, and required maintenance activities that would routinely disturb wildlife and vegetation) that would continue throughout the life of the project, as well as habitat degradation that would persist for decades following project closure.

Impacts during Construction

Construction Impacts to Vegetation

Impact analyses typically characterize effects to plant communities as temporary or permanent. Permanent impacts generally refer to areas to be paved or otherwise precluded from most natural habitat function throughout the life of a proposed project. Temporary impacts generally refer to areas to be disturbed during project construction, but allowed to return to a more natural condition after initial construction disturbance. Mitigation ratios for temporary impacts may be less than those for permanent impacts, especially if revegetation or ecological restoration is employed. In the desert ecosystem, the interpretation of permanent and temporary impacts needs to reflect the slow recovery rates of native plant communities. Natural recovery rates from disturbance in these systems depend on the nature and severity of the impact and on weather conditions in the subsequent years. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (Gibson et al. 2004), but more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery; complete ecosystem recovery may require over 3,000 years (Lovich and Bainbridge 1999). In this analysis, an impact that might be considered temporary in other parts of California will be considered long-term or permanent due to these very slow natural recovery rates.

Clearing and grubbing of native vegetation (i.e., removal of shrubs and their roots) would be performed for the construction of permanent access roads, mirror structure installation, and other project facilities throughout the proposed solar field site, throughout much of the proposed construction facilities and logistics area, at each tower or pull site and for the new access road along the proposed transmission line alignment, and at the interconnection substation. Outside of access roads and maintenance tracks, vegetation would be cut to ground level as needed for construction but would leave the roots intact, allowing for some regrowth. During project operations, these shrubs would be mowed to provide clearance for heliostat function. Native shrubs undergoing repeated mowing would be weakened and diminished in size, degrading or eliminating their value as wildlife habitat. Overall impacts of these construction, operations, and maintenance procedures would cause substantial degradation to native vegetation and wildlife habitat.

Project construction would result in permanent and long-term impacts to approximately 1,743 to 1770 acres of desert shrubland (excluding the 6-acre unvegetated concrete pad; see **Biological Resources Tables 2 and 3**). In addition to the direct impacts to vegetation, project construction and operation would have several indirect impacts to native vegetation, including introduction or spread of invasive weeds and increased dust. These are described further below.

Invasive, Non-Native, and Noxious Weeds

Weeds are defined here to include species of non-native plants identified on the weed lists of the California Department of Food and Agriculture (CDFA 2007), the California Invasive Plant Council, or those weeds of special concern identified by BLM. The spread of invasive plants is a major threat to biological resources in the California desert because non-native plants can displace native plants, increase the threat of wildfire, supplant wildlife foods that are important to herbivorous species, alter the habitat structure and ecological function of wetland, riparian, and desert wash communities, and invade threaten special-status plant occurrences and habitat (Zouhar et al 2008; Lovich 1998; Lovich et al 1997).

New weed species can be introduced to an area, or weeds already present on-site can spread due to construction and operation of the proposed facility.

Construction activities and soil disturbance tend to introduce non-native invasive plant species into new areas and to facilitate their proliferation and spread. New introductions occur when seed are inadvertently introduced to a site, most often with mulch, hay bales, or wattles used for erosion control, or when they are carried on equipment tires from off-site. Many invasive non-native species are adapted to and promoted by soil disturbance (Lathrop & Archibald 1980). Once introduced, they can out-compete native species because of minimal water requirements, high germination potential and high seed production (Beatley 1966) and can become locally dominant, representing a serious threat to native desert ecosystems (Abella et al. 2008). Invasive weeds generally spread most readily in disturbed, graded, or cultivated soils, including soils disturbed by construction equipment. Thus, the proposed RSEP, including solar generation construction and associated transmission line and other facilities, would be expected to introduce or facilitate the spread of invasive non-native plants. Without weed control, staff anticipates that weeds already present in the area would increase their abundance in soils disturbed by project construction throughout the project site and along the linear facilities, and that construction equipment could import new invasive species from off-site.

Undisturbed desert habitat has been vulnerable to a limited suite of alien plant species capable of invading it. But the hot and arid environment; undependable timing and amount of annual precipitation; and often saline or alkaline soils limit the range of invasive species capable of naturalization there (Mack 2002). Certain aspects of the proposed project would change those conditions, probably creating habitat more suited to a wider variety of invasive plants and to greater abundance of the invasive species already present in the area. Shade beneath the mirror structures would alter the micro-environments, favoring weedy annual species. Studies conducted in the Sonoran and Mojave Deserts have demonstrated that shading resulted in a cooler, moister microhabitat below and near structures (Smith 1984, Smith et al. 1987). Shading and

wind deflection caused by the structures decrease soil temperature extremes and decrease evaporation from soil surfaces. The addition of water due to a regular mirror washing regimen also increases the humidity of the microhabitat around the solar structures. This change from the normal arid desert environment would not favor the native arid-adapted species and, instead, would allow weedy ephemerals to colonize (Smith 1984).

Numerous invasive weeds have already become widespread throughout the Mojave and Colorado deserts and prevention of further spread is impracticable. Examples of these species include red brome, cheat grass, Mediterranean schismus, red-stemmed filaree, Sahara mustard, and Russian thistle. Other invasive species (e.g., saltcedar) are damaging to specific habitat types but pose little or no threat to widespread upland desert habitat. Weeds were relatively low in abundance and diversity throughout the RSEP project area. Staff anticipated that the following seven invasive weed species would be likely to invade disturbed soils on the proposed solar generation site and transmission line alignment. Once established, these or other invasive weeds would likely spread beyond the project boundaries into surrounding undisturbed desert lands.

- **Sahara mustard** (*Brassica tournefortii*) occurs occasionally to commonly throughout the general area; Sahara mustard is of high concern; Cal-IPC has declared this plant highly invasive (Cal-IPC 2006) and recommends that it should be eradicated whenever encountered.
- Annual grasses, including **red brome** (*Bromus madritensis* ssp. *rubens*), **cheatgrass** (*B. tectorum*), and especially **Mediterranean grass** (*Schismus* spp.) are widespread, though at only low cover, in the project area. Red brome is an introduced Eurasian grass adapted to microhabitats that, in desert environments, can be found in partial shade (e.g., at the bases of desert shrubs or near structures). It can also form carpet cover in pockets of fine grained soils in rough terrain of the bajada. It is widespread and abundant in the Mojave Desert, but less so in the Colorado Desert. Its seeds can disperse readily and across large distances. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Cheat grass is a closely related species, occurring occasionally at low cover throughout the general area. It is also highly invasive (Cal-IPC 2006). Mediterranean grass is patchily distributed throughout the project site. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). Because of their widespread distribution, the BLM and other agencies do not consider these and other annual grasses to be feasible for general control (i.e., it is not presently feasible to control them in wildlands). It is therefore important to prevent the project site from becoming a source population, leading to increasing invasions in surrounding lands.
- **Russian thistle, tumbleweed** (*Salsola* spp.) is a common invasive species in disturbed soils. More so than most other invasive species, Russian thistle tends to be restricted to roadway shoulders and other sites where the soil has been recently disturbed (i.e., within a few years). Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). There is a high potential that Russian thistle could become established in the construction area and it should be eradicated if observed.
- **London rocket** (*Sisymbrium irio*) is widespread throughout the warm deserts of North America. Cal-IPC has declared this plant moderately invasive (Cal-IPC 2006).

More so than the other invasive herbs, it tends to be in slightly mesic or shaded sites around structures, and monitoring for this species should particularly focus on moist and shaded areas around the mirror structures.

- **Mediterranean tamarisk, saltcedar** (*Tamarix ramosissima*), it is a riparian plant and is therefore restricted to habitats where there is perennial soil water availability (though often no surface water). Cal-IPC has declared this plant highly invasive (Cal-IPC 2006).
- **Red-stemmed filaree, or storksbill** (*Erodium cicutarium*) is a widespread annual species common in disturbed habitats and often on undisturbed desert uplands. It has a limited overall rating by Cal-IPC, generally because the ecological impacts of the species are minor. Because of its widespread distribution, eradication of filaree in wildlands is not considered feasible.

To avoid and minimize the spread of existing weeds and the introduction of new ones, an active weed management strategy and control methods must be implemented. Implementation of Energy Commission staff's proposed Conditions of Certification **BIO-8** (Impact Avoidance and Minimization Measures), **BIO-10** (Revegetation Plan and Compensation for Impacts to Native Vegetation Communities), and **BIO-11** (Weed Management Plan) would avoid, minimize, and compensate for impacts related to weed species on/near the site and would reduce the impact of weeds to less-than-significant levels under CEQA.

Dust

Disturbance of the soil's surface caused by construction traffic, operations traffic, and other activities such as mirror washing would result in increased wind erosion of the soil. Aeolian transport of dust and sand can result in the degradation of soil and vegetation over a widening area (Okin et al. 2001). Dust can have deleterious physiological effects on plants and may affect their productivity and nutritional qualities (Sharifi et al. 1997; 1999). Aeolian transport of dust and sand can kill plants by burial and abrasion, interrupt natural processes of nutrient accumulation, and allow the loss of soil resources. The destruction of plants and soil crusts by windblown sand and dust exacerbates the erodibility of the soil and accelerates the loss of nutrients (Okin et al. 2001). The impacts of increased dust and other construction impacts can be minimized with implementation of staff's proposed Condition of Certification **BIO-8** (Impact Avoidance and Minimization Measures) to less than CEQA significant levels.

Energy Commission staff considers the direct and indirect impacts to native plant communities from construction of the project to be significant. The following Conditions of Certification are proposed to reduce impacts to vegetation: **BIO-1** (Designated Biologist Selection), which states the minimum qualifications to the satisfaction of the Energy Commission's Compliance Project Manager (CPM); **BIO-2** (Designated Biologist Duties), which outlines the duties performed during any site mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities; **BIO-3** (Biological Monitor Qualifications); **BIO-4** (Biological Monitor Duties), in which the Biological Monitor assists the Designated Biologist during any site mobilization, ground disturbance, grading, construction, operation, closure, and restoration activities; **BIO-5** (Designated Biologist and Biological Monitor Authority), in which the Designated

Biologist and Biological Monitor can stop any activities that would cause an adverse impact to biological resources; **BIO-6** (Worker Environmental Awareness Program), in which workers on the project site or any related facilities are informed about sensitive biological resources; **BIO-7** (Biological Resources Mitigation Implementation and Monitoring Plan), which identifies all biological resources mitigation, monitoring, compliance measures, Conditions of Certification, and permits; **BIO-8** (Impact Avoidance and Minimization Measures), in which all feasible measures, including lighting and dust control, which avoid or minimize impacts to the local biological resources are incorporated in any modification or finalization of project design; **BIO-9** (Compliance Verification); **BIO-10** (Revegetation Plan and Compensation for Impacts to Native Vegetation Communities); **BIO-11** (Weed Management Plan), which would require preparation and implementation of a weed management plan; and in other proposed conditions of certification described in the following sections. Implementation of these measures would reduce impacts of the proposed project to less-than-significant levels under CEQA. In addition, staff's proposed Condition of Certification **BIO-16**, the Desert Tortoise Compensatory Mitigation, requires the acquisition, management, and preservation of similar habitats of equal or greater quality at a 1:1 ratio for permanent impacts to the solar field site and a 3:1 ratio for permanent impacts along the transmission line route and at the interconnection substation. These mitigation lands would provide similar habitat, including vegetation communities, as would be impacted by the RSEP, and preservation of these desert shrublands would compensate for impacts on site. Staff concludes that implementation of these measures would reduce impacts to native plant communities to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating temporarily disturbed areas; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on desert tortoise compensation lands.

Construction Impacts to Special-Status Plants

Four special-status plant species have been documented on the proposed project site (SR 2009a; Sycamore Environmental Consultants 2010). Staff has reviewed the AFC and its appendices; the applicant's responses to Data Requests; and recent botanical literature to evaluate potential project impacts to these species (see **Special-Status Plants**, above). Staff concludes that adverse impacts to Harwood's milk-vetch, should they occur, would be significant under CEQA and would warrant mitigation. Staff concludes that the proposed RSEP either would not impact chaparral sand-verbena, Utah cynanchum, and Wiggins' cholla, or, if adverse impacts were to occur, they would be less than significant under CEQA and would not warrant mitigation measures.

Staff notes that the seasonal and irregular nature of most plants' life histories, and the scheduling of the field surveys described in the AFC limit staff's ability to interpret the data as submitted for some later-flowering species, and that no botanical surveys have been conducted along the existing 161 kV Western Parker-Blythe #2 transmission line alignment. Staff's recommended **Condition of Certification BIO-12** would require additional late-season field surveys on the solar generator site, generator tie-line alignment, and interconnector substation site, and would require new botanical surveys on the existing 161 kV Western Parker-Blythe #2 transmission line alignment. There is a low to moderate probability that additional special-status plants may be discovered

within the solar generator site or along the generator tie-line alignment during these surveys. The potential for additional special status plant occurrences on the existing 161 kV Western Parker-Blythe #2 transmission line alignment is unknown. Staff's recommended **Condition of Certification BIO-12** provides a strategy to detect special status occurrences, avoid impacts to them, evaluate significance for any impacts in cases where avoidance is not possible, and to mitigate those impacts below a level of significance.

For special-status plants known from the project site, staff's conclusion of CEQA significance was based on an analysis of impacts to these species in light of the variables described below. Staff's recommended **Condition of Certification BIO-12** would apply the same criteria to evaluate significance of potential impacts to any additional special status plant occurrences discovered in follow-up field surveys.

- Conservation status and taxonomic status of each taxon, as reported by CNPS (2010); CDFG (2010b); and current botanical literature (as described for each species under **Special-Status Plants**, above);
- Proportion of occurrences that may be lost and indirectly affected by the project relative to the documented occurrences and distribution of these species in California;
- Extent of occurrence on-site (i.e., number of documented locations);
- Habitat quality;
- Cumulative effects and indirect threats to remaining occurrences; and
- Peripheral population status.

Proportion of Occurrences Affected and Occurrence Size. Plants and other sessile organisms are particularly vulnerable to the effects of habitat fragmentation. Small habitat patches ("fragments") can support only small populations, which are more vulnerable to extinction. Even minor habitat changes or other effects can cause extinction of a small, localized plant population. Harwood's milk-vetch is ranked on CNPS List 2, indicating that its occurrences in California, including its occurrences on the proposed transmission line alignment, are geographically marginal relative to its core populations outside the state. For this species, the Colorado Desert populations represent a substantial portion of its total known distribution within California. Adverse effects to occurrences in the project area could affect a substantial portion of its regional populations and make it more vulnerable to extirpation within the state.

Habitat Quality. Staff notes that the habitat along the proposed transmission line alignment is generally undisturbed and is immediately adjacent to a designated BLM Wilderness area. Habit on the solar generator site, by contrast, has been disturbed by historic land uses (described above).

Threats. Threats to special-status plants in the region include land use changes, grazing, ORV use, and non-native plants (CDFG 2010a; CNPS 2010). The proposed transmission line alignment is relatively remote and unaffected by these threats. There appears to have been little habitat damage by grazing, cross-country ORVs, or weed invasions along the proposed alignment.

Status as Peripheral Populations. California occupies an important biogeographic location and zone of ecological transition on the Pacific coast of North America, and so its floristic diversity includes many widespread taxa at the edges of their geographic ranges. The CNPS List 2 is defined as species which are rare in California but more common elsewhere in their geographic ranges. That is, these are species whose California occurrences are at the geographic limits of their ranges. Harwood's milk-vetch, the CNPS List 2 species occurring in the project area, is at the western limits of its geographic distribution centered farther east.

Plant populations at the peripheries of their geographic ranges, as the CNPS List 2 species are, may have special conservation and biodiversity values. They tend to be more genetically and ecologically divergent than core populations, and often are ecologically distinctive (Leppig & White 2006). Peripheral populations may serve to increase or maintain genetic variation for the species as a whole, and contribute to long-term species survival and adaptation, especially in changing environments (Channel and Lomolino 2000; Leppig & White 2006). Yet peripheral plant populations are at greater risk of extirpation than core populations because they are smaller in areal extent, smaller in numbers of plants, and often in locations where habitat conditions are at the margins of their physiological limits.

CEQA Significance and CNPS Status. Harwood's milk-vetch is not listed under the California or federal Endangered Species Acts. But, under significance criteria adopted by the Energy Commission in this SA/DEIS, project impacts to this species, if not mitigated, would be considered significant pursuant to CEQA. The Energy Commission and other state agencies such as CDFG and the California Department of Water Resources have a history of requiring mitigation for impacts to special-status plants such as these.

Under Section 15380 of the CEQA guidelines, a species may be considered endangered, rare or threatened, if it can be shown to meet the criteria for state or federal listing. "CEQA Section 15380 provides that a plant or animal species may be treated as 'rare or endangered' even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future."

The California Native Plant Society (CNPS) cooperates under a memorandum of understanding with CDFG to identify which plants may be rare or threatened, evaluate threats to them, share occurrence data, and plan protective measures. In this role, CNPS evaluates plant taxa according to abundance, distribution, and threats, and it ranks rare species on a series of lists. The joint CNPS Rare Plant Program and CDFG's CNDDDB Plant Status Review Process for CNPS List and CDFG Special Plants List status is a rigorous review process that evaluates existing literature, reviews herbarium collections, and communicates with experts before making a recommendation for listing. A summary of information on each candidate taxon is reviewed by a network of California botanists, representing state and federal agencies, environmental consulting firms, academic institutions, CNPS, and other conservation organizations. All of the CNPS List 1B and 2 plants in the project area are also included in the CDFG Special Plants List (CDFG 2010b) and are tracked by CDFG's CNDDDB (CDFG 2010a). The *CNPS Inventory* has been a broadly recognized and accepted source of science-based

information on the rarity, endangerment, and distribution of California special-status plants since its first edition in 1974. The Energy Commission's regulations reference CNPS Lists in the definition of "species of special concern" (California Code of Regulations, Title 20, section 1702 (q) and (v)), and the BLM has a policy of designating all CNPS List 1B plants, unless specifically excluded by the BLM State Director, as BLM Sensitive (BLM 2009b). By CNPS's standards, the plants on CNPS Lists 1A, 1B, and 2 meet the definitions of Sections 2062 and 2067 (CESA) of the California Fish and Game Code, and are eligible for state listing (CNPS 2001). The Energy Commission considers those plants appearing on CNPS List 1B or 2 to meet CEQA's Section 15380 criteria, and adverse effects to these species are generally considered "significant" except where substantial new data may show otherwise, as, in this case, it does for chaparral sand-verbena.

Listed Threatened or Endangered Plant Species

Staff's review of available survey information and other literature sources indicates that no State or federally listed threatened or endangered plants have the potential to occur within the solar generator site or generator tie-line corridor (see **Biological Resources Table 4**, Special-Status Species, Their Status, and Potential Occurrence at the Rice Solar Energy Project Site, above). Potential for occurrence of any listed threatened or endangered plants along the existing 161 kV Western Parker-Blythe #2 transmission line is unknown.

CNPS List 1B/BLM Sensitive Plant Species

One CNPS List 1B and BLM Sensitive species (chaparral sand-verbena) was documented on the project site during field surveys in March 2009. The plants were not present later in the spring when botanists returned to confirm the species identification. Instead, the identification of the chaparral sand-verbena plants on the site is inferred from confirmed identification of another, off-site population (Appendix 5.2.B of SR 2009a). Due to the plant's local distribution and abundance in the Colorado Desert, well outside the area where chaparral sand-verbena is considered rare, staff concludes that this plant is not regionally rare and that impacts would not be significant (see **Special-Status Plants**, above).

There is a low probability that one or more additional CNPS List 1B/BLM Sensitive plant species could occur on the project site (e.g., Orocopia sage). The applicant is currently conducting follow-up surveys to evaluate potential occurrence of later-flowering special-status plants on the solar generator site and generator tie-line alignment. Potential for occurrence of any CNPS List 1B plants along the existing 161 kV Western Parker-Blythe #2 transmission line is unknown.

CNPS List 2 Plant Species

One CNPS List 2 species (Harwood's milk-vetch) was documented on the generator tie-line alignment during field surveys in March 2009 (SR 2009a). Staff concludes that project impacts to this species would meet CEQA criteria as significant and recommends Condition of Certification **BIO-12** (Special-Status Plant Impact Avoidance and Minimization) to mitigate this impact below a level of significance.

This Condition of Certification would require the project owner to complete pre-construction field surveys of the generator tie-line alignment to identify and map any special-status plants occurring there, to the extent feasible; to designate these locations as Special-Status Plant Protection Areas; and to design and plan for tie-line construction to avoid impacts to these areas (e.g., transmission line tower locations, pull sites, and other disturbance). The project owner would be required to prepare and implement a Special-Status Plant Protection and Monitoring Plan to ensure protection of these sites. Where special-status plant occurrences cannot be feasibly avoided, the project owner would be required to prepare and implement a Special-Status Plant Remedial Action Plan to provide detailed species-specific replacement mitigation, to consist of seed collection and storage, and species reintroduction into suitable habitat.

In addition to Harwood's milk-vetch, there is a low to moderate probability that any of several additional CNPS List 2 plant species that can only be found during late summer or fall due to their growing season could occur on the solar generator site and generator tie-line alignment (see **Biological Resources Table 4**, Special-Status Species, Their Status, and Potential Occurrence at the Rice Solar Energy Project Site, above). Staff's recommended Condition of Certification **BIO-12** would require late-season botanical surveys to determine likelihood that any of these plants could occur on the site. Potential for occurrence of any CNPS List 2 plants along the existing 161 kV Western Parker-Blythe #2 transmission line is unknown.

CNPS List 3 Plant Species

Plant species included in CNPS List 3 are those species for which further information is needed to evaluate their appropriate conservation status. Nearly all of these species are "taxonomically problematic" (CNPS 2001). These plants may meet CEQA significance criteria in some circumstances and they should be evaluated in a CEQA analysis. One CNPS List 3 species, Wiggins' cholla, is reported in the AFC Appendix 5.2C, Desert Tortoise Survey Report, though the plant may have been misidentified or may have been recorded off-site, on desert tortoise zone of influence transects. Based on current taxonomic understanding, Wiggins' cholla appears not to be a valid taxon (see **Special-Status Plants**, above). Because recent taxonomic treatments do not recognize Wiggins' cholla as a valid subspecies, staff concludes that project impacts to Wiggins' cholla, if they were to occur, would not reach the Energy Commission's adopted threshold of significance. No other CNPS List 3 plants are likely to occur on the solar generator site or generator tie-line alignment (see **Biological Resources Table 4**, Special-Status Species, Their Status, and Potential Occurrence at the Rice Solar Energy Project Site, above). Potential for occurrence of any CNPS List 3 plants along the existing Parker-Blythe #2 transmission line is unknown.

CNPS List 4 Plant Species

Species included on CNPS List 4 are plants of limited distribution or infrequent throughout a broader area of California, and their vulnerability or susceptibility to threat appears low at this time (CNPS 2010). Very few CNPS List 4 plants meet the definition for state or federal listing (CNPS 2001). Nevertheless, they may be locally significant if, for example, they occur at the periphery of their geographic range, exhibit unusual morphology, or occur in atypical habitats. Thus, they should be evaluated in a CEQA analysis.

One CNPS List 4 species, Utah cynanchum, is reported in Appendix 5.2C (Desert Tortoise Survey Report) of the AFC, though the plant may have been misidentified or may have been recorded off-site, on desert tortoise zone of influence transects (see **Special-Status Plants**, above). Utah cynanchum has not been observed or reported on the site by the applicant's botanical consultant. However, the site is within its geographic range (Bell 2009), and suitable desert wash habitat may be present in desert washes on the proposed generator tie-line alignment. Based on its known geographic range and abundance, absence of any reported unusual morphology among local populations, and local occurrence in typical habitat, staff concludes that project impacts to Utah cynanchum potentially occurring on the generator tie-line alignment would not reach the level of significance under the Energy Commission's adopted significance criteria.

There is a low to moderate probability that any of several additional CNPS List 4 plant species that can only be found during late summer or fall due to their growing season could occur on the solar generator site or generator tie-line alignment (see **Biological Resources Table 4**, Special-Status Species, Their Status, and Potential Occurrence at the Rice Solar Energy Project Site, above). Staff's recommended Condition of Certification **BIO-12** would require late-season botanical surveys to determine likelihood that any of these plants could occur on the site. Potential for occurrence of any CNPS List 4 plants along the existing 161 kV Western Parker-Blythe #2 transmission line is unknown.

Special Status Plant Species Impact Evaluation and Mitigation Strategy

Staff concludes that project impacts to Harwood's milk-vetch would reach CEQA standards as significant, and that several other species not documented on the site also could occur there and, if present, could also be subject to adverse and potentially significant project impacts. The extent of these impacts cannot be fully evaluated due to limitations of available field survey data. Staff recommends an impact evaluation and mitigation strategy that would fully evaluate potential project impacts to special-status plants and mitigate any significant impacts below a level of significance.

Staff evaluated several approaches to mitigating these impacts. These approaches were:

1. Avoiding or minimizing direct impacts.
2. Acquisition and protection of special-status plant populations on private lands.
3. Protection and enhancement of populations on public lands.
4. Seed collection, translocation or transplantation of special-status plants.

Mitigation Strategies Considered But Rejected

Protection and Enhancement of Populations on Public Lands. Special-status plant occurrences on National Park Service lands are considered to be adequately protected and thus offer no potential for offsetting project losses. In recognition that some of the occurrences on BLM land are subject to the effects of grazing, ORV, transmission projects, mining (CDFG 2010a), and future energy projects, staff investigated the possibility of off-setting project losses by placing land use restrictions on or enhancing

BLM lands where one or more of these special-status plants occur and which are not protected, such as within a Desert Wildlife Management Area (DWMA). However, BLM cannot make pre-decisional commitments to implement specific actions such as fencing, altering grazing allotments, burro removal, or habitat restoration without conducting NEPA analysis and providing full public disclosure on the effects of those actions. Thus, mitigation measures such as land use changes potentially affecting other uses would necessitate a separate NEPA analysis. Consequently, this mitigation option would not be timely and its outcome would remain unknown until BLM completed a Record of Decision. Pursuant to CEQA and NEPA, the Energy Commission and Western cannot defer mitigation to a future NEPA document.

Transplantation or Translocation (including re-seeding). The applicant has proposed collecting seed and reseeded special status plants at an offsite location as a potential mitigation strategy (SR 1998a). However, the general consensus in the scientific community is that transplantation or re-seeding have not been shown to be viable strategies for special-status plant mitigation (Howald 1996). A study by CDFG (Fiedler 1991) found that, even under optimum conditions, transplantation was not effective in 85% of cases studied. Nonetheless for some species including cacti transplanting is often a statutory requirement. On BLM lands, all yucca species and most cacti, with the exception of chollas, must be salvaged and transplanted. It is CNPS's (1998) policy to oppose transplantation as mitigation for loss of rare plants. In a separate policy statement, CNPS (1992) identifies appropriate use of ex-situ conservation techniques and summarizes reasons these techniques have failed as mitigation.

Successful translocation or transplantation requires extensive information about microhabitat requirements, reproductive biology, essential pollinators, soil conditions and soil organisms, community relationships, and other critical biological characteristics. This information is lacking for most species, including the special-status species that would be affected by the proposed project. In consideration of the high rate of failed transplantation and translocation attempts with rare plants, staff believes that translocation would not provide meaningful conservation benefit, unless proven species-specific feasible methods are specified and adhered to with rigorous performance monitoring. Staff knows of no such methods for Harwood's milk-vetch or other special status species potentially occurring on the solar generator site, the generator tie-line alignment, or the existing 161 kV Parker-Blythe #2 transmission line. In the absence of known and proven reestablishment techniques for a given species, reestablishment attempts must be considered experimental in nature. These efforts may show early promise but lose viability or decline after the first few years due to one or more of the many factors listed above. Staff concludes that experimental reintroductions could yield important new information that may inform future mitigation efforts, but cannot be expected to succeed and therefore would not constitute mitigation as it is defined under CEQA.

Seed collection as long-term germplasm preservation. The applicant has proposed collecting seed for donation to botanical gardens or universities for propagation and study (SR 1998a). Staff agrees that seed collection for this purpose is a useful and important component of mitigation, and staff recommends long-term germplasm conservation as a part of the special status plant mitigation strategy in Condition of

Certification **BIO-12**. However, for most rare plants that could be impacted by the project, seed collection alone would not mitigate impacts below a level of significance.

In lieu fee. The applicant proposes *in lieu* fee payment as a potential mitigation measure for rare plants (SR 2009a) The overall approach to compensatory mitigation for desert tortoise habitat loss on this and other proposed solar projects has not yet been resolved by land management and resource agencies. Current BLM policy allows for *in lieu* fee payment as an alternative to purchasing and protecting private lands. *In lieu* mitigation fees for this and other proposed projects would be pooled and dedicated to purchasing and managing desert tortoise mitigation lands. Newly developing State policy would likely create similar mitigation fees for compensatory lands.

In lieu fee payment to fund compensatory mitigation for desert tortoise habitat loss would not feasibly or verifiably mitigate the project's impacts to special-status plants, unless the presence of special-status plants affected by the project are verified on the land planned for acquisition and protection and management of the plants is assured and funded in perpetuity. The *in lieu* fee program was not sufficiently developed at the time the SA/DEIS was prepared to judge whether it will be able to accommodate mitigation for special-status plants as part of the desert tortoise habitat mitigation. Under limited circumstances, compensation lands for desert tortoise could, however, serve to mitigate adverse impacts to rare plants, as discussed below and in staff's recommended Condition of Certification **BIO-12**.

Staff's Recommended Conceptual Mitigation Strategy

To reduce project impacts to CNPS List 1 and List 2 plants below a level of significance, staff recommends a mitigation strategy to (1) avoid Harwood's milk-vetch locations on the generator tie-line alignment, (2) determine whether any additional late-season special-status plants occur on the solar generator site or generator tie-line alignment or would be affected by the project, (3) determine whether any special-status plants occur on the existing 161-kV Parker-Blythe transmission line, and (4) identify and mitigate any additional significant adverse impacts to most CNPS List 1B and List 2 plants through avoidance measures, by protecting acquired lands off-site, or through other off-site measures such as habitat improvement or management. Staff recommends mitigation for any additional CNPS List 1A, 1B, or List 2 plants discovered within the project area or within 250 feet of any project activities during future pre-construction clearance surveys as recommended in staff's proposed Condition of Certification **BIO-12**. This mitigation strategy is described further in the paragraphs below. Full implementation of this mitigation strategy would reduce the project's direct, indirect, and cumulative impacts below a level of significance by locating CNPS List 1 and List 2 plants that may be affected by the project, and mitigating any significant adverse impacts to them through avoidance and protection, or through acquiring and protecting lands off-site, or through other off-site measures such as habitat improvement or management. Staff concludes that this mitigation strategy is both feasible and effective.

Avoiding or minimizing direct impacts. Staff's recommended mitigation approach is to avoid or minimize any construction impacts to Harwood's milk-vetch or most other CNPS List 1 or List 2 plant locations on the solar generator site, the generator tie-line alignment or the existing 161-kV Parker-Blythe #2 transmission line. Protection would be achieved by avoiding direct and indirect impacts to the plants and a 250-foot buffer

area surrounding each protected plant location. Staff concludes that this goal is feasible and would reduce impacts to Harwood's milk-vetch below a level of significance.

This level of protection is not recommended for chaparral sand-verbena because staff concludes that impacts to this plant would be less than significant under CEQA.

Staff's proposed Condition of Certification **BIO-12** (Special-Status Plant Impact Avoidance and Minimization) requires the applicant to minimize disturbance to the extent feasible as described above. This condition also requires preparation of a special-status plant protection and monitoring plan to be implemented for the life of the project and other measures to fully avoid impacts to Harwood's milk-vetch and any additional CNPS List 1 or List 2 taxa discovered during future botanical field surveys.

Additional Field Surveys. Due to the potential for occurrence of special-status late-season plant taxa on the project site, staff recommends follow-up late-season field surveys in summer and fall 2010. Staff's proposed Condition of Certification **BIO-12, Section B** describes scheduling and other recommendations for these additional surveys; **Section C** describes thresholds for identifying significant impacts to special status plants that may be found during those surveys; and **Section D** would require that the project owner prepare and implement a mitigation plan for any such impacts. **Section D** also describes a series of potential mitigation strategies that would reduce these impacts below a level of significance.

Conclusion: Summary of Special-Status Plant Impacts and Mitigation

Staff has concluded that implementation of proposed Conditions of Certification **BIO-1** through **BIO-12** would be effective and feasible in reducing impacts to special-status plants at the solar generator site, generator tie-line alignment, and interconnector substation to less-than-significant levels. Proposed Condition of Certification **BIO-12** would require late-season field surveys to document presently unknown locations of other special-status plants; provides specific thresholds to determine whether impacts to newly discovered plants would be significant; and would require additional mitigation to reduce such impacts below a level of significance. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Indirect and Off-Site Construction Impacts to Vegetation, Habitat, and Special-Status Plants

Project construction has the potential to cause a variety of indirect effects to vegetation, habitat, and special-status plants outside the project boundary (including areas outside transmission line construction area boundaries). These include effects of erosion or sedimentation that could result from altered hydrology on the site (i.e., plants, their habitat, or their seed banks occurring down slope of disturbed soils could be eroded away or could be covered in sediment); changes in the hydrology from alterations in the drainage patterns of the site (sensitive habitat types and several special-status plant species are associated with desert washes); the introduction of new weeds or spread of weeds already present in the area from the solar fields into the surrounding habitat; greater than normal dust levels; effects of herbicide drift on special-status plants,

vegetation, and pollinators; and an increased risk of fire. Weeds and dust are discussed above, and hydrology is discussed below.

The Conservation Biology Institute (CBI 2000) reviewed a variety of edge effects known or likely to adversely affect a rare plant species in southern California, and evaluated buffer distances in terms of their potential to prevent those effects. The CBI review evaluated edge effects expected to result from suburban development in interior Ventura County. Staff is not aware of any available research that would be more applicable to the RSEP. CBI reviewed potential effects of invasive plant and animal species; vegetation management (e.g., for fuels management); trampling; increased water supply (e.g., irrigation runoff); chemicals such as pesticides, herbicides, and fertilizers; and increased fire frequency. These edge effects are largely comparable to expected edge effects that would result from the RSEP. For example, soil disturbance and altered shade and hydrology on the solar generator site will likely lead to weed invasions (described above), which could spread from the site into surrounding desert. Construction-related soil disturbance along linear project facilities would have similar effects. Watering for dust control or other project-related hydrology changes could cause colonization by invasive ant species which, in turn, could affect specialized habitat conditions in surrounding soils. CBI concluded that buffer distances of 200-300 feet were “moderately” or “highly” likely to be effective in minimizing these adverse edge effects on rare plant habitat. Based on CBI’s analysis, staff concludes that the project would likely cause adverse indirect effects to any rare plant occurrences within a 250-foot radius of project activities. Therefore, staff’s proposed Condition of Certification **BIO-12** (Special-Status Plant Impact Avoidance and Minimization) requires pre-construction surveys within the 250-foot buffer beyond anticipated limits of grading at each transmission line construction site, including the interconnection substation site, and requires avoiding project activities or mitigating impacts to any protected plant occurrences at those sites.

Construction Impacts to Common Wildlife and Habitat

Construction of the proposed RSEP, including the solar generation and generator tie-line, would result in direct and indirect impacts to common wildlife species (i.e., species without special-status designation) and their habitat. These effects could include mortality of small mammals, reptiles, the eggs or nestlings of shrubland birds, and other less mobile species from trampling or crushing during clearing, grading, or excavation; and increased predation when wildlife is flushed from cover during site clearing or rendered vulnerable to predation due to increased disturbance by construction noise or lighting.

In addition to mortality, project construction would cause wildlife displacement from the project site and surrounding habitat due to loss of habitat, increased vehicular and human presence throughout the site, increased fugitive dust, noise and lighting disturbances, and a modified hydrologic and sediment regime due to the construction of the storm water management system. Mobile species such as adult birds would generally disperse into nearby habitat areas during construction (impacts to nesting birds are discussed in more detail below under **Impacts to Common Migratory and Resident Birds**). However, mammals and reptiles would be hindered or prevented from

escaping the construction site by the project's perimeter fencing (i.e., the desert tortoise exclusion fence, described further below).

Animals dispersing from the construction site still would be subject to adverse effects, potentially including mortality, after leaving the site. After leaving their home territories, they may be unable to find suitable food or cover in new, unfamiliar areas. Or, if they find food and other resources, these may be within the occupied territory of another individual of the same or similar species, and would result in competition for resources. The energy and time spent on competition would likely cause reduced vigor, at least temporarily, perhaps making the animals vulnerable to predation or physical demands during migration, and potentially reducing or precluding reproduction.

Construction disturbance such as noise, lighting, dust, invasive weeds, and increased human activity are likely to discourage wildlife from foraging and nesting adjacent to the proposed project throughout the construction phase of its implementation. Dust and invasive weeds are discussed in more detail above under **Impacts to Vegetation**. Lighting is discussed further under **Impacts During Operation** below. Noise during operation is also discussed in that section. According to data presented in the AFC (SR 2009a), noise generated by various construction activities is expected to range between 85 and 98 dBA on the site. These levels attenuate to less than about 50 dBA at distances of one mile. The loudest single noise events during project construction would be "steam blows," to clean scale and debris from boiler tubes. These reach a level of 110 dBA at 1000 ft. from the source (i.e., the power block, in the center of the heliostat field) (SR 2009a). The noise levels of these tests would attenuate considerably at the perimeter fence (approximately 3,200 to 5,000 feet from the power block) but levels at the heliostat field perimeter are not stated in the AFC. Construction noise effects on wildlife in the surrounding area will vary, depending on distance from the noise source; time of day, and persistence of the noise. Noise could affect wildlife in adjacent habitats by disrupting foraging, breeding, sheltering, and other activities; or it could cause animals to avoid otherwise suitable habitat surrounding the site. The effects of construction noise include annoyance, which causes birds and other wildlife to abandon nests or dens; increased stress hormone levels, interference with sleep and other activities; and interference with acoustic communication by masking important sounds or sound components, such as territorial calls, contact calls, or alarm calls (Dooling 2006). Many species rely on vocalizations during the breeding season to attract a mate within their territory, and noise from construction could disturb nesting birds and other wildlife and adversely affect nesting and other activities. Reijnen et al. (1995) demonstrated that for two species of European warbler (*Phylloscopus* spp.), sound levels between 26 dB(A) and 40 dB(A) reduced breeding density by up to 60 percent compared to undisturbed areas. These data suggest project-related construction disturbance would reduce wildlife habitat use or breeding success adjacent to disturbance.

Construction effects on nocturnal (i.e., active at night) wildlife would be dependent upon construction schedules. Although noise would likely be important overnight, increased lighting (including security lighting) would likely affect some species.

Prior to construction, the project site would be enclosed within a desert tortoise exclusion fence, and tortoises inhabiting the project site would be removed from the

enclosure area (see **Impacts to Desert Tortoise** below). Once in place, this enclosure fence would entrap most mammal and reptile wildlife species within the project site. These animals, if they persist within the project area, would be subject to disturbance and habitat loss during construction and to ongoing, repeated disturbance during project operation. While many species can tolerate human disturbance to some degree, the project's construction and operation would cause ongoing habitat degradation and loss of wildlife, primarily due to habitat alteration and mortality on access and maintenance roads within the site.

Construction-related effects to common wildlife typically are not considered significant under CEQA. However, the large scale of the project site, the fact that animals would remain trapped within the perimeter fencing, and the multiyear construction schedule would result in potential significant effects to common species. To reduce these impacts, staff recommends several Conditions of Certification, listed below. These conditions would educate workers of the presence and sensitivity of wildlife that may occur in the project area, provide limitations on work that may occur during the breeding season, reduce the effect of fugitive dust on adjacent areas through dust control and reduced vehicle speeds, require monitoring of construction to reduce direct wildlife mortality, and the control of weeds.

Implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-11** would minimize potential impacts to common wildlife. In combination with Condition of Certification **BIO-16**, which would require compensatory land acquisition to mitigate impacts to desert tortoise (described below), these measures would mitigate impacts to common wildlife at the solar generator site, generator tie-line alignment, and interconnector substation to less-than-significant levels. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Construction Impacts to Common Migratory and Resident Birds

General impacts such as habitat loss, noise, lighting, and human disturbances to common wildlife, including most birds, are described above (**Impacts to Common Wildlife**). This subsection focuses on impacts to bird species regulated under state and federal statute. The federal Migratory Bird Treaty Act (MBTA) prohibits take of any migratory bird as defined in the Act (or any part of such migratory bird including active nests) except as permitted by regulation (e.g., duck hunting). Under the MBTA, "migratory bird" is broadly defined as "any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle" and thus applies to most native bird species. California Fish and Game Code Section 3503 prohibits take, possession, or needless destruction of bird nests or eggs; Section 3503.5 prohibits take or possession of birds of prey or their eggs; and Section 3513 prohibits take or possession of any migratory nongame bird. With the exception of a few non-native birds such as European starling, the take of any birds or loss of active bird nests or young is regulated by these statutes. Most of these species have no other special conservation status as defined above (**Biological Resources Table 4**).

Potential construction-related project impacts discussed here would generally apply to all bird species, including special-status birds. Additional project impacts to all birds that would likely occur during operation of the proposed RSEP facility, including mortality

caused by striking the heliostats, central tower, or flying through focused solar energy points, are addressed below (**Impacts During Operation**). The project also could have more specific impacts to special-status birds, dependent on the behavior, seasonality, and habitat requirements of each species. These are discussed in more detail below (**Impacts to Special-Status Birds**).

The entire project site and surrounding area, including the proposed generator tie-line, provides suitable nesting habitat for numerous resident and migratory bird species. Examples of species likely to nest in shrubs or on the ground on the RSEP site and observed during desert tortoise surveys (Appendix 5.2C of SR 2009a) include northern mockingbird, white-winged dove, lesser nighthawk, common poorwill, and horned lark. The Lower Colorado River Valley supports some 60 year-round resident bird species, 28 breeding season migrants, and 80 winter migrants (Rosenberg et al. 1991). About half of these birds are found in wetland or riparian habitats and thus would not be expected on the proposed RSEP solar generator site or the generator tie-line alignment. These species may occur in portions of the Western's existing 161-kV Parker-Blythe #2 transmission line and may also migrate seasonally through the Rice Valley where they may be subject to project-related construction disturbance. The project site could provide seasonal or year-round habitat for dozens of native bird species. Most of these birds have no special conservation status, and adverse impacts generally would not warrant a finding of significant impacts under CEQA. However, they all are protected under the MBTA and Fish and Game Code Sections 3503 and 3513 as described above.

Many adult birds would flee from equipment during initial vegetation clearance for project construction. However, nestlings and eggs would be vulnerable to impacts during project construction, and are also protected by the MBTA and Fish and Game Code Sections 3503 and 3513. If initial site grading or brush removal were to occur during nesting season, then it likely would destroy bird nests, including eggs or nestling birds. One special-status species, the burrowing owl, is unlikely to flee the site during construction, due to its characteristic behavior of taking cover in burrows. Potential project impacts and an avoidance and mitigation strategy for burrowing owl are provided below (**Impacts to Special-Status Birds**).

The applicant has proposed mitigation measures to avoid and minimize impacts to nesting birds that have been incorporated into staff's proposed Condition of Certification **BIO-13** (Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds). This measure includes removing vegetation outside the breeding season, pre-construction nesting surveys, and the establishment of 500-foot buffers around active nests for most birds (1,200 feet for active raptor nests). The applicant also notes that biological monitors and project personnel will need to be diligent in identifying any nest-building behavior on the construction site before birds lay eggs. Staff concurs with the approach proposed by the applicant but considers it difficult to achieve due to the extended construction schedule and the numerous common birds with potential to nest within the area prior to and during construction.

Some species of birds will likely nest in the project area during construction and operation of the facility. Depending on the species, birds may nest on the ground close to equipment, within the open metal framework of the heliostat structures, on buildings

or other structures, or on idle construction equipment. For example, staff has observed recent nesting activity at several large electrical transmission line projects currently underway in the western Mojave Desert. In these locations birds have nested on vehicles, foundations, construction trailers, and other equipment left overnight or during a long weekend. In areas where construction was phased (i.e., footings, or tower structures) birds quickly utilized these features as nest sites. Most of these nesting birds were common ravens, house finches, and mourning doves, all of which are protected by the MBTA and Fish and Game Code Sections 3503 and 3513. Staff considers that the likelihood of encountering nesting birds on-site during construction, within the 500-foot disturbance buffer proposed by the applicant, or on vehicles and equipment would be high. Therefore, staff recommends that to avoid impacts to nesting birds, preconstruction surveys and regular monitoring of the work area shall be conducted at any time work is to occur during the breeding season. If active nests are detected during the surveys or monitoring, a 500-foot disturbance-free buffer zone shall be implemented (Condition of Certification **BIO-13**, Pre-Construction Nest Surveys and Impact Avoidance Measures for Migratory Birds). Implementation of staff's proposed conditions of certification would avoid direct impacts (including take) to migratory birds and their nests, eggs, or young and would reduce the impacts of construction disturbance at the solar generator site, generator tie-line alignment, interconnector substation and on the existing 161 kV Parker-Blythe #2 Transmission Line to nesting birds to less-than-significant levels under CEQA. Potential project impacts to special status birds are described in more detail below and, in some cases, staff recommends additional mitigation measures, or does not determine potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Even with pre-construction surveys, monitoring, and other measures, the scale of the project and the known nesting behaviors of some native birds increases the likelihood that the project would require the removal or relocation of active nests in order to proceed with construction or operate the facility. To comply with the legal requirements under the MBTA and California Fish and Game Code, staff has proposed as part of Condition of Certification **BIO-13** that the applicant coordinate with staff, CDFG, and USFWS to be certain that any removal and relocation work is conducted properly. Similarly, staff has provided language in proposed Condition of Certification **BIO-13** that would allow certain construction activities to occur closer than 500 feet to active nests with approval of staff, CDFG, and USFWS. The ability to work closer than the proposed 500-foot (1,200 feet for raptors) buffer would depend on the species, stage of development of chicks within the nest, proposed construction activity, and biological response of the animal.

Construction Impacts to Special-Status Wildlife

Habitat in the proposed RSEP solar generation site and generator tie-line alignment has the potential to support a variety of special-status wildlife including State and federally listed species. The special-status species observed within or near these project components include desert tortoise, Mojave fringe-toed lizard, loggerhead shrike, prairie falcon, burrowing owl, and desert kit fox. In addition, golden eagle, while not observed on the site, is likely to forage in the area and is fully protected under the California Fish and Game Code and federal Bald and Golden Eagle Act. **Biological Resource Table 4** describes these and other special-status species that have the potential to occur in the

project area. In addition, construction of the proposed fiber optic OPGW along Western's existing 161-kV Parker-Blythe #2 transmission line could impact species or habitats not described here.

Impacts to special-status species, including listed species, would generally be similar to those described above for common wildlife and could be caused by a variety of direct and indirect factors. Direct impacts to wildlife could include displacement and/or potential mortality of wildlife that are poor dispersers such as tortoise, lizards, and small mammals. Construction may also cause the temporary degradation of the value of adjacent native habitat areas due to disturbance, noise, increased human presence, and increased vehicle traffic during construction. Long-term indirect impacts may include increased human presence and the loss of habitat through the colonization of non-native invasive plants. Mortality or loss of reproductive success may also occur during land clearing, excavation, grading, and construction of the RSEP. Potential project impacts to special-status species are detailed below.

Cheeseweed Owlfly

Cheeseweed owlfly is known from an occurrence along the proposed generator tie-line corridor. Creosote bush shrubland throughout the RSEP and generator tie-line alignment is apparently suitable habitat, though its distance from local hilltop sites and the effects of soil compaction from previous land uses may reduce its suitability. The project area does not appear to provide specialized habitat or other resources for cheeseweed owlfly other than those resources widely available throughout the region. Project development would result in the loss of potentially suitable habitat throughout the proposed solar generation site and adjacent temporary construction site; and additional habitat loss, including some historically occupied habitat, for access road and transmission line construction along the proposed generator tie-line alignment. Additional suitable habitat may also be affected along Western's existing 161-kV Parker-Blythe #2 transmission line.

Cheeseweed owlfly has a conservation ranking with the CDFG Natural Diversity Database of S1S3, indicating uncertain status ranging between "critically imperiled" and "vulnerable" (CDFG 2009b). Based on the known historic occurrence on the generator tie-line alignment, the RSEP's proposed disturbance to a large area of potentially suitable habitat, and the uncertain conservation status, staff concludes that project impacts to cheeseweed owlfly would be significant under CEQA.

Implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-10** would minimize potential impacts to cheeseweed owlfly and its habitat. Staff concludes that implementation of these measures would reduce potential project impacts to less than significant because they would require minimization of habitat disturbance in the area of known historic occurrence and throughout the project area to only that area required for construction; revegetation of disturbed areas along linear project components after construction, and other measures to minimize impacts. In addition, Condition of Certification **BIO-16** would require compensatory land acquisition to mitigate impacts to desert tortoise (described below); staff believes that protection of these compensatory lands would be likely to protect habitat for cheeseweed owlfly. Staff

concludes that no additional mitigation is required to reduce potential impacts to cheeseweed owlly below a level of significance.

Couch's Spadefoot

The solar generator site is near the western margin of Couch's spadefoot's geographic range, and much of Western's existing 161-kV Parker-Blythe #2 transmission line are within its known range. There are several known regional occurrences (Jennings and Hayes 1995; Morey 2005). Drainage channels and topography on the proposed solar generation site and along the proposed generator tie-line alignment indicated that no suitable breeding pools would form or hold rain water long enough for spadefoot reproduction (Attachment DR60-1 of CH2MHill 2010a). Habitat suitability along the Parker-Blythe #2 transmission line is unknown. Creosote bush shrubland throughout the RSEP and its linear project components may be suitable as habitat for winter dormancy within burrows. Based on anecdotal information on a number of species, Hammerson (2002) reported that spadefoots move several hundred meters or more from breeding sites and suggested that, without specific information, the minimum extent of terrestrial habitat around breeding sites can be set at 500 meters. A further evaluation of habitat suitability would require more detailed knowledge of Couch's spadefoot movement distances between breeding ponds and burrow sites. Further, the effects of soil compaction from previous land uses may reduce habitat suitability on the RSEP site. The solar generator site and generator tie-line alignment do not appear to provide specialized habitat or other resources for Couch's spadefoot other than those resources widely available throughout the region; however, available information cannot rule out the potential that Couch's spadefoot could overwinter on the site.

RSEP development would result in loss of potentially suitable habitat throughout part or all of the proposed solar generation site, adjacent temporary construction site, and interconnector substation site. Suitable habitat on the generator tie-line and Western's existing 161-kV Parker-Blythe #2 transmission line could also be temporarily or permanently lost during construction. In addition to habitat loss, project construction could destroy individual Couch's spadefoots if breeding ponds are disrupted while adults, eggs, tadpoles, or juvenile spadefoots are present, or if the animals are crushed in their burrows by vehicle traffic.

In California, Couch's spadefoot is threatened by habitat conversion for other uses. It is ranked as a Species of Special Concern by CDFG and as a Sensitive Species by BLM. Although potential occurrence on the site is unknown, particularly on Western's existing 161-kV Parker-Blythe #2 transmission line, because of the RSEP's proposed disturbance to a large area of potentially suitable burrowing/winter dormancy habitat, staff concludes that project impacts to Couch's spadefoot, if it occurs in the area, would be significant under CEQA. Staff notes, however, that long-term or permanent habitat loss along the project's transmission line components would be minimal, and that impacts of these project components would primarily be those resulting from short-term construction.

Implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-10** would minimize potential impacts to Couch's spadefoot and its habitat. In addition, staff recommends **Condition of Certification BIO- 23** (Couch's Spadefoot Surveys and

Breeding Habitat Avoidance) which would require preconstruction surveys for potential habitat along project transmission line alignments and seasonal avoidance of that habitat during construction. Staff concludes that implementation of these measures would reduce potential project impacts to Couch's spadefoot to less than significant at the solar generator site, generator tie-line alignment, interconnector substation and along Western existing Parker-Blythe #2 Transmission Line because they would require minimization of habitat disturbance to only that area required for construction; and seasonal avoidance of impacts to breeding habitat. Staff concludes that no additional mitigation is required to reduce potential impacts to Couch's spadefoot below a level of significance.

Mojave Fringe-Toed Lizard

The proposed solar generator site does not appear to provide suitable habitat for Mojave fringe-toed lizard, except perhaps very marginal habitat within sandy washes that cross the site from north to south, though portions of the generator tie-line alignment provide suitable habitat (Black 2010; CH2MHill 2010h). The Danby Dunes, which are occupied Mojave fringe-toed lizard habitat, are located off-site to the south. There is a known occurrence about 0.75 mi south (SR 2009a) and patches of sparsely vegetated sand dunes are located within approximately 1,000 feet south of the southern proposed RSEP solar generation site boundary (Appendix A). It is likely that individual Mojave fringe-toed lizards occur throughout the Danby Dunes and adjacent sparsely vegetated dunes. It also is likely that individual animals infrequently travel northward among scattered or partially stabilized sandfields and along the sandy washes from the occupied habitat to the proposed RSEP site.

If the solar generator site were located between two areas of suitable habitat, then these washes could serve as dispersal routes for animals moving between the two areas. Instead, however, there is no potential Mojave fringe-toed lizard habitat upslope, and the washes on-site offer no opportunity for dispersal between the Danby Dunes and suitable habitat elsewhere in the area.

It is possible, but unlikely, that individual Mojave fringe-toed lizards could wander from the Danby Dunes onto the solar generator site where they could be crushed during construction or adversely affected by other aspects of the project. Although the species is ranked by CDFG as a Species of Special Concern and by BLM as a Sensitive Species, staff concludes that these impacts, should they occur, would be less than significant under CEQA.

Because the project site is located upslope from the Danby Dunes, the proposed solar facility has the potential to interrupt fluvial or aeolian sand transport to the Danby Dunes from upslope or upwind sources. These potential effects were evaluated and found to be less than significant (Appendix A). The proposed RSEP solar generation site is outside the wind corridor that transports sand to the dunes. Fluvial sand transport during infrequent flash floods would largely continue without significant interruption, via the existing desert washes and proposed new drainage channels at the northern boundaries of the proposed solar generation site. Sand originating from the heliostat field contributes only minimally to the Danby Dunes and interruption of that source would not be significant.

Suitable aeolian sand habitat or fine sandy desert wash habitat that may be occupied by Mojave fringe-toed lizards may occur in patches along the proposed generator tie-line alignment, at the interconnector substation site, or on Western's existing 161-kV Parker-Blythe transmission line. Project-related transmission line construction and upgrades would temporarily disturb habitat, and could crush individual Mojave fringe-toed lizards. But habitat for these animals, consisting of open sand, is expected to recover quickly following disturbance because vegetation recovery is not required. Thus, habitat impacts would be short-term. Staff concludes that, without avoidance or mitigation, potential take of individual Mojave fringe-toed lizards for transmission line work could be significant under CEQA, but habitat impacts would not be significant.

In Response to Data Request 51 (CH2MHill 2010a), the applicant notes that mitigation measures may be necessary to avoid and protect these areas during generator tie-line construction, and suggests that "judicious placement of generator tie-line towers may lead to avoidance of such habitats" and that "a plan to avoid impacts during construction by fencing and monitoring these areas would be appropriate." Staff concurs with the applicant's suggestion, and recommends Conditions of Certification **BIO-1** through **BIO-10**, which would minimize potential impacts to Mojave fringe-toed lizards and potential habitat, including marginal habitat, during generator tie-line construction or project-related work on the existing Parker-Blythe #2 161-kV transmission line. Proposed Condition of Certification **BIO-8** specifically requires that generator tie-line construction and fiber optic OPGW installation on the existing Parker-Blythe #2 transmission line shall avoid any desert wash, desert microphyll woodland, or any aeolian sand habitat wherever feasible, and that where these sites cannot feasibly be avoided, the Designated Biologist shall outline site-specific requirements to minimize impacts to habitat and wildlife, including Mojave fringe-toed lizard. Staff concludes that implementation of these measures would reduce potential impacts below a level of significance by avoiding construction activities in potential habitat where feasible, and implementing site-specific measures to avoid take of individual animals where habitat avoidance is infeasible.

Gila Monster and Rosy Boa

Neither Gila monsters nor rosy boas were observed during biological surveys conducted in 2009 of the proposed RSEP project site and linear facilities. The site is at the margin of the Gila monster's known geographic range, and the solar generator site does not provide the rocky habitat where both species typically occur. These species may be more likely to occur in surrounding mountains, along the generator tie-line alignment, the existing 161-kV Parker-Blythe #2 transmission line, or at the interconnector substation site. There is only a low potential that the Gila monster may occur in the project area. However, its geographic range is poorly understood and, even in occupied habitat, it occurs in low densities, is difficult to detect, and may be overlooked during surveys. If present, direct impacts could include habitat loss; being hit by vehicles on access roads; and mechanical crushing during site preparation, grading of spur roads, or drainage features. Absent mitigation, staff considers these potential impacts to be significant under CEQA.

Construction of the RSEP would eliminate up to 1,770 acres of marginally suitable habitat that may provide cover, foraging, and breeding habitat for Gila monsters and

rosy boas. The applicant has not proposed specific mitigation to reduce potential impacts to these species. Implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-10** would minimize impacts to these species and their potential habitat. Condition of Certification **BIO-14** would require capture and relocation of any special-status reptiles encountered during preconstruction desert tortoise clearance surveys (described below). Staff concludes that implementation of these measures would reduce potential project impacts to Gila monster and rosy boa to less than significant because they would require minimization of habitat disturbance to only that area required for construction; and off-site translocation of animals found during preconstruction clearance surveys. Condition of Certification **BIO-16** would require compensatory land acquisition to mitigate impacts to desert tortoise (described below); staff believes that protection of these compensatory lands would be likely to protect habitat for Gila monster and rosy boa. Staff concludes that no additional mitigation is required to reduce potential impacts to these species below a level of significance.

Desert Tortoise

Desert tortoises are present within the proposed RSEP solar field and generator tie-line alignment and the adjacent desert areas surrounding the site. No field survey data are available for Western's existing 161-kV Parker-Blythe #2 transmission line alignment. Information provided by the applicant (SR 2009a) indicated that most of the live desert tortoise occurrences were noted in the zone of influence (ZOI) transects surrounding the solar field site and transmission line. Recent desert tortoise sign was concentrated in the northwest portion of the solar field site and along the southern half of the transmission line route. In the ZOI transects, recent sign was most abundant to the north and west of the solar field site, and along the southern half of the transmission line route. Shell and skeletal remains were found throughout the ZOI transects except in the area south of the solar field site. Juvenile through adult size classes were detected, and egg shell fragments were found at two locations on the solar field site and one location in the ZOI transects. A large number of shell and skeletal remains were found during the surveys, with 71 percent of the remains estimated as greater than four years old at the time of the surveys. The large number of remains suggests that a significantly higher density tortoise population may have been present in the project area and surrounding areas within the last ten years. It is unknown what caused this evidently high level of mortality, but the applicant has speculated that drought and/or disease may be to blame. Currently, the project site and surrounding areas support desert tortoises in low density, but shell fragments on site suggest this population is still reproducing and therefore viable (Appendix 5.2C of SR 2009a). **Biological Resources Table 7** identifies the types and locations of sign observed during protocol surveys conducted April to May 2009. See also Figure 5.2-5 in the AFC and Figures 2 and 3 in Appendix 5.2C of the AFC (SR 2009a).

**Biological Resources Table 7
Desert Tortoise 2009 Protocol Survey Results**

Location	Type of Sign	Quantity	Comments
Solar Field Site (survey area = 2,560 acre project site property boundary)	Live individual	1	
	Shell and skeletal remains	16	13 of the remains were over four years from time of death, 2 were between 2-4 years since time of death, and 1 died within 1 year of the surveys
	Burrow	7	
	Scat	13	All but one scat event less than 1 year old
	Egg shell fragments	2	
	Tracks	1	
Transmission Line Route	Live individual	1	
	Shell and skeletal remains	9	6 of the remains were over four years from time of death and 3 were between 2-4 years since time of death
	Burrow	7	
	Scat	8	All but 2 scat events less than 1 year old
	Egg shell fragments	0	
	Tracks	0	
ZOI Transects (adjacent to project area)	Live individual	5	
	Shell and skeletal remains	66	46 of the remains were over four years from time of death, 15 were between 2-4 years since time of death, 1 was between 1-2 years since time of death, and 1 died within 1 year of the surveys
	Burrow	52	
	Scat	35	All but 11 scat events less than 1 year old
	Egg shell fragments	1	Location of egg shell fragments also a drinking depression
	Tracks	2	

Source: Appendix 5.2C, SR 2009a

Because of the large-scale land use conversion of the solar field site coupled with the expected level of vehicle traffic and maintenance activities (i.e., mowing, mirror washing, etc.) required at the site, construction of the RSEP would require the applicant to translocate any tortoises found within the solar field construction footprint and adjacent diversion channels and logistics and lay-down areas (up to 1,540 acres). Once construction is complete, 1,410 acres would remain fenced to permanently exclude tortoises, to avoid risk of injury or mortality to tortoises during solar generation operations.

One living tortoise was found within the solar generator site. However, the actual number of desert tortoises on the project site cannot be determined from field survey data alone, due to the possibility that some tortoises may have been overlooked during surveys (e.g., they may have been in deep burrows where they could not be seen). The USFWS (2010c: see Table 3) provides a mathematical formula for estimating actual numbers of adult and sub-adult desert tortoises from field survey data. Statistical techniques can provide further estimates of minimum and maximum numbers of tortoises expected, within a 95% confidence interval.

Based on the Service's spreadsheet, two adult or subadult tortoises should be expected on the site, and the number may range from one to as many as 12 (with 95% confidence). In addition, most juvenile tortoises and tortoise eggs are not detected during field surveys. Based on estimates that juveniles account for about 30% to 50% of

a population (Turner et al. 1987), the site would be expected to support a total of about three to four tortoises, including two adults and one or two juveniles.

The number of tortoise eggs expected on the site was estimated based on the assumption of a 1:1 sex ratio and any female tortoise on the site would be expected to lay eggs (clutch) in a given year. Thus, one of the two adult desert tortoises expected onsite is presumed to be a reproductive female. On average, female tortoises produce 1.6 egg clutches per year (Turner et al. 1984), and the average number of eggs per clutch is 5.8 (USFWS 1994). Therefore, staff estimates that 10 eggs would be expected on the site in a typical year. Staff emphasizes that these estimates are extrapolated from field survey data and are not intended to represent the actual numbers of tortoises or eggs on the site.

Survey data provided by the applicant indicates that the generator tie-line alignment and interconnector substation site also are occupied desert tortoise habitat. Staff believes that tortoises or eggs would also be expected along Western's existing 161-kV Parker-Bythe transmission line alignment.

Direct Impacts

Implementation of the project would result in the permanent or long-term loss of approximately 1,770 acres of occupied desert tortoise habitat. The transmission line route would not be fenced and would not pose a barrier to movement for the desert tortoise. The main threat to the desert tortoise related to the transmission line would be risk of injury or mortality during construction or, after construction is complete, vehicle strikes on the approximately 5.4-mile new unpaved access road. The most important impact to desert tortoise would be habitat loss at the solar field site, which would be converted for incompatible land use and fenced to prevent desert tortoises from accessing the site.

During construction of the RSEP, desert tortoises or eggs could be harmed during clearing, grading, and trenching activities or could become entrapped within open trenches and pipes. Construction activities could also cause direct mortality, injury, or harassment of tortoises or eggs as a result of encounters with vehicles or heavy equipment. Other direct effects could include individual tortoises or eggs being crushed or entombed in their burrows, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers' or visitors' pets. Desert tortoises may also be attracted to the construction area by shade beneath vehicles, equipment, or materials, or the application of water to control dust, placing them at higher risk of injury or mortality. Increased human activity and vehicle travel could disturb, injure, or kill individual tortoises. Also, tortoises may take shelter under parked vehicles where they could be killed, injured, or harassed when the vehicle is moved.

The applicant has recommended impact avoidance and minimization measures to reduce these direct impacts to desert tortoise, including installation of exclusion fencing to keep desert tortoise out of construction areas, translocating the resident desert tortoises from the RSEP site, reducing construction traffic speed limits to reduce the incidence of road kills, and a worker training program. Staff has incorporated these recommendations into conditions of certification. These include Conditions of

Certification **BIO-1** through **BIO-10**, which apply to protection of all biological resources including desert tortoise, and Conditions of Certification **BIO-14** through **BIO-17**, which are specific to desert tortoise.

Staff's proposed Condition of Certification **BIO-14** (Desert Tortoise Clearance Surveys and Exclusion Fencing) would require installation of security and desert tortoise exclusionary fencing around the entire project site and along access roads, and **BIO-15** (Desert Tortoise Translocation Plan) recommends the preparation and implementation of a desert tortoise translocation plan to move any tortoises within the solar generator site to translocation sites, to be determined and identified in the Plan, in coordination with Western, USFWS, BLM, and CDFG. Staff notes that the presence of eggshell fragments on the RSEP site indicate a potential for additional breeding, and that tortoise egg clutches commonly consist of 1 to 12 (often 4 to 6) eggs (Stebbins 2003). Staff recommends that the applicant, USFWS, and CDFG consider the possibility that one or more juvenile tortoises or egg clutches could be found on-site during pre-construction surveys in preparation of the applicable desert tortoise take permits.

Staff's proposed Condition of Certification **BIO-8** recommends a variety of additional impact avoidance and minimization measures to reduce the risk of injury and death to desert tortoise and other special-status species. Staff's proposed Condition of Certification **BIO-9** requires verification that all desert tortoise impact avoidance, minimization, and compensation measures have been implemented.

Desert tortoise clearance surveys and translocation, as described in staff's proposed Conditions of Certification **BIO-14** and **BIO-15** have inherent risks and could themselves result in direct adverse effects to desert tortoises, such as mortality, injury, or harassment of desert tortoises due to equipment operation, fence installation, removal of tortoise burrows, and tortoise translocation. These potential impacts are described in more detail below.

Impacts to Critical Habitat

No direct impacts to designated desert tortoise critical habitat would result from the project. The RSEP solar generator site, generator tie-line alignment, and interconnector substation, are outside the federally designated critical habitat for desert tortoise (USFWS 1994). Western's existing 161-kV Parker-Blythe #2 transmission line alignment is within about one mile of the southeast corner of the Chemehuevi critical habitat unit, near Vidal.

Translocation⁵

All tortoises, including adults, subadults, and juveniles found during clearance surveys on the solar generator site and contiguous disturbance area would be translocated off the site to new locations. However, it is likely that some tortoises, particularly juveniles, and tortoise eggs would be overlooked during clearance surveys because of the cryptic nature of tortoises, especially the juveniles and hatchlings and location of egg clutches

⁵ In this SA/DEIS, translocation is defined as any project-related action involving moving any desert tortoise or tortoise egg from one location to another, regardless of distance. When finalized, the Desert Tortoise Translocation Plan (per Condition of Certification **BIO-14**) shall adhere to resource agency requirements and may or may not distinguish between translocation and relocation, depending upon distance or other factors.

below ground. These tortoises and eggs would be subject to mortality from project activities within the tortoise exclusion fence during construction and future operation of the project. Mortality would be minimized through staff's proposed Conditions of Certification **BIO-8** (Impact Avoidance and Minimization Measures), **BIO-14** (Desert Tortoise Clearance Surveys and Exclusion Fencing), and **BIO-15** (Desert Tortoise Translocation Plan). Any tortoises found on the generator tie-line alignment, interconnector substation site, or the existing 161-kV Parker-Blythe transmission line alignment would be moved from harm's way as needed. Impacts to desert tortoises in these areas would be avoided through staff's recommended Conditions of Certification **BIO-8** and **BIO-14** (above).

Staff estimates that two adult or subadult tortoises would be translocated from the solar generator site and that approximately two juvenile tortoises and ten eggs would suffer mortality during project construction. It is possible that juvenile desert tortoises will be found within the exclusion fence during project construction or operation. Staff does not anticipate that desert tortoises would be translocated during construction or upgrade work for the project's transmission line components. Desert tortoises encountered during construction work on transmission lines would be allowed to leave the construction area or moved short distances as described in staff's recommended Condition of Certification **BIO-8**.

Because handling and translocation causes risk to tortoise survival, all translocated tortoises must be radio-tagged and monitored to evaluate translocation success. If five or more tortoises are translocated, the USFWS (2010a) also requires radio-tagging and follow up monitoring of an equal number of host population tortoises at each translocation site. In addition, USFWS requires radio-tagging and follow-up monitoring of an equal number of tortoises at a selected control site, where no translocated animals have been introduced.

Desert tortoise translocation would require a series of actions including but not limited to the following activities:

1. Identification of the proposed translocation and control sites;
2. evaluation of the habitat quality on the translocation and control sites;
3. determination of existing tortoise density at the translocation site and an assessment of the site's ability to accommodate additional tortoises above baseline conditions;
4. pre-construction fencing and clearance surveys of the project site;
5. construction of holding pens for quarantined translocated tortoises prior to their release into host populations;
6. pre-construction surveys of the proposed translocation sites;
7. placement of tracking units (e.g., GPS transmitters) on tortoises from the project site and, if five or more animals are translocated, at the translocation site and control site;

8. disease testing for tortoises translocated more than 500 m and at the host and control sites;
9. long term monitoring and reporting of control and translocated and host populations; and
10. implementation of remedial actions should excessive predation or mortality be observed.

Capturing, handling, and translocating desert tortoises from the RSEP site after the installation of exclusion fencing could result in harassment and possibly injury or death. Impacts of translocation upon desert tortoises may include elevated stress hormone levels, changes in behavior and social structure dynamics, increased movement (caused by courting or aversive behavior with other tortoises, avoidance of predators or anthropogenic influence, homing, or seeking out of preferred or familiar habitat), spread of disease, increased competition for resources, and increased predation. Furthermore, handling, holding, and transport protocols may compound with abiotic factors to affect the outcome for translocated individuals (Bertolero et al. 2007; Field et al. 2007; Rittenhouse et al. 2007; Teixeira et al. 2007), particularly during extreme temperatures, or if they void their bladders. Averill-Murray (2001) determined that tortoises that voided their bladders during handling had significantly lower overall survival rates (0.81-0.88) than those that did not void (0.96). If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, pathogens may be spread among the tortoises, both resident and translocated animals. For tortoises near but not within the RSEP site, fencing off habitat within their home ranges would likely result in displacement stress that could result in decrease in health, exposure, increased risk of predation, increased intraspecific competition, or death. Tortoises moved outside their home ranges may attempt to return to the area from which they were moved, therefore making it difficult to isolate them from the potential adverse effects associated with project construction. Mortality for translocated desert tortoise has been estimated at approximately 15% (Sullivan 2008), though recent evidence from the desert tortoise translocation effort conducted in support of the Fort Irwin Land Expansion Project indicates that mortality rates may be closer to 25% per year (Gowan and Berry 2010).

Success rates of herpetofauna translocations range from 14% to 42%, suggesting that improved methods are needed for future recovery of many reptiles and amphibians (Dodd and Seigel 1991; Germano and Bishop 2009). A recent review of 91 herpetofauna translocation projects reported the primary causes of translocation failure were homing response by translocated individuals and poor habitat in translocation areas, followed by human collection, predation, food and nutrient limitation, and disease (Germano and Bishop 2009). The risks and uncertainties of translocation to desert tortoise are well recognized in the desert tortoise scientific community. The Desert Tortoise Recovery Office (DTRO) Science Advisory Committee (SAC) has made the following observation regarding desert tortoise translocations (DTRO 2009, p. 2):

... consensus (if not unanimity) exists among the SAC and other meeting participants that translocation is fraught with long-term uncertainties, notwithstanding recent research showing short-term successes, and should not be considered lightly as a management option. When considered, translocation

should be part of a strategic population augmentation program, targeted toward depleted Populations in areas containing “good” habitat. The SAC recognizes that quantitative measures of habitat quality relative to desert tortoise demographics or population status currently do not exist, and a specific measure of “depleted” (e.g., ratio of dead to live tortoises in surveys of the potential translocation area) was not identified. Augmentations may also be useful to increase less depleted populations if the goal is to obtain a better demographic structure for long-term population persistence. Therefore, any translocations should be accompanied by specific monitoring or research to study the effectiveness or success of the translocation relative to changes in land use, management, or environmental condition.

To provide guidance for the applicant in addressing these concerns and developing an adequate relocation/translocation plan, the USFWS (2010a) provides guidelines for clearance and translocation of desert tortoises from project sites. This document describes timing of translocations; disease testing and monitoring requirements for tortoises that are translocated and those already at recipient sites; and control site monitoring for translocation projects involving more than 5 desert tortoises. USFWS standards require disease testing and quarantine for any tortoise translocated more than 500 meters (985 feet). This requirement is intended to limit the potential exposure risk to healthy tortoises in adjacent habitat.

The applicant submitted a Draft Desert Tortoise Relocation/Translocation Plan for the RSEP as Appendix A of the Draft Biological Assessment (CH2MHill 2010c). Based on the results of 2009 protocol surveys, the applicant estimates that fewer than five desert tortoises would require translocation from the project site (Appendix A of CH2MHill 2010c). The Draft Desert Tortoise Relocation/Translocation Plan proposes private, applicant-owned land adjacent to the solar field site as a translocation area. The proposed translocation site is proposed for long-term conservation under a conservation easement (Appendix A of CH2MHill 2010c). These adjacent lands provide similar habitat and staff has concluded, in consultation with CDFG, USFWS, BLM, and Western biologists, that they would be suitable as a translocation site and as compensation land as described in staff’s proposed Condition of Certification **BIO-16** (below).

Staff’s proposed Condition of Certification **BIO-15** requires the applicant to prepare and implement a Desert Tortoise Translocation Plan in consultation with staff, BLM, CDFG, and USFWS, to be based on the draft Plan described above and to conform to USFWS guidelines (2010a). The final plan will provide additional details, including applicable monitoring and disease testing requirements for translocated tortoise(s).

Mitigation for Desert Tortoise Habitat Loss

Construction of the proposed RSEP facility and associated facilities would result in the permanent and long-term loss of approximately 1,770 acres of occupied desert tortoise habitat, (see **Biological Resources Table 3**; for the purpose of estimating project impacts, staff includes all impacts except the 6-acre concrete pad and uses the higher acreage for each project component where an acreage range is indicated). The quality of the habitat on the solar field site is lower than that along the generator tie-line and interconnection substation, as the solar field site was historically disturbed by the Rice

Army Airfield. Staff noted on site visits in April, 2010 that soils on much of the site appeared somewhat compacted, and the density and diversity of native vegetation is lower than that on undisturbed areas adjacent to the site. Nonetheless, a live desert tortoise, desert tortoise remains, egg shell fragments, burrows, and tracks were all observed on the site during the 2009 protocol surveys. Sign and live tortoises were also observed along the generator tie-line route and in areas adjacent to the route and the solar field site (see **Biological Resources Table 7** above). Staff believes that similar habitat and tortoise occurrence should be expected on the existing 161-kV Parker-Blythe #2 transmission line alignment.

Habitat along the generator tie-line route appears to be of higher quality for desert tortoises than that found on the solar field site. Soils are more friable, there is no evidence of historic compaction, paving, or oiling; native vegetation is denser and more diverse; wildlife sign (burrows, scat, etc.) is more common; and a large, broad wash supporting microphyll woodland occurs along the route. Further, impacts along the proposed new tie-line alignment would be immediately adjacent to a BLM wilderness area. These impacts include a new access road, with associated edge effects such as weed propagation, introduced into otherwise inaccessible and undisturbed natural habitat.

The solar generator facility and interconnector substation would be surrounded by perimeter fencing designed to exclude tortoises and other wildlife. The generator tie-line and existing 161-kV Parker-Blythe #2 transmission line alignments would not be fenced, but habitat would be lost permanently or long-term through the construction of a 5.4-mile new access road, transmission tower construction sites, other construction disturbance (road improvements, structure access areas, pull sites, lay-down areas, etc.). The fenced solar field site would also disrupt tortoise and other wildlife movement and contribute to reduced tortoise movement opportunity among habitat areas. Compensatory mitigation is required to offset this significant impact and to fully mitigate adverse project impacts to desert tortoise. Compensatory mitigation for desert tortoise typically involves balancing the acreage of habitat loss with acquisition of lands that would be permanently protected and enhanced to support viable tortoise populations. The compensation comes about by improving habitat conditions of the acquired property so that more desert tortoises are likely to survive and reproduce on these lands, thus offsetting over time the decrease in numbers of tortoise resulting from the habitat loss.

For the acquisition of mitigation lands to truly compensate for the habitat loss and to make up for the numbers of desert tortoise that would otherwise have been supported by that habitat, the acquisition must be accompanied by (1) permanent protection and management of the lands for desert tortoise, and (2) enhancement actions. The permanent protection is essential because that allows the lands to be managed in a way that excludes multiple threats and incompatible uses (e.g., grazing, off-highway vehicle use, roads and trails, utility corridors, military operations, construction, mining, grazing by livestock and feral burros, invasive species, fire, and environmental contaminants). Without this protection and management the desert tortoise populations on the acquired lands would be subject to the same threats that led to its population declines and threatened status. An equally important component is the implementation of enhancement actions to improve desert tortoise survival and reproduction. These

actions could include habitat restoration, invasive plant control, road closures or road fencing, reducing livestock and burro grazing, and controlling ravens and other predators.

To mitigate the loss of desert tortoise habitat under CESA, CDFG usually requires a mitigation ratio for compensation lands of 1:1 for low-quality suitable habitat and a ratio greater than 1:1 for impacts to better quality habitat (i.e., acquisition of more than one acre of compensation lands for each acre lost). CDFG typically uses a 3:1 ratio or higher for good quality habitat such as that found along the generator tie-line alignment. This higher ratio for the impacts along the generator tie-line and related disturbance is based on (1) absence of soil compaction, pavement, or oiling found at the former airfield site; (2) the geographic nature of the disturbance, which would create multiple new, localized disturbed sites which can become sources of weed infestations or other disturbances into surrounding undisturbed desert lands; (3) the 5.4 miles of new roadway, which could lead to increased noise and other human disturbances as recreational motorists make use of the new access route; and (4) the generator tie-line alignment's location at the boundary of a BLM Wilderness Area, which has higher conservation priority than most other desert lands.

The applicant has proposed to provide compensation lands at a 1:1 ratio to mitigate for permanent impacts to desert tortoise habitat (SR 2009a; CH2MHill 2010c). Staff and CDFG propose that a mixed habitat compensation ratio should be implemented for the RSEP. The rationale for the mixed ratio is that tortoise habitat quality and long-term habitat value for tortoise varies between the solar field site and the transmission corridor/substation site, primarily due to historic disturbance on the solar field site. In consultation with USFWS, BLM, and CDFG biologists, staff has concluded that a mitigation ratio of 1:1 (i.e., acquisition and preservation of one acre of compensation lands for each acre of project disturbance) would reduce permanent and long-term impacts to approximately 1,661 acres of lower quality habitat at the solar generator site to less than significant. In the absence of further information about habitat quality along the existing 161-kV Parker-Blythe #2 transmission line alignment, staff includes the estimated 127 acres of disturbance for OHGW installation within the habitat impacts to be mitigated at 1:1. For permanent and long-term impacts to approximately 109 acres of higher-quality habitat along the generator tie-line, access road, and at the interconnector substation, a mitigation ratio of 3:1 would reduce impacts to less than significant.

Habitat compensation would consist of land dedication and protection for all project impacts to desert tortoise habitat on private lands. For impacts on public (BLM) lands, compensation may consist of land dedication and protection at a 2:1 mitigation ratio and an additional assessed financial contribution at a 1:1 ratio, so that total compensation is at a 3:1 ratio for impacts to BLM lands, as described in the following sections. This mitigation strategy is consistent with measures in Incidental Take Permits issued by CDFG for projects in the region, and with requirements described in the NECO (BLM and CDFG 2002).

Biological Resources Table 8.
Summary of Impact Estimates and Compensation Ratios for Desert Tortoise Habitat¹

Project component	Disturbance acreage	Compensation Ratio	Compensation acreage
Solar generator site, including permanent and long-term disturbance within and outside perimeter fence; all applicant-owned land; and 127 acres estimated disturbance on Parker-Blythe #2 transmission line.	1,661 acres	1:1	1,661 acres
Total permanent and long-term disturbance for generator tie-line, access road, and interconnector substation (includes approx. 20 acres private land and 97-99 acres BLM land).	109 acres	3:1	327 acres ²
Acreage Totals	1,770 acres		1,988 acres

1. For the purpose of estimating project impacts, staff includes all impacts except the 6-acre concrete pad and uses the higher acreage for each project component where an acreage range is indicated. See **Biological Resources Tables 2 and 3**.
2. Compensation for impacts to BLM land may consist of 2:1 habitat compensation and 1:1 habitat enhancement (financial contribution to be based on estimated cost of acquisition).

State and Federal Desert Tortoise Habitat Compensation Requirements

To satisfy the full mitigation standard under CESA (California Fish and Game Code Section 2081) and to comply with requirements of a State Incidental Take Permit for desert tortoise, the proposed mitigation must meet criteria described in Title 14 CCR, Sections 783.4(a) and (b). These criteria include requirements that the proposed mitigation would be capable of successful implementation and that adequate funding is provided to implement the required mitigation measures and to monitor compliance effectiveness of the measures. In order to ensure that the project meets these requirements, CDFG typically requires and the Energy Commission would require that lands acquired as mitigation for a listed species must be managed and protected in perpetuity for the benefit of that species. The mitigation ratios described above are consistent with habitat compensation ratios as required by CDFG and the Energy Commission for impacts to desert tortoise and other listed threatened or endangered species, based on habitat quality.

The approach to desert tortoise mitigation for the RSEP must also satisfy BLM's policies for lands within the NECO planning area (BLM and CDFG 2002). The NECO specifies the following desert tortoise compensation requirements (from page D-2, Appendix D, BLM and CDFG 2002):

A mitigation fee based on the amount of acreage disturbed shall be required of proponents of new development. Within Desert Wildlife Management Areas (DWMAs) (Category I) the lands delivered or equivalent fee shall be an amount that achieves a ratio of 5 acres of compensation land for every 1 acre disturbed. Outside DWMAs (Category III) the lands delivered or equivalent fee shall be an amount that achieves a ratio of one (1) acre of compensation land for every 1 acre disturbed. Funds may be expended as approved by the Management

Oversight Group in 1991. Lands will be acquired or enhanced within the same recovery unit as the disturbance. CDFG may require additional fees for management of lands and for rehabilitation of lands.

Consistent with NECO direction, staff recommends that for permanent and long-term impacts to desert tortoise habitat on BLM-managed lands, the BLM portion of the mitigation ratio shall be 1:1 outside of designated critical habitat or Desert Wildlife Management Areas. The proposed project does not cross any DWMA's or other special management areas, and all BLM lands impacted by the RSEP are classified as Category III lands.

As specified in staff's proposed Condition of Certification **BIO-16**, acquisition, protection and enhancement of desert tortoise habitat, in combination with the requirements of **BIO-14**, **BIO-15** and **BIO-17**, would mitigate project impacts to desert tortoise. Acquisition of appropriate mitigation lands as described in **BIO-16** would secure and protect desert tortoise habitat.

Staff's proposed Condition of Certification **BIO-16**, Desert Tortoise Compensatory Mitigation, specifies security for acquisition, dedication, and protection of 1,988 acres and provides a estimates of each associated cost. Also, see **Biological Resources Table x**). The estimated composite mitigation cost to meet staff's recommendation for establishing the security would be approximately \$2,622 per acre of compensation land. This security amount may change with updated appraisals and when a Property Analysis Record or similar analysis is prepared for the parcels selected for acquisition. It is important to note that these are estimates based on current cost estimates; the requirement is defined in terms of compensation habitat acreage, not cost, and actual costs may vary.

Integrating State and BLM Desert Tortoise Habitat Compensation

Staff from the Energy Commission, Western, BLM, USFWS, and CDFG agree that compensatory mitigation at the 3:1 and 1:1 ratios described above is appropriate for the RSEP's impacts to desert tortoise habitat. However, some differences remain between the federal and state approach to desert tortoise mitigation that currently preclude a complete integration of desert tortoise mitigation requirements. One difference is the state requirement for permanent protection of acquired mitigation lands. Energy Commission staff and CDFG require that mitigation lands acquired for endangered species be maintained and protected in perpetuity for the benefit of those species. The BLM generally cannot make the same commitment to protecting acquired mitigation lands because the multiple use mandate on most lands it manages restricts its ability to designate lands solely for conservation purposes or to exclude potentially incompatible development and activities.

The Renewable Energy Action Team (REAT) Agencies (Energy Commission, BLM, CDFG, and USFWS) agree that to address the in-perpetuity protection requirement, any lands acquired and subsequently donated to BLM will have either a deed restriction or conservation easement in title that will preclude future development of the land. The REAT Agencies also note that protection could be achieved by buying private in-holdings within designated wilderness or wilderness study areas, being that these areas

are congressionally designated and as such preclude incompatible land uses within their boundaries, thus meeting the requirement for in perpetuity protection. The BLM has an established process for accepting lands with deed restrictions or conservation easements and is working on streamlined version of this process. Staff anticipates that the streamlined process for in-perpetuity protection of BLM mitigation lands will be established before the end of 2010 (Fesnock pers. comm., Flint pers. comm.).

Rather than just purchasing compensation lands, BLM may use a portion of the compensation funds to implement desert tortoise habitat enhancement measures. These measures may include, but would not be limited to: habitat restoration and invasive plant control, eliminating livestock and burro grazing, fencing to exclude livestock and vehicles or reduce the incidence of road strikes, controlling tortoise predators such as ravens, feral dogs and coyotes, as well as increased law enforcement, signage and education.

The BLM has also indicated that for any land enhancement actions or recovery actions implemented on existing BLM-owned lands, BLM would develop a Memorandum of Understanding (MOU) with CDFG containing provisions for notification of any proposed Projects affecting those lands (BLM 2009a). The BLM agreed that future Projects authorized on these mitigation lands would be compensated at a higher rate (BLM 2009a).

Staff believes that habitat enhancement measures, in combination with habitat acquisition, would feasibly and effectively mitigate the project's impacts to desert tortoises. The measures outlined above are consistent with the USFWS desert tortoise recovery plan recommendations (USFWS 1994, 2008a), which describe actions in addition to land acquisition that could reduce threats to desert tortoise populations. Staff agrees that fencing, retirement of grazing allotments, removal of burros, and habitat restoration show considerable promise as actions that could increase desert tortoise survivorship and reproduction in portions of its range. These measures would address specific known threats to desert tortoise as identified in the Recovery Plan (USFWS 1994b), Draft Revised Recovery Plan (2008a) and Spotlight Species Action Plan (USFWS 2009e). These threats, which may be relieved in part through the habitat enhancement measures listed above, include proliferation of roads; off-highway vehicle activity; deliberate maiming, killing, or collecting; habitat invasion by non-native invasive species; and increased frequency of wildfire due to invasion of desert habitats by non-native plant species.

The amount of the security deposit (calculated below) is based upon estimated cost to purchase and protect mitigation land at the ratios described above. BLM may use no more than the portion of the fund that corresponds to a 1:1 ratio for staff's estimated purchase and protection cost for long-term and permanent impacts to desert tortoise habitat on BLM lands (99 acres as shown in Biological Resources Table 2 and additional land disturbed on the existing 161-kV Parker-Blythe transmission line) to implement habitat enhancement measures as described above. The remainder of the mitigation obligation shall be used only for compensation land acquisition and protection, initial improvement and management.

Calculation of Security for Desert Tortoise Habitat Compensation

Staff's proposed Condition of Certification **BIO-16** specifies compensatory mitigation for desert tortoise habitat loss at a 1:1 ratio for the solar field site and for habitat loss along the existing 161-kV Parker-Blythe #2 transmission line alignment and at a 3:1 ratio along the generator tie-line alignment and at the interconnection substation site.

To satisfy Section 2081 of the California Endangered Species Act, the applicant must provide financial assurances to guarantee that an adequate level of funding is available to implement all impact avoidance, minimization, and compensation measures described in the desert tortoise conditions of certification. These financial assurances are generally provided in the form of an irrevocable letter of credit, a pledged savings account or another form of security prior to initiating ground-disturbing project activities. Staff's proposed conditions of certification typically specify the dollar amount of the security, and include a provision for adjusting that security amount when parcel-specific information is available. This security amount is calculated by multiplying the required compensation mitigation acreage by the estimated total per acre costs, a figure which represents the sum of the costs required for: (1) land acquisition, (2) initial habitat improvements, and (3) a long-term maintenance and management fee to support long-term management of the acquired lands.

The latter cost for the long-term management endowment is typically the largest component of the mitigation fee. Interest or earnings from the endowment creates a long term funding source to provide enough income to cover annual stewardship costs on the acquired lands and includes a buffer to offset inflation. The amount for the endowment is established by a Property Analysis Record (PAR) or PAR-like analysis. PAR is a database method developed by the Center for Natural Lands Management (<www.cnlm.org/cms>) which calculates the costs of in perpetuity land management activities for a particular parcel. These activities include development of a desert tortoise management plan tailored for each parcel of mitigation land to assess habitat status, identify desired conditions, and develop plans to achieve conditions that would best support desert tortoise. Once the management plan is developed and approved by the appropriate resource agencies, implementation of enhancement actions such as fencing, road closure, weed control, habitat restoration as well as monitoring can begin. The goal of these activities is to increase the carrying capacity of the acquired lands for desert tortoise and increase their population numbers by enhancing survivorship and reproduction.

Funding for the initial habitat improvements supports those actions needed immediately upon acquisition of the property to secure it and remove hazards. These activities might include fencing or debris clean-up, or other urgent remedial action identified prior to when the parcels were acquired. When the management plan is completed for the acquired parcel activities like these are thereafter funded from the interest produced by the long-term management maintenance fee described above.

In contrast to the state mitigation approach, the BLM does not require a long-term maintenance and management fee or other funding to manage the acquired desert tortoise mitigation lands because they pursue recovery goals through implementation of region-wide management plans and land use planning as described in the NECO and

the Desert Tortoise Recovery Plan rather than through parcel by parcel acquisitions and management. The BLM typically requires a cash payment (proffer) prior to initiating ground-disturbing activities, which generally includes a per acre cost reflecting current land value and recent purchase prices, as well as additional acquisition and indirect costs and funding for appraisals, environmental site assessments, property cleanup, and an inflation contingency. However, as noted by the REAT agencies, other methods may be employed which would satisfy both BLM and the state agency legal requirements.

The applicant may elect to purchase and permanently protect compensation lands itself; to fund the acquisition and initial improvement of compensation lands through NFWF by depositing funds for that purpose into NFWF's REAT Account as outlined in **BIO-16**. Further, **BIO-16** would require that the project owner provide financial assurances to guarantee an adequate level of funding to implement the compensation measures described above. Because there are several suitable options available to the applicant to satisfy the compensation requirement, and because mitigation requirements must satisfy the requirements of both state and federal Endangered Species Acts, staff's calculation of the security amount includes estimates of all transaction and management fees described above. These calculations are presented in **Biological Resources Table 10** in the Conclusion section, below.

Location of Acquired Habitat Compensation Lands

The RSEP solar field site is located within a 3,324-acre holding owned by the applicant. The applicant proposes to apply lands within the holding, but outside the RSEP footprint area, as desert tortoise compensation lands. Energy Commission staff, in coordination with BLM, CDFG, Western, and USFWS biologists, tentatively agree that these lands are largely suitable as compensation for project impacts to desert tortoise habitat, with some exceptions. Staff concludes that habitat values within a 250-foot buffer area surrounding the project footprint would be reduced due to indirect and off-site project impacts such as noise, lighting, ground vibration, human disturbance, weed introductions, and other effects (see **Construction Impacts to Vegetation and Construction Impacts to Common Wildlife and Habitat**, above; and **Operations Impacts to Birds and Common Wildlife**, below). Therefore, staff recommends this 250-foot buffer area surrounding the perimeter fence (estimated as 165 acres), if included as desert tortoise compensation land, should be credited at the reduced mitigation value of 0.5:1 rather than 1:1. That is, the approximately 165-acre area would be credited as only 82.5 acres of mitigation land. For similar reasons, staff recommends that applicant-owned lands between SR-62 and the project footprint (i.e., north of the heliostat perimeter and administrative area, estimated as 230 acres) also should be credited at the reduced mitigation value of 0.5:1 rather than 1:1. This area would be credited as only 115 acres of mitigation land. Based on these approximations, staff estimates that applicant-owned land contiguous to the project area could account for approximately 1,486 acres of the required 1,998 acres of desert tortoise compensation habitat as recommended in Condition of Certification **BIO-16**.

Staff's estimated compensation and security cost described above, and in Condition of Certification **BIO-16** and **Biological Resources Table 10**, assumes that the applicant would purchase all compensation land or provide cash funding to a REAT NFWF

subaccount as described in **BIO-16** and **Biological Resources Table 6**. Staff recognizes that much of the compensation mitigation would likely be acreage currently owned by Solar Reserve, but some uncertainties remain. In consultation with CDFG, staff recommends that the applicant transfer fee title to the Lands to CDFG under terms approved by CDFG. Alternatively, a CDFG-approved non-profit organization qualified pursuant to California Government Code section 65965 may hold the fee title or a conservation easement over the Lands. In the event an approved non-profit holds title, a conservation easement shall be recorded in favor of DFG in a form approved by CDFG; in the event an approved non-profit holds a conservation easement over the Lands, CDFG shall be named third party beneficiary. Staff further recommends requiring the security as described in Condition of Certification **BIO-16** and **Biological Resources Table 10**, pending confirmation that applicant-owned compensation lands meet the selection criteria described in BIO-16, and until establishment of a conservation easement or title transfer, PAR or PAR-like analysis, long-term management and maintenance fund, and all other associated costs and activities for the compensation land are complete. Staff anticipates that much or all of the project's compensation requirement could be satisfied relatively quickly through dedication of applicant-owned lands.

Except as noted above, areas within the holding but outside of the permanent project fencing are contiguous to the solar field site and provide similar habitat values. These adjacent lands that are already owned by the applicant and may be used to fulfill part or all of the State mitigation requirements of proposed Condition of Certification **BIO-16**. If the applicant chooses not to use these lands for mitigation, then staff recommends that alternate lands should be identified and acquired offsite, but should be located within the same recovery unit as the proposed project (Colorado Desert Recovery Unit, as identified in the *Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise (Gopherus agassizii)* (USFWS 2008a).

Indirect Effects to Desert Tortoise

Construction-related indirect effects to desert tortoises would be similar to those described for common wildlife, above. Additional indirect effects to desert tortoises would occur during operations of the RSEP. These include loss of forage, burrowing sites, and cover sites, the spread of non-native invasive plants, loss of dispersal areas and connectivity to other areas, reduced home ranges, and increased risk of predation by predators (primarily ravens) attracted to the area by increased human activity. Staff's recommended Condition of Certification **BIO-17** would require raven management on-site and payment on a per-acre basis into a region-wide raven management plan. Each of these impacts is discussed in more detail below, under the discussion of operational impacts.

Conclusion: Summary of Desert Tortoise Impacts and Mitigation

The project would result in permanent or long-term habitat loss and degradation totaling approximately 1,770 acres. Staff also concludes that project implementation would necessitate translocation of two adult or subadult tortoises, and mortality of approximately two juvenile tortoises and ten eggs. Because fewer than five tortoises are expected to be translocated, there would be no requirement for handling additional tortoises at translocation sites or control sites.

Staff has developed proposed conditions of certification to reduce significant impacts to desert tortoise to less than significant under CEQA and to fully mitigate these impacts under CESA. These include staff's proposed Conditions of Certification **BIO-1** through **BIO-9**, which apply to protection of desert tortoise and other biological resources in and near the RSEP. Staff's proposed Conditions of Certification **BIO-14** through **BIO-17** would require additional measures, including installation of tortoise exclusion fencing; clearance surveys; translocation; monitoring; habitat compensation through the acquisition, protection, management, and enhancement of compensation lands; predator management and control; and verification that all measures are implemented.

Staff concludes that implementation of these conditions would reduce impacts at the solar generator site, generator tie-line alignment, and interconnector substation to desert tortoise to less than significant levels under CEQA and would also satisfy the CESA requirements to fully mitigate impacts to desert tortoise under California Fish and Game Code Section 2081. The conditions would minimize habitat disturbance to only that necessary for project development; would prevent desert tortoises from entering the project site through installation of exclusion fencing; would require removal and translocation of tortoises now present on the project site; and would compensate for habitat loss through off-site habitat acquisition. All of these measures would be monitored and verified according to provisions set forth in the conditions of certification. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Impacts to Special-Status Birds: Overview

The desert vegetation and adjacent mountains provide foraging, cover, or breeding habitat for a variety of resident and migratory birds. During field surveys of the site, including the generator tie-line alignment and desert tortoise zone of influence transects, the applicant identified 19 bird species (Appendix 5.2C of SR 2009a; CH2MHill 2010e). Three special-status birds have been documented on or over the site. These are: loggerhead shrike, burrowing owl, and prairie falcon. Prairie falcon and golden eagle nest in the surrounding mountains. There are golden eagle nesting territories in the Turtle, Arica, and West Riverside mountains (Bloom 2010), and prairie falcon territories in the Arica and Little Maria mountains, bordering Rice Valley (CDFG 2010a; Bloom 2010). Both species are likely to utilize the project site for foraging year-around, including during nesting season. Special-status shrubland species, including loggerhead shrike and Le Conte's thrasher, may nest onsite. Burrowing owls evidently winter on-site but probably were not breeding there during 2009 or 2010. Several special-status raptors, including merlin, sharp-shinned hawk, and ferruginous hawk, may utilize the project site during winter for foraging, though no wintering bird field survey data are available. Swainson's hawk (State-listed threatened) could briefly visit the site during spring or fall migration, though it would not be expected to nest or winter in the area.

There are no field survey data or habitat descriptions available for Western's existing 161-kV Parker-Blythe #2 transmission line alignment. Based on a review of Google Earth aerial views of the alignment, the transmission line appears to cross several washes, some of which may support riparian vegetation or desert microphyll woodland vegetation. A variety of special status birds not addressed below could occur in these

habitats. Desert riparian habitat, if present on the alignment, may support breeding habitat for several special status bird species including listed threatened or endangered species (least Bell's vireo or southwestern willow flycatcher). Desert microphyll woodland is a more productive habitat than surrounding uplands and supports breeding desert bird species in higher densities (Laudenslayer 1988). During migration seasons, is important as stopover habitat for large numbers of migratory songbirds.

Golden Eagle

The project site does not provide suitable golden eagle nesting habitat. There are three golden eagle territories within a 10-mile radius of the RSEP site (Bloom 2010) in the Turtle Mountains, West Riverside Mountains, and Arica Mountains, though nest sites in those territories were inactive in May 2010. The entire RSEP project area, including the proposed generator tie-line alignment and existing 161-kV Parker-Blythe transmission line alignment, provides potential foraging habitat, though staff notes that small mammal productivity on the solar generator site appears to be low. Staff expects that golden eagles forage occasionally on the site at any time of year, particularly during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges.

Proximity of golden eagle nesting territories to the 161-kV Parker-Blythe transmission line is unknown. If the transmission line passes near a nesting territory, then human activity and construction disturbance during installation of the fiber optic OPGW could adversely affect golden eagle nesting success. Human intrusions near golden eagle nest sites have resulted in nest abandonment; high nestling mortality when young go unattended due to altered behavior by the parent birds; premature fledging; and ejection of eggs or young from the nest (reviewed by Pagel 2010). Nest-site abandonment would constitute take under the Bald and Golden Eagle Protection Act.

Construction and operation at the proposed RSEP solar generator, generator tie-line and interconnector substation sites have no potential to affect golden eagle nest sites, but do have the potential to eliminate foraging habitat within range of known nesting territories and by creating flight collision or incineration hazards. These collision and incineration hazards are primarily associated with long-term effects of the solar generator and generator tie-line operations, and are addressed below under **Impacts during Operation**.

During years when golden eagles nest in the territories surrounding the RSEP site, the proposed project could have a significant effect on their foraging habitat. The proposed RSEP would disturb or eliminate a large area of suitable golden eagle foraging habitat. Staff concludes that project impacts to foraging habitat surrounding known golden eagle nesting territories would be significant in terms of CEQA. Due to the larger foraging ranges and greater behavioral flexibility of non-nesting golden eagles (i.e., birds using the area during winter or migration seasons, and unmated birds in the area even during breeding season), staff concludes that adverse impacts to foraging habitat for non-breeding golden eagles would be less than significant.

Implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-10** would minimize impacts to potential golden eagle foraging habitat. Condition of

Certification **BIO-16** would require compensatory land acquisition to mitigate impacts to desert tortoise (described above); staff believes that protection of these compensatory lands would be likely to protect foraging habitat for golden eagles. Staff concludes that no additional mitigation is required to reduce potential impacts of the solar generator site, generator tie-line alignment, and interconnector substation to golden eagle foraging habitat below a level of significance. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Staff also recommends Condition of Certification **BIO-18** which would require a compilation of existing field survey data for all known or potential golden eagle nesting territories within visual contact or within two miles of Western's existing 161-kV Parker-Blythe transmission line alignment and, for any portions of the alignment where no protocol survey data are available, new nest surveys. Staff's recommended Condition of Certification **BIO-25** would require preparation and implementation of an Avian and Bat Protection Plan, to be reviewed and approved by USFWS, to specify measures to mitigate or prevent adverse project impacts to birds, including impacts to golden eagle nesting territories. Condition of Certification **BIO-18** also would require early season pre-construction surveys for golden eagle nests within a 10-mile radius of the RSEP solar generation site in conformance with methods recommended by Pagel et al. (2010). These surveys would serve to further document golden eagle nesting activity in the area, but would not alter staff's conclusions regarding significance of the project's impacts or recommended mitigation measures. Staff concludes that implementation of these measures would prevent or mitigate potential project impacts of the solar generator site, generator tie-line alignment, and interconnector substation to golden eagle nesting territories to less than significant under CEQA and would prevent take under the Bald and Golden Eagle Protection Act because they would identify golden eagle nest sites and nesting territories and would limit any project-related impacts to those areas only to activities approved by USFWS in its review of the Avian and Bat Protection Plan. Staff concludes that no additional mitigation is required to reduce potential impacts of these project components to golden eagle nesting territories below a level of significance. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Prairie Falcon

A prairie falcon was observed flying over the project site during field surveys reported by the applicant (SR 2009a) and active prairie falcon nests are reported in the area (Bloom 2010). The project's potential impacts to prairie falcon nesting and foraging habitat would be similar to those described above for golden eagle. Proximity of golden eagle nesting territories to the 161-kV Parker-Blythe transmission line is unknown. If the transmission line passes near a nesting territory, then human activity and construction disturbance during installation of the fiber optic OPGW could adversely affect prairie falcon nesting success, as described above for golden eagles. Construction and operation at the proposed RSEP solar generator, generator tie-line and interconnector substation sites have no potential to affect prairie falcon nest sites, but do have the potential to eliminate foraging habitat within range of known nesting territories and by creating flight collision or incineration hazards. These collision and incineration hazards are primarily associated with long-term effects of the solar

generator and generator tie-line operations, and are addressed below under **Impacts during Operation**.

The prairie falcon holds no special protection under the federal Bald and Golden Eagle Act, and is not Fully Protected under the California Fish and Game Code, but it is a bird of prey, and protected under California Fish and Game Code Section 3503.5. The proposed RSEP would disturb or eliminate a large area of suitable prairie falcon foraging habitat within range of known nesting areas. This impact could be significant under CEQA. Due to the larger foraging ranges and greater behavioral flexibility of non-nesting prairie falcons (i.e., birds using the area during winter or migration seasons, and unmated birds in the area even during breeding season), staff concludes that adverse impacts to foraging habitat for non-breeding golden eagles would be less than significant.

Implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-10** would minimize impacts to prairie falcon foraging habitat. Condition of Certification **BIO-16** would require compensatory land acquisition to mitigate impacts to desert tortoise (described above); staff believes that protection of these compensatory lands would be likely to protect foraging habitat for prairie falcon. Staff concludes that no additional mitigation is required to reduce potential impacts to prairie falcon foraging habitat below a level of significance.

Staff's recommended Condition of Certification **BIO-25** would require preparation and implementation of an Avian and Bat Protection Plan, to be reviewed and approved by USFWS, to specify measures to mitigate or prevent adverse project impacts to birds, including impacts to prairie falcons. Staff concludes that implementation of these measures would prevent or mitigate potential project impacts of the solar generator site, generator tie-line alignment, and interconnector substation to prairie falcons to less than significant under CEQA. Staff concludes that no additional mitigation is required to reduce potential impacts of these project components to prairie falcon nesting territories below a level of significance. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Burrowing Owl

Implementation of the proposed RSEP would impact nine burrow sites that apparently are active during winter, but were not occupied during spring 2009 or 2010 field surveys (CH2MHill 2010e). Burrowing owl nesting season in the low desert begins in March (Patten et al. 2003) and, if they were nesting on-site in 2009 or 2010, would have been detected during field surveys. Based on these survey results, burrowing owls appear to use the site primarily during winter, though the surveys do not exclude the possibility that the owls nest on the site in low numbers during some years. The entire site provides suitable foraging habitat. The applicant estimates that as many as seven single burrowing owls or nesting pairs may occur on the project site (five on the solar generator site and another two on the generator tie-line alignment) (CH2MHill 2010h). Additional suitable or occupied habitat may also be affected along Western's existing 161-kV Parker-Blythe #2 transmission line.

Direct project impacts to burrowing owls would include the crushing of burrows, removal or disturbance of vegetation, increased noise levels, increased human presence, and exposure to fugitive dust. Indirect impacts could include the loss or degradation of habitat due to colonization by invasive weeds and mowing of native vegetation. Operational impacts include increased human presence from maintenance personnel that would flush or otherwise disturb burrowing owls, invasive plant control activities, exposure to high salinity levels at the evaporation basins, and vehicular use of access roads. Impacts that could occur during operations and maintenance are further discussed below under **Impacts during Operation**.

If burrowing owls are present within or adjacent to a construction zone, project disturbance could destroy occupied burrows or cause the owls to abandon burrows. If owls were breeding on or near the site, construction during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. The loss of occupied burrowing owl habitat (habitat known to have been occupied by owls during the nesting season within the past three years) or reductions in the number of burrowing owls, either directly or indirectly through nest abandonment or reproductive suppression, would constitute a significant impact. Burrowing owls and their nests are protected under federal and State laws and regulations, including the Migratory Bird Treaty Act and California Fish and Game Code Section 3503.5.

Staff recommends Condition of Certification **BIO-19** to reduce impacts to burrowing owls. Condition **BIO-19** prescribes that, should it become necessary to destroy an occupied burrow, whether or not breeding is occurring on the site, the applicant would implement a passive relocation plan and construct artificial burrows. Occupied burrows may not be disturbed during the nesting season (February 1 to August 31). In addition, the applicant would provide compensation land consistent with the California Burrowing Owl Consortium guidelines to offset the loss of foraging habitat (CBOC 1993). Staff estimates total burrowing owl compensation habitat would 135 acres, as described in Condition of Certification **BIO-19**. Compensation lands would be on lands surrounding the artificial burrows, likely on lands presently owned by the project owner.

Implementation of staff's proposed Condition of Certification **BIO-16**, the compensatory mitigation plan for desert tortoise, could further mitigate habitat loss by the preservation of similar vegetation and habitat, depending on the location and burrowing owl occupancy on the compensation lands. With implementation of these conditions, staff concludes that potential impacts of the solar generator site, generator tie-line alignment, and interconnector substation to burrowing owls would remain adverse but would be mitigated to less than significant under CEQA because new burrow sites would be provided for displaced burrowing owls and suitable habitat would be dedicated and protected in perpetuity to offset habitat loss on the project site. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Special-Status Wintering/Migratory Raptors

Several migratory raptor species, including Cooper's hawk, sharp-shinned hawk, ferruginous hawk, northern harrier, merlin, and Swainson's hawk spend winters in the southern California deserts or, (for Swainson's hawk) migrate through the region en

route to wintering habitat farther south. The project would eliminate or degrade foraging habitat throughout the proposed solar generator site and, to a lesser extent, on the generator tie-line alignment and at the interconnector substation site. Additional foraging habitat may also be affected along Western's existing 161-kV Parker-Blythe #2 transmission line.

Due to the larger foraging ranges and greater behavioral flexibility of raptors outside the breeding season, staff concludes that adverse impacts to foraging habitat for wintering and migratory raptors would be less than significant. Potential operations impacts of the proposed project, including collision with project facilities, or burning in flight near the central tower or standby points, are addressed below (**Impacts during Operations**).

Special-Status Desert Shrubland Passerine Birds

Several special-status perching birds could occur on the project site, generator tie-line alignment, or near enough to these facilities to be affected by noise and other disturbances. These birds include loggerhead shrike (documented on or near the site), Le Conte's thrasher, Crissal thrasher, and black-tailed gnatcatcher. Additional suitable or occupied habitat may also be affected along Western's existing 161-kV Parker-Blythe #2 transmission line. Potential project impacts to these birds would be as described above (**Construction Impacts to Common Wildlife and Habitat; Construction Impacts to Common Migratory and Resident Birds**) and below (**Impacts during Operation**).

Staff's proposed Conditions of Certification **BIO-1** through **BIO-10**, and **BIO-13** which requires pre-construction nest surveys and impact avoidance measures, would minimize impacts to special-status desert shrubland passerine birds. Implementation of staff's proposed Condition of Certification **BIO-16**, the compensatory mitigation plan for desert tortoise, could further mitigate habitat loss by the preservation of similar vegetation and habitat, depending on the location and passerine bird occupancy on the compensation lands. With implementation of these conditions, staff concludes that potential impacts of the solar generator site, generator tie-line alignment, and interconnector substation to special-status passerine birds would remain adverse but would be mitigated to less than significant under CEQA because direct impacts to active nests would be avoided and impacts to habitat would be minimized and compensated. Staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Impacts to Special-Status Mammals

Nelson's Bighorn Sheep, Burro Deer, and Yuma Mountain Lion

The RSEP solar generator site provides marginally suitable foraging habitat that Nelson's bighorn sheep and burro deer may use infrequently during winter. Both species require regular access to drinking water, especially during summer, but there is no permanent water source on the site and staff is not aware of any suitable nearby wildlife water source. Thus, the site would likely be unsuitable as habitat during summer. Further, the site provides no shaded rest places or escape cover for either species (i.e., dense, shaded desert wash vegetation for burro deer, or steep, rocky slopes for Nelson's bighorn sheep). The site is covered by creosote bush shrubland

which is relatively low in nutritional value and is available in abundance throughout the region. Similarly, the site provides no water or suitable dense shaded cover for Yuma mountain lion. In addition, due to the poor habitat characteristics for deer and bighorn sheep, the site also provides no suitable prey base for mountain lion.

The generator tie-line alignment and interconnector substation site provide similar forage habitat to that on the solar generator site. Portions of the existing 161-kV Parker-Blythe transmission line alignment passes nearer to several mountain ranges, where foraging is more likely due to proximity to cover and regularly occupied habitat.

An important threat to all three species is the reduced opportunity for movement among isolated desert mountain ranges and (for Yuma mountain lion) the Colorado River corridor, where their primary habitat is found. One potential result of this reduced movement opportunity is the decline or extirpation of local populations in individual mountain ranges, perhaps due to a series of poor rainfall years which may cause reproductive failure. Without immigration from another location, declining local populations may become extinct. The proposed project has the potential to adversely impact wildlife movement for many species, including Nelson's bighorn sheep, burro deer, and/or Yuma mountain lion; particularly potential north-south movement between the Turtle Mountains (to the north) and the series of ranges to the south and southwest (the Big Maria, Little Maria, and Granite Mountains).

The regional metapopulation of the Nelson's bighorn sheep is an important management concern in the Colorado Desert. Several portions of its historic range are now unoccupied. The Little Maria, Big Maria, and Riverside Mountains that surround Rice Valley were once occupied by Nelson's bighorn sheep, and CDFG may eventually plan to repopulate these areas if reestablishment does not occur naturally from source populations in the nearby Granite and Turtle mountains (SR 2009a). The Colorado River Aqueduct, Arizona-California railroad, and SR-62 are major barriers and risks to bighorn sheep that might move from the Turtle Mountains south through Rice Valley. The southwestern portion of the original Rice Valley Grazing Allotment was retired due to its proximity to the Palen Mountain bighorn sheep herd, and it is possible that the bighorn from the west or north could move through the Rice Valley. There is a strong potential that the mountains surrounding Rice Valley will eventually be reoccupied by bighorn sheep (SR 2009a). Potential impacts to wildlife movement are discussed further, below, and a strategy is recommended to minimize and mitigate those impacts.

None of these three species are listed as threatened or endangered species, nor are they considered to be at high risk of extirpation. Nelson's bighorn sheep and Yuma mountain lion are CDFG Species of Special Concern. All three species have high public interest and management priority.

Loss of habitat on the solar field and generator tie-line sites, and expected off-site impacts such as noise, lighting, and disturbance, are not expected to significantly affect Nelson's bighorn sheep, burro deer, or Yuma mountain lion except during potential long-distance dispersal through the broader Rice Valley area, discussed below. Construction on the generator tie-line and existing 161-kV Parker-Blythe #2 transmission line alignments would cause temporary disturbance to habitat and long-term degradation of forage quality along the alignments, but these impacts would not be

significant. Potential project impacts to regional wildlife movement for these and other species, including staff's recommended Condition of Certification **BIO-21**, are discussed below (**Impacts to Wildlife Movement**).

American Badger and Desert Kit Fox

American badgers were not detected on the site during field surveys, but the site could be within a badger's foraging home range, or badgers may occasionally travel across the RSEP site. No badger burrows are known from the site, but badgers in the region could construct a burrow on-site in the future. Desert kit fox was detected in the project area (Appendix 5.2C of SR 2009a), and staff noted at least one burrow likely used by desert kit fox on the site. The desert kit fox is not a special-status species, but is protected under Title 14, California Code of Regulations (Section 460), and potential impacts to individual kit foxes must be avoided. Additional suitable or occupied habitat for both animals may also be affected along Western's existing 161-kV Parker-Blythe #2 transmission line.

Potential direct impacts to American badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction equipment, noise, dust, and loss of habitat. The tortoise exclusion fence is expected to entrap desert kit foxes or even badgers if either species is on the site when the fence is built. Animals trapped within the fence would almost surely die from direct or indirect effects of project construction (e.g., vehicle strike, inability to find sufficient food or thermal cover). Potential indirect and off-site impacts include construction and operational noise and disturbance, impediments to local or regional movement, alteration in prey base, introduction or spread of invasive plants, and risk of mortality by vehicle strikes.

Staff's proposed Condition of Certification **BIO-20** requires that, prior to ground disturbance, a qualified biologist perform a preconstruction survey for badger and kit fox dens in the project area, including areas within 250 feet of all proposed project facilities, utility corridors, and access roads. If occupied dens are present, the applicant will flag and avoid them during ground-disturbing activities and establish a buffer to minimize disturbance, including potential disturbance to denning females with young. Should the applicant need to work in an area near an occupied (but non-natal) den, the applicant will slowly excavate the den in accordance with Condition of Certification **BIO-20** and or allow the animal to escape the project area on its own (e.g., by providing a temporary monitored opening in the tortoise exclusion fence and directing the animal toward the opening with temporary plastic construction fencing). Female kit foxes or badgers with young would not be directed off-site until the young are ready to leave the dens. Implementation of **BIO-20** would avoid take of American badger and desert kit fox. Staff's proposed Condition of Certification **BIO-16**, the compensatory mitigation plan for desert tortoise habitat, would offset the loss of habitat for desert kit fox and American badger by providing protection and enhancement for suitable habitat. Implementation of these conditions of certification would reduce impacts to these species to less than significant levels under CEQA.

Special-Status Bats

Several special-status bats (pallid bat, western mastiff bat, California leaf-nosed bat, pocketed free-tailed bat, big free-tailed bat, and Townsend's big-eared bat) could use

the solar generator site, generator tie-line alignment, or interconnector substation site for foraging, but no suitable roosting habitat is available on-site for any of these species. Project construction could impact special-status bats through the elimination of desert shrubland foraging habitat. The solar generator does not appear to provide specialized habitat or other resources for foraging bats other than those resources widely available throughout the region. Due to the absence of suitable roosting habitat on-site or in the area, and due to the very low acreage of microphyll woodland habitat on the site, staff concludes that potential impacts would be less than significant under CEQA.

Suitable or occupied special status bat habitat may be present along Western's existing 161-kV Parker-Blythe #2 transmission line. Construction of the fiber optic OPGW line along that alignment would not necessitate demolition of rock outcrops or other potential roosting area, though construction would necessitate short-term anthropogenic disturbance to potential roost sites on power poles. Staff's recommended Condition of Certification **BIO-6** (Worker Environmental Awareness Program) would require specific training in recognizing and avoiding unnecessary disturbance to roosting bats for all construction workers on the transmission line. However, staff has not determined potential significance of project impacts along Western existing Parker-Blythe #2 Transmission Line.

Impacts to Wildlife Movement

The extent, distribution, and accessibility of suitable habitat affect the long-term viability of regional wildlife populations. Fragmentation and isolation of natural habitat ultimately results in the loss of native species within those areas (Soulé et al. 1988). Wildlife movement among habitat areas is important to long-term genetic variation and demography. In the short term, it may also be important to individual animals' ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations are especially important for rare, threatened, or endangered species such as the desert tortoise, and wide-ranging species which exist in low population densities such as large mammals. Therefore, this discussion of potential project impacts to wildlife movement focuses on desert tortoise and Nelson's bighorn sheep.

In landscapes where native habitats exist as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on "wildlife corridors" to provide animals with access routes among habitat patches. In largely undeveloped areas, including the Rice Valley, wildlife habitat is available in extensive open space areas throughout the region, but specific linear barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on sites where animals can cross linear barriers, but may not emphasize linear corridors among habitat areas.

In Rice Valley, the biologically important functions of large mammal movement are the long-term demographic and genetic effects of occasional animal movement among mountain ranges and other large habitat areas. Desert tortoises and other less-mobile animals may live out their entire lives within a "corridor" area between larger habitat blocks; for these species, movement among mountain ranges may take place over the course of several generations (Beier and Loe 1992). However, larger and more mobile

animals such as Nelson's bighorn sheep may travel across the valley infrequently, as a part of dispersal among subpopulations. It is unlikely that any individual animal would need to move across the valley to access different parts of its regular home range.

BLM management strategies for wildlife and habitat, including management to maintain connectivity among habitat areas, include special management of Areas of Critical Environmental Concern (ACECs), Wilderness Areas, Wilderness Study Areas, and Desert Wildlife Management Areas (DWMAs). BLM lands throughout the surrounding area are designated as the Rice Wildlife Habitat Management Area (WHMA), which is managed for sand dune habitat (for the Mojave fringe-toed lizard) and to provide wildlife connectivity between the Chemehuevi Desert Wildlife Management Area/Turtle Mountains Wilderness to the north and Palen-McCoy and Rice Valley Wildernesses to the south. The project site itself is on private land and not under BLM management, but similar wildlife movement values apply to the site.

There are no significant constructed barriers to east-west wildlife movement through the proposed project area and the Rice Valley, south of SR-62. There are three parallel linear structures that limit wildlife north-south movement opportunities in the Rice Valley near of the proposed RSEP site, as described in the applicant's Response to Data Request 59 (CH2MHill 2010a): the Colorado River Aqueduct, Arizona-California Railroad, and SR- 62. See **Biological Resources Figure 4**. The three structures are parallel to one another, running roughly east-west across the valley in a corridor approximately 0.25 mile wide. Any of the three structures alone would impede wildlife crossing for many species. In combination, their impediment effect is substantial. An animal traveling from the Turtle Mountains into the Rice Valley would encounter the aqueduct first, then the railroad, and last, the highway. The proposed RSEP project would be immediately south of the highway.

The aqueduct presents an impassable barrier to terrestrial wildlife along most of its alignment, except at "siphon" points where desert washes cross over the alignment. At these wash crossings, aqueduct water is carried underground through U-shaped siphons over distances of several hundred feet or more. There are 15 such overcrossings within 5 miles east and west of the proposed RSEP site (CH2MHill 2010a, including Figure DR59-1). Within this area, the largest overcrossing is approximately 1,705 feet wide, and is north of the western margin of the proposed RSEP heliostat field. A similar, but narrower, crossing is present north of the eastern margin of the proposed heliostat field.

Burro deer have been documented crossing similar aqueduct siphons in Arizona. The Central Arizona Project (CAP) is a manmade canal that presents a partial barrier to wildlife movement between the Tucson Mountains and Roskrige Mountains, in Pima County, Arizona. There are a series of wildlife crossings over the canal, ranging from 130 to 550 feet wide, similar in design to the siphons on the Colorado River Aqueduct. Several individual burro deer (also called desert mule deer) crossed the CAP at these locations and some of the deer crossed several times (Tull and Krausman 2001). Staff noted coyote tracks and scat at these channel crossings, indicating that coyotes probably cross the aqueduct at those points.

Downstream from each aqueduct siphon, each wash is crossed by the railroad line, which is built on concrete supports and foundations bridging the washes (CH2MHill 2010a, Figures DR59-3a through 3d). The rail crossings north of the RSEP site are approximately 45 feet wide, with about 6 feet of vertical clearance. East and west of the channel crossing, the railbed is elevated a few feet above the surrounding grade. Any terrestrial wildlife species could cross beneath the railroad bridges, though specific behavioral adaptations affect the likelihood that any given species would do so. Mountain lions or desert tortoises would likely cross beneath the bridges routinely if they occur in the area. Deer and bighorn sheep may avoid them if they appear to present a risk of predation. Most medium- to large-sized mammals also could cross the rail line east or west of the channel crossings by simply walking over the raised railbed and tracks. These animals would be at some risk of mortality by being struck by trains, though rail traffic appears to be relatively light on this line.

Downstream from the rail bridges, SR-62 crosses each wash at grade (i.e., there are no bridges or culverts which could allow safe passage across the highway). Any terrestrial wildlife species could cross the highway. Wary or fast-moving animals such as medium- to large-sized mammals would probably cross safely in most crossing attempts, but some road mortality also would be expected. Slower-moving animals, particularly desert tortoise, would be at high risk of mortality during any road-crossing attempt.

During the construction phase of the proposed RSEP project, a security fence surrounding the proposed logistics and laydown areas would be built along the property boundary immediately south of the SR-62 alignment, over a length of about 3,200 feet. The fence would further limit north or south wildlife travel by reducing access to suitable crossing points. Wildlife moving southward through those crossings would be forced to travel longer distances parallel to the highway before continuing southward, and would therefore be at increased risk of road mortality. This fence would be removed after construction, leaving only the circular perimeter fence. Operation impacts of the permanent perimeter fence are described below (**Impacts During Operation**).

During both construction and operations, the proposed RSEP would probably prevent most wildlife movement from the Rice Valley toward the Turtle Mountains by way of the two crossings described above. Animals travelling northward from the valley would be diverted to the east or west by the perimeter fence around the heliostat field. They might reach either of the two nearby crossings by following a semicircle around the fence, but they would be more likely to continue east or west toward another crossing site. Similar crossings are located at periodic intervals to the east and west. The nearest crossings are located 0.4 mile to the west and 1.5 miles to the east.

During both construction and operations, wildlife travelling east or west, parallel to the highway, and encountering the RSEP perimeter fence would be directed north or south around the arc of the exclusion fence. Individuals directed northwards would become confined within the narrow passage between the three barriers (highway, railroad, and aqueduct) north of the RSEP. This path would present a greater risk of road mortality than presently exists in the area.

Staff believes that numerous species, including large mammals (burro deer, Nelson's bighorn sheep, and Yuma mountain lion) and perhaps desert tortoises, may infrequently

cross the three linear barriers north of the proposed RSEP site. The proposed solar generator facility, including the perimeter and security fences, would further limit potential movement. However, due to presence of numerous similar crossing sites to the east and west, and due to the short-term usage of the security fence, staff concludes that the proposed project's construction impacts to wildlife movement would be less than significant. However, in order to minimize highway mortality, staff recommends Condition of Certification **BIO-21**, Fence Locations: Logistics, Lay-down Area, and Access Road. This condition would require that the logistics and lay-down area be redesigned to provide a 100-foot buffer area between the road shoulder and the temporary security fence, and that the security gate on the main access road be relocated to the main fenceline, to remove the fenced barrier to east-west wildlife movement across the access road. The proposed interconnector substation, generator tie-line, and fiber optic OPGW construction along the existing 161-kV Parker-Blythe transmission line would not have significant effect to wildlife movement.

Impacts to Waters of the State

Numerous ephemeral drainage features occur throughout the solar field site and transmission line corridor, generally trending in a north-south orientation (Attachment DR60-1 of CH2MHill 2010a; **Biological Resources Figures 5A through 5D**). As described above under **Jurisdictional Waters**, the applicant conducted a preliminary Jurisdictional Delineation of the solar field site and transmission line route in February and March of 2010. The drainage features delineated in that report fall within CDFG jurisdiction as Waters of the State. Impacts to these drainage features are described below.

The applicant concluded that there are no wetlands on site and no drainages that would fall under federal jurisdiction pursuant to the federal Clean Water Act. The USACE (2010) concurs that drainage features on the proposed solar generator site and generator tie-line alignment are not within federal jurisdiction as defined in the federal Clean Water Act.

There has been no delineation of state or federal jurisdictional streambed features on Western's existing 161 kV Parker-Blythe #2 transmission line alignment, where the new fiber optic OPGW would be constructed.

A total of approximately 82.8 acres of state-jurisdictional ephemeral channels would be directly or indirectly impacted by construction and operation of the solar generator, generator tie-line, and interconnector substation. Streambed acreage on the existing 161 kV Parker-Blythe #2 transmission line is unknown. Staff concludes that all direct or indirect impacts to these channels are subject to California Fish and Game Code Section 1600 regulation. Stormwater flows originating upstream from the project area would be diverted around the perimeter of the site; minor channels throughout the site would be disturbed during construction and plant operations (e.g., by vegetation removal, location of project facilities, vehicle access crossings, etc.). Although some drainages may be avoided during placement of the transmission towers along the generator tie-line, final engineering has not been completed, and drainages are numerous along the alignment. Therefore, design constraints may require some transmission towers to be sited within ephemeral drainages. In addition, the proposed

new access road that would extend for approximately 5.4 miles along the transmission line would cross numerous drainages. Therefore, quantification of impacts to drainages along the transmission line is not possible at this time, but staff includes streambed acreage along the generator tie-line alignment in the total streambed acreage, above.

Direct impacts to drainages would include the removal of native vegetation, including some areas characterized by microphyll woodland; the discharge of fill; and the attenuation of peak flood flows which affect sediment transport. Most of these impacts would occur during access road construction; solar generation site clearing, grubbing, and improvements; and the development of the project's storm water management system. The attenuation of peak storm flows can adversely affect biological resources dependent on these features. Flooding and regular scour is a form of disturbance to which many plant and animal species appear well adapted and is often required to provide suitable nesting or breeding habitat (Busch and Smith 1995). The imposition of artificial stream flows by the attenuation of storm events may affect seedling recruitment at appropriate stream bank elevations, exaggerate drought stress, and increase mortality of seedlings (Mahoney and Rood 1998). In arid systems, this may be particularly important to ensure seedling survival. In addition, the attenuation of flood events may prevent the essential geomorphic disturbance required to create new nursery sites for seedling recruitment while maintaining other areas relatively clear of vegetation within the scour zone that provides habitat for a number of other plant and animal species (Johnson et al. 1976). Non-natural flow regimes may also change the sediment load carried during regular storm events.

Indirect impacts could include alterations to the existing topographical and hydrological conditions and the introduction of non-native, invasive plant species. Construction of the project would result in alterations to the existing hydrology and expected sediment transport across the site. Adverse effects on habitat are created as sediment-starved water removes fine particulate material from the stream course resulting in stream narrowing, erosion of the streambed and banks, and development of a coarse, boulder-dominated streambed (Mount 1995). Conversely, uninhibited storm flows carry a natural mixture of boulder, cobble, gravel, sand, and silt materials that are deposited at different intervals within the floodplain reflective of the strength of the most recent flood event. The diversity and episodic nature of streams and streambed materials creates habitat niches within the floodplain for varying wildlife.

Drainages along the transmission line corridor would not be permanently obstructed by the placement of transmission towers, and crossings such as culvert or Arizona crossings would be installed at locations where the transmission line access road crosses drainages so as not to impede normal flows. Hydrologically, the solar field site would be entirely cut off from surrounding areas, and flow would be diverted around the site by the raised access road. However, the area is relatively flat, with flows primarily moving in a southern direction via a broad, diffuse network of shallow ephemeral drainages. The site is located on a bajada south of the Turtle Mountains, but hydrology across the bajada has been altered by the construction of the Colorado River Aqueduct, Arizona-California Railroad, and SR-62 north of the project site (Attachment DR60-1 of CH2MHill 2010a). In addition, diversion dams were constructed to the north of these features to protect them from flows originating in the Turtle Mountains. These diversion dams direct flows into two major washes which flow through culverts under SR-62 and

onto the project site. Berms were constructed in the northern portion of the project site to divert water around the former Rice Army Airfield. These berms have since been breached, but flows through these berms quickly fan out creating a dispersed flow pattern characteristic of alluvial fans and bajadas (Attachment DR60-1 of CH2MHill 2010a).

Based on the attenuation of storm flows and other project impacts to ephemeral washes, staff and CDFG consider that all of the ephemeral washes on the solar generator site and portions of the washes downstream of the project boundaries would be adversely affected by the proposed project.

Staff considers permanent and long-term impacts of the project to State jurisdictional waters to be significant. The ephemeral drainages in the project area provide beneficial functions and values such as groundwater recharge, flood peak attenuation, floodwater storage, and wildlife corridors and habitat. For the proposed project, these functions would be impaired by construction and operation of the project. Staff and CDFG agree that acquisition and enhancement of off-site State waters would mitigate project impacts to jurisdictional waters. For the RSEP, staff and CDFG propose a mitigation ratio of 1:1 for all permanent and long-term impacts to waters of the State. Staff does not recommend compensatory mitigation for impacts to downstream reaches, because the hydrology and sand transport functions of the proposed redirected channels would largely replace function of the existing channel system (Appendix A).

The applicant has not proposed specific mitigation to reduce impacts to State waters during construction and operation of the proposed RSEP. Staff, in coordination with CDFG, proposes Condition of Certification **BIO-22**, and provides additional recommendations and guidance consistent with CDFG Streambed Alteration Agreement requirements. These include elimination of proposed detention basins at the southern margin of the project site to minimize alterations to off-site storm flows and sediment transport; implementation of Best Management Practices on-site during project construction and operation; and compensation for streambed impacts through the acquisition, protection, and management of comparable streambeds offsite at a ratio of 1:1 (i.e., one acres of streambed compensation for each acre impacted by the project).

It is possible that the applicant could meet the compensation requirements with the implementation of Condition of Certification **BIO-16**, which requires compensatory mitigation lands for desert tortoise habitat. With implementation of staff's proposed Condition of Certification **BIO-22**, impacts to State jurisdictional waters associated with the desert washes on the solar generator site, generator tie-line, and interconnector substation would be mitigated to less-than-significant levels under CEQA. This condition also fulfills requirements of CDFG's Lake and Streambed Alteration Agreement program pursuant to Fish and Game Code Section 1600 et seq. Because the construction of the RSEP would involve the diversion of offsite water around the site, and onsite runoff would be contained onsite (where it would evaporate or percolate to the groundwater), staff would require the applicant to restore flow across the project area upon the project's retirement. Staff concludes that these measures would reduce impacts of the solar generator, generator tie-line, and interconnector substation to state-jurisdictional streambeds below a level of significance by minimizing project impacts to streambeds; protecting sufficient off-site acreage to offset the on-site impacts; and reclaiming on-site

streambed upon eventual closure of the RSEP. Staff has not determined potential significance of project impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Impacts During Operation

Operation of the RSEP would cause long-term persistent impacts to biological resources within the perimeter fence and in adjacent habitats surrounding the solar generator site, and along the length of the generator tie-line. Operational impacts to biological resources include disturbance to common and special-status wildlife from vehicle traffic; heliostat maintenance and washing; mowing; night-time lighting; maintenance activities; noise; collisions with structures; and the potential for electrocution and incineration of birds. The proposed evaporation ponds would also provide subsidies for ravens which can lead to increased tortoise predation. These impacts are discussed below. Operational impacts of the new fiber optic OPGW along the existing 161-kV Parker-Blythe transmission line would be minimal, because the new ground line would be placed on existing structures and would replace an existing ground line.

Operational Impacts: Vegetation

Ongoing disturbance, including mowing and other facilities operations and maintenance; increased shade from the heliostats; and increased dry-season water availability (from mirror washing) would all contribute to increased weed cover and abundance.

There is some evidence that locally dominant desert shrubs, including burrobush, creosote bush, and white bursage, will resprout vigorously following one mowing (CH2M Hill 2009). However, staff does not believe that this preliminary research provides useful information about the long-term effects of mowing on the project area's plant communities. Little research has been done on the longer-term effects of mowing on native desert plant species, but extensive studies have been conducted on general plant responses to short- and long-term mowing in weed research. Mowing suppresses vegetation through carbohydrate starvation, reduces its water use (which is likely to give a competitive edge to annual grasses between shrubs) and discourages reproduction by seed. Frequent mowing can stimulate branch development in some species, but would eventually deplete the plants' carbohydrate reserve if done often enough (Radosevich et al. 1997). Sprouting is a common morphological response and, when repeated, results in a prostrate, turf-like structure in adapted species. Mowing every few weeks for at least one or two seasons may be all that is required to suppress perennial vegetation (Radosevich et al. 1997).

Vegetation not cleared or mown for construction and maintenance could be indirectly impacted by increased shading from the heliostats, depending on its location. Shading would alter microclimate conditions, including soil temperatures and light availability for photosynthesis, altering habitat suitability for native species and likely enhancing suitability for invasive weeds. Further, if mown material is mulched on-site, the mulch would alter native soil characteristics by increasing organic matter, soil moisture, and mineral nutrients. These effects would likely favor invasive weed species adapted to disturbance and increased moisture and nutrient availability. The proliferation of non-native annual species has dramatically increased the fuel load and frequency of fire in

many desert ecosystems (Lovich & Bainbridge 1999). Unlike other ecosystems in California, fire was not an important natural disturbance in the deserts. Most native desert shrubs are poorly adapted to even low-intensity fires. The potential spread or proliferation of non-native annual grasses, combined with the proximity to ignition sources could increase the risk of fire, and the effects to these poorly-adapted desert communities would be harmful, particularly to cacti and most native shrub species. Burned creosote and other native shrubs are typically replaced by short-lived perennials and non-native grasses (Brown & Minnich 1986).

Other indirect effects on plant communities during operation include soil compaction, changes to the soil structure by use of dust suppressants, and changes in the distribution of precipitation falling on the solar field site. Precipitation runoff would concentrate along the driplines below the heliostats rather than being uniformly distributed, altering localized microhabitat, including erosion and soil water content. Mirror wash water would similarly concentrate along the drip line below the heliostats, causing minor erosion of the soil at the drip lines and promoting invasive weeds.

Energy Commission staff considers the direct and indirect impacts to native plant communities from operation of the project to be significant. Staff's proposed Condition of Certification **BIO-11**, the Weed Management Plan, would minimize the spread of non-native and invasive plant species on the site.

Indirect and Off-Site Operational Impacts To Special-status Plants, Vegetation and Habitat

Project operations have the potential to cause a variety of indirect effects to special status plants, native vegetation and wildlife habitat outside the project boundary. These include effects of erosion or sedimentation that could result from altered hydrology on the site (i.e., plants, their habitat, or their seed banks occurring down slope of disturbed soils could be eroded away or could be covered in sediment); changes in the hydrology from alterations in the drainage patterns of the site (e.g., to desert washes); the introduction of new weeds or spread of weeds already present in the area from the solar fields into the surrounding habitat; greater than normal dust levels; effects of herbicide drift on vegetation; and an increased risk of fire. Weeds, dust, and hydrology are discussed in greater detail above. These impacts would be similar to those described under indirect and off-site construction impacts to special status plants, vegetation and habitat. Staff's recommended Conditions of Certification **BIO-1** through **BIO-12**, and **BIO-16** would mitigate these impacts. Staff concludes that implementation of these measures would reduce indirect and off-site operational impacts to special status plants, native plant communities, and wildlife habitat to less than significant levels under CEQA by minimizing vegetation impacts to the extent practicable; revegetating temporarily disturbed areas; implementing a Worker Environmental Awareness Program; controlling dust and erosion; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation on desert tortoise compensation lands; and implementing a site closure plan.

Operational Impacts: Birds and Common Wildlife

Some bird species will likely nest in the project area both during construction and operation of the facility. Operational impacts are expected to remain an ongoing source of disturbance to nesting birds. As described above, operation of the facility would likely result in disturbance to both ground nesting birds and possibly to birds actively nesting on the structures.

Species that utilize the project site for foraging but not nesting, such as golden eagle and prairie falcon, and wintering birds such as merlins, sharp-shinned hawks, and ferruginous hawks would be affected by the loss of foraging habitat, which would be considered significant absent mitigation. Overall the loss of foraging habitat for these special-status bird species would add to the cumulative, significant loss of habitat for these species within the region. Staff's proposed Condition of Certification **BIO-16**, the compensatory mitigation plan for desert tortoise, would reduce this habitat loss below a level of significance by the preservation of similar foraging areas.

The size of the project coupled with the operations activities including vegetation management, mirror washing, and other heliostat maintenance, as well as operational noise levels, would cause ongoing disturbance and mortality to small mammals and reptiles within the project perimeter as well as birds in the area.

Operational Impacts: Ravens, Coyotes, and Other Predators

Human activities in the RSEP area could provide resources in the form of trash, litter, or water, which attract and subsidize unnaturally high numbers of predators such as the common raven, kit fox, and coyote. This influx of predators could then place unnaturally high predation pressure on desert tortoises and other special-status species in the region. For example, common raven populations in some areas of the Mojave Desert have increased 1,500% from 1968 to 1988 in response to expanding human use of the desert (Boarman 2002). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered an unnatural occurrence (BLM 1990; USFWS 2008a). In addition to ravens, feral dogs have emerged as major predators of the tortoise. Dogs may range several miles into the desert and have been found digging up and killing desert tortoises (USFWS 1994b; Evans 2001). Dogs brought to the project site with visitors may harass, injure, or kill desert tortoises, particularly if allowed off leash to roam freely in occupied desert tortoise habitat. The worker environmental awareness training (Condition of Certification **BIO-6**) and restrictions on pets being brought to the site required of all personnel (Condition of Certification **BIO-8**) would reduce or eliminate the potential for these impacts. Construction and operation of the RSEP would increase raven and coyote presence in the project area. Ravens capitalize on human-related food and water "subsidies" and habitat changes to expand into areas where they were previously absent or in low abundance. Ravens were observed during staff's site visits of the RSEP site.

Ravens habituate to human activities and are subsidized by the food and water, as well as roosting and nesting resources that are introduced or augmented by human encroachment. Road killed animals, including small mammals and reptiles provide another attractant and subsidy for opportunistic predators and scavengers such as ravens. Ravens use transmission line structures as nest and perch sites, increasing the

potential for loss of tortoises from raven predation. Because of the agricultural and other land uses in the region, particularly near the Colorado River, ravens will continue to occur at elevated numbers.

Road kills would increase with increased RSEP construction and operations traffic, further exacerbating the raven/predator attractions and increasing desert tortoise predation levels. In addition, bird strikes that occur from either collision with facility structures or transmission lines may also attract ravens. There are numerous anthropogenic perch sites (e.g., power distribution lines, abandoned structures, and sign posts) and potential food subsidies (road killed animals and litter). Thus, tortoises in the RSEP area may already be subject to raven predation. Any cumulative loss of juvenile tortoises due to the further addition of raven subsidies could have a long-term effect on the tortoise population by reducing juvenile tortoise survivorship (Boarman 2003). The population-level consequences of this effect may not be apparent for years because tortoises do not typically reach sexual maturity until approximately 15 to 20 years of age.

To reduce the local impacts of increased raven presence at the RSEP site and ancillary facilities, the applicant has prepared a draft Raven Management Plan (Appendix B of CH2MHill 2010c) and has recommended additional avoidance and minimization measures. Staff has incorporated these recommendations into proposed Conditions of Certification **BIO-8** and **BIO-17**, which would minimize the effects of increased predation on desert tortoise in the project area. Staff also recommends participating in region-wide raven management (below).

Regional Approach to Raven Control

The USFWS, in cooperation with BLM, National Park Service, Department of Defense, and Department of Agriculture, has developed a comprehensive, regional raven management and monitoring program in the California Desert Conservation Area to address the regional, significant threat that increased numbers of common ravens pose to desert tortoise recovery efforts (USFWS 2010d). The Regional Raven Management Program will implement recommendations in the USFWS *Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise* (USFWS 2008b). To mitigate the RSEP's contribution to cumulative and indirect impacts on desert tortoise from raven predation, staff recommends that the applicant contribute toward implementation of the Regional Raven Management Program (USFWS 2010c), as described in staff's proposed Condition of Certification **BIO-17**. To mitigate for the regional effects of ravens on desert tortoise, the applicant shall provide a onetime fee in the amount of \$105.00 per acre to the REAT Account held by the National Fish and Wildlife Foundation (NFWF), for the 1,776-acre total project footprint area. This payment of \$190,209.60 would support the regional raven management plan activities focused within the Colorado Desert Recovery Unit. The fees contributed by the applicant would fund raven removal actions, education and outreach efforts, and surveying and monitoring activities identified in the federal Environmental Assessment (USFWS 2008b). Staff has concluded that that implementation of these actions would be an effective means of reducing the project's cumulative contributions to desert tortoise predation from increased raven numbers; would reduce the impacts below a level of significance; and, in combination with other

Conditions of Certificate described above, would satisfy the requirements for full mitigation pursuant to CESA.

Staff's recommended Condition of Certification **BIO-17** also would require the applicant to prepare and implement a Raven Monitoring, Management, and Control Plan for all project-related activities and components. The Plan would involve identifying and preventing conditions that might attract or support ravens (for example, eliminating food sources such as garbage or roadkill, and minimizing creation of structures that could provide raven perches, nests, or roosts), monitoring the effectiveness of raven management and control measures, and then implementing additional adaptive management measures to make sure that the project does not result in an increase in raven numbers. Staff concludes that implementation of measures in Condition of Certification **BIO-17** would avoid, minimize, or compensate for the project's potential contributions to increased desert tortoise predation from ravens to less than significant levels pursuant to CEQA and would fully mitigate these potential impacts pursuant to CESA.

Operational Impacts: Increased Risk from Roads/Traffic

Vehicle traffic would increase as a result of construction and improvement of access roads, increasing the risk of injuring or killing desert tortoise and other wildlife. Vehicle access by project personnel during operations, as well as by the public along the new generator tie-line access road and improved access along the existing 161-kV Parker-Blythe transmission line, could result in mortality of desert tortoises by vehicle strikes. The potential for increased traffic-related tortoise and other wildlife mortality is greatest along paved roads where vehicle frequency and speed is greatest, though animals on dirt roads may also be affected depending on vehicle frequency and speed. Data indicate that desert tortoise numbers decline as vehicle use increases (Bury et al. 1977) and that tortoise sign increases with increased distance from roads (Nicholson 1978; Karl 1989; von Seckendorf and Marlow 1997, 2002). Additional impacts that may occur from unauthorized use of the access roads in the project area include unauthorized trail creation. To minimize the risks of increased traffic fatality and other hazards associated with roads at the RSEP solar field site and ancillary facilities, the applicant has proposed a variety of minimization measures which staff has incorporated into Condition of Certification **BIO-8**. These measures include confining vehicular traffic to and from the project site to existing routes of travel, prohibiting cross country vehicle and equipment use outside designated work areas, and imposing a speed limit of 20 miles per hour on access routes other than SR-62. In addition, staff's recommended Conditions of Certification **BIO-16** requires compensation mitigation at a 3:1 ratio for habitat impacts on the new generator tie-line alignment. This increased ratio is intended, among other things, to mitigate for potential vehicle strikes along the alignment by protecting and enhancing off-site at a ratio greater than 1:1.

Operational Impacts: Noise, Disturbance, and Lighting

Increased noise and other adverse project effects to wildlife habitat on the project site would be mitigated below a level of significance through measures described elsewhere in this section of the SA/DEIS. The effects of operational noise on wildlife and habitat surrounding the site are addressed here. Noise may affect birds and other wildlife in several ways, as described above under **Construction Impacts to Common Wildlife**

and Habitat. During operations, estimated noise levels at the solar generator's perimeter fence would range between about 43 and 52 dBA (SR 2009a, including Fig. 5.7-1). These levels are roughly comparable to light traffic or rainfall noise (SR 2009a) but may be loud enough to adversely affect bird nesting success. For most common species, staff concludes that this impact would be less than significant, but staff believes that it could significantly affect breeding habitat suitability for special status desert upland passerine birds. Staff's proposed Condition of Certification **BIO-16** (Desert Tortoise Compensatory Mitigation) would require habitat compensation habitat for impacts to desert tortoise habitat on the site. This compensation land also would serve as habitat for upland bird species, including loggerhead shrike and others that may be affected by the project. If the applicant elects to use lands surrounding the solar generator site as compensation habitat, the lands within a 250-foot radius of the project area would be credited at a reduced ratio of 0.5:1 due in part to their noise-related reduced habitat value. Staff concludes that **BIO-16** would reduce potentially significant operational impacts of noise below a level of significance by protecting off-site lands.

Lighting may affect essential behavioral activities, physiology, population ecology, and ecosystems of diurnal, crepuscular, and nocturnal wildlife, and ecological light pollution may affect competition and predation for some species (Longcore and Rich 2004). Lighting may also increase the risk of predation of wildlife because they may be more detectable to nocturnal predators (USACE and CDFG 2009). Many insects are drawn to lights, and species that prey on insects, such as bats, may be attracted to lighted construction areas which would increase the potential for disturbance and mortality. However, studies have indicated that many small species, such as rodents, rabbits, snakes, and bats, actually forage at lower rates at high illumination levels (Longcore and Rich 2004), which may be a biological adaptation to high levels of moonlight. Overall, chronic ecological light pollution may favor light-tolerant species over those that are dark-adapted (Longcore and Rich 2004).

The operation of the RSEP would require on-site nighttime lighting for safety and security, which could disturb nocturnal wildlife. In addition, the large scale maintenance activities would require vehicle and equipment lighting in order to safely clean and service the heliostats. To reduce off-site lighting impacts, lighting at the RSEP facility would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded, and lights would be directed on site so that light or glare would be minimized. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. Switched lighting would be provided for areas where continuous lighting is not required for normal operation, safety, or security; this would allow these areas to remain un-illuminated (dark) most of the time, thereby minimizing the amount of lighting potentially visible off site. These measures are described in staff's proposed Condition of Certification **VIS-2**. With implementation of this measure, lighting impacts to wildlife at the RSEP would be reduced to less-than-significant levels under CEQA.

Operational Impacts: Evaporation Ponds

The proposed RSEP includes three five-acre evaporation ponds that would process wastewater discharge from the water treatment system and oil/water separator (SR 2009a). Staff presumes that one or more of these ponds would hold surface water year-around. Evaporation ponds could serve as a perennial water source in an otherwise arid

region and act as a subsidy to ravens. Even if they are fenced off from wildlife, evaporation ponds may still attract predators and other species, including waterfowl. Subsidized predators would increase potential project effects to desert tortoise, Mojave fringe-toed lizard, and other less mobile species. In addition, small mammals, waterfowl, shorebirds, and other resident or migratory birds that drink or forage at the ponds would be exposed to potentially lethal doses of hyper-saline water, depending on the salts and concentrations present. Monitoring results from the summer of 2007 at Harper Lake Solar Electric Generating System in the Mojave Desert revealed that numerous waterfowl died at the evaporation ponds due to salt toxicosis (Luz 2007). Another concern is that the evaporation ponds would attract foraging birds, whether or not they land on the ponds, increasing potential risk of burning near the central tower or standby points, or collision with project facilities including the proposed transmission towers, heliostat structures, and central tower. Foraging bats also may be attracted to the evaporation ponds, but staff believes that potential adverse impacts to bats would be minimal because they would not be active during daylight hours while the heliostats focus energy on the central tower.

The applicant has proposed measures to reduce or avoid impacts of the ponds to wildlife, including monitoring the ponds during operation to determine usage and any injury, mortality, or deformities associated with birds at the ponds. The applicant indicated that corrective measures would be implemented if mortality was attributed to salt toxicosis or encrustation (SR 2009a). These measures could include the use of an air canon, Bird-B-Gone Balloon (visual scare device), or other hazing device to scare birds away from the site (Appendix 5.15B of SR 2009a).

The applicant also indicated that the ponds would be designed to minimize wildlife use and would include features such as 33 percent slopes on the interior walls of the ponds and anti-perching devices around the perimeters of the ponds, both of which are expected to minimize access to the water by birds and other wildlife (Appendix 5.15B of SR 2009a). However, the applicant proposes to keep the ponds uncovered to maximize evaporation and avoid trapping birds under netting or monofilament arrays; this would allow birds to access the evaporation ponds by landing on the water (Appendix 5.15B of SR 2009a). The primary risks to birds associated with the evaporation ponds are salt encrustation and salt toxicosis. High levels of salt in the water in the ponds can result in the precipitation of salt into crystals, which can form and accumulate on feathers and interfere with flight. Salt toxicosis (poisoning) can also result (Appendix 5.15B of SR 2009a). Terrestrial wildlife are at risk of drowning if they fall into the water and cannot climb back out, and they can be poisoned by high levels of salt and other toxins or impurities in the water of the evaporation ponds. However, terrestrial wildlife exposure to the evaporation ponds would be limited by the perimeter exclusion fencing, and any individuals that could encounter the ponds would likely be those that remain within the fence line after the fence is erected at the start of construction activities. Staff considers potential impacts to wildlife to be significant absent mitigation under CEQA. To reduce these impacts, staff recommends that the applicant cover the ponds with netting or other suitable materials to minimize bird mortality, and prepare and implement an Evaporation Pond Design, Monitoring, and Management Plan. This plan would incorporate any revisions to pond size or design discussed in the Soil and Water section of the SA/DEIS and would require the review and approval by USFWS, CDFG, and staff. The plan would include language specifying the type of netting and fencing to be

used, reporting protocols and remedial actions required in the event of bird mortality. The plan would be developed and implemented per guidance in staff's proposed Condition of Certification **BIO-24** (Evaporation Pond Design, Monitoring, and Management Plan). Staff concludes that implementation of recommended design modifications and follow-up monitoring and management, as required by this Condition of Certification would reduce evaporation pond impacts to birds and other wildlife to less-than-significant levels under CEQA.

Operational Impacts: Wildlife Movement

Potential wildlife movement routes through the area are described above (**Impacts to Wildlife Movement**). This subsection is based on that analysis, but addresses the proposed project's operational impacts to wildlife movement, and only those that are distinct from construction impacts described above. The primary difference between anticipated construction impacts and operational impacts to wildlife movement will be the removal of the security fence around the proposed logistics and laydown area at the northern site boundary, along SR-62. After construction is completed, the proposed RSEP would be surrounded by a circular security and tortoise exclusion fence that would effectively exclude terrestrial wildlife movement onto or across the site. The circular exclusion fence would reduce potential north-south wildlife movement at the two desert wash crossings north of the site.

At the two points where washes cross SR-62 near the project site, the perimeter exclusion fence would be several hundred feet or more south of the highway and its outline would tend to direct southward-traveling wildlife to the east or west, away from the highway and the RSEP site (CH2MHill 2010a: Fig. DR59-1). At these two sites, the fence would not be immediately adjacent to the highway and thus would not force animals to travel along the roadway for any distance. Therefore, wildlife moving southward through those crossings would likely be at increased risk of road mortality compared with present conditions, though somewhat decreased risk compared with conditions during the construction phase of the project. This risk is somewhat reduced by the proposed configuration of the permanent fence.

Staff believes that numerous species, including large mammals (burro deer, Nelson's bighorn sheep, and mountain lion) and perhaps desert tortoises, may infrequently cross the three linear barriers north of the proposed RSEP site. The proposed project, including the permanent perimeter fence, would further limit potential movement. However, due to presence of numerous similar crossing sites to the east and west, and due to the proposed configuration of the perimeter fence, staff concludes that the proposed project's operational impacts to wildlife movement would be less than significant. However, in order to minimize highway mortality, staff recommends Condition of Certification **BIO-21**, Fence Locations: Logistics, Lay-down Area, and Access Road. This condition would require that the logistics and lay-down area be redesigned to provide a 100-foot buffer area between the road shoulder and the temporary security fence, and that the security gate on the main access road be relocated to the main fenceline, to remove the fenced barrier to east-west wildlife movement across the permanent access road.

Operational Impacts: Avian Collision, Incineration, Electrocution, Glare, Lighting

In addition to the adverse impacts of lost or degraded habitat, the proposed RSEP would cause operational impacts to migratory and special-status bird species, including mortality caused by collisions with the proposed tower, heliostats, or transmission line; incineration or burns to birds that fly into the reflected sunlight between the heliostats and the solar receiver tower; and potential adverse effects of glare.

Collision and Incineration

Bird mortality due to collision with heliostats and the solar receiver tower, and by burning when flying through “standby points” were documented by McCrary et al. (1986) for the 10-megawatt Solar One facility east of Daggett, San Bernardino County, California. The standby points are the focal points in the air adjacent to the solar concentrator tower target, on which groups of heliostats may be focused when they are not stowed and when the power plant is on standby mode and not generating electricity (CH2MHill 2010a). The Solar One facility consisted of a 32-hectare (79-acre) heliostat field and 86-meter (282-foot) solar receiver tower. The researchers documented 70 bird fatalities during the course of a 40-week study, and estimated that about 10 to 30 percent of bird carcasses went undocumented because animal scavengers removed them before researchers detected them. The bulk of bird mortality (more than 75 percent) resulted from collisions with the heliostat mirrors. One known mortality resulted from collision with the solar receiver tower. Thirteen mortalities (19 percent) resulted from burns, apparently while flying through standby points.

The proposed RSEP would consist of a 1,410-acre facility including a 653-foot-tall solar receiver tower. By extrapolating from the Solar One data, staff estimates that the proposed RSEP, a much larger facility, could cause approximately 1,700 bird mortalities per year from collisions with heliostats and the solar receiver tower and burning as birds fly through concentrated solar energy near the solar receiver tower or standby points. However, at the Solar One facility, McCrary et al. (1986) speculated that bird mortality was largely due to large on-site evaporation ponds and surrounding agricultural land uses. Both these features produce insects in large numbers and attract feeding birds. While the proposed RSEP does include evaporation ponds, there is no adjacent agricultural land. The nearby Colorado River Aqueduct may be an attractant for birds or insects, though the Aqueduct has no adjacent riparian vegetation and contains swiftly moving water, and consequently would not be as strong an attractant as would a natural riparian feature.

Additional factors that may lead to mortality of migratory birds and special-status birds are nighttime project lighting, evaporation ponds, and perhaps a “mirage” effect that may be caused by the proposed heliostat field. Any of these could attract birds or bats to the facility, where they would be susceptible to mortality by collision or burning, as described above.

Most diurnal bird collisions with tall structures are associated with guyed towers in poor visibility conditions such as fog or inclement weather (Manville 2001). The RSEP does not include guyed towers or structures, and rarely is subject to weather that would reduce visibility. Thus, staff believes that nocturnal collisions with the tower are more likely to cause bird mortality than diurnal collisions. Lighting plays a substantial role in

collision risk because lights can attract nocturnal migrant songbirds. Major bird kill events have been reported at lighted communications towers (Manville 2001), with most kills resulting from towers taller than 300 to 500 feet (Kerlinger 2004).

The proposed transmission line and structures pose a collision threat to birds along the 10-mile generator tie-line corridor. Bird collisions with power lines generally occur when a power line or other aerial structure transects a daily flight path used by a concentration of birds, or migrants are traveling at reduced altitudes and encounter tall structures in their path (Brown 1993). Collisions are more probable near wetlands, valleys that are bisected by power lines, and within narrow passes where power lines run perpendicular to flight paths. Passerines (e.g., songbirds) and waterfowl (e.g., ducks) collide with wires (APLIC 1994, 2006), particularly during nocturnal migrations or poor weather (Avery et al. 1978). Overall bird densities in the project area are relatively low, but the Colorado River Valley is an important migratory route for many species. Some species tend to migrate along the river and focus primarily on wetlands habitats, but others migrate more broadly throughout the region (Rosenberg et al. 1991). Migratory or wintering species may travel through the Rice Valley en route between productive wetlands habitats at the Colorado River and elsewhere, such as the Iron Mountain area northwest of the project site. Staff concludes that the potential for bird mortality through collision with the proposed power line would be significant. Staff's proposed Condition of Certification **BIO-8** requires the applicant to construct the transmission line according to the standards in the Avian Power Line Interaction Committee's (APLIC's) *Mitigating Bird Collisions with Power Lines* (APLIC 1994) to minimize risk of collision. Staff's recommended Condition of Certification **BIO-25** (Avian and Bat Protection Plan and Monitoring Operational Impacts of Solar Collector on Birds) would require that the project owner prepare and implement an Avian Protection Plan to minimize death and injury of birds from collisions with facility features and focused heat and light at and near the central tower and at "standby points"; and to identify adaptive management measures to minimize such impacts. Further, the Avian Protection Plan shall provide documentation that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code, section 668). With the implementation of this mitigation, impacts to birds from collisions with the proposed transmission line would be less than significant under CEQA.

Available data confirm that avian mortality has resulted from similar, much smaller solar facilities. Staff expects that bird mortality also will result from the proposed RSEP. Given the limited research-based data on these impacts, staff cannot conclude that they are significant. However, due to the potential for significant impacts, staff recommends monitoring so that if impacts do occur, they can be evaluated and addressed. In Condition of Certification **BIO-25** (Avian and Bat Protection Plan and Monitoring Operational Impacts of Solar Collection Facility on Birds and Bats), staff recommends that the applicant prepare and implement a formal long-term study to determine the effects of the proposed project on migratory and special status bird species, patterned after the McCrary et al. (1986) study and, if a significant level of bird mortality occurs during operation of the RSEP, the applicant shall adopt one or more adaptive management measures as recommended in the Condition of Certification.

Many of the avian fatalities at communications towers and other tall structures have been associated with steady-burning, red incandescent L-810 lights used on structures

for aircraft avoidance, which seem to attract birds (Gehring et al. 2009). Longcore et al. (2008) concluded that strobe or flashing lights on towers resulted in less bird aggregation, and, by extension, lower bird mortality, than steady burning lights.

To minimize this risk of collision and disturbance to wildlife from lights, staff recommends implementation of staff's proposed Condition of Certification **BIO-8**, which includes specifications that the lighting atop the towers use flashing strobe lights rather than steady burning, and recommendations for other project lighting to be shielded downward and turned off when not needed.

Electrocution

Egrets, herons, raptors, and other large aerial perching birds, including those accorded state and/or federal protection, are susceptible to power line electrocution if they simultaneously contact two energized phase conductors or an energized conductor and grounded hardware. This happens most frequently when a bird attempts to perch on a tower/pole with insufficient clearance between these energized elements. The majority of bird electrocutions are caused by lines that are energized at voltage levels between 1-kV and 60-kV, which generally have less clearance between these elements. Distribution lines designed for 69 kV or less represent a greater danger to raptors than transmission lines designed for greater than 69 kV, because the spacing between elements in distribution lines is much less than that of transmission lines (APLIC 2006). The RSEP proposed transmission line would be built to 230-kV standards to allow for future system upgrades, but would initially be energized at 161 kV (SR 2009a).

The BLM will not approve a transmission line that is not raptor safe. Potential impacts to wildlife resulting from electrocution by transmission lines required for RSEP interconnection may be mitigated by incorporating the construction design recommendations provided in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). Specifically, the phase conductors shall be separated by a minimum of 60 inches and bird perch diverters and/or specifically designed avian protection materials should be used to cover electrical equipment where adequate separation is not feasible (APLIC 2006). This is further described in staff's proposed Condition of Certification **BIO-8** (Impact Avoidance and Minimization Measures); implementation of Condition of Certification **BIO-8** would prevent or minimize bird electrocution. With this proposed mitigation, staff concludes that the proposed transmission lines would not pose a substantial threat to birds and impacts would be less than significant under CEQA.

Glare

Glare from the reflection of sunlight off the heliostats is another factor that may contribute to the risk of avian collision on the project site. To date little is known regarding the avian response to glare from solar technology. However, it is likely that glare will affect birds to some degree. In the same way that large mirrored buildings may be confused by birds as open sky; the mirrors will reflect light and take on the color of the image being reflected. This may result in birds confusing the heliostats as either open sky or water which could increase the collision risk. Another factor that must be considered is how reflected light may result in damage to a bird's vision from direct exposure to high levels of photon flux density (PFD). Exposure to high intensity light or glare can damage vision and impair foraging in some species. The proposed heliostats

are sources of bright light caused from the diffuse reflection of the sun. Glint and glare studies of solar trough technology found that pedestrians standing within 20 meters (60 feet) of the perimeter fence when the mirrors rotate from the stowed position to a vertical position may see a light intensity equal to or greater than levels considered safe for the human retina (URS 2008). Staff concludes that any wildlife on a distance of 20 meters (66 feet) or closer could experience similar hazards from unsafe light intensity.

Bird response to glare from the proposed heliostats is not well understood. Given the lack of research-based data on these impacts, staff cannot reach a conclusion as to significance. However, due to potential for significant impacts, staff recommends monitoring bird mortality so that if impacts do occur, they can be addressed (refer to Condition of Certification **BIO-25** [Avian and Bat Protection Plan / Monitoring Operational Impacts of Solar Collection Facility on Birds and Bats]). The proposed monitoring program would be unable to distinguish mortality due to glare from other causes, but it would detect increased mortality levels and establish thresholds for implementing adaptive management measures to reduce mortality. Staff concludes that implementing BIO-25 would reduce any significant project effects to bird mortality below a level of significance by developing and implementing adaptive management measures to reduce mortality as indicated by monitoring.

Lighting

For birds, lighting plays a significant role in collision risk with tall towers because lights can attract nocturnal migrant birds, and major bird kill events have been reported at lighted communications towers (Manville 2001), with most kills from towers higher than 300 to 500 feet (Kerlinger 2004). Increased lighting during low-light periods can cause some species to leave the area and can disrupt foraging, breeding, or other activities. Lighting may disturb the nighttime rest and sleep periods of diurnal species, including most passerine birds, having similar effects as noise, including annoying individuals and causing them to abandon nests that are otherwise suitable (USACE and CDFG 2009). Nest site selection by some birds may also be affected by light, with nests being established farther from light sources (Longcore and Rich 2004). Staff has proposed measures to reduce the effects of operational lighting on birds, including designing facility lighting to prevent side casting towards adjacent habitat and using only flashing or strobe lights on project features that require lights per FAA regulations (Condition of Certification **BIO-8**). Implementation of these measures would reduce impacts to birds from facility lighting to less than significant under CEQA.

Operational Impacts: Waters of the State

Operational impacts to jurisdictional waters would include routine mowing of vegetation, vehicle access, interruption of natural flows by diversion channels and other project features, and repair of damaged culverts and roads following large storm events. Operation and maintenance of the heliostat mirrors would require vehicle access to wash the mirrors on a regular basis. Less frequent access would be necessary for maintenance and vegetation clearing or cropping. These activities would involve driving through existing drainages and also through drainages that have reformed due to natural processes (SR 2009a). These operational impacts would take place in jurisdictional waters already impacted during project construction. Staff's recommended mitigation for construction impacts, described above, are Conditions of Certification

BIO-16 (Desert Tortoise Compensatory Mitigation), and **BIO-22** (Streambed Impact Minimization and Compensation Measures). These conditions would also serve to mitigate operational impacts to waters of the state below a level of significance.

Project Closure and Decommissioning

In the future, the RSEP would experience either a planned closure or be unexpectedly (either temporarily or permanently) closed. When facility closure occurs, it must be done so that it protects the environment and public health and safety. A closure plan would be prepared by the project owner prior to any planned closure. To address unanticipated facility closure, an “on-site contingency plan” would be developed by the project owner and approved by the Energy Commission Compliance Project Manager (CPM). Facility closure requirements are discussed in more detail in the **General Conditions** section of this SA/DEIS. Facility closure mitigation measures would also be included in the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) prepared by the project owner and described in staff’s proposed Condition of Certification **BIO-7**.

The facility closure plan should address habitat restoration measures to be implemented in the event of a planned or an unexpected permanent closure and must also include a funding mechanism to ensure sufficient funds are available for decommissioning and habitat restoration. Planned or unexpected permanent facility closure should address the removal of the transmission conductors and poles since birds are known to collide with transmission line ground wires and poles may serve as predatory perches and nesting sites.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2 percent smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The solar generator site would occupy about 1,270 acres instead of the 1,410 acres required for the proposed project. The solar receiver tower location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western’s Parker-Blythe transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western’s Parker Blythe 161-kV transmission line.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would reduce the proposed project footprint by about 140 acres, reducing impacts to the most active ephemeral washes on-site (i.e., washes downstream from the blueline channel on the eastern margin of the site), habitat for the State and federally listed threatened desert

tortoise, and impacts to the historic Rice airfield. The Reduced Acreage Alternative achieves the project's energy production objective, while marginally reducing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

SETTING AND EXISTING CONDITIONS

The setting for the Reduced Acreage Alternative is the same as described above for the proposed project. All project elements, including number of heliostats, evaporation ponds, generator tie-line, etc. would be as described for the proposed project, above. Because the footprint of the Reduced Acreage Alternative is located entirely within the footprint of the proposed project, the environmental setting with regard to biological resources would be the same. Please see the discussion of existing conditions under Section C.2.5.1.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The Reduced Acreage Alternative would decrease the project footprint by approximately 140 acres, or approximately ten percent. The boundary of the solar field site would contract slightly towards the center as compared with the proposed project. This altered project design would avoid impacts to the most active ephemeral washes, in the eastern margin of the site. Otherwise, the design change would not alter project impacts to biological resources. This reduction in project size would not avoid desert tortoise impacts, though it would reduce habitat loss by approximately 140 acres. Avoidance of the easternmost ephemeral washes would slightly reduce impacts to waters of the State and would reduce or avoid alterations to existing active flood flow and sediment transport downslope across the site. Impacts to biological resources under the Reduced Acreage Alternative would be similar to those described for the proposed project (see Section C.2.5.2), except for the reduction in acreage of impacts to common and special status species, including desert tortoises, golden eagle foraging habitat, and others as described above.

Staff's proposed conditions of certification would mitigate for the Reduced Acreage Alternative's direct, indirect, and cumulative impacts to biological resources. These conditions are identical to those for the proposed project, except that the compensatory mitigation acreages recommended for desert tortoise habitat (Condition of Certification **BIO-16**) and State waters (Condition of Certification **BIO-22**) would be adjusted to reflect the reduced project footprint.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller parcels of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line

(along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

The Desert Center Alternative is evaluated in this SA/DEIS because it would reduce impacts to cultural resources; the RSEP is located on the historic Rice Army Airfield. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

SETTING AND EXISTING CONDITIONS

The North of Desert Center Alternative site is located north of Interstate-10, and west of Rice Road (SR 177). Most of the site is private agricultural land. A portion of the North of Desert Center Alternative site is public land managed by BLM.

The North of Desert Center alternative site is located in the Colorado Desert Bioregion, described for the proposed project site, in Section C.2.5.1.

The North of Desert Center Alternative site consists mostly of fallow agricultural fields and some active orchards. The Rice Road traverses the east side of the site, just outside the site boundary. Surrounding lands to the north, east, and west are mostly undeveloped BLM land, and to the south are private lands that make up Desert Center including the Desert Center Airport and the newly constructed Chuckwalla Valley Racetrack, along with rural residences. The dry McCoy Wash is located southwest of the northern and eastern portions and northwest of the southern portion of the Desert Center Alternative site. Topography on the North of Desert Center Alternative site is relatively flat, with elevation ranging from approximately 340 to 570 feet above mean sea level, from the south to the north. Soils mapped for the North of Desert Center Alternative site are comprised primarily of three soil series: Rositas, Orita, and Aco; most of which is classified as prime farmland. Other soil series mapped for the North of Desert Center Alternative site include Carrizo, Valva, Quilotosa, Hyder, Cipriano, and Cherioni (BLM and CEC 2010b).

One major wash supporting desert dry wash woodland passes through the fallow agricultural lands in the north-central portion of the North of Desert Center Alternative site. Additionally, an area south of the large wash, supporting Sonoran creosote bush scrub but no riparian or desert wash vegetation, shows evidence of some surface water flow. However, the area is surrounded on three sides by fallow agricultural fields (the fourth side is adjacent to the wash), and the flow appears to be historic (possibly an artifact of past irrigation). The first wash would be considered waters of the State, under the jurisdiction of the CDFG but the second one may not be. A jurisdictional delineation would be necessary to confirm this. Both washes could be waters of the U.S. under the jurisdiction of the USACE, dependent upon USACE interpretation of its watershed jurisdiction. However, based on review of regional aerial photography, neither wash appears to be a tributary to waters of the U.S. A letter of concurrence from the USACE would be necessary to confirm this conclusion. Because the North of Desert Center Alternative site is larger than the footprint required for the project, the large wash could be avoided when siting the facility.

Undisturbed portions of the North of Desert Center Alternative site were observed being used, directly or via sign, by common animal species such as coyote, black-tailed jackrabbit, white-crowned sparrow (*Zonotrichia leucophrys*), northern flicker (*Colaptes auratus*), Say's phoebe (*Sayornis saya*), and kangaroo rat. Little wildlife use was noted in areas supporting fallow agriculture.

The large wash supporting desert dry wash woodland (above) may provide for wildlife movement across the site through the fallow agricultural lands to the east and west connecting undeveloped or undisturbed lands on either side of the North of Desert Center Alternative site.

Vegetation Communities. Fallow agriculture, Sonoran creosote bush scrub, desert saltbush scrub, and desert dry wash woodland are the four primary vegetation communities on the North of Desert Center Alternative site. Some active agriculture and developed land is also present.

Fallow agriculture covers approximately 3,750 to 4,250 acres (approximately 63 to 71 percent) of the North of Desert Center Alternative site. Visible furrows and irrigation tubing are still present. This fallow land supports very sparse growth of creosote bush (*Larrea tridentata*), along with a few persisting jojoba (*Simmondsia chinensis*), which may have been the plant being farmed. Dead jojoba plants are common throughout the area. Among the sparsely growing shrubs, minimal cover of annual species such as Mediterranean grass (*Schismus* sp.; a non-native species), cryptantha (*Cryptantha* spp.), and desert sunflower (*Geraea canescens*) are present.

Sonoran creosote bush scrub occurs on approximately 1,100 to 1,600 acres in the central and western portions of the North of Desert Center Alternative site and supports varying densities of creosote bush and desert saltbush (*Atriplex polycarpa*) as well as sparse to moderate cover of annual plant species such as desert Indian wheat (*Plantago ovata*), cryptantha, and Mediterranean grass.

Desert saltbush scrub occurs on approximately 140 to 240 acres of the northeastern portion of the North of Desert Center Alternative site and is dominated by desert saltbush with an occasional creosote bush. Mediterranean grass is common in the open areas between shrubs.

Desert dry wash woodland occurs on approximately 180 to 280 acres in the large wash that passes through the north-central portion of the North of Desert Center Alternative site. This community is dominated by blue palo verde (*Cercidium floridum*), desert ironwood (*Olneya tesota*), creosote bush, and desert saltbush and supports a number of annual plant species such as cryptantha, phacelia (*Phacelia* spp.), Mediterranean grass, devil's lantern (*Oenothera deltoides*), desert Indian wheat, and browneyes (*Camissonia claviformis*).

Special-status species observations have been reported to the CNDDDB within 5 miles of the North of Desert Center Alternative site (**Biological Resources Table 5**). These CNDDDB records include one listed plant species, the federally endangered Coachella Valley milk-vetch and one federally and state listed reptile, the desert tortoise (CDFG 2010a). The CNDDDB includes a record of the desert tortoise approximately 3,500 feet

northeast of the North of Desert Center Alternative site on National Park Service land, and designated critical habitat for the desert tortoise is located approximately 0.9 mile west of the North of Desert Center Alternative site (USFWS 1994a).

**Biological Resources Table 5
California Natural Diversity Database Records for Special-Status Species
within Five Miles of the North of Desert Center Alternative Site**

Common Name <i>Scientific Name</i>	Status State/Fed/CNPS/BLM	Occurrence Within 5 Miles of North of Desert Center Alternative Site
PLANTS		

Common Name Scientific Name	Status State/Fed/CNPS/BLM	Occurrence Within 5 Miles of North of Desert Center Alternative Site
Chaparral sand-verbena <i>Abronia villosa</i> var. <i>aurita</i>	--/--/List 1B.1/--	Reported approximately 2 to 3 miles southwest of the site.
Harwood's milk-vetch <i>Astragalus insularis</i> var. <i>harwoodii</i>	--/--/List 2.2/--	Reported approximately 4 miles south of the site.
Coachella Valley milk-vetch <i>Astragalus lentiginosus</i> var. <i>coachellae</i>	--/FE/List 1B.2/--	Reported on site in 1998 along Desert Center Rice Road (State Route 177), approximately 1.3 miles east of the site. Also reported approximately 4.5 miles northeast of site in 1973.
Emory's crucifixion thorn <i>Castela emoryi</i>	--/--/List 2.3/--	Reported in the westernmost portion of the site in 1996.
Las Animas colubrina <i>Colubrina californica</i>	--/--/List 2.3/--	Reported from approximately 3.5 to 4.5 miles west of the site, approximately 5 miles northwest of the site, and approximately 4.6 miles south of the site.
Alverson's foxtail cactus <i>Coryphantha alversonii</i>	--/--/List 4.3/--	Multiple records within 5 miles of site, including approximately 1 mile west of the site, approximately 3.4 miles southwest of the site, approximately 4 miles northwest of the site, and approximately 3 miles southeast of the site.
California ditaxis <i>Ditaxis serrata</i> var. <i>californica</i>	--/--/List 3.2/--	Reported approximately 4 miles southwest of the site and approximately 4.6 miles northwest of the site.
Orocopia sage <i>Salvia gregatae</i>	--/--/List 1B.3/--	Reported approximately 5 miles south of the site.
Cove's cassia <i>Senna covesii</i>	--/--/List 2.2/--	Reported approximately 4 miles northwest of the site. Alternative site may be too low in elevation for this species.
ANIMALS		
Prairie falcon <i>Falco mexicanus</i>	CDFG WL/--/--	Reported approximately 2 to 3 miles west of the site and approximately 0.75 mile northeast of the site.
Desert tortoise <i>Gopherus agassizii</i>	ST/FT/--/S	Reported adjacent to or within the northern and eastern portion of the site as well as approximately 4.7 miles southwest, approximately 4.6 miles west, approximately 4 miles northwest, and approximately 5 miles north of the site.
Nelson's bighorn sheep <i>Ovis canadensis nelsoni</i>	--/--/--/S	Reported approximately 3.5 miles northwest of the site and 2.5 miles northeast of the site.
Bendire's thrasher <i>Toxostoma bendirei</i>	CSSC/--/--/S	Reported approximately 3 miles south of site in 2004.
LeConte's thrasher <i>Toxostoma lecontei</i>	CDFG WL/--/--/S	Reported approximately 3 miles south of site and approximately 4 miles southwest of the site in 2004.

Status Codes:

Federal FE - Federally listed endangered: species in danger of extinction throughout a significant portion of its range
 FT - Federally listed threatened: species likely to become endangered within the foreseeable future

State SE - State listed endangered
 ST = State listed threatened
 CSSC = Species of special concern

California Native Plant Society (CNPS)

List 1B - Rare, threatened, or endangered in California and elsewhere

List 2 - Rare, threatened, or endangered in California but more common elsewhere

List 3 - Plants which need more information

List 4 - Limited distribution – a watch list

0.1 - Seriously threatened in California (high degree/immediacy of threat)

0.2 - Fairly threatened in California (moderate degree/immediacy of threat)

0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

U.S. Bureau of Land Management (BLM)

S = Sensitive

BLM Manual § 6840 defines sensitive species as "...those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." <www.blm.gov/ca/pdfs/pa_pdfs/biology_pdfs/SensitiveAnimals.pdf>

The primary species of concern at the North of Desert Center Alternative site is the federal and State listed threatened desert tortoise. The desert tortoise has a high potential to occur in Sonoran creosote bush scrub habitat in the southwestern portion of the North of Desert Center Alternative site. This habitat area is adjacent to and biologically connected to more undisturbed habitat to the west and ultimately to desert tortoise critical habitat that is approximately 0.9 mile west of the North of Desert Center Alternative site (USFWS 1994a). There is no agricultural land or other disturbance or impediment to movement between the habitat area on the North of Desert Center Alternative site and the designated critical habitat. The desert tortoise also has high potential to occur in the desert dry wash woodland on the site and one area of Sonoran creosote bush scrub immediately south of the woodland. The woodland habitat continues, undisturbed, to the northwest where it is contiguous to other undisturbed habitat areas that ultimately adjoin designated critical habitat and other areas where the desert tortoise occurrences have been documented.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Construction. For this analysis, staff assumes that the entire North of Desert Center Alternative site and all of the vegetation communities on it (i.e., fallow agriculture, Sonoran creosote bush scrub, desert saltbush scrub, desert dry wash woodland, active agriculture, developed) as well as some potential jurisdictional waters of the State (e.g., desert dry wash woodland and disturbed wetland) would be permanently lost as a result of vegetation clearing, grading, and construction of the solar facilities, potentially affecting special-status plant species, particularly Coachella Valley milk-vetch and Emory's crucifixion thorn. However, staff also assumes that some of the potential jurisdictional areas, in particular the large wash dividing the northern portion of the site from the southern portion of the site, would be avoided when siting the facility.

Few impacts to special-status animal species would be expected because the North of Desert Center Alternative site is largely fallow agricultural land. However, the habitat is suitable for burrowing owls, which commonly use agricultural land for foraging during winter or breeding seasons. Burrowing owl biology, threats, and conservation status are described above (Section C.2.5.1, **Special-Status Species**). Although the CNDDDB does not report burrowing owls within 5 miles of the site, they have been observed breeding on the proposed Palen Solar Power Project site approximately 5.5 miles northwest of the North of Desert Center Alternative site (BLM and CEC 2010b). Burrowing owls may occur on the North of Desert Center Alternative site and, if present,

nest sites or foraging habitat could be impacted by development of a solar project on the site.

Multiple observations of the desert tortoise have been reported to the CNDDDB within 5 miles of the North of Desert Center Alternative site, including records adjacent to or within the northern and eastern portion of the site. As described above, the desert tortoise has high potential to occur in desert dry wash woodland and Sonoran creosote bush scrub on the North of Desert Center Alternative site. Since these areas would be impacted by the alternative project, there is high potential for impacts to desert tortoise.

There is some potential for other special-status species, including Harwood's milk-vetch, northern harrier, loggerhead shrike, American badger, and desert kit fox to be impacted on the North of Desert Center Alternative site because potential habitat for these species is present and would be impacted by development of the alternative.

Because the primary wash on site would be avoided by project design, as recommended in staff's **Condition of Certification BIO-22**, impacts to wildlife movement across the site in desert dry wash woodland connecting undeveloped or undisturbed lands on either side of the site could be minimized. However, this east-west connectivity would likely be disrupted to some extent due to the construction and other disturbances on either side of the wash.

Additional impacts to vegetation communities, and possibly special-status species, would occur due to the construction of linear facilities (e.g., transmission lines) associated with a solar project on the North of Desert Center Alternative site.

General Construction Impacts to Wildlife. Likely construction impacts to wildlife residing on the North of Desert Center Alternative site would be as discussed above (Section C.2.5.2, **Impacts during Construction**). These impacts would include disturbance, displacement, injury, or mortality during project construction. Burrowing and ground-dwelling animals in the project area could become entrapped in construction trenches, be crushed by construction vehicles or equipment, or be harmed by project personnel. In addition, construction may attract predators or crush animal burrows or nests, potentially causing entombment and mortality.

Migratory and Resident Birds; Special-status Bird Species Impacts. The North of Desert Center Alternative site provides foraging, cover, or breeding habitat for numerous migratory and resident bird species, including special-status species. Absent mitigation, project construction could destroy nesting birds, in violation of the Migratory Bird Treaty Act.

Spread of Nonnative and Invasive Weeds. Construction of a solar project at the North of Desert Center Alternative site could cause the introduction or dispersal of invasive or exotic weeds. The permanent and temporary earth disturbance adjacent to native habitats would increase the potential for exotic, invasive plant species to establish and disperse into native plant communities, which leads to community and habitat degradation.

Excessive Noise. Noise from construction activities on the North of Desert Center Alternative site could temporarily discourage wildlife from foraging and nesting

immediately adjacent to the project area. Many bird species rely on vocalization during the breeding season to attract a mate within their territory. Noise levels from certain construction activities could reduce the reproductive success of nesting birds.

Operational Impacts. Operation of the project at the alternative site would cause impacts to wildlife similar to those described above (Section C.2.5.2, **Impacts during Operation**). These would include increased avian mortality due to collision with new transmission lines, mirrors, and central tower. Other operational impacts would include potential incineration if birds fly through heliostat “standby points.”

An increased incidence of accidental wildfire is also a possibility during operation (although the potential is low) from downed transmission lines. Additionally, there would be the potential for edge effects to special-status animal species in surrounding habitat areas from operational night lighting or noise. Desert tortoises in the area could be subjected to increased predation by common ravens or other animals. Ravens were observed during reconnaissance surveys on the site, and may increase in numbers due to an increase in perching and nesting sites and potentially increased food and/or water sources provided by project facilities. Desert tortoise could also be injured or killed by vehicles on project access roads.

Comparison to Proposed Project. Definitive conclusions about the magnitude of potential adverse impacts to biological resources cannot be made in the absence of site-specific survey and project design information for the North of Desert Center Alternative site. However, development of a solar project at the North of Desert Center Alternative site would impact fewer biological resources compared to the proposed project site because the site is primarily fallow agricultural land, whereas development at the proposed project site would occur primarily on land supporting native vegetation and habitat. Staff’s proposed conditions of certification would mitigate for the Reduced Acreage Alternative’s direct, indirect, and cumulative impacts to biological resources. These conditions are identical to those for the proposed project.

SR-62/RICE VALLEY ROAD TRANSMISSION LINE ALTERNATIVE

The SR 62/Rice Valley Road Transmission Line Alternative would interconnect to Western’s 161-kV/230-kV Parker-Blythe transmission line at the same location as the proposed project transmission line. This alternative transmission line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP’s circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant’s proposed new transmission line alignment and continue southeast for 5.4 miles along the proposed alignment to Western’s Parker-Blythe transmission line. The SR 62/Rice Valley Road Transmission Line Alternative route is illustrated in **Alternatives Figure 4**.

The SR-62/Rice Valley Road Transmission Line Alternative is evaluated in this SA/DEIS because it would:

1. Avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise.
2. Avoid the creation of a new 4.6-mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley Road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

SETTING AND EXISTING CONDITIONS

The SR-62/Rice Valley Road Transmission Line Alternative alignment would be in the same general area as the proposed project, and the setting for this Alternative is the same as for the proposed project except that the generator tie-line would follow a different route to avoid the need for a new 4.6-mile access road and transmission corridor across undeveloped habitats. All other project elements, including the solar field and interconnection substation would be the same as described for the proposed project in Section C.2.5 above. Although biological field surveys of the alternative alignment have not been carried out between the heliostat field and the point at which the proposed project corridor connects to Rice Valley Road, this area is within the general region described for the proposed project. Similar habitats and species are expected to occur along the alternative alignment, with the main difference being that the alternative alignment occurs adjacent to SR-62 and Rice Valley Road, and the line would be sited in areas more disturbed by human activity than those described for the proposed project. Please see the discussion of existing conditions under Section C.2.5.1.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The SR-62/Rice Valley Road Transmission Line Alternative would result in reduced habitat disturbance as compared with the proposed project because it would be sited along existing roadways along its entire length, eliminating the need for the construction of a new access road. Additionally, the alternative route would be in more disturbed areas along existing roads and adjacent to existing power lines along portions of the route, as compared with the proposed project generator tie-line alignment. The areas disturbed by the SR-62/Rice Valley Road Transmission Line Alternative would be of lower quality for wildlife than those disturbed by the proposed project. It should be noted that the alternative route is longer than the proposed route, and would require 30 to 35 additional tower bases, compared with the proposed route, with additional construction disturbance at each additional tower location. All of the additional disturbance would be in areas nearer to existing human influence (e.g., roadways) than the western segment of the proposed project alignment.

Biological field surveys have not been conducted on the alternative route along SR-62 and Rice Valley Road north of the proposed project junction, although similar habitats and species are expected to occur. It is likely that similar special-status species would occur along this route, such as special-status plants, desert tortoise, and burrowing owl.

Due to the alignment's proximity to a major highway, established road, and an existing power line corridor, staff anticipates that impacts to biological resources would be reduced. Therefore, even if special-status species are found along the alternative route, the habitat impacted by this Alternative is likely to be of lower quality for these species than the proposed route. Therefore, impacts to general and special-status species would be of the same types as described for the proposed project (see Section C.2.5.2), but would be slightly lower in magnitude.

The SR 62/Rice Valley Road Transmission Line Alternative would increase the total length of the transmission line by approximately 4.4 miles (CH2MHill 2010d). This increase in length would slightly increase the potential for birds to collide with or be electrocuted by the transmission line. Because the new route would be located less than 0.25 mile from the Colorado River Aqueduct in some places, while the proposed route is over two miles from the aqueduct at the nearest location, any birds drawn to the aqueduct as a water source could be at an increased risk for collision with the transmission lines. However, staff's proposed Condition of Certification **BIO-8** (Impact Avoidance and Minimization Measures) would require the transmission line and all electrical components to be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC 1994) to reduce the likelihood of bird electrocutions and collisions. Therefore, impacts to birds from collisions and electrocutions would be less than significant under CEQA with implementation of staff's proposed Condition of Certification **BIO-8**.

Staff's proposed conditions of certification would mitigate for the SR 62/Rice Valley Road Transmission Line Alternative's direct, indirect, and cumulative impacts to biological resources. These conditions are identical to those for the proposed project, except that the compensatory mitigation acreages recommended for desert tortoise habitat (staff's proposed Condition of Certification **BIO-16**) and State waters (staff's proposed Condition of Certification **BIO-22**) are revised to reflect the slightly reduced acreage of permanent impacts.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to

remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the impacts to biological resources from the proposed project would occur and none of the benefits of the proposed project would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACTS

GEOGRAPHIC EXTENT

The “geographic extent” of the cumulative analysis of impacts to biological resources refers to the area within which cumulative impacts are likely to occur. For the RSEP, the geographic extent varies depending on the resource being evaluated. For example, the geographic extent for impacts to a special-status species generally includes that species’ entire range, including the California desert and beyond. However, for a special-status species that occurs in a series of isolated populations, cumulative effects analysis may appropriately focus on relatively small, local populations as well as their wider geographic distribution. This situation often applies to plants or animals with specialized habitat requirements such as mountain ranges or windblown sand. For species whose geographic range extends outside California, cumulative effects for CEQA purposes may appropriately focus on cumulative impacts within California, while the analysis for NEPA purposes may extend to other states. The following subsections describe the geographic extent under consideration for cumulative impacts to each biological resource that would be affected by the proposed project.

Vegetation Communities

The geographic extent of the analysis of cumulative impacts to vegetation communities includes the entire NECO planning area (see **Biological Resources Figure 6**). The NECO planning area is located in the southeastern California Desert Conservation Area (CDCA). It occurs primarily in the Sonoran Desert region but includes a smaller portion of the southern Mojave Desert region. The NECO planning area comprises 5,547,665 acres of private, federal, and State land. The majority of the planning area land (3,823,194 acres, or 69 percent) is public land managed by BLM (BLM and CDFG 2002).

The entire RSEP project area is mapped as Sonoran creosote bush scrub in the NECO plant communities dataset that is based on the 1996 California Gap Analysis Project prepared by the Biogeography Lab at the University of California, Santa Barbara and coordinated through the USGS Biological Resources Division. A total of 3,829,999 acres of Sonoran creosote bush scrub is mapped within the NECO planning area.

Threats to vegetation communities in the NECO planning area include habitat loss and fragmentation due to development, fire, off-highway vehicle activity, cattle and sheep grazing, overdrawn groundwater, and the spread of invasive plant species (BLM and CDFG 2002). Current and foreseeable renewable energy developments in the planning area contribute cumulatively to impacts to vegetation communities through loss and fragmentation of habitat, contribution to groundwater depletion, and contribution to the

spread of nonnative and invasive weeds. Cumulatively, impacts of these projects to vegetation communities in the NECO planning area would be significant.

Special-Status Plants

The geographic extent of the analysis of cumulative impacts to special-status plants includes the entire NECO planning area. A variety of special-status plant species have ranges that extend through the Mojave and Colorado Deserts of the NECO planning area, and several are endemic to the planning area. Two special-status plants occur on the RSEP and generator tie-line site: chaparral sand-verbena (CNPS List 1B.1 and BLM Sensitive) and Harwood's milk-vetch (CNPS List 2.2). Threats to special-status plants in the California deserts include habitat loss and fragmentation due to development, off-highway vehicle activity, cattle and sheep grazing, overdrawn groundwater, and the spread of invasive plant species (CDFG, 2005). Current and foreseeable renewable energy developments in the Mojave Desert contribute to impacts to special-status plants through loss and fragmentation of habitat to development, contributing to depletion of groundwater supplies, and contributing to the spread of nonnative and invasive weeds. Cumulatively, impacts of these projects to special-status plants in the NECO planning area would be significant.

Common Wildlife

The geographic extent of the analysis of cumulative impacts to common wildlife includes the entire California desert. Common wildlife, including large and small mammals, bats, most migratory and resident birds, reptiles, amphibians, and invertebrates, occur at generally low density in the California desert due to the limited resources present in this arid environment. Naive migratory and resident birds of the California desert are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code Section 3513. Most common wildlife species that occur within the NECO planning area range throughout the California deserts and often beyond. However, even common species are subject to threats such as ongoing habitat loss due to urbanization, agriculture, and energy and infrastructure developments; habitat fragmentation and consequent disruption of regional and local movement corridors; grazing; off-highway vehicle use; groundwater depletion; reduced prey availability; pesticide use; and (for birds) electrocution on power lines. Current and foreseeable renewable energy developments in the California deserts contribute to the loss and damage of habitat through reduced habitat availability; habitat fragmentation; reduced prey base; increased noise and disturbance; and other disruption of natural areas. Cumulatively, impacts of these projects to common wildlife in the California deserts would be significant.

Desert Tortoise

The geographic extent of this analysis of cumulative impacts to desert tortoise is the range of the Mojave desert tortoise population, as recognized by the USFWS (USFWS 1994b), which includes the RSEP project area. The Mojave population's range encompasses the area north and west of the Colorado River in the Mojave and Sonoran/Colorado deserts in California, southern Nevada, southwestern Utah, and extreme northwestern Arizona (USFWS 1994b). This population occurs throughout much of the region, generally in valleys, flat areas, fans, bajadas, and washes below 4,000 feet in native desert vegetation (e.g., creosote bush, saltbush scrub, Joshua tree,

Mohave yucca, and ocotillo-creosote vegetation communities), but also in steeper areas and higher elevations, in lower numbers. Desert tortoise biology and reasons for listing it as threatened are described above (Section C.2.5.1, **Special-Status Species**).

To promote substantial populations for desert tortoise recovery in the Mojave population's range, the 1994 Recovery Plan (USFWS) designated six Recovery Units traversing all four abovementioned states. The establishment of the Recovery Units is intended to protect the species and its habitat requirements so that populations will naturally increase to levels acceptable for delisting (i.e. 50,000 breeding adults per recovery unit). However, desert tortoises are slow-growing animals that do not reach sexual maturity until age 15 to 20 years and have a low reproductive rate over a long period of reproductive potential; these life history characteristics hinder recovery since tortoises experience high mortality rates prior to reaching sexual maturity (USFWS 2008a).

Renewable projects operating and proposed in the range of the Mojave desert tortoise population further contribute to the ongoing loss and fragmentation of its habitat. These projects may also increase the abundance of ravens, increasing predation pressure on desert tortoises. Cumulatively, the impacts of these projects to desert tortoises in the Mojave population would be significant.

Mojave Fringe-Toed Lizard

The geographic extent of the analysis of cumulative impacts to Mojave fringe-toed lizard includes the animal's entire geographic range, the deserts of Los Angeles, Riverside, and San Bernardino Counties in California and La Paz County in Arizona. In the NECO planning area, Mojave fringe-toed lizard is known from aeolian sand habitats around Bristol Dry Lake, Cadiz Dry Lake, Dale Dry Lake, Rice Valley, Pinto Basin, Palen Dry Lake, and Ford Dry Lake (BLM and CDFG 2002). It is listed as a California Species of Special Concern by CDFG and is a BLM Sensitive Species. Biology and threats are described above (Section C.2.5.1, **Special-Status Species**). Current and foreseeable renewable energy developments in the range of the Mojave fringe-toed lizard contribute to the loss and damage of habitat through development, fragmentation, and disruption of aeolian sand movement. Cumulatively, impacts of these projects to the Mojave fringe-toed lizard throughout its geographic range would be significant.

Golden Eagle

The geographic extent of this analysis of cumulative impacts to the golden eagle includes its breeding and breeding-season foraging habitat throughout the California desert. Golden eagle biology, threats to the species, and its conservation status are described above (Section C.2.5.1, **Special-Status Species**). In terms of breeding habitat and breeding season biology, the most important cumulative impacts to golden eagles are the potential for loss or disruption of nesting sites, and the loss of productive foraging habitat surrounding nest sites. Breeding golden eagles forage widely but are limited in their foraging ranges by the necessity of returning to nest sites to tend eggs and feed young. Outside the breeding season, golden eagles are less limited in available foraging ranges, and cumulative loss of foraging habitat is less likely to affect regional population viability. Current and foreseeable renewable energy developments in the California deserts contribute to the loss and degradation of breeding-season

foraging habitat through land use changes, a reduction in prey base, and the disruption of natural areas. Due to the locations of renewable energy projects on the desert valleys and bajadas, rather than remote mountains, cumulative impacts to known or potential nesting sites are relatively minor. However, cumulative impacts of these projects to golden eagle breeding-season foraging habitat surrounding known and potential nesting areas in the California deserts would be significant.

Prairie Falcon

The geographic extent of this analysis of cumulative impacts to the prairie falcon includes its breeding and breeding-season foraging habitat throughout the California desert. Prairie falcon biology, threats to the species, and its conservation status are described above (Section C.2.5.1, **Special-Status Species**). Its breeding habitat and breeding season foraging patterns and limitations are similar to those described above for golden eagle. Like the golden eagle, it nests in cliffs and forages over a broad variety of vegetation types. In the desert, it appears to favor sparse shrubland for foraging (BLM and CDFG 2002). Current and foreseeable renewable energy developments in the California deserts contribute to the loss and damage of habitat through land use changes, a reduction in prey base, and the disruption of natural areas. Due to the locations of renewable energy projects on the desert valleys and bajadas, rather than remote mountains, cumulative impacts to known or potential nesting sites are relatively minor. However, cumulative impacts of these projects to prairie falcon breeding-season foraging habitat surrounding known and potential nesting areas in the California deserts would be significant.

Burrowing Owl

The geographic extent of this analysis of cumulative impacts to the western burrowing owl includes its distribution throughout the California desert. Burrowing owl biology, threats to the species, and its conservation status are described above (Section C.2.5.1, **Special-Status Species**). Current and foreseeable renewable energy developments in the California deserts contribute to the loss and damage of habitat through land use changes, reduction in prey base and the disruption of natural areas. Cumulatively, impacts of these projects to burrowing owl populations in the California deserts would be significant.

Special-Status Passerine Birds

The geographic extent of this analysis of cumulative impacts to special-status passerine bird populations includes their distributions throughout the California desert. Several special-status passerine bird species occur throughout the California desert and surrounding areas. Loggerhead shrike was documented on the project site. This and other special-status shrubland species, including Le Conte's thrasher and Crissal thrasher, may nest onsite. Native resident birds are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code Section 3513. Biology, threats, and conservation status of these birds are described above (Section C.2.5.1, **Special-Status Species**). Current and foreseeable renewable energy developments in the California desert contribute cumulatively to the loss and degradation of their habitat through land use changes, a reduction in prey base, and the disruption of natural areas. Cumulatively, impacts to special-status passerine bird populations in the California desert area would be significant.

Large Mammals (Nelson's Bighorn Sheep, Burro Deer, and Yuma Mountain Lion)

The geographic extent of this analysis of cumulative impacts to large mammals includes their distributions throughout the California desert. The biology, threats, and conservation status of Nelson's bighorn sheep, burro deer, and Yuma mountain lion are described above (Section C.2.5.1, **Special-Status Species**). All three of these animals require regular access during summer to drinking water and shaded cover during summer. These are generally found in canyons and riparian corridors of the scattered desert mountain ranges. Thus, all three species are found in scattered, partially isolated small habitat areas. Nelson's bighorn sheep and burro deer must periodically move among isolated habitat areas to sustain regional population segments. Yuma mountain lions may need to move more frequently among habitat patches to capture enough prey for survival. Due to the locations of renewable energy projects on the desert valleys and bajadas, rather than remote mountains, cumulative impacts to primary habitat areas are relatively minor. Instead, the most important cumulative impact to these animals is the reduced opportunity for movement among mountain ranges. Cumulative impacts of these projects to large mammal movement among habitat areas in the California deserts would be significant.

American Badger and Desert Kit Fox

The geographic extent of this analysis of cumulative impacts to American badger and desert kit fox populations includes their distributions throughout the California desert. The biology, threats, and conservation status of both animals are described above (Section C.2.5.1, **Special-Status Species**). Current and foreseeable renewable energy developments in the California desert contribute cumulatively to the loss and degradation of habitat through land use changes, fragmentation, and the disruption of natural areas. Cumulatively, impacts of these projects to American badger and desert kit fox populations in the California desert would be significant.

Special-status Bats

The geographic extent of this analysis of cumulative impacts to special-status bat populations includes their distributions throughout the California desert. The biology, threats, and conservation status of special-status bats are described above (Section C.2.5.1, **Special-Status Species**). Current and foreseeable renewable energy developments in the California desert contribute cumulatively to the loss and damage of habitat through land use changes, reduction in prey base, and the disruption of natural areas. Cumulatively, impacts of these projects to special-status bat populations in the California desert area would be significant.

Wildlife Movement and Connectivity

The geographic extent of this analysis of cumulative impacts to wildlife movement is the Rice Valley and surrounding mountain ranges at a local scale and, more broadly, the entire California desert. Threats to wildlife movement throughout the desert include large-scale land use changes, such as agriculture, infrastructure, commercial and residential development, and military uses. Wildlife movement in the Rice Valley contributes more broadly to movement throughout the entire California desert. Current and foreseeable renewable energy developments in the California desert contribute to

the loss and damage of wildlife movement corridors. Cumulatively, impacts to corridors in the California desert would be significant.

Jurisdictional Waters of the State

The geographic extent of this analysis of cumulative impacts to jurisdictional waters of the State is the NECO planning area. A variety of playas, seeps, lakes, and drainages are found throughout the planning area. Some of these range over large acreages. Most of the jurisdictional desert washes and channels in the planning area flow ephemerally in response to heavy rain storms. Desert wash habitats, which make up the majority of jurisdictional waters in the planning area, provide habitat for a variety of species and play an important role in conveying surface flows during storm events. Threats to jurisdictional waters include large-scale land use conversion, including agriculture, infrastructure, and commercial and residential development, as well as off-road vehicle use, pesticide use, and mining. Current and foreseeable renewable energy developments in the NECO planning area contribute to the loss and alteration/damage of jurisdictional waters. Cumulatively, impacts of these projects to jurisdictional waters in the NECO planning area are significant.

EXISTING CUMULATIVE CONDITIONS

Over the past two hundred years, California's deserts have been subject to major human-induced changes that have threatened native plant and animal communities by habitat loss, fragmentation, and degradation. Some of the most conspicuous threats are those activities that have resulted in large-scale habitat loss due to urbanization, agricultural uses, landfills, military operations, mining, as well as activities that fragment and degrade habitats such as roads, off-highway vehicles, recreational use, and grazing (Berry et al. 1996; Boarman and Sasaki 2006; Avery 1997; Jennings 1997). In addition, these development pressures have facilitated the introduction of non-native plant species and increases in predators such as ravens, which contribute to population declines and range contractions for many special-status plant and animal species (Boarman 2002).

Development is limited in the general area around the RSEP site. **CUMULATIVE IMPACTS Table 2** identifies ten existing projects in the Rice Valley area and surrounding area within approximately 20 miles of the RSEP site. The projects closest to the RSEP site include the Rice Valley Grazing Allotment, the Arizona-California Railroad, and the Colorado River Aqueduct. In addition, SR-62 runs in an east-west direction immediately north of the RSEP site, in parallel with the adjacent aqueduct and railroad. Other existing projects in the Rice Valley area include various transmission lines, the Iron Mountain Pumping Plant and airport, and recreational opportunities. More distant projects (greater than 20 miles from the RSEP) in eastern Riverside County include Interstate 10 to the south, the Eagle Mountain Pumping Plant, the Blythe Energy Project, the Kaiser Mine (now inactive), and the Devers-Palo Verde Transmission Line.

In consideration of the existing cumulative conditions encompassing the Rice Valley area and surrounding area, the RSEP would contribute to the loss of habitat for sensitive species including desert tortoise, burrowing owl, and other species described above. The combined effects of existing development and the proposed project's additional incremental effect on biological resources would be cumulatively significant.

Habitat loss and fragmentation has already contributed to the decline of several California desert associated species. The proposed project's contribution to these effects would be mitigated through staff's recommended **Conditions of Certification BIO-1** through **BIO-26**. With implementation of these Conditions of Certification, the project's contribution to cumulative effects would not be considerable. Cumulative impacts to specific resources and individual species are discussed in greater detail below.

Vegetation Communities

As described above under **Geographic Extent**, the entire RSEP project area is mapped as Sonoran creosote bush scrub in the NECO plant communities dataset. A total of 3,829,999 acres of Sonoran creosote bush scrub is mapped within the entire NECO planning area. The RSEP would have permanent and long-term impacts to approximately 1,770 acres of desert vegetation, primarily creosote bush scrub. Regional and project-level mapping data are not available to allow calculation of acreages or percentages of impacts to other vegetation types at finer scale. This acreage is approximately 0.04 percent of the Sonoran creosote bush scrub in the NECO planning area. The RSEP would contribute incrementally to the cumulatively significant impacts of existing and future projects to Sonoran creosote bush scrub habitat. Sonoran creosote bush scrub is a common and widespread community in the southeastern deserts of California. Large, intact blocks of habitat such as that in the Rice Valley are important to wildlife movement and to foraging and breeding habitat for wildlife, including special-status species and State and federally listed species. The RSEP's contribution to regional cumulative impacts to these habitat values are addressed below, under special-status species and wildlife movement.

Staff's proposed Conditions of Certification **BIO-1** through **BIO-11**, and **BIO-16** would minimize the proposed project's contribution to cumulative loss of Sonoran creosote bush scrub. While acquisition does not prevent the net loss of habitat that would result from the RSEP, it is expected to minimize future loss of protected habitat by placing a permanent conservation easement and deed restrictions on private lands that could otherwise be converted for urban, agricultural, or energy development. Given the relatively small proportion of Sonoran creosote bush scrub habitat to be lost for this project and the incorporation of mitigation measures described above, the RSEP's contribution to the loss of Sonoran creosote bush scrub in the region is not cumulatively considerable and would be less than significant with mitigation incorporated.

Special-Status Plants

The RSEP's incremental contribution to cumulative impacts to special-status plants would be minor. Two special-status species would be impacted by the RSEP: chaparral sand-verbena and Harwood's milk-vetch. Chaparral sand-verbena is widespread in the Colorado Desert, and is not rare in this region (see Section C.2.5.1, **Special-Status Species**, above). Impacts to Harwood's milk-vetch and any other special-status plants found on the project site would be avoided or minimized through implementation of staff's proposed Condition of Certification **BIO-12**. The NECO planning area contains an estimated 1,555,915 acres of potential habitat for Harwood's milk-vetch (Based on the BLM NECO Landforms dataset [BLM and CDFG 2002], selecting the following values: undifferentiated dunes; sandy plains; sandy dissected fans; undifferentiated plains;

dissected fans; sand-covered fans). The RSEP would impact approximately 0.1 percent of modeled potential habitat for this species in the NECO planning area. However, the majority of modeled “potential” habitat is not occupied by the plant and this calculation has very limited utility in this analysis. Staff concludes that, due to the relatively low abundance of both plants in the RSEP and generator tie-line footprints, the occurrence of Harwood’s milk-vetch in areas to be avoided due to other resource concerns (sandy washes and similar habitats); the relatively low local conservation concern for chaparral sand verbena, and the mitigation recommended under Condition of Certification **BIO-12**, the RSEP would not make a considerable contribution to the cumulative regional impacts to special-status plants, and its cumulative impact would be less than significant.

Common Wildlife

The RSEP’s incremental contribution to cumulative impacts to common wildlife, including most resident and migratory birds, would be habitat loss and fragmentation. Most common wildlife species range widely over California, and these species have not been identified as conservation priorities because significant population declines and other risk factors have not been identified. The RSEP would contribute incrementally to impacts to common wildlife such as disruption of movement, disturbance, mortality, loss of habitat, and fragmentation. With the incorporation of recommended Conditions of Certification (see **Construction Impacts to Common Wildlife and Habitat** in Section C.2.5.2, above), this incremental contribution would be mitigated to the extent feasible and would not result in the loss of a population or a trend toward federal or State listing for any common wildlife species. With incorporated mitigation, the RSEP would not make a considerable contribution to the cumulative regional impacts to common wildlife, when combined with the effects of past and future projects in the NECO planning area, and its impact would be less than significant.

Desert Tortoise

The RSEP’s incremental contribution to cumulative impacts to desert tortoise would be similar to the impacts of other solar developments in the range of the Mojave population, and would include loss of habitat, interference with regional movement, stress and potentially illness or mortality from translocation, and indirect impacts from an increase in predators such as the common raven. The current USGS Desert Tortoise Habitat Model (Nussear et al. 2009) maps the project area and most of Rice Valley as “Medium Quality” desert tortoise habitat, with scores of 0.3-0.7 on a scale of 0 to 1 (0 being the lowest quality and 1 being the highest quality). The model is a predictive model for mapping the potential distribution of desert tortoise habitat and is useful tool for evaluating different land-use issues that tortoises face at a landscape scale. It is not intended to be used, or viewed, as a substitute for ground-based and site-specific field surveys. Model scores reflect a hypothesized habitat potential given the range of environmental conditions where tortoise occurrence was documented. The report (Nussear et al. 2009) specifically states:

“ . . . there are likely areas of potential habitat for which habitat potential was not predicted to be high, and likewise, areas of low potential for which the model predicted higher potential. Finally, the map of desert tortoise potential habitat that we present does not account either for anthropogenic effects, such as urban

development, habitat destruction, or fragmentation, or for natural disturbances, such as fire, which might have rendered potential habitat into habitat with much lower potential in recent years”.

Based on staff’s field observations and historic land uses, desert tortoise habitat quality on the RSEP site is somewhat degraded. Even so, the site is occupied habitat and the observations of tortoise eggshell fragments indicate successful desert tortoise reproduction. The RSEP would have permanent and long-term impacts to approximately 1,530 acres of habitat at the solar field site, and approximately 119 acres along the generator tie-line corridor. This would amount to less than 0.06 percent of the total medium quality habitat mapped within the NECO planning area in the habitat model (2,797,866 acres).

Staff has proposed mitigation to reduce project-level impacts to desert tortoise, including construction minimization measures (**BIO-8**), clearance surveys and exclusion fencing (**BIO-14**), preparation and implementation of a translocation plan (**BIO-15**), acquisition and conservation of compensation lands (**BIO-16**), and preparation and implementation of a plan to control ravens (**BIO-17**). Together these measures would reduce project-level impacts of the solar generator, generator tie-line, and interconnector substation to less than significant under CEQA and would fully mitigate those impacts under CESA. Staff concludes that, with incorporation of these measures, those components of the RSEP’s contribution to significant cumulative effects to desert tortoises would not be considerable. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Mojave Fringe-Toed Lizard

The RSEP’s impacts to Mojave fringe-toed lizard would largely be limited to construction-related impacts during construction or upgrade work on the generator tie-line alignment and the Parker-Blythe #2 transmission line alignment. Potential habitat on the solar generator site is marginal, patchy, and not extensive. Staff’s recommended Conditions of Certification **BIO-8** would minimize potential adverse impacts to the species and its habitat during transmission line work. Mojave fringe-toed lizard occurs in the Danby Dunes, less than one mile south of the project site. If the RSEP causes an increase in predators such as the common raven due to food and nesting habitat subsidies, then these indirect project impacts could affect the off-site Mojave fringe-toed lizard population. Staff’s proposed Condition of Certification **BIO-17** requires the preparation and implementation of a Raven Management Plan to minimize the potential for increases in raven populations related to implementation of the RSEP; therefore, the incremental contribution of the solar generator, generator tie-line, and interconnector substation to cumulative impacts to the Mojave fringe-toed lizard would be reduced to less than significant with mitigation incorporated. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Golden Eagle

The RSEP would contribute incrementally to the cumulative loss of golden eagle foraging habitat. The RSEP solar generator site does not provide suitable golden eagle

nesting habitat, but there are inactive recent golden eagle nest sites known within 10 miles of the proposed project site (Bloom 2010), and these sites could be used again in the future. The entire RSEP site, including the proposed generator tie-line alignment and the existing Parker-Blythe #2 transmission line alignment, provides potential foraging habitat and is within foraging range of known or potential nest sites. Other renewable developments, both existing and proposed, in the NECO planning area would have similar potential impacts, and cumulatively, development in the California deserts would have significant impacts on golden eagles. Implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-11** would minimize project impacts to potential golden eagle foraging habitat. Condition of Certification **BIO-16**, which would require compensatory land acquisition to mitigate impacts to desert tortoise (described above), would mitigate project-specific loss of foraging habitat to less-than-significant levels. Condition of Certification **BIO-25** would require compliance with the Bald and Golden Eagle Protection Act as part of the Avian and Bat Protection Plan and a monitoring study to address potential bird injury or mortality, including adaptive management actions. With implementation of these measures, the solar generator, generator tie-line, and interconnector substation's contribution to significant cumulative impacts to golden eagles would be less than considerable. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Prairie Falcon

A prairie falcon was observed flying over the project site during surveys for the RSEP (SR 2009a) and nesting prairie falcons were reported in the surrounding mountains (Bloom 2010). This species has a similar life history as the golden eagle, and impacts would be similar to those described for golden eagle above. Prairie falcons are likely to forage over the RSEP site year-around. However, the prairie falcon's overall distribution appears to be stable (BLM and CDFG 2002), and it has no federal conservation status other than its protection under the Migratory Bird Treaty Act. Staff concludes that the solar generator, generator tie-line, and interconnector substation's incremental contribution to cumulative impacts to prairie falcon would be less than significant. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Burrowing Owl

The RSEP would contribute incrementally to the cumulative loss of burrowing owl wintering habitat. Recently active burrows were identified on site during surveys in 2009 and 2010. However, there were no sightings of the owls themselves during the breeding season surveys and the condition of the burrows suggests that burrowing owls had used the site as wintering habitat, earlier in the year. Although no burrowing owls nested on the site in 2009 or 2010, habitat on-site appears suitable for nesting, at least in some years. Impacts from the RSEP would be similar to other solar developments in the region, and could include loss of breeding or wintering habitat, disturbance due to human activities, and destruction of active (nesting or wintering) burrows. However, due to the low level of use, and an apparent rarity of breeding on-site, the RSEP solar generator, generator tie-line and interconnector substation's incremental contribution to cumulative impacts to burrowing owls would be minor. Implementation of staff's proposed Conditions of Certification **BIO-19** (Burrowing Owl Impact Avoidance,

Minimization, and Compensation Measures) and **BIO-16** (Desert Tortoise Compensatory Mitigation) would reduce the RSEP's contribution to cumulative impacts to a less-than-significant level under CEQA. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Special-Status Passerine Birds

The RSEP would contribute incrementally to the cumulative loss of year-round habitat for several special-status birds. Loggerhead shrike was documented on the site. This and other special-status shrubland species, including Le Conte's thrasher and Crissal thrasher, may nest on-site. The RSEP's primary impacts to resident and migratory birds include habitat loss, disturbance to foraging and breeding, and risk of injury or mortality due to collision with project features or incineration at the solar field site. However, due to the low density of birds observed on-site, and the availability of similar or higher-quality habitat in the greater Rice Valley and beyond, the RSEP's incremental contribution to cumulative impacts to resident and migratory birds would be low. This contribution would be further reduced by the implementation of staff's proposed Conditions of Certification **BIO-1** through **BIO-10**, and **BIO-13** which requires pre-construction nest surveys and impact avoidance measures for nesting birds. Condition of Certification **BIO-25** would require an Avian and Bat Protection Plan and a monitoring study to address potential bird injury or mortality, including adaptive management actions. With implementation of these measures, the solar generator, generator tie-line and interconnector substation's incremental contribution to cumulative impacts to special-status passerine birds would be less than significant with mitigation incorporated. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Large Mammals (Nelson's Bighorn Sheep, Burro Deer, and Yuma Mountain Lion)

The RSEP would contribute incrementally to the cumulative reduction in large mammal movement opportunities among mountain ranges. Large mammal movement from the nearby Turtle Mountains, across the project area, to other mountain ranges in the area is restricted by the aqueduct, railroad, SR-62, and large containment berms just north of these features. Even though the RSEP would permanently fence a 1,410-acre area, it is unlikely to have a substantial impact on any occasional use of the Rice Valley for movement. No future projects are planned adjacent to the RSEP that would significantly impair movement, should it occur in the project area. Therefore, the RSEP's incremental contribution to cumulative impacts to large mammals would be less than significant.

American Badger and Desert Kit Fox

The RSEP would contribute incrementally to the cumulative loss and fragmentation of habitat for desert kit fox and, perhaps, badgers. These impacts are similar to impacts that would result from other past and foreseeable future developments within the California desert. However, due to the low density of kit fox and badgers on site, and the fact that no future projects are planned adjacent to the RSEP that would significantly impair movement, the RSEP's contribution to cumulative impacts to badgers and kit fox would be minor. Staff's proposed Condition of Certification **BIO-20** requires impact avoidance and minimization measures for American badgers and desert kit fox.

Condition of Certification **BIO-16**, which requires compensatory mitigation for desert tortoise habitat, would also offset project-specific impacts to these species. Staff concludes that the RSEP's incremental contribution to cumulative impacts to American badger and desert kit fox would be less than significant.

Bats

There is no suitable roosting habitat in or adjacent to the RSEP solar generator site and generator tie-line alignment, and bats in the area likely roost in nearby mountain ranges. However, bats may forage over the project area, and may even be drawn to the area once the RSEP is operational due to the presence of the evaporation ponds. Due to the lack of roosting habitat in or near the project area, and the widespread availability of similar foraging habitat in the Rice Valley and beyond, the incremental contribution of the RSEP solar generator, generator tie-line, and interconnector substation to cumulative impacts to bats would be less than significant. Potential occurrence of bats, including special status bat species, along the Parker-Blythe #2 transmission line alignment is unknown. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

Wildlife Movement and Connectivity

As described above for Nelson's bighorn sheep, burro deer, and Yuma mountain lion, wildlife movement between the Rice Valley and the Turtle Mountains to the north is greatly restricted by the presence of the aqueduct, railroad, highway, and berms located along the southern foothills of the mountains just north of the RSEP solar generator site. In addition to large mammals, this restriction affects all terrestrial species, including desert tortoise. Cumulative impacts of these existing facilities are significant restrictions to wildlife movement through the area. Staff's recommended Condition of Certification **BIO-21** would serve to maximize potential wildlife movement around the proposed solar generator site. Construction and upgrades along new and existing transmission line facilities would have minimal impacts to wildlife movement. Therefore, the RSEP's incremental contribution to cumulative impacts to wildlife movement and connectivity would be less than significant.

Jurisdictional Waters of the State

The RSEP would contribute incrementally to cumulative impacts of State-jurisdictional waters in the NECO Planning Area. The most important existing alterations to State jurisdictional waters in the Rice Valley are the Colorado River Aqueduct and upstream berm system that directs flows to the aqueduct siphon points. The existing railroad and highway also affect jurisdictional waters. Jurisdictional waters in the northern part of the Rice Valley consist of dry desert washes and small, ephemeral drainages that drain from the north to the south over the aqueduct siphons and beneath the railroad line. Most of the jurisdictional waters on the RSEP site are minor ephemeral channels that originate on-site, though the project also would affect larger channels along its eastern and western margins and along the generator tie-line alignment. Further, with few exceptions, jurisdictional waters on the site do not support specialized riparian or desert wash vegetation or other special habitat values. The RSEP solar generator and generator tie-line would impact 82.8 acres of State jurisdictional waters. Additional jurisdictional waters may be impacted along the Parker-Blythe #2 transmission line

alignment. This loss would be offset by the implementation of staff's proposed Conditions of Certification **BIO-22**, which requires that the applicant provide compensatory mitigation at a 1:1 ratio for all impacts to State jurisdictional waters, and also requires a number of impact avoidance and minimization measures, including the elimination of the applicant's proposed stormwater detention basin. The applicant would likely fulfill the large majority of this compensatory mitigation requirement through the conservation and management of jurisdictional drainages on the desert tortoise compensatory mitigation lands (see Condition of Certification **BIO-16**). Due to the relative lack of riparian habitat and the small, ephemeral character of most of these channels, the incremental contribution of the solar generator, generator tie-line, and interconnector substation to cumulative impacts to State jurisdictional waters would be less than significant with mitigation incorporated. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

FUTURE FORESEEABLE PROJECTS

Foreseeable Projects in the Project Area

As described in **CUMULATIVE IMPACTS Figure 2** and **CUMULATIVE IMPACTS Table 3**, four projects are proposed or under construction within 20 miles of the RSEP. Three of these four projects are proposed solar power developments which would convert approximately 70,160 acres of desert lands to industrial uses. Twenty-three additional developments are proposed or under construction in eastern Riverside County, more than 20 miles from the RSEP. These projects include several solar developments, commercial and residential developments, reconstruction projects, transmission line and substation projects, a pumped storage project, an auto racetrack, a landfill, and a communication project. The DOE and BLM have identified 24 tracts of land as Solar Energy Study Areas in the BLM and DOE Solar Energy Development Programmatic EIS (PEIS) (*in prep*). These areas have been identified for in-depth study of solar development and may be found appropriate for designation as solar energy zones in the future. Five solar trough and solar power tower projects have been proposed along the I-10 corridor approximately 15 miles east of the California-Arizona border. In addition, pending legislation proposes a 941,000-acre national monument between Joshua Tree National Park and Mojave National Preserve.

In consideration of the existing cumulative conditions in eastern Riverside County, these proposed projects have the potential to further reduce and degrade native plant and animal populations, especially sensitive species such as desert tortoise and burrowing owl. Many of the impacts to biological resources that would result from these projects could be mitigated to less than significant at the project level; however, the incremental contribution of each project could be cumulatively considerable even with mitigation. The effects of the RSEP to biological resources, combined with future foreseeable projects in the area, would be similar to the effects identified for the RSEP's contribution combined with existing projects (see **Existing Cumulative Conditions**, above). As described above, the proposed RSEP would similarly contribute to the cumulative loss and degradation of habitat for desert plants and wildlife within the NECO planning area and the greater California desert. **Biological Resources Figure 6** indicates locations of foreseeable future projects within the NECO Planning Area. With the implementation of

staff's recommended Conditions of Certification, these impacts to biological resources (discussed individually in Section C.2.10.2), would be reduced below a level of significance and , for all the RSEP's contribution to cumulative impacts would be less than significant.

Foreseeable Renewable Projects in the California Desert

As shown on **CUMULATIVE IMPACTS Figures 1 and 2** and **Table 1**, a total of 56 solar energy development projects on 544,203 acres and 61 wind energy development projects on 474,258 acres are proposed on BLM land in the California Desert District. Over 25 additional renewable energy projects are proposed, under environmental review, or approved on State and private lands within the deserts of California. This represents a worst-case scenario for cumulative impacts to biological resources, and not all of these projects would ultimately be developed. However, if even a fraction of the more than one million acres of development proposed on BLM lands alone is implemented, this would represent a significant cumulative impact to biological resources including loss and fragmentation of habitat for common and sensitive plants and animals, interruption of wildlife movement corridors, alteration of watersheds, large-scale spread of invasive and non-native weeds, and permanent loss of sensitive vegetation communities.

It should be noted that legislation has been introduced in the United States Congress to create a National Monument that would link Joshua Tree National Park and the Mojave National Preserve. The Monument would potentially include the former Catellus Lands donated by the Wildlands Conservancy to the BLM. Details of the proposed Monument are not yet known, but according to the Wildlands Conservancy, the Monument would preserve 941,000 acres of BLM lands along with their existing uses (recreation, national scenic highway, wildlife corridors, etc.). The establishment of the Monument would restrict future development and would preserve habitat for sensitive species such as desert tortoise, Mojave fringe-toed lizard, and Nelson's bighorn sheep (Wildlands Conservancy 2009). The Monument has not been approved, and details regarding the boundaries and the management actions that would be implemented are currently unknown. If approved, this Monument would aid in the conservation of many of the same species and resources that would be affected by the RSEP and other developments proposed in the region. However, even with the approval and implementation of the Monument proposal, cumulative impacts to biological resources in the California desert would not be offset due to the magnitude of development proposed (i.e., over one million acres on BLM lands and an unknown additional acreage of State and private lands proposed for renewable energy development in the California Desert).

The effects of the RSEP to biological resources, combined with future foreseeable projects in the California desert, would be similar to for the RSEP's contribution combined with existing projects (**Existing Cumulative Conditions**, above), described above. The proposed RSEP would similarly contribute to the cumulative loss and degradation of habitat for desert plants and wildlife within the California desert. With the implementation of staff's recommended Conditions of Certification, these impacts to biological resources (discussed individually in Section C.2.10.2), would be reduced

below a level of significance and , for all the RSEP's contribution to cumulative impacts would be less than significant.

CONCLUSION: CUMULATIVE IMPACTS ANALYSIS

The impacts of the RSEP on biological resources by itself would be mitigated to less than significant at the project level (see **Assessment of Impacts and Discussion of Mitigation**, above). However, the project would also contribute incrementally to cumulatively significant impacts of numerous past, present, and reasonably foreseeable future projects in the California desert. The important cumulative effects of these projects include extensive habitat loss, impaired biological connectivity among remaining habitat areas (i.e., fragmentation), and the degradation of the function and values of remaining habitat from disturbance, invasive plants, fire, disease, and other factors. These cumulative impacts are likely to remain significant, even with implementation of project-specific mitigation. Therefore, although the development of renewable resources in compliance with federal and State mandates is important and required, this land use conversion would result in significant and unavoidable cumulative impacts. The RSEP's location, low density of special-status resources, previous disturbance over much of the site, and proposed mitigation would reduce its incremental contribution to these significant impacts to less than significant with mitigation incorporated for most resources. With the implementation of staff's recommended Conditions of Certification, these impacts to biological resources (discussed individually in Section C.2.10.2), would be reduced below a level of significance and , for the solar generator, generator tie-line and interconnector substation's contribution to cumulative impacts would be less than significant. Staff has not determined potential significance of cumulative impacts along the Western Parker-Blythe 161-Kv OPGW Transmission Line, pending additional biological data.

COMPLIANCE WITH LORS

The proposed project must comply with State and federal laws, ordinances, regulations, and standards (LORS) that address State and federally listed species, as well as other sensitive species and habitats, and must secure the appropriate permits to satisfy these LORS. The Energy Commission has a one-stop permitting process for all thermal power plants rated 50 MW or more under the Warren-Alquist Act (Pub. Resources Code § 25500). Under the act, the Energy Commission's certificate is "in lieu of" other State, local, and regional permits (*ibid*). The Energy Commission's streamlined permitting process accomplishes a primary objective of the Renewable Energy Action Team, as identified in the Governor's Executive Order S-14-08 — to create a "one-stop" process for permitting renewable energy generation facilities under California law. Accordingly, Energy Commission staff has coordinated joint environmental review with the California Department of Fish and Game and the Colorado River Basin Regional Water Quality Control Board, as well as the U.S. Fish and Wildlife Service. Staff has incorporated all required terms and conditions that might otherwise be included in State permits into the Energy Commission's certification process. The conditions of certification described below satisfy the following State LORS and take the place of terms and conditions that, but for the Commission's exclusive authority, would have been included in the following State permits.

In addition, the applicant has submitted an application to the BLM requesting a ROW to construct the proposed project's generator tie-line. Pursuant to the California Desert Conservation Area (CDCA) Plan (1980, as amended), sites associated with power generation or transmission not identified in the CDCA Plan are considered through the Plan Amendment process. Under federal law, BLM is responsible for processing requests for ROWs to authorize such proposed projects and associated transmission lines and other appurtenant facilities on land it manages. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in the Plan be considered through the Plan Amendment process. BLM would use the following Planning Criteria during the Plan Amendment process:

- The plan amendment process would be completed in compliance with the Federal Land Policy and Management Act (FLPMA), NEPA, and all other relevant Federal law, Executive orders, and management policies of the BLM;
- The plan amendment process would include an EIS (i.e., this joint SA/DEIS) to comply with NEPA standards;
- Where existing planning decisions are still valid, those decisions may remain unchanged and be incorporated into the new plan amendment;
- The plan amendment would recognize valid existing rights;
- Native American Tribal consultations would be conducted in accordance with policy, and Tribal concerns would be given due consideration. The plan amendment process would include the consideration of any impacts on Indian trust assets (please see the **Cultural Resources** section);
- Consultation with the State Office of Historic Preservation (SHPO) would be conducted throughout the plan amendment process (please see the **Cultural Resources** section); and
- Consultation with the US Fish and Wildlife Service (USFWS) would be conducted throughout the plan amendment process.

If the ROW and proposed land use plan amendment are approved by BLM, the proposed transmission facility on public lands would be authorized in accordance with Title V of the FLPMA of 1976 and the Federal Regulations at 43 CFR part 2800. This Environmental Impact Statement (EIS) acts as the mechanism for meeting NEPA requirements, and also provides the analysis required to support a Plan Amendment identifying the facility within the Plan.

Biological Resources Table 9 provides a summary of the proposed project's compliance with federal, State, and local LORS and proposed conditions of certification.

Biological Resources Table 9
Summary of Solar Generator, Generator Tie-Line, and Interconnector Substation
Compliance with LORS¹

Applicable LORS	Description	Rationale for Compliance
FEDERAL		
Federal Endangered Species Act (Title 16, United States Code, section 1531 et seq., and Title 50, Code of Federal Regulations, part 17.1 et seq.)	Designates and provides for protection of threatened and endangered plant and animal species and their critical habitat. "Take" of a federally-listed species is prohibited without an incidental take permit, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan.	Western is consulting with USFWS per Section 7 of the ESA reg. project impacts to desert tortoise (federally listed as threatened); a Biological Opinion is pending. Proposed Conditions of Certification BIO-1 through BIO-10 and BIO-14 through BIO-17 require measures to avoid or mitigate impacts to desert tortoise, including translocation off-site and protection of compensation habitat. These measures would ensure that the project is not likely to jeopardize the continued existence of desert tortoise.
Migratory Bird Treaty (Title 16, United States Code, sections 703 through 711)	Makes it unlawful to take or possess any migratory nongame bird (or any part of such migratory nongame bird) as designated in the Migratory Bird Treaty Act unless permitted by regulation (e.g., duck hunting).	Condition of Certification BIO-13 includes preconstruction nest surveys, no-disturbance buffers around active nests, and monitoring to minimize impacts to nesting migratory birds; Condition of Certification BIO-25 requires preparation and implementation of an Avian Protection Plan and a monitoring study to address potential bird injury or mortality, including adaptive management actions.
Clean Water Act (Title 33, United States Code, sections 1251 through 1376, and Code of Federal Regulations, part 30, section 330.5(a)(26))	Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge from dredged or fill materials into waters of the US, including wetlands. Section 401 requires a permit from a regional water quality control board (RWQCB) for the discharge of pollutants.	USACE has determined that no jurisdictional Waters of the US are within the solar generator site or generator tie-line alignment.
Bald and Golden Eagle Protection Act (Title 16, United States Code section 668)	Provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. Defines the "take" of an eagle to include a broad range of actions, including disturbance (i.e., to agitate or bother an eagle to a degree that causes, or is likely to cause, injury, decreased productivity by substantially interfering with behavior, or nest abandonment).	Condition of Certification BIO-16 requires protection of compensation habitat for desert tortoise, that also would serve as golden eagle foraging habitat; Condition of Certification BIO-18 requires preconstruction nest surveys and measures to prevent disturbance to nesting golden eagles; Condition of Certification BIO-25 requires documentation of compliance with the Bald and Golden Eagle Protection Act as part of the Avian Protection Plan and a monitoring study to address potential bird injury or mortality, including adaptive management actions.

Applicable LORS	Description	Rationale for Compliance
California Desert Conservation Area Plan 1980, as amended (reprinted in 1999)	Administered by the BLM; requires that proposed projects are compatible with policies that provide for the protection, enhancement, and sustainability of fish and wildlife species, wildlife corridors, riparian and wetland habitats, and native vegetation resources.	Staff's proposed Conditions of Certification BIO-1 through BIO-26 minimize, avoid, and compensate for impacts to various biological resources covered by the CDCA Plan.
California Desert Protection Act of 1994	An Act of Congress which established 69 wilderness areas, the Mojave National Preserve, expanded Joshua Tree and Death Valley National Monuments and redefined them as National Parks.	Staff's proposed Conditions of Certification BIO-1 through BIO-26 minimize, avoid, and compensate for impacts to various biological resources covered by the California Desert Protection Act of 1994.
Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)	BLM land use plan amendment that resolves issues of resource demands, use conflicts, and environmental quality in the 5.5-million acres planning area located primarily within the Sonoran Desert in southeastern California; provides reserve management for the desert tortoise, integrated ecosystem management for special status species and natural communities for all federal lands, and regional standards and guidelines for public lands (BLM and CDFG 2002).	Staff's proposed Conditions of Certification BIO-1 through BIO-26 minimize, avoid, and compensate for impacts to various biological resources covered by the NECO.
STATE		
California Endangered Species Act of 1984 (Fish and Game Code, sections 2050 through 2098)	Protects California's rare, threatened, and endangered species. "Take" of a State-listed species is prohibited without an Incidental Take Permit.	Conditions of Certification BIO-1 through BIO-10 and BIO-14 through BIO-17 would fully mitigate project impacts to desert tortoise.
California Code of Regulations (Title 14, sections 670.2 and 670.5)	Lists the plants and animals of California that are declared rare, threatened, or endangered.	Conditions of Certification BIO-1 through BIO-10 and BIO-14 through BIO-17 would fully mitigate project impacts to desert tortoise.
Fully Protected Species (Fish and Game Code, sections 3511, 4700, 5050, and 5515)	Designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (see also California Code of Regulations, Title 14, section 670.7).	Golden eagle is designated as fully protected. Condition of Certification BIO-16 requires protection of compensation habitat for desert tortoise, that also would serve as golden eagle foraging habitat; Condition of Certification BIO-18 requires preconstruction nest surveys and measures to prevent disturbance to nesting golden eagles; Condition of Certification BIO-25 requires documentation of compliance with the Bald and Golden Eagle Protection Act as part of the Avian Protection Plan and a monitoring study to address potential bird injury or mortality, including adaptive management actions.

Applicable LORS	Description	Rationale for Compliance
Nest or Eggs (Fish and Game Code section 3503)	Protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.	Condition of Certification BIO-13 includes preconstruction nest surveys, no-disturbance buffers around active nests, and monitoring of nests to minimize impacts to nesting birds; Condition of Certification BIO-6 includes a Worker Environmental Awareness Program to educate workers about compliance with environmental regulations, including Fish and Game Code section 3503.
Birds of Prey (Fish and Game Code section 3503.5)	Birds of prey are protected in California making it "unlawful to take, possess, or destroy any birds of prey (in the order Falconiformes or Strigiformes)."	Condition of Certification BIO-13 includes preconstruction nest surveys, no-disturbance buffers around active nests, and monitoring of nests to minimize impacts to nesting birds, including raptors; Condition of Certification BIO-6 includes a Worker Environmental Awareness Program to educate workers about compliance with environmental regulations, including Fish and Game Code section 3503.5; Condition of Certification BIO-25 requires preparation and implementation of an Avian Protection Plan and a monitoring study to address potential bird injury or mortality, including adaptive management actions.
Migratory Birds (Fish and Game Code section 3513)	Protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame birds.	Condition of Certification BIO-13 includes preconstruction nest surveys, no-disturbance buffers around active nests, and monitoring of nests to minimize impacts to nesting birds; Condition of Certification BIO-6 includes a Worker Environmental Awareness Program to educate workers about compliance with environmental regulations, including Fish and Game Code section 3513; Condition of Certification BIO-25 requires preparation and implementation of an Avian Protection Plan and a monitoring study to address potential bird injury or mortality, including adaptive management actions.
Significant Natural Areas (Fish and Game Code section 1930 et seq.)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.	There are no refuges, natural sloughs, riparian areas, and vernal pools on the solar generator site or generator tie-line alignment.
Designated Ecological Reserves (Fish and Game Code section 1580 et seq.)	The Fish and Game commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study.	There are no Designated Ecological Reserves that would be affected by the project.

Applicable LORS	Description	Rationale for Compliance
California Environmental Quality Act (CEQA), CEQA Guidelines section 15380	CEQA's basic purposes are to: inform agency decision makers and the public about potential significant environmental effects of proposed activities; identify measures to avoid or reduce impacts; require these mitigation measures when feasible. CEQA defines rare species more broadly than State and federal Endangered Species Acts, such that species not protected through State or federal listing but nonetheless demonstrable as "endangered" or "rare" should also receive consideration in environmental analyses.	This section of the SA/DEIS serves to inform the decision-makers and the public of the RSEP's potential impacts to biological resources, and identifies measures to avoid or reduce those impacts; implementation of Staff's proposed Conditions of Certification BIO-1 through BIO-26 would serve to mitigate the projects impacts to biological resources below a level of significance as defined in CEQA.
Warren Alquist Act of 2005 (Public Resources Code sections 25000 et seq.)	A CEQA-equivalent process implemented by the Energy Commission.	In compliance with the Warren Alquist Act, this section of the SA/DEIS serves to inform the Energy Commission and the public of the RSEP's potential impacts to biological resources, and identifies measures to avoid or reduce those impacts; implementation of Staff's proposed Conditions of Certification BIO-1 through BIO-26 would serve to mitigate the projects impacts to biological resources below a level of significance as defined in CEQA.
Streambed Alteration Agreement (Fish and Game Code sections 1600 et seq.)	Regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFG in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.	Condition of Certification BIO-22 includes measures to minimize, avoid, and compensate for impacts to jurisdictional waters of the State.
California Native Plant Protection Act of 1977 (Fish and Game Code section 1900 et seq.)	Designates State rare, threatened, and endangered plants.	Staff's proposed Conditions of Certification BIO-10 through BIO-12 include restoration and compensation for impacts to native plant communities, a Weed Management Plan, special-status plant surveys, and minimization and avoidance measures to minimize impacts to special-status plants.
California Desert Native Plants Act of 1981 (Food and Agricultural Code section 80001 et seq. and California Fish and Game Code sections 1925-1926)	Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.	The proposed project does not include provisions to harvest native desert plants.

Applicable LORS	Description	Rationale for Compliance
LOCAL		
Riverside County General Plan: Land Use and Multipurpose Open Space Elements of the County General Plan (County of Riverside 2003)	Contains specific policies to preserve the character and function of open space that benefits biological resources. It also contains specific policies and goals for protecting areas of sensitive plant, soils and wildlife habitat and for assuring compatibility between natural areas and development. The RSEP area and most of eastern Riverside County is designated as Open Space Conservation in the General Plan. Although the RSEP is not within one of the 19 area plans contained within the General Plan, it is addressed in the Eastern Riverside County Desert Areas (Non-Area Plan).	Implementation of staff's proposed Conditions of Certification BIO-1 through BIO-26 would ensure that the project remains in compliance with the Riverside County General Plan regarding biological resources.

1. LORS compliance as reported here is limited only to solar generator, generator tie-line, and interconnector substation project components; LORS compliance for the OPGW component on the existing Parker-Blythe #2 transmission line is unknown.

NOTEWORTHY PUBLIC BENEFITS

The RSEP and the proposed alternatives would result in significant impacts to sensitive biological resources, and would permanently diminish the extent and value of native plant and animal communities in the region. Staff has therefore concluded that the RSEP would not provide any noteworthy public benefits related to biological resources, despite the contributions the project would make to meeting federal and State mandates for development of renewable energy resources.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

The following Mitigation Measures/Conditions of Certification meet the Energy Commission's responsibility to comply with CEQA and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and assure conformance with applicable laws, ordinances, regulations and standards (LORS). The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in its Record of Decision. With implementation of staff's proposed conditions of certification, construction and operation of the RSEP would comply with all federal, State, and local laws, ordinances, regulations, and standards relating to biological resources. Staff recommends adoption of the following conditions of certification to mitigate potential impacts to sensitive biological resources. As described above (**C.2.5.2 Assessment of Impacts and Discussion of Mitigation**) staff concludes that these measures would reduce the project's impacts to less than significant levels under CEQA.

DESIGNATED BIOLOGIST SELECTION

BIO-1 The project owner shall assign at least one Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval in consultation with Western, BLM, CDFG, and USFWS. USFWS <www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/dt> designates biologists who are approved to handle tortoises as "Authorized Biologists." Such biologists have demonstrated to USFWS that they possess sufficient desert tortoise knowledge and experience to handle and move tortoises appropriately, evaluate their health, and draw blood, and have received USFWS approval. Authorized Biologists are responsible for the implementation of all desert tortoise measures and are permitted, in turn, to approve specific monitors to handle tortoises, at their discretion. CDFG must also approve such biologists, potentially including individual approvals for monitors approved by the Authorized Biologist. Designated Biologists for the Project are the equivalent of USFWS Authorized Biologists. Only Designated Biologists and certain Biological Monitors who have been approved by the Designated Biologist shall be allowed to handle desert tortoises.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. Have at least one year of field experience with biological resources found in or near the project area;
4. Meet the current USFWS Authorized Biologist qualifications criteria (www.fws.gov/ventura/speciesinfo/protocols_guidelines), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS (note that biologists who meet previous criteria may not meet current criteria due to requirements to assess health and draw blood; biologists must obtain training such as that offered through the Desert Tortoise Conservation Center in Las Vegas); and
5. Possess a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM in consultation with Western, BLM, CDFG and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: No fewer than 30 days prior to construction-related ground disturbance, the Project owner shall submit the name(s) and resume(s) of the Designated

Biologists(s) along with copies of the completed USFWS Desert Tortoise Authorized Biologist Request Form(s) (www.fws.gov/ventura/speciesinfo/protocols_guidelines) to the USFWS and CPM for review and final approval in consultation with Western, BLM, and CDFG. No construction-related ground disturbance, grading, boring, or trenching shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least 10 working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

DESIGNATED BIOLOGIST DUTIES

BIO-2 The project owner shall ensure that the Designated Biologist performs the activities described below during any site mobilization activities, construction-related ground disturbance, grading, boring, or trenching activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the project owner, the CPM, Western, CDFG, BLM, and USFWS. The Designated Biologist Duties shall include, but shall not be limited to those listed below. Additional responsibilities of the Biological Monitor are set forth in Condition of Certification **BIO-9**.

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;
3. Be available to supervise, conduct, and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of each work day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;
6. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification;

7. Respond directly to inquiries of the CPM, Western, or any other agencies regarding biological resource issues;
8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report to the CPM;
9. Consistent with **BIO-3**, train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>; and
10. Maintain the ability to be in regular, direct communication with representatives of CDFG, USFWS, BLM, Western, and the CPM, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base consistent with Condition of Certification **BIO-22**.

Verification: The Designated Biologist shall provide copies of all written reports and summaries that document biological resources compliance activities in the Monthly Compliance Reports submitted to the CPM. If actions may affect biological resources during operation a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless his or her duties cease, as approved by the CPM in consultation with Western, CDFG, BLM, and USFWS.

BIOLOGICAL MONITOR QUALIFICATIONS

BIO-3 The Designated Biologist shall submit the resume, at least three references, and contact information of each of the proposed Biological Monitors to the CPM. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks. The Biological Monitor is the equivalent of the USFWS designated Desert Tortoise Monitor (USFWS 2008c).

The Designated Biologist will be responsible for training the Biological Monitor(s); training shall include familiarity with the conditions of certification, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys and handling procedures <www.fws.gov/ventura/speciesinfo/protocols_guidelines>.

Verification: The project owner shall submit the specified information to the CPM for approval, in consultation with Western, CDFG, BLM, and USFWS at least 30 days prior to the start of any site mobilization or construction-related ground disturbance, grading, boring, and trenching. The Designated Biologist shall submit a written statement to the CPM confirming that individual Biological Monitor(s) has been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to the CPM for approval in

consultation with Western, CDFG, BLM, and USFWS at least 10 days prior to their first day of monitoring activities.

BIOLOGICAL MONITOR DUTIES

BIO-4 The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, grading, boring, or trenching. The Designated Biologist shall remain the contact for the project owner the CPM, Western, CDFG, BLM, and USFWS.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources compliance activities, including those conducted by Biological Monitors. If actions may affect biological resources during operation, a Biological Monitor, under the supervision of the Designated Biologist, shall be available for monitoring and reporting.

DESIGNATED BIOLOGIST AND BIOLOGICAL MONITOR AUTHORITY

BIO-5 The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. If required by the Designated Biologist and Biological Monitor(s), the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, boring, trenching, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
2. Inform the project owner and the construction/operation manager when to resume activities;
3. Notify the CPM if there is a halt of any activities and advise them of any corrective actions that have been taken or would be instituted as a result of the work stoppage; and
4. If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM in consultation with Western, CDFG, BLM, and USFWS as appropriate, within five working days after receipt of notice that corrective action is completed, or the project owner would be notified by the CPM that coordination with other agencies would require additional time before a determination can be made.

WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

BIO-6 The project owner shall prepare and implement a Project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the CPM in consultation with Western, CDFG, BLM, and USFWS. The WEAP shall be administered to all onsite personnel at the solar generator site, interconnector substation site, and on both transmission line alignments. The WEAP shall be administered to all surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site preconstruction, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes other reptiles, bats, or any other wildlife shall be harmed or harassed;
3. Place special emphasis on desert tortoise, burrowing owl, golden eagle, nesting birds, desert kit fox, and American badger, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures; for construction work on the existing 161-kB transmission line, the WEAP also shall place special emphasis on bats which may be roosting on transmission line structures;
4. Include a discussion of fire prevention measures to be implemented by workers during project activities; request workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
5. Describe the temporary and permanent habitat protection measures to be implemented at the project site;
6. Identify whom to contact if there are further comments and questions about the material discussed in the program;
7. Include printed training materials, including photographs and brief descriptions of desert tortoises, burrowing owls, golden eagles, nesting birds, desert kit fox, roosting bats, and American badger, including

behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;

8. Prominently display posters and descriptions in offices, conference rooms, employee break rooms, and other areas where employees may congregate, of desert tortoises, burrowing owls, golden eagles, nesting birds, desert kit fox, roosting bats, and American badger, including behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
9. Direct all WEAP trainees to report all observations of listed species and their sign to the Designated Biologist for inclusion in the monthly compliance report; and
10. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 30 days prior to start of construction-related ground disturbance the Project owner shall provide to the CPM a copy of the WEAP for review and approval in consultation with Western, CDFG, BLM, and the USFWS. The Project owner also shall submit copies of all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least 10 days prior to construction-related ground disturbance activities the project owner shall submit two copies of the approved final WEAP.

Throughout the life of the project, the WEAP shall be repeated annually for permanent employees, and shall be routinely administered within one week of arrival to any new construction, maintenance, or operations personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Upon completion of the orientation, employees shall sign a form stating that they attended the program and understand all protection measures. These forms shall be maintained by the project owner and shall be made available to the CPM upon request. Workers shall receive and be required to visibly display a hardhat sticker or certificate that they have completed the training. Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least 6 months after the start of commercial operation.

During project operation, signed statements for operational personnel shall be kept on file for 6 months following the termination of an individual's employment.

BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN

BIO-7 The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), and shall submit two copies of the proposed BRMIMP to the CPM for review and approval in consultation with Western, CDFG, BLM, and USFWS. The project owner shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Hazardous Materials Plan; the Revegetation Plan; the Weed Management Plan; the Special-Status Plant Impact Avoidance and Minimization Plan; the Desert Tortoise Translocation Plan; the Raven Monitoring, Management, and Control Plan; the Burrowing Owl Relocation and Mitigation Plan; the Streambed Management Plan; the Evaporation Pond Design, Monitoring, and Management Plan; and the Avian and Bat Protection Plan.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion and any additional Western or BLM stipulations;
4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure;
5. All required mitigation measures for each sensitive biological resource;
6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
8. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
9. All performance standards and remedial measures to be implemented if performance standards are not met;

10. Biological resources-related facility closure measures including a description of funding mechanism(s);
11. A process for proposing plan modifications to the CPM and any other appropriate agencies for review and approval; and
12. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Data Base (CNDDDB) per CDFG requirements.

Verification: The project owner shall submit the final BRMIMP to the CPM at least 30 days prior to start of any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching. The BRMIMP shall contain all of the required measures included in all biological Conditions of Certification. No construction-related ground disturbance, grading, boring, or trenching may occur prior to approval of the final BRMIMP by the CPM in consultation with Western, CDFG, BLM, and USFWS.

If any permits have not yet been received when the BRMIMP is first submitted, copies of these permits shall be submitted to the CPM within five days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit conditions within 10 days of their receipt by the project owner. Under no circumstances shall ground disturbance proceed without implementation of all permit conditions.

To verify that the extent of construction disturbance does not exceed that described in this analysis, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and shall be submitted at least 60 days prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction, and shall be submitted to the CPM no later than 90 days after completion of construction. The project owner shall also provide a final accounting of the acreages of vegetation communities/cover types present before and after construction and a depiction of the approved project boundaries superimposed on the post project aerial photograph. If final acreages and/or disturbance footprints exceed those previously approved, the CPM shall coordinate with project owner, in consultation with Western, CDFG, BLM, and USFWS to determine appropriate mitigation for such impacts. Such mitigation may exceed the requirements as outlined in these Conditions of Certification (i.e., higher mitigation ratios may be imposed as a result of consultation with the wildlife agencies).

Any changes to the approved BRMIMP (including the project footprint) must be approved by the CPM in consultation with Western, BLM, CDFG, and USFWS before such action is taken.

Implementation of BRMIMP measures (for example, construction activities that were monitored, species observed) shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval in consultation with Western, CDFG, BLM, and USFWS, a written construction termination report identifying

which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's preconstruction site mobilization and construction-related ground disturbance, grading, boring, and trenching, and which mitigation and monitoring items are still outstanding as well as a timeline for implementing outstanding items.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-8 The project owner shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources. All measures shall be subject to review and approval by the CPM.

1. Limit Disturbance Areas and Perimeter Fencing. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in areas already disturbed or to be disturbed by construction, so that stockpile sites do not add to total disturbance footprint. All disturbances, project vehicles, and equipment shall be confined to the flagged areas. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat.
2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
3. Minimize Traffic Impacts. Vehicular traffic during project construction and operation shall be confined to existing designated routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 20 miles per hour within any part of the project area, maintenance roads for linear facilities, or unpaved access roads to the project site where desert tortoise clearance surveys and translocations have not been completed.
4. Monitor During Construction. Due to the possibility that desert tortoises, especially juveniles, may persist on the site after desert tortoise clearance surveys and exclusion fencing are completed, the Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities. Any time over the life of the project that a desert tortoise is found within the exclusion fencing, the Designated Biologist shall immediately contact the CPM,

CDFG, and USFWS; monitor the tortoise's location and activities; and implement translocation of the animal in accordance with and the approved Desert Tortoise Translocation Plan and in consultation with the USFWS, CDFG, and CPM.

5. Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas. Staging areas for construction on the solar generator site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For transmission line construction or other activities outside of the solar generator site, access roads, pulling sites and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. The Designated Biologist or Biological Monitor shall evaluate potential for special status plants or wildlife at every potential disturbance site along the lengths of both transmission lines prior to any construction-related disturbance, include access improvements. Specifically, site selection of any area to be permanently or temporarily disturbed for transmission line construction and fiber-optic installation shall avoid any desert wash, desert microphyll woodland, or any aeolian sand habitat wherever feasible. Where these sites cannot feasibly be avoided, the Designated Biologist shall outline site-specific requirements to minimize impacts to habitat and wildlife. These requirements shall include, but would not be limited to, pre-construction clearance surveys, exclusion fencing (e.g., for desert tortoise or Mojave fringe-toed lizard), on-site monitoring, and post-construction remediation.
6. Implement APLIC Guidelines. Transmission lines, fiber optic lines, and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC 1994) to reduce the likelihood of large bird electrocutions and collisions.
7. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.
8. Minimize Lighting Impacts. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat. To minimize risk of avian collisions with project features, only flashing or strobe lights shall be installed on features requiring safety lighting per FAA requirements.
9. Minimize Noise Impacts. A continuous low-pressure technique shall be used for steam blows, to the extent possible, in order to reduce noise levels in sensitive habitat proximate to the Project area. Loud construction activities (e.g., unsilenced high pressure steam blowing and pile driving, or other) shall be avoided from February 15 to April 15 when it would result in noise levels over 65 dBA in nesting habitat. Loud construction activities may be permitted from February 15 to April 15 only if the Designated

Biologist provides documentation (i.e., nesting bird data collected using methods described in **BIO-13** and maps depicting location of the nest survey area in relation to noisy construction) to the CPM indicating that no active nests would be subject to 65 dBA noise.

10. Avoid Vehicle Impacts to Desert Tortoise. Parking and storage shall occur only within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed, it shall be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may remove and relocate the animal to a safe location if temperatures are within the range described in the USFWS' 2009 *Desert Tortoise Field Manual* (http://www.fws.gov/ventura/speciesinfo/protocols_guidelines). All access roads outside of the fenced project footprint shall be delineated with temporary desert tortoise exclusion fencing on either side of the access road, unless otherwise authorized by the CPM, in consultation with Western, BLM, USFWS, and CDFG.

11. Avoid Wildlife Pitfalls:

- a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, temporary detention basins, and other excavations) have been backfilled. If backfilling is not feasible, all trenches, bores, temporary detention basins, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, temporary detention basins, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically, but no less than three times, throughout the day and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a desert tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and, if applicable, relocate it as described in the Desert Tortoise Translocation Plan. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.
- b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground for one or more nights, shall be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks.

12. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to

prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action to reduce water application where necessary.

13. Dispose of Road-killed Animals. Road-killed animals or other carcasses detected on roads near the project area shall be picked up immediately and delivered to the Designated Biologist or Biological Monitor. For all road-killed species, the Designated Biologist shall retain the carcass in a freezer on-site and contact CDFG within 30 working days for guidance on disposal or storage. For any road-killed special-status species, the Biological Monitor shall contact CDFG and USFWS (for golden eagle or federally-listed species, including desert tortoise) within one working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall report the special-status species record as described in Conditions of Certification **BIO-2**, **BIO-7**, and **BIO-22**.
14. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.
13. Worker Guidelines. During construction all trash and food-related waste shall be placed in self-closing containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife or bring pets to the project site, including the logistics, parking, and other ancillary areas. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. Vehicular traffic shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on dirt access routes within desert tortoise habitat shall not exceed 20 miles per hour.
14. Implement Erosion Control Measures. Standard erosion control measures shall be implemented for all phases of construction and operation to prevent any sediment run-off from exposed slopes from entering state-jurisdictional streambeds within or outside the Project Disturbance Area. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction, except that soil stabilizer

use may be limited in portions of roads crossing washes or stream channels consistent with applicable water quality requirements.

15. Monitor Ground-Disturbing Activities Prior to Pre-Construction Site Mobilization. If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.
16. Remove Unused Material and Equipment. All unused material and equipment, including soil and rock piles, will be removed upon completion of any maintenance activities located outside the permanently fenced area.
17. Control and Regulate Fugitive Dust. To reduce the potential for the transmission of fugitive dust, the project owner shall implement dust control measures as described in staff's recommended Conditions of Certification **AQ-SC4**, **AQ-SC5**, and **AQ-SC7** in the Air Quality section of this Staff Assessment.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed. If loud construction activities are planned between February 15 to April 15, no more than 10 days before initiation of such construction the Project owner shall provide documentation to the CPM indicating that no active nests occur in areas that would be subject to noise 65 dBA or greater.

COMPLIANCE VERIFICATION

BIO-9 The project owner shall provide the CPM, Western, BLM, CDFG, and USFWS with reasonable access to the project site and mitigation lands under the control of the project owner and shall otherwise fully cooperate with the Energy Commission's, Western's, BLM's, CDFG's, and USFWS's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures set forth in the conditions of certification. The project owner shall hold harmless the Designated Biologist, Biological Monitor, the Energy Commission and staff, Western, BLM, CDFG, USFWS, and any other agencies with regulatory requirements addressed by the Energy Commission's sole permitting authority for any costs the project owner incurs in complying with the management measures, including stop work orders issued by the CPM, the Designated Biologist, or Biological Monitor. In addition to the duties described in **BIO-2**, the Designated Biologist shall do all of the following:

1. Notification. Notify the CPM, Western, BLM, CDFG, and USFWS at least 14 calendar days before initiating ground-disturbing activities. Immediately notify the CPM, Western, BLM, CDFG, and USFWS in writing if the project owner is not in compliance with any conditions of certification, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified in the conditions of

certification. CDFG shall be notified at their Southern Region Headquarters Office, 4949 Viewridge Avenue, San Diego, CA 92123; (858) 467-4201. USFWS shall be notified at the Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Rd., 101, Carlsbad, CA 92011; (760) 431-9440.

2. Monitoring During Grading. Remain on site daily while grubbing and grading are taking place to avoid or minimize take of listed or special-status species, to check for compliance with all impact avoidance and minimization measures, and to check all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protected zones.
3. Fence Monitoring. During construction, maintain and check desert tortoise exclusion fences on a daily basis to ensure the integrity of the fence is maintained. The Designated Biologist shall be present on site to monitor construction and determine fence placement during fence installation. During operation of the project, fence inspections shall occur at least once per month throughout the life of the project, and more frequently after storms or other events that might affect the integrity and function of desert tortoise exclusion fences. Fence repairs shall occur within two days (48 hours) of detecting problems that affect the functioning of the desert tortoise exclusion fencing. All wildlife found entrapped or dead in the fence shall be reported to the CPM, BLM, CDFG, and USFWS. Carcasses of animals entrapped in the fence shall be handled as described above in **BIO-8** paragraph 14; the Designated Biologist shall retain the carcass in a freezer on-site and contact CDFG within 30 working days for guidance on disposal or storage. For special-status species, the Biological Monitor shall contact CDFG or (for federally-listed species, including desert tortoise) within one working day.
4. Monthly Compliance Inspections. Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to the CPM. The monthly compliance report shall include all reported observations of listed species made by WEAP trainees on the site pursuant to Condition of Certification **BIO-6**.
5. Annual Listed Species Status Report. No later than January 31 of every year the project facility remains in operation, the Designated Biologist shall provide the CPM, BLM, CDFG, and USFWS an annual Listed Species Status Report, which shall include, at a minimum: 1) a general description of the status of the project site and construction/operation activities, including actual or projected completion dates, if known; 2) a copy of the table in the BRMIMP with notes showing the current implementation status of each mitigation measure; 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts, 4) recommendations on how

effectiveness of mitigation measures might be improved, and 5) a summary of any agency approved modifications to the BRMIMP.

6. Final Listed Species Mitigation Report. No later than 45 days after initiation of project operation, provide the CPM a Final Listed Species Mitigation Report that shall include, at a minimum: 1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of listed species; 3) information about other project impacts on the listed species; 4) construction dates; 5) an assessment of the effectiveness of conditions of certification in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the listed species; and 7) any other pertinent information, including the level of take of the listed species associated with the project.
7. Notification of Injured, Dead, or Relocated Listed Species. In the event of a sighting in an active construction area (e.g., with equipment, vehicles, or workers), injury, kill, or relocation of any listed species, the CPM, BLM, CDFG, and USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant:
 - a. Injured Desert Tortoise. If a desert tortoise is injured as a result of project-related activities during construction, the Designated Biologist shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the project owner. Following phone notification as required above, the CPM, BLM, CDFG, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, location, circumstances of the incident, and the name of the facility where the animal was taken.
 - b. Desert Tortoise Fatality. If a desert tortoise is killed by project-related activities during construction or operation, or if a desert tortoise is otherwise found dead, submit a written report with the same information as an injury report. These desert tortoises shall be salvaged according to guidelines described in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise (Berry 2001). The project owner shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.
8. Stop Work Order. The CPM may issue the project owner a written stop work order to suspend any activity related to the construction or operation

of the project to prevent or remedy a violation of one or more conditions of certification (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. The project owner shall comply with the stop work order immediately upon receipt thereof.

Verification: No later than two calendar days following the above-required notification of a sighting, kill, injury, or relocation of a listed species, the project owner shall deliver to the CPM, BLM, CDFG, and USFWS via FAX or electronic communication the written report from the Designated Biologist describing all reported incidents of the sighting, injury, kill, or relocation of a listed species, identifying who was notified and explaining when the incidents occurred. In the case of a sighting in an active construction area, the project owner shall, at the same time, submit a map (e.g., using Geographic Information Systems) depicting both the limits of construction and sighting location to the CPM, BLM, CDFG, and USFWS.

No later than January 31st of every year the RSEP facility remains in operation, provide the CPM, BLM, CDFG, and USFWS an annual Listed Species Status Report as described above, and a summary of desert tortoise exclusion fence inspections and repairs conducted in the course of the year. No later than 45 days after initiation of project operation, provide the CPM a Final Listed Species Mitigation Report as described above.

REVEGETATION PLAN AND COMPENSATION FOR IMPACTS TO NATIVE VEGETATION COMMUNITIES

BIO-10 The project owner shall provide restoration/compensation for impacts to native vegetation communities and develop and implement a Revegetation Plan for all areas subject to temporary (albeit long-term) project disturbance, including but not limited to linear features and berms of detention or debris basins, to the extent permitted by stormwater control requirements (see above, **Construction Impacts to Vegetation**). Upon completion of construction, all temporarily disturbed areas, including the logistics/lay down areas; all generator tie-line and existing 161-kV Parker-Blythe #2 transmission line tower sites, pull sites, and similar areas) shall be restored to pre-project grade and conditions. Other temporarily disturbed areas within the project area shall include, but shall not be limited to: all areas where underground infrastructure was installed, temporary access roads, construction work temporary lay-down areas, and construction equipment staging areas. The following measures shall be implemented for the revegetation effort areas not subject to the facility Landscape Plan. These measures will include:

1. Plan Details. The revegetation plan shall include at minimum: (a) locations and details for top soil storage; (b) methods to salvage and replant cacti, yucca, or other species described in BIO-12 Section E, or to plant out nursery stock of these species onto revegetation sites; (c) seed collection guidelines; (d) a schematic depicting the mitigation area; (e) time of year that the planting will occur and the methodology of the planting; (f) a description of the irrigation methodology if used; (g) measures to control

exotic vegetation on site; (h) success criteria; and (i) a detailed monitoring program. All habitats dominated by non-native species prior to project disturbance shall be revegetated using appropriate native species. This plan shall also contain contingency measures for failed restoration efforts (efforts not meeting success criteria).

2. Topsoil Salvage. Topsoil shall be stockpiled from the project site for use in revegetation of the disturbed soils. The topsoil excavated shall be segregated, kept intact, and protected, under conditions shown to sustain seed bank viability. The upper 1 inch of topsoil which contains the seed bank shall be scraped and stockpiled for use as the top-dressing for the revegetation area. An additional 6 to 8 inches of soil below the top 1 inch of soil shall also be scraped and separately stockpiled for use in revegetation areas. Topsoil shall be replaced in its original vertical orientation following ground disturbance, ensuring the integrity of the top one inch in particular. All other elements of soil stockpiling shall be conducted as described on pages 39-40 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003).
3. Seed and Nursery Stock. Only seed or potted nursery stock of locally occurring native species shall be used for revegetation. Seeds shall contain a mix of short-lived early pioneer species such as native annuals and perennials and subshrubs. Seeding and planting shall be conducted as described in Chapter 5 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003). A list of plant species suitable for Colorado Desert region revegetation projects, including recommended seed treatments, are included in Appendix A-9 of the same report. The list of plants observed during the special-status plant surveys of the project area can also be used as a guide to site-specific plant selection for revegetation. In conformance with BLM policy, the project owner shall include salvaged or nursery stock yucca (all species), and cacti (excluding cholla species, genus *Cylindropuntia*), in revegetation plans and implementation affecting BLM lands, as described in **BIO-12** Section E.
4. Monitoring Requirement and Success Criteria. Post-seeding and planting monitoring will be yearly and shall continue for a period of no less than 10 years or until the defined success criteria are achieved. If the survival and cover requirements have not been met, the project owner is responsible for replacement planting to achieve these requirements or other remedial action as agreed to by the CPM in consultation with BLM and Western. Replacement plants shall be monitored with the same survival and growth requirements as required for original revegetation plantings. Remediation activities (e.g., additional planting, removal of non-native invasive species, or erosion control) shall be taken during the 10-year period if necessary to ensure the success of the restoration effort. If the mitigation fails to meet the established performance criteria after the 10-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the 10-year period until the criteria are met or unless otherwise specified

by the CPM in consultation with BLM and Western. The following performance standards must be met by the end of monitoring year two:

- At least 80% of the species observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; and
 - Relative cover and density of plant species within the temporarily disturbed areas shall equal at least 60%.
5. **Replacement.** If a fire occurs in a revegetation area within the 10-year monitoring period, the owner shall be responsible for a one-time replacement. If a second fire occurs, no replanting is required, unless the fire is caused by the owner's activity (e.g., as determined by BLM or other firefighting agency investigation).

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented.

Within 90 days after completion of each year of project construction, the project owner shall provide to the CPM verification of the total vegetation acreage subject to temporary and permanent disturbance and a written report identifying which items of the Revegetation Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding. To monitor and evaluate the success of the revegetation, the project owner shall submit annual reports of the revegetation including the status of the site, percent cover of native and exotics, and any remedial actions conducted by the owner to the CPM and BLM.

On January 31st of each year following construction until the completion of the revegetation monitoring specified in the Revegetation Plan, the Designated Biologist shall provide a report to the CPM that includes: a summary of revegetation activities for the year, a discussion of whether revegetation performance standards for the year were met, and recommendations for revegetation remedial action, if warranted, that are planned for the upcoming year.

WEED MANAGEMENT PLAN

BIO-11 The project owner shall prepare and implement a Weed Management Plan that meets the approval of the CPM, in consultation with Western, BLM, CDFG, and USFWS. At minimum, the Weed Management Plan shall include the following:

1. An assessment of nonnative and invasive weeds occurring onsite prior to construction activities;
2. An assessment of nonnative and invasive weeds that could be introduced into the project area;
3. A description of methods to be used to survey for the presence of introduced weeds during construction and operation;

4. Monitoring and weed control methods to be employed during operation;
5. Specific and detailed guidelines for herbicide use to prevent overspray onto surrounding areas where it would adversely affect wildlife or native plants; and
6. Reporting requirements.

The final plan shall only include weed control measures for target weeds with a demonstrated record of success, based on the best available information from sources such as: The Nature Conservancy's The Global Invasive Species Team, Cooperative Extension, California Invasive Plant Council: <http://www.cal-ipc.org/ip/management/plant_profiles/index.php>, and the California Department of Food & Agriculture Encycloweediea: <http://www.cdfa.ca.gov/phpps/ipc/encycloweediea/encycloweediea_h_p.htm>. The methods shall meet the following criteria:

Manual: well-timed removal of plants or seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner.

Chemical: Herbicides known to have residual toxicity, such as pre-emergents and pelts, shall not be used in natural areas or within the engineered channels. Only the following application methods may be used: wick (wiping onto leaves); inner bark injection; cut stump; frill or hack & squirt (into cuts in the trunk); basal bark girdling; foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations

In addition to describing weed eradication and control methods, and a reporting plan for weed management during and after construction, the final Weed Management Plan shall include at minimum the following Best Management Practices to prevent the spread and propagation of weeds:

- Limit the extent of any vegetation and/or ground disturbance to the absolute minimum needed, and limit ingress and egress to defined routes.
- Install and maintain vehicle wash and inspection stations and closely monitor the types of materials brought onto the site.
- Reestablish vegetation on disturbed sites with native seed mixes (measures and performance standards to be consistent with Revegetation Plan, described in Condition of Certification **BIO-10**).
- Monitoring and timely implementation of control measures to ensure early detection and eradication for weed invasions. Weed infestations must be controlled or eradicated as soon as possible upon discovery, and before they go to seed, to prevent further expansion.
- Use only weed-free straw or hay bales used for sediment barrier installations, and weed-free seed.

- Reclamation and revegetation shall occur on all temporarily disturbed areas, including, but not limited to, temporary access roads, construction work temporary lay-down areas, and staging areas.
- Control weeds in areas where irrigation and mirror washing take place.
- Prohibit on-site storage or disposal of mulch or green waste from weed material to prevent inadvertent introduction and spread of invasive plants beyond the immediate vicinity of the project area and possibly into rare plant populations off-site. Mulch or green waste shall be removed from the site in a covered vehicle to prevent seed dispersal, and transported to a licensed landfill or composting facility.
- Indicate where herbicides may be used, which herbicides, and specify techniques to be used to avoid chemical drift or residual toxicity to special-status plants, consistent with guidelines provided by the Nature Conservancy's The Global Invasive Species Team <<http://www.invasive.org/gist/products.html>>
- Avoid herbicide use or other control methods in or around Environmentally Sensitive Areas (ESAs, see Condition of Certification **BIO-12**) on-site or off-site; prevent any herbicide drift into ESAs.

Nonnative and invasive weed infestations will be flagged by the Designated Biologist or Biological Monitor and controlled, using either mechanical (hand pulling, mowing) or chemical methods as approved by the CPM and, as appropriate, Western or BLM. Only state and BLM-approved herbicides will be used, and all herbicide applicators will possess a qualified herbicide applicator license from the state. All herbicide applications will follow U.S. Environmental Protection Agency label instructions and be performed in accordance with federal, state, and local laws and regulations.

From the time construction begins and throughout the life of the project, surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required within the project area. Surveying and monitoring for weed infestations shall occur at least two times per year (timed to occur early and late in the growing season). Treatment of all identified weed populations shall occur at a minimum of once annually. When no new seedlings or resprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site.

Verification: At least 30 days prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM and BLM with the final version of the Weed Management Plan. All modifications to the approved Weed Management Plan shall be made only after consultation with the CPM in consultation with Western, BLM, USFWS, and CDFG. Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval, a written report identifying which items of the Weed Management Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which items are still outstanding. A summary report on

weed management on the project site shall be submitted in the Annual Compliance Report during facility operations.

SPECIAL-STATUS PLANT IMPACT AVOIDANCE, MINIMIZATION AND COMPENSATORY MITIGATION

BIO-12 This condition contains the following five sections:

- **Section A: Avoidance and Minimization Measures** describes measures to avoid and protect Harwood's milk-vetch locations on the generator tie-line alignment within 250 feet of project activities (including access roads, staging areas, laydown areas, parking and storage areas) from accidental and indirect impacts during construction, operation, and closure.
- **Section B: Conduct Further Botanical Surveys** describes guidelines for conducting summer-fall 2010 surveys to detect special-status plants that may have been missed during spring surveys on the solar generator site and generator tie-line alignment; describes guidelines for summer-fall and pre-construction spring surveys on the existing Western 161-kV Parker-Blythe transmission line alignment.
- **Section C: Mitigation Requirements for Special-Status Plants Detected** outlines the level of avoidance required for plants detected during the further surveys (Section B), based on the species' rarity and status codes. Avoidance is based on extent of local occurrences in the Project disturbance Area and, as applicable, extending onto contiguous public land.
- **Section D: Off-Site Compensatory Mitigation for Special-Status Plants** describes performance standards for mitigation for a range of options for compensatory mitigation through acquisition, restoration/enhancement, or a combination of acquisition and restoration/enhancement.
- **Section E: Conformance with BLM Plant Protection Policies** describes measures to salvage and transplant certain cacti, yucca, and other species in conformance with BLM policies.

"Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the Project, including the solar generator site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation. Nothing in this condition requires the project owner to conduct botanical surveys on private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission

The Project owner shall implement the following measures in Section A, B, C, D and E to avoid, minimize, and compensate for impacts to special-status plant species:

Section A: Special Status Plant Impact Avoidance and Minimization Measures

To protect Harwood's milk-vetch or other CNPS List 1 or List 2 plants (excluding chaparral sand-verbena) located within the project area or within 250 feet of its boundaries (including access roads, staging areas, laydown areas, parking and storage areas) from accidental and indirect impacts during construction, operation, and closure, the Project owner shall implement the following measures:

1. **Designated Botanist**. An experienced botanist who meets the qualifications described in Section **B-2** below shall oversee compliance with all special-status plant avoidance, minimization, and compensation measures described in this condition throughout construction, operation, and closure. The Designated Botanist shall oversee and train all other Biological Monitors tasked with conducting botanical survey and monitoring work.
2. **Special Status Plant Impact Avoidance and Minimization Plan**. The Project owner shall prepare and implement a Special Status Plant Impact Avoidance and Minimization Plan and shall incorporate the Plan into the BRMIMP (**BIO-7**). The Plan shall be designed to prevent direct or indirect effects of project construction and operation to CNPS List 1 and List 2 plants (excluding chaparral sand-verbena) within or within 250 feet of the project disturbance area,. The Plan shall include the following elements:
 - a. **Site Design Modifications**: Incorporate site design modifications to minimize impacts to special-status plants along the Project linears, as follows: limit the width of the work area; adjust the location of staging areas, lay downs, spur roads and poles or towers; drive and crush vegetation as an alternative to blading temporary roads to preserve soil integrity and seed banks, and adjust the alignments of roads and access points within the constraints of the ROW. These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.
 - b. **Designate Environmentally Sensitive Areas (ESAs)**. Before construction, designate ESAs to protect all known CNPS List 1 or List 2 plant locations (excluding chaparral sand-verbena) within the project disturbance area or within 250 feet of disturbance area. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall provide a minimum of 250 feet buffer area between plant locations and any ground-disturbing project activity. The ESAs shall be clearly delineated in the field with fencing and signs prohibiting movement of the fence under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be marked (with signage or other markers) to ensure that avoided plants are not inadvertently harmed during construction.

- c. Special-Status Plant Worker Environmental Awareness Program (WEAP). The WEAP (**BIO-6**) shall include training components specific to protection of special-status plants as outlined in this condition.
- d. Herbicide and Soil Stabilizer Drift Control Measures. Special-status plant occurrences within 250 feet of the Project Disturbance Area shall be protected from any potential herbicide and soil stabilizer drift. The Weed Control Program (**BIO-11**) shall include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by Hillmer and Liedtke (2003) and Kegley et al. (2010).
- e. Erosion and Sediment Control Measures. Erosion and sediment control measures shall avoid adverse impacts to ESAs and shall not use invasive or non-native plants in seed mixes, introduce pest plants through contaminated seed or straw, etc. These measures shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under **SOIL&WATER-1**.
- f. Avoid Special-Status Plant Occurrences. Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from the boundaries of any ESAs.
- g. Monitoring and Reporting Requirements. The Designated Botanist shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.

Section B: Conduct Further Botanical Surveys

The Project owner shall conduct late-summer/fall botanical surveys for late-season special-status plants throughout the Project Disturbance Area, and shall conduct pre-construction spring surveys along the existing Western 161-kV Parker-Blythe transmission line as described below:

1. Survey Timing. To the extent feasible, surveys shall be timed to detect all special status species. Spring surveys shall be scheduled according to known flowering seasons of special-status plants of the area. To the extent feasible, late-season surveys shall be timed to detect: a) summer annuals triggered to germinate by the warm, tropical summer storms (which may occur any time between June and October), and b) fall-blooming perennials that respond to the cooler, later season storms that originate in the Pacific northwest (typically beginning in September or October). The survey dates shall be based on plant phenology and the timing of a significant storm (i.e., a 10 mm or greater rain or storm event, as measured at or within 1 mile of the Project site) if an event is recorded. Surveys for summer annuals shall be timed to occur approximately 4 to 7 weeks following a warm, tropical storm. Re-surveys shall occur as many times as necessary to ensure that surveys are conducted during the appropriate identification period for the target taxa, which may be blooms,

fruit, seed characteristics, or vegetative characteristics, depending on the taxon. However, due to the undependable nature and scattered patterns of summer and early fall rainfall, it is possible that no suitable rain event will be documented in the area. Nevertheless, the project owner shall be responsible for conducting late-season botanical surveys along washes and other lowland areas on-site due to the possibility that rainstorms in the Cady Mountains may go undetected, but may initiate summer or fall blooms.

2. Surveyor Qualifications and Training. Surveys shall be conducted by qualified botanists knowledgeable in the complex biology of the local flora and consistent with CDFG (2009) and BLM (2009b) protocols. The botanical survey crew shall be prepared to mobilize quickly to conduct appropriately timed surveys. Each field botanist shall be equipped with a GPS unit and record a complete tracklog; these data shall be compiled and submitted along with the Summer-Fall Survey Botanical Report (described below). Prior to the start of surveys, all crew members shall, at a minimum, visit target species reference sites (where available) and/or review herbarium specimens to obtain a search image.
3. Target Species. Field surveys shall be designed and scheduled to locate target species, defined as all BLM Sensitive plants, CNPS List 1 or 2 (Nature Serve rank S1 and S2) or proposed List 1 or 2 taxa, and any new reported or documented taxa. Because the potential for range extensions is unknown, the list of potentially occurring special-status plants shall include all special-status taxa known from comparable habitats within the eastern portion of the Colorado Desert in California. Determination of flowering season shall be based upon field visits to reference populations and data available online from the Consortium of California Herbaria and California Native Plant Society. The list of late-season target species shall also include taxa with bloom seasons that begin in fall and extend into the early spring as many of these are reported to be easier to detect in fall, following the start of the fall rains.
4. Survey Coverage. At a minimum, the Applicant shall conduct comprehensive surveys (i.e., 100 percent visual coverage) of the washes, dune swales, and other lowlands within the project disturbance area. In the intervening uplands (e.g., bajadas and rock outcrops) surveys shall be conducted to ensure a 25 percent visual coverage. Other special or unique habitats associated with rare plants (such as dunes, washes, and chenopod scrubs) shall also be surveyed at 100 percent visual coverage. Transects shall be “intuitive controlled” (per BLM 2009b) to ensure a focus on habitat most likely to support rare plants (such as desert washes or dunes), rather than on pre-defined, evenly-spaced survey grids.
5. Documenting Occurrences. If a special-status plant is detected, the full extent of the population on-site shall be assessed using GPS in accordance with BLM survey protocols. Additionally, the extent and density of contiguous occupied habitat within one mile of project

boundaries may be assessed at least qualitatively to facilitate an accurate estimation of the proportion of the occurrence affected by the project. For occurrences that are very dense or very large, the plant numbers may be estimated by simple sampling techniques and the survey report must provide qualitative or quantitative data describing the density and roughly mapping the extent on a topographic map. All but the smallest populations (e.g., a population occupying less than 100 square feet) shall be recorded as area polygons; small populations may be recorded as point features. All GPS-recorded occurrences shall include: the number of plants, phenology, observed threats (e.g., OHV or invasive exotics), and habitat or community type. The map of occurrences submitted with the progress reports and final botanical report shall be prepared to ensure consistency with mapping protocol and definitions of occurrences in CNDDDB: occurrences found within 0.25 miles of another occurrence of the same taxon, and not separated by significant habitat discontinuities, shall be combined into a single 'occurrence.' The Project Owner shall also submit the raw GPS shape files and metadata, and completed CNDDDB forms to CNDDDB for each occurrence as defined by CNDDDB.

Reporting. Raw GPS data, metadata, CNDDDB field forms shall be provided to the CPM within two weeks of completion of each survey. If field surveys take place during two or more phases (e.g., late summer and fall 2010; spring 2011), then a summary letter shall be submitted following each survey.

The Final Botanical Survey Report shall be prepared consistent with CDFG guidelines (CDFG 2009), and BLM guidelines (2009b) and shall include the following components:

- a. the BLM designation, NatureServe Global and State Rank of each species or taxon found (or proposed rank, or CNPS List);
- b. the number or percent of the occurrence that will be directly affected, and indirectly affected by changes in drainage patterns or altered geomorphic processes;
- c. the habitat or plant community that supports the occurrence and the total acres of that habitat or community type that occurs in the Project Disturbance Area;
- d. an indication of whether the occurrence has any local or regional significance (e.g., if it exhibits any unusual morphology, occurs at the periphery of its range in California, represents a significant range extension or disjunct occurrence, or occurs in an atypical habitat or substrate);
- e. a completed CNDDDB field form for every occurrence, and;
- f. two maps: one that depicts the raw GPS data (as collected in the field) on a topographic base map with Project features; and a second map

that follows the CNDDDB protocol for occurrence mapping, which lumps two or more occurrences of the same species within one-quarter mile or less of each other into one occurrence.

Section C: Mitigation Requirements for Special-Status Plants Detected

The Project owner shall apply the following avoidance standards to special-status plants that might be detected during the surveys described above. Avoidance and/or mitigation measures described in Section D below would reduce impacts to special-status plant species to less than significant levels.

Mitigation for CNDDDB Rank S1 and S2 Plants: If species with a CNDDDB rank of S1 or S2 (CDFG 2010b), excluding chaparral sand-verbena, are detected within the Project Disturbance Area or otherwise would be directly impacted by project activities, the Project owner shall implement avoidance measures to protect at least 75 percent of the local occurrence(s) of the species. For perennial species, the local occurrence(s) shall be measured by the number of individual plants located on the Project Disturbance Area or on contiguous public or applicant-owned lands. For annual species, the occurrence(s) shall be measured as areal extent of contiguous occupied habitat on the Project Disturbance Area and on contiguous public or applicant-owned lands. Avoidance shall include protection of the ecosystem processes essential for maintenance of the protected plant occurrence. Plants located within the ESAs established pursuant to Section A above shall be considered to be “avoided” to the extent that direct impacts on the plants are avoided and that these processes would be maintained. If special status plant occurrences are isolated by the Project from natural fluvial, aeolian, or other processes known to be necessary for their persistence or reproduction, these occurrences shall not be considered “avoided.” This evaluation shall be made by the project Botanist and CPM, in consultation with CDFG and BLM, on a case by case basis, dependent on the species and its location on the site. The Project owner shall provide compensatory mitigation as described below in Section D for Project impacts to CNDDDB Rank S1 and S2 plants that are not avoided. If the project Botanist, CPM, CDFG, and BLM agree that on-site avoidance would not allow for long-term viability of the plant occurrence(s), then compensatory mitigation may be substituted for avoidance for up to 100% of impacts to Rank S1 and S2 plants, as described below in Section D.

Mitigation for CNDDDB Rank S3 Plants: If species with a CNDDDB rank of 3 are detected within the Project Disturbance Area, no onsite avoidance or compensatory mitigation shall be required unless the occurrence has local or regional significance, in which case the plant occurrence shall be treated as a CNDDDB S2 ranked plant. A plant occurrence would be considered to have local or regional significance if:

- a. It occurs at the outermost periphery of its range in California;
- b. It occurs in an atypical habitat, region, or elevation for the taxon that suggests that the occurrence may have genetic significance (e.g., that may increase its ability to survive future threats), or;

- c. It exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or sub-species.

Should CNDDDB Rank S3 plant locations meeting any of the three criteria above be found on the project site during summer or fall field surveys, mitigation requirements for those species shall be as described above for CNDDDB Rank S1 and S2 species.

Pre-Construction Notification for State- or Federal-Listed Species, or BLM Sensitive Species. If a state or federal-listed species or BLM Sensitive species is detected, the Project owner shall immediately notify the CDFG, USFWS, BLM, and the CPM.

Preservation of the Germplasm of Affected Special-Status Plants. For all impacts to CNPS List 1 or List 2 plants, excluding chaparral sand-verbena, mitigation shall include seed collection from the affected special-status plants on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. Where construction schedules or seed availability prevents seed collection from plant locations to be impacted during a given season, seed must be collected from another portion of the project site or, as approved by the CPM in consultation with BLM's State Botanist, from public or applicant-owned lands off-site. Seed collection on public land must only be done under permit from the BLM; the project owner shall be responsible for obtaining and complying with applicable permit(s). The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the Project owner. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the CPM.

Section D: Off-Site Compensatory Mitigation for Special-Status Plants

Where compensatory mitigation is required under the terms of Section C, above, the Project owner shall mitigate Project impacts to CNPS List 1 or List 2 plants (excluding chaparral sand-verbena) with compensatory mitigation. Compensatory mitigation shall consist of acquisition of habitat supporting the target species, restoration/enhancement of populations of the target species, or a combination of acquisition and restoration/enhancement as provided within this Condition. Compensatory mitigation shall be at a 3:1 ratio. For annual species, compensation shall provide three acres of habitat acquired or restored/enhanced for every acre of special-status plant habitat disturbed by the Project Disturbance Area. For perennial species, compensation lands shall supporting three living plants of the same species for each plant disturbed within the project area. The Project owner shall provide funding for the acquisition and/or restoration/enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. The actual costs to comply with this condition will vary depending on

the Project Disturbance Area, the actual costs of acquiring compensation habitat, the actual costs of initially improving the habitat, the actual costs of long-term management as determined by a Property Analysis Record (PAR) or PAR-like analysis, and other transactional costs related to the use of compensatory mitigation.

The Project owner shall comply with other related requirements in this condition:

I. Compensatory Mitigation by Acquisition: The requirements for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of special-status plant compensation lands include all of the following:

Selection Criteria for Acquisition Lands. The compensation lands selected for acquisition may include any of the following three categories:

1. Occupied Habitat, No Habitat Threats: The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).
2. Occupied Habitat, Habitat Threats. Occupied compensation lands characterized by habitat threats may also be acquired as long as the population could be reasonably expected to recover with minor restoration (e.g., OHV or grazing exclusion, pest plant removal) and is accompanied by a Habitat Enhancement/Restoration Plan as described in Section D.II, below.
3. Unoccupied but Adjacent. The Project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The Project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat.

Review and Approval of Compensation Lands Prior to Acquisition. The Project owner shall submit a formal acquisition proposal to the CPM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above, and must be approved by the CPM.

Management Plan. The Project owner or approved third party shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Management Plan shall be submitted for review and approval to the CPM.

Integrating Special-Status Plant Mitigation with Other Mitigation lands. If all or any portion of the acquired Desert Tortoise, Waters of the State, or other

required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species' or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.

Compensation Lands Acquisition Requirements. The Project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM, has approved the proposed compensation lands:

- a. Preliminary Report. The Project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.
- b. Title/Conveyance. The Project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the CPM. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the CPM. If an entity other than CDFG holds a conservation easement over the compensation lands, the CPM may require that CDFG or another entity approved by the CPM, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Project owner shall obtain approval of the CPM of the terms of any transfer of fee title or conservation easement to the compensation lands.
- c. Initial Protection and Habitat Improvement. The Project owner shall fund activities that the CPM requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities are estimated to be \$750 per acre (\$250 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a 3:1 ratio, but actual costs will vary depending on the measures that are required for the compensation lands). A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the CPM in consultation with CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands.

If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

- d. Property Analysis Record. Upon identification of the compensation lands, the Project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM before it can be used to establish funding levels or management activities for the compensation lands.
- e. Long-term Maintenance and Management Funding. The Project owner shall provide money to fund the long-term maintenance and management of the compensation lands. The amount of money to be paid will be determined through an approved PAR or PAR-like analysis conducted for the compensation lands. Until an approved PAR or PAR-like analysis is conducted for the compensation lands, the amount of required funding is initially estimated to be \$4,350 for every acre of compensation lands, using as the best available proxy the estimated cost of \$1,450 per acre for Desert Tortoise compensatory mitigation, at a 3:1 ratio. This amount may be revised up or down by the CPM in consultation with DFG, BLM and USFWS, based on further analysis of long-term management and maintenance costs. If compensation lands will not be identified and a PAR or PAR-like analysis completed within the time period specified for this payment (see the verification section at the end of this condition), the Project owner shall either: (i) provide initial payment equal to the amount of \$4,350 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation; or (ii) provide security to the Energy Commission under subsection (g), "Mitigation Security," below, in an amount equal to \$4,350 multiplied by the number of acres the Project owner proposes to acquire for compensatory mitigation. The amount of the required initial payment or security for this item shall be adjusted for any change in the Project Disturbance Area as described above. If an initial payment is made based on the estimated per-acre costs, the Project owner shall deposit additional money as may be needed to provide the full amount of long-term maintenance and management funding indicated by a PAR or PAR-like analysis, once the analysis is completed and approved. If the approved analysis indicates less than \$4,350 per acquired acre (at a 3:1 ratio) will be required for long-term maintenance and management, the excess paid will be returned to the Project owner. The Project owner must obtain the CPM's approval of the entity that will receive and hold the long-term maintenance and management fund for the compensation lands. The CPM will consult with CDFG before deciding whether to approve an entity to hold the Project's long-term maintenance and management funds.

The Project owner shall ensure that an agreement is in place with the long-term maintenance and management fund holder/manager to ensure the following requirements are met:

- i. Interest. Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the CPM and is designed to protect or improve the habitat values of the compensation lands.
- ii. Withdrawal of Principal. The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the CPM or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.
- iii. Pooling Long-Term Maintenance and Management Funds. An entity approved to hold long-term maintenance and management funds for the Project may pool those funds with similar funds that it holds from other projects for long-term maintenance and management of compensation lands for special-status plants. However, for reporting purposes, the long-term maintenance and management funds for this Project must be tracked and reported individually to the CPM.
- f. Other Expenses. In addition to the costs listed above, the Project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.
- g. Mitigation Security. The Project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing Project activities. Financial assurances shall be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the CPM. The amount of the Security shall be based upon staff's estimate of per-acre acquisition, transaction, and management costs as described in Condition of Certification **BIO-16** for each acre of occupied habitat impacted, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a 3:1 ratio; see **Biological Resources Tables 6 and 9**) for every acre of habitat supporting the target special-status plant species which is significantly impacted by the project. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the CPM, the Project owner shall obtain the CPM's approval of the form of the Security. The CPM may draw on the Security if the CPM determines the Project owner has

- failed to comply with the requirements specified in this condition. The CPM may use money from the Security solely for implementation of the requirements of this condition. The CPM's use of the Security to implement measures in this condition may not fully satisfy the Project owner's obligations under this condition, and the Project owner remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security shall be returned to the Project owner in whole or in part upon successful completion of the associated requirements in this condition.
- h. The Project owner may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the Project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this condition) of implementing the requirement. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the Project owner, the Project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the applicant, the remaining balance shall be returned to the Project owner.
 - i. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the CPM, in consultation with CDFG, BLM and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the Energy Commission's certification of the Project.

II. Compensatory Mitigation by Habitat Enhancement/Restoration: As an alternative or adjunct to land acquisition for compensatory mitigation the Project owner may undertake habitat enhancement or restoration for the target special-status plant species. Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio, with improvements applied to three acres of habitat for every acre special-status plant habitat directly or indirectly disturbed by the Project Disturbance Area. Examples of suitable enhancement projects include but are not limited to the following: i) control unauthorized vehicle use into an occurrence (or pedestrian use if clearly damaging to the species); ii) control weeds that infest or pose an immediate threat to an occurrence; iii) exclude grazing by wild burros or

livestock from an occurrence; or iv) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species.

If the Project owner elects to undertake a habitat enhancement project for mitigation, the project must meet the following performance standards: The proposed enhancement project shall achieve rescue of an off-site occurrence that is currently assessed, based on the NatureServe threat ranking system (Master et al. 2009; Morse et al. 2004) with one of the following threat ranks: a) long-term decline >30%; b) an immediate threat that affects >30% of the population, or c) has an overall threat impact that is High to Very High. "Rescue" would be considered successful if it achieves an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").

If the Project owner elects to undertake a habitat enhancement project for mitigation, they shall submit a Habitat Enhancement/Restoration Plan to the CPM for review and approval, and shall provide sufficient funding for implementation and monitoring of the Plan. The amount of the Security shall be based upon staff's estimate of per-acre acquisition, transaction, and management costs as described in Condition of Certification **BIO-16** for each acre of occupied habitat impacted by the Project, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a 3:1 ratio (see **Biological Resources Tables 6 and 9**). The amount of the security shall be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring. The implementation and monitoring of the enhancement/restoration may be undertaken by an appropriate third party such as NFWF, subject to approval by the CPM. The Habitat Enhancement/Restoration Plan shall include each of the following:

1. Goals and Objectives. Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. The objective of the proposed habitat enhancement plan shall include restoration of a target special-status plant occurrence that is currently threatened with a long-term decline. The proposed enhancement plan shall achieve an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").
2. Historical Conditions. Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions.
3. Site Characteristics. Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species).
4. Ecological Factors. Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc.

5. Methods. Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years.
6. Budget. Provide a detailed budget and time-line, develop clear, measurable, objective-driven annual success criteria.
7. Monitoring. Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, or until the performance standards for rescue of a threatened occurrence are met, whichever comes first. At a minimum the progress reports shall include: quantitative measurements of the projects progress in meeting the enhancement project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.
8. Reporting Program. The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties.
9. Contingency Plan. Describe the contingency plan for failure to meet annual goals.
10. Long-term Protection. Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in a Desert Wildlife Management Area, Wildlife Habitat Management Area, or other land use protections that will protect the mitigation site and target species.

Section E: Conformance with BLM Plant Protection Policies

It is BLM policy to salvage yucca and cactus plants (excluding cholla species, genus *Cylindropuntia*) and transplant them to undisturbed sites within project Rights of Way. Staff recommends conformance with policy, as follows:

- a. The project owner shall inventory all plants subject to BLM policies on all NLM lands within the Project Disturbance Area that would be removed or damaged by proposed project construction.
- b. The project owner shall prepare a Protected Plant Salvage Plan in conformance with BLM standards for review and approval by the CPM in consultation with BLM. The plan shall include detailed descriptions of proposed methods to salvage plants; transport them; store them temporarily (as needed); maintain them in temporary storage (i.e., irrigation, shade protection, etc.); proposed transplantation locations and methods for permanent relocation; proposed irrigation and maintenance methods at transplantation sites; and a monitoring plan to verify survivorship and establishment of translocated plants for a minimum of five years.

- c. Prior to initiating any ground-disturbing activities on the project site, the project owner shall implement the Protected Plant Replacement measures as approved by the CPM, in consultation with BLM's State Botanist.

Verification: The Special-Status Plant Impact Avoidance and Minimization Measures shall be incorporated into the BRMIMP as required under Condition of Certification **BIO-7**.

Implementation of the special-status plant impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of Project construction, the Project owner shall provide to the CPM, for review and approval in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The Project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all avoided special-status plants to the CPM and BLM State Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends, and description of the remedial action, if warranted and planned for the upcoming year.

Section A. No less than 30 days prior to the start of ground-disturbing activities the Project owner shall submit grading plans and construction drawings depicting the location of Environmentally Sensitive Areas and the Avoidance and Minimization Measures contained in Section A of this Condition. The project owner shall coordinate with the CPM and BLM's Wildlife Biologist to revise and finalize boundaries of the ESAs.

No less than 30 days prior to the start of ground-disturbing activities the Project owner shall submit to the CPM for review and approval, in consultation with the BLM State Botanist, the name and resume of the project's Designated Botanist. If a Designated Botanist needs to be replaced, the specified information of the proposed replacement must be submitted to BLM's Wildlife Biologist and the CPM as soon as possible prior to the termination or release of the Designated Biologist. In an emergency, the project owner shall immediately notify the BLM's Wildlife Biologist and the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Botanist is proposed to BLM's Wildlife Biologist and the CPM and for consideration.

No less than 30 days prior to ground-disturbing activities the Project owner shall submit a Special Status Plant Impact Avoidance and Minimization Plan to the CPM for review and approval, in consultation with the BLM State Botanist. Implementation of the impact avoidance and minimization measures shall be reported in the Monthly Compliance Reports prepared by the Designated Botanist. Within 30 days after completion of Project construction, the Project owner shall provide to the CPM, for review and approval in consultation with the BLM State Botanist, a written construction termination report identifying how measures have been completed.

The Project owner shall submit a monitoring report every year for the life of the project to monitor effectiveness of protection measures for all ESAs to the CPM and BLM State

Botanist. The monitoring report shall include: dates of worker awareness training sessions and attendees, an inventory of the special-status plant occurrences and description of the habitat conditions, an indication of population and habitat quality trends, and description of the remedial action, if warranted and planned for the upcoming year. The project owner shall coordinate with the CPM and BLM to revise and finalize monitoring reports and all reports described in this section, and shall specifically report any difficulties in meeting the protection goals and cooperatively develop adaptive measures as needed.

Section B. Raw GPS data, metadata, and CNDDDB field forms shall be submitted to the CPM within two weeks of the completion of each survey. A preliminary summary of results for the late summer/fall botanical surveys shall also be submitted to the CPM and BLM's State Botanist within two weeks following the completion of the surveys. If surveys are split into more than one period, then a summary letter shall be submitted following each survey period. The Final Summer-Fall Botanical Survey Report, GIS shape files and metadata shall be submitted to the BLM State Botanist and the CPM no less than 30 days prior to the start of ground-disturbing activities. The Final Report shall include a detailed accounting of the acreage of Project impacts to special-status plant occurrences.

Section C. The Project owner shall immediately provide written notification to the CPM, CDFG, USFWS, and BLM if it detects a State- or Federal-Listed Species, or BLM Sensitive Species at any time during its late summer/fall botanical surveys or at any time thereafter through the life of the Project, including conclusion of Project decommissioning.

Prior to construction, the project owner shall provide written verification that seed of any special status plants in the Project Disturbance Area have been collected and conveyed to a facility (as described in this measure) and that suitable long-term funding has been provided by the project owner.

Section D. If compensatory mitigation is required (based upon field survey results and mitigation strategy adopted by the project owner, as described in Sections C and D), no less than 30 days prior to the start of ground-disturbing activities, the Project owner shall submit to the CPM Security adequate to acquire compensatory mitigation lands and/or undertake habitat enhancement or restoration activities, as described in this condition.

No fewer than 90 days prior to acquisition of compensatory mitigation lands, the Project owner shall submit a formal acquisition proposal and draft Management Plan for the proposed lands to the CPM, with copies to CDFG, USFWS, and BLM, describing the parcels intended for purchase and shall obtain approval from the CPM prior to the acquisition. No fewer than 90 days prior to acquisition of compensatory mitigation lands, the Project owner shall submit to the CPM and obtain CPM approval of any agreements to delegate land acquisition to an approved third party, or to manage compensation lands; such agreement shall be executed and implemented within 18 months of the Energy Commission's certification of the Project.

The Project owner or an approved third party shall complete the acquisition and all required transfers of the compensation lands, and provide written verification to the CPM of such completion no later than 18 months after the start of Project ground-disturbing activities. If NFWF or another approved third party is being used for the acquisition, the Project owner shall ensure that funds needed to accomplish the acquisition are transferred in timely manner to facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18-month deadline. If habitat enhancement is proposed, no later than six months following the start of ground-disturbing activities, the Project owner shall obtain CPM approval of the final Habitat Enhancement/Restoration Plan, prepared in accordance with Section D, and submit to the CPM or a third party approved by the CPM Security adequate for long-term implementation and monitoring of the Habitat Enhancement/Restoration Plan.

Enhancement/restoration activities shall be initiated no later than 12 months from the start of construction. The implementation phase of the enhancement project shall be completed within five years of initiation. Until completion of the five-year implementation portion of the enhancement action, a report shall be prepared and submitted as part of the Annual Compliance Report. This report shall provide, at a minimum: a summary of activities for the preceding year and a summary of activities for the following year; quantitative measurements of the Project's progress in meeting the enhancement project success criteria; detailed description of remedial actions taken or proposed; and contact information for the responsible parties.

Within 18 months of ground-disturbing activities, the Project owner shall transfer to the CPM or an approved third party the difference between the Security paid and the actual costs of (1) acquiring compensatory mitigation lands, completing initial protection and habitat improvement, and funding the long-term maintenance and management of compensatory mitigation lands; and/or (2) implementing and providing for the long-term protection and monitoring of habitat enhancement or restoration activities.

Section E. The project owner shall coordinate with the CPM and BLM's Wildlife Biologist to revise and finalize all plans and reports named in this section. Verification and reporting shall be as described in BIO-10 and shall be included in reports described therein. Within 90 days after completion of each year of project construction, the project owner shall provide to the CPM verification of the numbers or acreage of plants covered in this Condition (i.e., species named in BLM and County policies) which have been removed or salvaged over the course of the year. Annual revegetation reports described in BIO-10 verification shall include summaries of salvage and planting operations and monitoring results. Compliance reports shall include summaries of written and photographic records of the plan implementation described above. Compliance reports shall be submitted annually for a period not less than 5 years to document irrigation, maintenance, and monitoring results, including plant survival.

PRE-CONSTRUCTION NEST SURVEYS AND IMPACT AVOIDANCE MEASURES FOR MIGRATORY BIRDS

BIO-13 Pre-construction nest surveys for bird species other than burrowing owls shall be conducted if construction activities will occur during the breeding period (from February 1 through August 31). Burrowing owl surveys are addressed in **BIO-19**. The Designated Biologist or Biological Monitor conducting the

surveys shall be experienced bird surveyors and familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). Surveys shall be conducted in accordance with the following guidelines. Nothing in this condition requires the project owner to conduct nesting bird surveys by entering private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission. In this situation only, the project owner may substitute binocular surveys for protocol field surveys.

1. Surveys shall cover all potential nesting habitat in the project site and within 500 feet of the boundaries of the plant site and linear facilities;
2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall be conducted within the 10 days preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed one week in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;
3. If active nests are detected during the survey, a 500-foot no-disturbance buffer zone shall be implemented. If active raptor nests or bat maternity roosts are detected during the survey, a 1200-foot no-disturbance buffer zone shall be implemented. A monitoring plan shall be prepared and implemented to ensure no disturbance takes place within the buffer areas. This protected area surrounding the nest may be adjusted by the Designated Biologist in consultation with CDFG, USFWS, Western, and the CPM. Nest locations shall be mapped using GPS technology and submitted, along with a weekly report stating the survey results, to the CPM; and
4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed. Activities that might, in the opinion of the Designated Biologist and in consultation with the CPM, disturb nesting activities shall be prohibited within the buffer zone until such a determination is made.

Verification: Prior to the start of any project-related ground disturbance activities, the project owner shall provide the CPM a letter-report describing the findings of the pre-construction nest surveys, including the time, date, and duration of the survey; identity and qualifications of the surveyor(s); and a list of species observed. If active nests are detected during the survey, the report shall include a map or aerial photo identifying the location of the nest(s) and shall depict the boundaries of the no-disturbance buffer zone around the nest(s).

DESERT TORTOISE CLEARANCE SURVEYS AND EXCLUSION FENCING

BIO-14 The project owner shall undertake appropriate measures to manage the construction site(s) and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence specification

and installation, tortoise handling, artificial burrow construction, egg handling and other procedures shall be consistent with those described in the USFWS' 2009 *Desert Tortoise Field Manual*

<http://www.fws.gov/ventura/speciesinfo/protocols_guidelines> or more current guidance provided by CDFG and USFWS. The project owner shall also implement all terms and conditions described in the Biological Opinion for the project to be prepared by USFWS. These measures include, but are not limited to, the following:

1. Desert Tortoise Exclusion Fence Installation. To avoid impacts to desert tortoises, permanent desert tortoise exclusion fencing shall be installed at the solar generator site along the permanent perimeter security fence and permanent access road from the security gate southward. Temporary exclusion fencing shall be installed along any additional construction site associated with the project, including the 60-acre logistics/staging area, stormwater diversion channels, and proposed generator tie-line alignment. Permanent desert tortoise exclusion fencing shall also be installed at the interconnector substation site prior to construction activities at that site. The only exception to the requirement for exclusion fencing shall be for temporary construction sites where a qualified desert tortoise monitor is on-site throughout all construction activities (e.g., transmission line construction sites). The proposed alignments for all desert tortoise exclusion fencing shall be flagged and surveyed for desert tortoise within 24 hours prior to the initiation of fence construction. Clearance surveys of the perimeter fence and utility rights-of-way alignments shall be conducted by the Designated Biologist(s) using techniques approved by the USFWS and CDFG and may be conducted in any season with USFWS and CDFG approval. Biological Monitors may assist the Designated Biologist under his or her supervision with the approval of the CPM, USFWS, and CDFG. These fence clearance surveys shall provide 100 percent coverage of all areas to be disturbed and an additional buffer approximately 90 feet wide centered on the fence alignment (i.e., 45 feet along each side of the fence line). Survey transects shall be no greater than 15 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS' 2009 *Desert Tortoise Field Manual*. Any desert tortoise located during fence clearance surveys shall be handled only by the Designated Biologist(s) in accordance with the USFWS' 2009 *Desert Tortoise Field Manual*.
 - a. Timing, Supervision of Fence Installation. The exclusion fencing shall be installed prior to the onset of site clearing and grubbing. During construction, temporary tortoise exclusion fencing shall also be placed on access roads in tortoise habitat unless otherwise approved by the CPM, Western, BLM, USFWS, and CDFG. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.

- b. Fence Material and Installation. The permanent tortoise exclusionary fencing shall be constructed in accordance with the USFWS' 2009 *Desert Tortoise Field Manual* (Chapter 8 – Desert Tortoise Exclusion Fence).
 - c. Security Gates. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time. Cattle grating designed to safely exclude desert tortoise may be installed at the gated entries to discourage tortoises from gaining entry, to be determined by the CPM in consultation with CDFG and USFWS.
 - d. Fence Inspections. Following installation of all desert tortoise exclusion fencing (i.e., both permanent and temporary fencing), the fencing shall be regularly inspected. If tortoises were moved out of harm's way during fence construction, permanent and temporary fencing in that area shall be inspected at least two times a day for a minimum of 7 days after moving the animal to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during and within 24 hours following all major rains. Major rains are defined as a storm(s) for which surface flow is detectable within the fenced drainages. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises from entering the site, and permanently repaired within 48 hours of observing damage. Monthly and post-rainfall inspections of permanent site fencing shall continue throughout the life of the project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rains. All temporary fencing shall be repaired immediately upon discovery and the Designated Biologist shall inspect the area to determine whether the damage may have permitted tortoise entry.
2. Desert Tortoise Clearance Surveys within the Plant Site. Following construction of the tortoise exclusion fencing, the solar field and adjacent fenced areas (including permanent and temporarily fenced areas) shall be cleared of tortoises by the Designated Biologist, who may be assisted by the Biological Monitors. Clearance surveys shall be conducted in accordance with the USFWS 2009 *Desert Tortoise Field Manual* (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) and shall consist of at least two surveys covering 100 percent of the project area by walking transects no more than 15 feet apart. Surveys shall be repeated until two consecutive 100%-coverage surveys are completed without finding live tortoises. Transect routes on each separate survey shall be walked in different directions to allow opposing angles of observation. Clearance surveys of the power plant site may only be conducted when tortoises are most active (April through May or September through October). Surveys outside of these time periods require approval by

USFWS and CDFG. Any tortoise located during clearance surveys of the solar field site or construction areas along the transmission line route shall be relocated and monitored in accordance with the Desert Tortoise Translocation Plan (Condition of Certification **BIO-15**).

- a. Burrow Searches. During clearance surveys all desert tortoise burrows, and any burrows constructed by other species that might be used by desert tortoises, shall be examined by the Designated Biologist, who may be assisted by the Biological Monitors, to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS' 2009 *Desert Tortoise Field Manual*. To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined. Tortoises taken from burrows and from elsewhere on the solar field site or construction areas along the transmission line route shall be translocated as described in the Desert Tortoise Translocation Plan.
 - b. Burrow Excavation/Handling. All potential desert tortoise burrows located during clearance surveys shall be excavated by hand, tortoises removed, and burrows collapsed or blocked to prevent occupation by desert tortoises. All desert tortoise handling and removal, and burrow excavations, including nests, shall be conducted by the Designated Biologist, who may be assisted by a Biological Monitor in accordance with the USFWS' 2009 *Desert Tortoise Field Manual*.
3. Monitoring Following Clearing. Following the desert tortoise clearance and removal from the power plant site and utility corridor, workers and heavy equipment shall be allowed to enter the project site to perform clearing, grubbing, leveling, and trenching. A Designated Biologist shall monitor clearing and grading activities to find and move any tortoises which may have been missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be translocated as described in the Desert Tortoise Translocation Plan to an area approved by the Designated Biologist.
 4. Relocation of Other Special-Status Species. Any special-status mammal or reptile species incidentally encountered during desert tortoise clearance surveys or monitoring (2 and 3, above), excluding American badger or desert kit fox, shall be captured and relocated to a safe, suitable area beyond the construction impact zone. If American badger or desert kit fox are encountered during the clearance surveys, they will be avoided and allowed to escape from the site as described below (Condition of Certification **BIO-20**). Any captured animal shall be maintained in a shaded, sheltered, cool (<85 degrees F) environment until relocation. If capture is not safe or feasible (e.g., for a badger) appropriate measures will be taken to encourage the animal to leave the site (including temporary exclusion fence removal, if monitored closely, per incident-specific direction from the CPM and cooperating agencies). The Designated Biologist shall coordinate with staff and CDFG biologists in the transport and relocation of any special-status animals encountered during

project surveys, construction, or operation. A written report documenting any animals relocated shall be provided to the CPM within 30 days of relocation.

5. **Reporting.** The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise. Desert tortoises moved from within project areas shall be monitored in accordance with the Desert Tortoise Translocation Plan.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP and implemented by the project owner. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of desert tortoise clearance surveys the Designated Biologist shall submit a report to the CPM, Western, BLM, USFWS, and CDFG describing implementation of each of the mitigation measures listed above. The report shall include the desert tortoise survey results, capture and release locations of any relocated desert tortoises or other animals, and any other information needed to demonstrate compliance with the measures described above.

DESERT TORTOISE TRANSLOCATION PLAN

BIO-15 The project owner shall prepare and implement a final Desert Tortoise Translocation Plan (Plan) in conformance with standards and guidelines described in *Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance* (USFWS August 2010), any more current guidance or recommendations as available from CDFG or USFWS, and meets the approval of the CPM in consultation with Western, BLM, USFWS, and CDFG. The goal of the Plan shall be to safely exclude desert tortoises from within the fenced project area and translocate them to suitable habitat capable of supporting them, while minimizing stress and potential for disease transmission. The final Plan shall be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the applicant and shall include all revisions deemed necessary by USFWS, CDFG, and the CPM, in consultation with Western and BLM. The Plan shall include but not be limited to, a list of the authorized handlers, protocols for disease testing and assessing tortoise health, proposed translocation locations and procedures, schedule of translocations, a habitat assessment of translocation lands, monitoring of translocated tortoise(s), reporting, and contingency planning (e.g., handling an injured or diseased tortoise).

Verification: Within 30 days of publication of the Energy Commission License Decision the project owner shall provide the CPM with the final version of a Desert Tortoise Translocation Plan that is consistent with all terms and conditions of the Biological Opinion and Incidental Take Permits, both yet to be issued. The Plan shall

not be accepted as “final” until it has been reviewed and approved by the CPM, USFWS, and CDFG in consultation with Western and BLM. Any modifications to the approved final Plan shall be made only with written approval by the CPM, USFWS, and CDFG in consultation with Western and BLM.

Within 30 days after initiation of translocation activities, the Designated Biologist shall provide to the CPM for review and approval in consultation with Western, USFWS, BLM, and CDFG, a written report identifying which items of the final Desert Tortoise Translocation Plan have been completed, and a summary of any modifications to measures made during implementation of the Plan. Written monthly progress reports shall be provided to the CPM for the duration of the Plan implementation. Progress reports shall be made available to Western, BLM, CDFG, and USFWS upon request.

DESERT TORTOISE COMPENSATORY MITIGATION

BIO-16 The project owner shall provide compensatory mitigation acreage of 1,988 acres of desert tortoise habitat lands, adjusted to reflect the final project footprint, as specified in this condition. A portion of this compensation land may consist of land currently held by the project owner, pending analysis of its suitability (see Selection Criteria, below), as discussed in the analysis of impacts to desert tortoise, above. In addition, the project owner shall provide funding for initial improvement and long-term maintenance, enhancement, and management of the acquired lands for protection and enhancement of desert tortoise populations, and comply with other related requirements of this condition. This acreage was calculated as follows: Impacts to the solar generator site and existing 161-kV Parker-Blythe transmission line shall be compensated at a 1:1 ratio. Impacts along the generator tie-line and at the interconnector substation shall be compensated at a 3:1 ratio (see **Biological Resources Table 8**). These impact acreages are to be adjusted to reflect the final project footprint. For purposes of this condition, the Project footprint means all lands disturbed in the construction and operation of the Project, including all linear project components, as well as undeveloped areas inside the Project’s boundaries that will no longer provide viable long-term habitat for the desert tortoise.

Costs of these requirements are estimated to be \$5,076,447.00 based on the acquisition of 1,988 acres (see **Biological Resources Tables 6** and **9** for a complete breakdown of costs and acreage).

As many as 99 acres (based on staff’s estimate of generator tie-line and interconnector substation acreage on public land) of the compensation lands requirement, plus unspecified acreage along the existing 161-kV Parker-Blythe #2 transmission line alignment, may be satisfied by applicant’s compliance with the desert tortoise habitat acquisition or enhancement requirements of BLM, to be calculated as an acre-for-acre offset in the Energy Commission requirement for mitigation provided to satisfy BLM’s requirements. For purposes of this paragraph, credit will be given for BLM-required mitigation without regard to whether BLM uses the mitigation funds for habitat acquisition or for enhancement projects to benefit the species.

The project owner shall provide financial assurances as described below in the amount of \$5,076,447. In lieu of acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into a Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as described below. If the Project owner elects to establish a REAT NFWF Account and have NFWF and the agencies complete the required habitat compensation, then the total estimated cost of complying with this condition is \$5,213,088.41. The amount of security or NFWF deposit shall be adjusted up or down to reflect any revised cost estimates recommended by REAT.

The actual costs to comply with this condition will vary depending on the final footprint of the Project, the costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a Property Analysis Report or similar analysis (below). The 1,988 acre habitat requirement, and associated funding requirements based on that acreage, shall be adjusted up or down if there are changes in the final footprint of the project or the associated costs of evaluation, acquisition, management, and other factors listed in **Biological Resources Tables 6 and 10**. Regardless of actual cost, the project owner shall be responsible for funding all requirements of this condition.

COMPENSATORY MITIGATION LAND ACQUISITION

1. Method of Acquisition. Compensation lands shall be acquired by either of the two options listed below. Regardless of the method of acquisition, the transaction shall be complete only upon completion of all terms and conditions described in this Condition of Certification.
 - a. The project owner transfer title and/or conservation easement of compensation lands to a state or federal land management agency or to a third-party non-profit land management organization, as approved by the CPM in consultation with BLM, CDFG, and USFWS; staff recommends transfer in fee title to the lands to CDFG under terms approved by CDFG. Alternatively, a CDFG-approved non-profit organization qualified pursuant to California Government Code section 65965 may hold the fee title or a conservation easement over the lands. In the event an approved non-profit holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG; in the event an approved non-profit holds a conservation easement over the lands, CDFG shall be named third party beneficiary; or
 - b. The Project owner shall deposit funds into a project-specific subaccount within the REAT Account established with the NFWF, in the amount as indicated in **Biological Resources Tables 6 and 10** (adjusted to reflect final project footprint and any applicable REAT adjustments to costs).

2. Selection Criteria for Compensation Lands. Pending a review of the selection criteria below, staff has tentatively determined, in consultation with Western, CDFG, BLM, and USFWS, that applicant-owned land contiguous to the solar generator site would meet criteria as mitigation lands to partially satisfy this Condition of Certification (see discussion of “location of acquired habitat compensation lands” under Desert Tortoise, in the Assessment of Impacts and Discussion of Mitigation section, above). Any additional or alternate compensation lands selected for acquisition to meet Energy Commission and CESA requirements shall be equal to or better than the quality and function of the habitat impacted and shall:
 - a. be within the Colorado Desert Recovery Unit, with potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands;
 - b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;
 - c. be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;
 - d. be contiguous and biologically connected to lands currently occupied by desert tortoise, ideally with populations that are stable, recovering, or likely to recover;
 - e. not have a history of intensive recreational use or other disturbance that might cause future erosional damage or other habitat damage, and make habitat recovery and restoration infeasible;
 - f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration; and
 - g. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and
 - h. have water and mineral rights included as part of the acquisition, unless the CPM, in consultation with CDFG, BLM and USFWS, agrees in writing to the acceptability of land without these rights.
3. Review and Approval of Compensation Lands Prior to Acquisition. The project owner shall submit a formal acquisition proposal to the CPM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above and must be

approved by the CPM. The CPM will share the proposal with and consult with Western, CDFG, BLM and the USFWS before deciding whether to approve or disapprove the proposed acquisition.

4. Compensation Lands Acquisition Conditions: The project owner shall comply with the following conditions relating to acquisition of the compensation lands after the CPM, in consultation with Western, CDFG, BLM and the USFWS, have approved the proposed compensation lands:
 - a. Preliminary Report: The Project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM, in consultation with Western, CDFG, BLM and the USFWS. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission, and the Wildlife Conservation Board.
 - b. Title/Conveyance: The Project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the CPM in consultation with CDFG. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM in consultation with CDFG. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the CPM. If an approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary. If an entity other than CDFG holds a conservation easement over the compensation lands, the CPM may require that CDFG or another entity approved by the CPM, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Project owner shall obtain approval of the CPM, in consultation with CDFG, of the terms of any transfer of fee title or conservation easement to the compensation lands.
 - c. Property Analysis Record. Upon identification of the compensation lands, the Project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM, in consultation with CDFG, before it can be used to establish funding levels or management activities for the compensation lands.

5. Compensation Lands Acquisition Costs: The Project owner shall pay all other costs related to acquisition of compensation lands and conservation easements. In addition to actual land costs, these acquisition costs shall include but shall not be limited to the items listed below. Management costs including site cleanup measures are described separately, in the following section.
 - a. Level 1 Environmental Site Assessment;
 - b. Appraisal;
 - c. Title and document review costs;
 - d. Expenses incurred from other state, federal, or local agency reviews;
 - e. Closing and escrow costs;
 - f. Overhead costs related to providing compensation lands to CDFG or an approved third party;
 - g. Biological survey(s) to determine mitigation value of the land; and
 - h. Agency costs to accept the land (e.g., writing and recording of conservation easements; title transfer).

COMPENSATORY MITIGATION LAND IMPROVEMENT

1. Land Improvement Requirements: The Project owner shall fund activities that the CPM, in consultation with Western, CDFG, USFWS and BLM, requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include surveys of boundaries and property lines, installation of signs, trash removal and other site cleanup measures, construction and repair of fences, invasive plant removal, removal of roads, and similar measures to protect habitat and improve habitat quality on the compensation lands.

The costs of these activities are estimated at \$250 an acre, but will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the CPM in consultation with CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee.

COMPENSATORY MITIGATION LAND LONG-TERM MANAGEMENT

1. Long-term Management Requirements: Long-term management is required to ensure that the compensation lands are managed and

maintained to protect and enhance habitat for desert tortoise. Management activities may include maintenance of signs, fences, removal of invasive weeds, monitoring, security and enforcement, and control or elimination of unauthorized use.

2. Long-term Management Plan. The project owner shall pay for the preparation of a Management Plan for the compensation lands. The Management Plan shall reflect site-specific enhancement measures on the acquired compensation lands. The plan shall be submitted for approval of the CPM, in consultation with Western, CDFG, BLM and USFWS.
3. Long-Term Maintenance and Management Funding. The Project owner shall provide money to fund the long-term maintenance and management of the compensation lands. The amount of money to be paid will be determined through an approved PAR or PAR-like analysis conducted for the compensation lands. The amount of required funding is initially estimated to be \$1,450 for every acre of compensation lands. If compensation lands will not be identified and a PAR or PAR-like analysis completed within the time period specified for this payment (see the verification section at the end of this condition), the Project owner shall provide initial payment of \$2,882,600.00 calculated at \$1,450 an acre for 1,988 into an account for long-term maintenance and management of compensation lands. The amount of the required initial payment or security for this item shall be adjusted for any change in the Project footprint as described above. If an initial payment is made based on the estimated per-acre costs, the project owner shall deposit additional money as may be needed to provide the full amount of long-term maintenance and management funding indicated by a PAR or PAR-like analysis, once the analysis is completed and approved. If the approved analysis indicates less than \$1,450 an acre will be required for long-term maintenance and management, the excess paid will be returned to the Project owner.

The project owner must obtain the CPM's approval of the entity that will receive and hold the long-term maintenance and management fund for the compensation lands. The CPM will consult with the project owner and CDFG before deciding whether to approve an entity to hold the project's long-term maintenance and management funds on any lands. The CPM, in consultation with the project owner and CDFG, may designate another state agency or non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity.

If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision.

The Project owner shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions:

- i. Interest. Interest generated from the initial capital shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFG designed to protect or improve the habitat values of the compensation lands.
- ii. Withdrawal of Principal. The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by the CPM, in consultation with CDFG, or the approved third-party long-term maintenance and management fee manager to ensure the continued viability of the species on the compensation lands. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless CDFG designates NFWF or another entity to manage the long-term maintenance and management fee for CDFG.
- iii. Pooling Funds. A CPM- approved non-profit organization qualified to hold long-term maintenance and management fees solely for the purpose to manage lands in perpetuity, may pool the fund with other funds for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the CDFG and CPM.
- iv. Reimbursement Fund. The project owner shall provide reimbursement to CDFG or an approved third party for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other State or State-approved federal agency reviews; and overhead related to providing compensation lands.

COMPENSATORY MITIGATION LAND SECURITY

1. Compensation Mitigation Security: The project owner shall provide security sufficient for funding acquisition, improvement, and long-term management of desert tortoise compensation land. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the Project owner shall obtain the CPM's approval, in consultation with CDFG, BLM and the USFWS, of the form of the Security.

The security amount shall be based on the estimates provided in **Biological Resources Tables 6 and 9**. This amount shall be updated and verified prior to payment and shall be adjusted to reflect actual costs or more current estimates as agreed upon by the REAT agencies.

The Project owner shall provide verification that financial assurances have been established to the CPM with copies of the document(s) to BLM, CDFG and the USFWS, to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing activities described in Section A of this condition.

In the event that the project owner defaults on the Security, the CPM may use money from the Security solely for implementation of the requirements of this condition. The CPM's use of the security to implement measures in this condition may not fully satisfy the Project owner's obligations under this condition. Any amount of the Security that is not used to carry out mitigation shall be returned to the Project owner upon successful completion of the associated requirements in this condition.

Security for the requirements of this condition shall be provided in the amount of \$5,076,447.00 (or \$5,213,088.41 if the project owner elects to use the REAT Account with NFWF pursuant to paragraph 2 of this condition, below). The Security is calculated in part from the items that follow but adjusted as specified below (consult **Biological Resources Tables 6 and 9** for the complete breakdown of estimated costs). However, regardless of the amount of the security or actual cost of implementation, the project owner shall be responsible for implementing all aspects of this condition.

- i. land acquisition costs for compensation land, calculated at \$500/acre;
- ii. Site assessments, appraisals, biological surveys, transaction closing and escrow costs, calculated as \$18,000 total per parcel (presuming 160 acres per parcel);
- iii. Initial site clean-up, restoration, or enhancement, calculated at \$250/acre;
- iv. Third-party and agency administrative transaction costs and overhead, calculated as percentages of land cost;
- v. Long-term management and maintenance fund, calculated at \$1,450 per acre; and
- vi. NFWF fees to establish a project-specific account; manage the sub-account for acquisition and initial site work; and manage the sub-account for long term management and maintenance.

2. The project owner may elect to comply with some or all of the requirements in this condition by providing funds to implement the requirements into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the Project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs of implementing the requirement (as set forth in the Security section of this condition, paragraph 1, above). If the actual cost of the acquisition, initial protection and habitat improvements, long-term funding or other cost is more than the estimated amount initially paid by the project owner, the project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, the long-term funding requirements as established in an approved PAR or PAR-like analysis, or the other actual costs that are estimated in the table. If those actual costs or PAR projections are less than the amount initially transferred by the applicant, the remaining balance shall be returned to the project owner.
3. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the CPM, in consultation with CDFG, BLM and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be executed and implemented within 18 months of the Energy Commission's certification of the project.
5. The project owner may request the CPM to provide it with all available information about any funds held by the Energy Commission, CDFG, or NFWF as project security, or funds held in a NFWF sub-account for this project, or other project-specific account held by a third party. The CPM shall also fully cooperate with any independent audit that the project owner may choose to perform on any of these funds.

Verification: The project owner shall provide the CPM with written notice of intent to start ground disturbance at least 30 days prior to the start of ground-disturbing activities on the project site.

If the mitigation actions required under this condition are not completed at least 30 days prior to the start of ground-disturbing activities, the Project owner shall provide verification to the CPM and CDFG that an approved Security has been established in accordance with this condition of certification no later than 30 days prior to beginning Project ground-disturbing activities. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the CPM, the project owner shall obtain the CPM's approval, in consultation with Western, CDFG, BLM and the USFWS, of the form of the Security. The project owner, or an approved third party, shall complete and provide written verification to the CPM, Western, CDFG, BLM and USFWS of the

compensation lands acquisition and transfer within 18 months of the start of Project ground-disturbing activities.

No later than 12 months after the start of ground-disturbing project activities, the project owner shall submit a formal acquisition proposal to the CPM describing the parcels intended for purchase or transfer, and shall obtain approval from the CPM, in consultation with Western, CDFG, BLM and USFWS, prior to the acquisition. If NFWF or another approved third party is handling the acquisition, the project owner shall fully cooperate with the third party to ensure the proposal is submitted within this time period. The project owner or an approved third party shall complete the acquisition and all required transfers of the compensation lands, and provide written verification to the CPM, Western, CDFG, BLM and USFWS of such completion, no later than 18 months after the issuance of the Energy Commission Decision. If NFWF or another approved third party is being used for all or part of the acquisition, the project owner shall ensure that funds needed to accomplish the acquisition are transferred in timely manner to facilitate the planned acquisition and to ensure the land can be acquired and transferred prior to the 18-month deadline.

The project owner shall complete and submit to the CPM a PAR or PAR-like analysis no later than 60 days after the CPM approves compensation lands for acquisition associated with any phase of construction. The project owner shall fully fund the required amount for long-term maintenance and management of the compensation lands for that phase of construction no later than 30 days after the CPM approves a PAR or PAR-like analysis of the anticipated long-term maintenance and management costs of the compensation lands. Written verification shall be provided to the CPM and CDFG to confirm payment of the long-term maintenance and management funds.

No later than 60 days after the CPM determines what activities are required to provide for initial protection and habitat improvement on the compensation lands for any phase of construction, the project owner shall make funding available for those activities and provide written verification to the CPM of what funds are available and how costs will be paid. Initial protection and habitat improvement activities on the compensation lands for that phase of construction shall be completed, and written verification provided to the CPM, no later than six months after the CPM's determination of what activities are required on the compensation lands.

The project owner, or an approved third party, shall provide the CPM, Western, CDFG, BLM and USFWS with a management plan for the compensation lands within 180 days of the land or easement purchase, as determined by the date on the title. The CPM, in consultation with Western, CDFG, BLM and the USFWS, shall approve the management plan after its content is acceptable to the CPM.

Within 90 days after completion of all project related ground disturbance, the project owner shall provide to the CPM, CDFG, BLM and USFWS an analysis, based on aerial photography, with the final accounting of the amount of habitat disturbed during Project construction. If this analysis shows that more lands were disturbed than was anticipated in this condition, the project owner shall provide the Energy Commission with additional compensation lands and funding commensurate with the added impacts and applicable mitigation ratios set forth in this condition. A final analysis of all project related ground

disturbance may not result in a reduction of compensation requirements if the deadlines established under this condition for transfer of compensation lands and funding have passed prior to completion of the analysis.

RAVEN MONITORING, MANAGEMENT, AND CONTROL PLAN

BIO-17 The project owner shall prepare and implement a Raven Monitoring, Management, and Control Plan (Raven Plan) that shall be consistent with the most current USFWS-approved raven management guidelines and that meets the approval of the CPM in consultation with Western, BLM, USFWS, and CDFG. The draft Raven Plan submitted by the applicant (Appendix B of CH2MHill 2010c) shall provide the basis for the final plan, subject to review, revisions and approval from the CPM in consultation with Western, BLM, USFWS, and CDFG.. The purpose of the plan shall be to avoid any Project-related increases in raven numbers or activity during construction, operation, and decommissioning. The Plan shall address all project components and their potential effects on raven numbers and activity, including but not limited to the solar generator site, temporary logistics and lay down areas, generator tie-line alignment, distribution line, and fiber optic OPGW installation on the Parker-Blythe #2 transmission line. The threshold for implementation of raven control measures shall be any increases in raven numbers from baseline conditions, as detected by monitoring to be implemented pursuant to the Plan. Regardless of raven monitoring results, the project owner shall be responsible for all other aspects of raven management described in the Plan, including avoidance and minimization of project-related trash, water sources, or perch/roost sites that could contribute to increased raven numbers, throughout the life of the project. In addition, to offset the cumulative contributions of the Project to desert tortoise from increased raven numbers, the Project owner shall also contribute to the USFWS Regional Raven Management Program. The Project owner shall do all of the following:

1. Prepare and Implement a Raven Management Plan that shall include, but shall not be limited to the following components:
 - a. Identify conditions potentially associated with the Project that might provide raven subsidies or attractants;
 - b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;
 - c. Specify a program to monitor raven presence in the Project vicinity and detect any increase in numbers or activity;
 - d. Specify raven activity thresholds for implementation of control measures;
 - e. Describe control practices for ravens to be implemented as needed based on that monitoring results;
 - f. Address monitoring and nest removal during construction and for the life of the Project; and

- g. Describe reporting schedules and requirements; for the first year of reporting the project owner shall provide quarterly reports describing implementation of the Plan; thereafter the reports shall be submitted annually for the life of the project.
 2. Contribute to the USFWS Regional Raven Management Program. The project owner shall submit payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven Management Program. The amount shall be a one-time payment of \$105 per acre of long-term or permanent disturbance (totaling \$185,850.00 for disturbance area of 1,770 acres, to be adjusted according to final project footprint).

Verification: No later than 30 days prior to the start of construction, the project owner shall provide written verification to the CPM that NFWF has received and accepted payment into the project's sub-account of the REAT Account to support the USFWS Regional Raven Management Program.

No later than 30 days prior to any construction-related ground disturbance activities, the Project owner shall provide the CPM, USFWS, and CDFG with the final version of a Raven Management Plan. All modifications to the approved Raven Management Plan shall be made only with approval of the CPM in consultation with Western, BLM, USFWS and CDFG.

Within 30 days after completion of Project construction, the Project owner shall provide to the CPM for review and approval, a written report identifying which items of the Raven Management Plan have been completed, a summary of all modifications to mitigation measures made during the Project's construction phase, and which items are still outstanding.

On January 31st of each year following construction the Designated Biologist shall provide a report to the CPM that includes: a summary of the results of raven management and control activities for the year; a discussion of whether raven control and management goals for the year were met; and recommendations for raven management activities for the upcoming year.

GOLDEN EAGLE PRE-CONSTRUCTION SURVEYS

BIO-18 The Project owner shall implement the following measures to avoid or minimize Project-related construction impacts to golden eagles.

1. Annual Inventory During Construction. For each year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur within ten miles of the solar generator site and generator tie-line alignment and within two miles of the existing Parker-Blythe #2 transmission line alignment. Survey methods for the inventory shall be as described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al. 2010) or more current guidance from the USFWS.

2. Inventory Data: Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed.
3. Determination of Unoccupied Territory Status: A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles only after completing at least two full aerial surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least two ground observation periods lasting at least four hours are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods shall be at least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories.
4. Monitoring and Adaptive Management Plan: If an occupied nest (as defined by Pagel et al. 2010) is detected within 10 miles of the solar generator site or generator tie-line alignment, or within two miles the Parker-Blythe #2 transmission line alignment, the Project owner shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that Project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al. 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with the USFWS. Triggers for adaptive management shall include any evidence of Project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

Verification: No fewer than 30 days from completion of the golden eagle inventory the Project owner shall submit a report to the CPM, Western, CDFG, BLM, and USFWS documenting the results of the inventory.

If an occupied nest is detected within 10 miles of the solar generator site or generator tie-line alignment, or within two miles of the existing Parker-Blythe #2 transmission line alignment, then at least 30 days prior to the start of any pre-construction site mobilization the project owner shall provide the CPM, Western, BLM, CDFG, and USFWS with the final version of the golden eagle monitoring and management plan. This final plan shall have been reviewed and approved by the CPM, USFWS, and Western in consultation with BLM, and CDFG. If no occupied nests are detected during the inventory and a plan is not warranted, a letter from USFWS documenting this determination shall be submitted to the CPM and Western at least 10 days prior to the start of any pre-construction site mobilization.

BURROWING OWL IMPACT AVOIDANCE, MINIMIZATION, AND COMPENSATION MEASURES

BIO-19 The project owner shall implement the following measures to avoid and offset impacts to burrowing owls. Nothing in this condition requires the project owner to conduct burrowing owl surveys by entering private lands adjacent to the project site when the project owner has made reasonable attempts to obtain permission to enter the property for survey work but was unable to obtain such permission. In this situation only, the project owner may substitute binocular surveys for protocol field surveys.

1. Pre-Construction Surveys. Concurrent with desert tortoise clearance surveys, the Designated Biologist shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to the start of ground disturbing activities in any part of the project area. Surveys shall be conducted within the project site and along all linear facilities in accordance with CDFG guidelines (CBOC 1993). Surveys shall also be completed within 500 feet of all project disturbances.
2. Implement Avoidance Measures. If an active burrowing owl burrow is detected within 500 feet from the Project Disturbance Area the following avoidance and minimization measures shall be implemented:
 - a. Establish Non-Disturbance Buffer. Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all Project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.
 - b. Monitoring: If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 – August 31st) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall implement measures to minimize or avoid such disturbance.

3. Passive Relocation of Burrowing Owls. If active burrowing owl burrows are detected within the Project Area, the Project owner shall prepare and implement a Burrowing Owl Relocation and Mitigation Plan, in addition to the avoidance measures described above. The final Burrowing Owl Relocation and Mitigation Plan shall be based on the applicant's draft plan (CH2MHill 2010h) revised to incorporate pending review and recommendations by the CPM in consultation with Western ,USFWS, BLM and CDFG, and shall:
 - a. Identify and describe suitable burrow replacement sites within 1 mile of the Project Disturbance Area, and describe measures to ensure that burrow installation or improvements would not affect sensitive species habitat or any burrowing owls already present in the relocation area; burrow replacement sites shall be in areas of suitable habitat for burrowing owl nesting, and be characterized by minimal human disturbance and access. Relative cover of non-native plants within the proposed relocation sites shall not exceed the relative cover of non-native plants in the adjacent habitats;
 - b. Provide guidelines for creation or enhancement of at least two natural or artificial burrows for each active burrow within the project disturbance area, including a discussion of timing of burrow improvements, specific location of burrow installation, and burrow design. Design of the artificial burrows shall be consistent with CDFG guidelines (CDFG 1995) and shall be approved by the CPM in consultation with Western, CDFG, BLM and USFWS; if artificial burrows are required, they shall be located on applicant-owned lands outside of the project boundary where construction/ development would not occur, and at sufficient distance from the project site to minimize noise and other disturbance;
 - c. Provide detailed methods and guidance for passive relocation of burrowing owls occurring during non-breeding season within the Project Disturbance Area. Occupied burrows may not be disturbed during the nesting season (February 1 to August 31) to avoid "take" under the MBTA and Fish and Game codes; and
 - d. Describe monitoring and management of the replacement burrow site(s), and provide a reporting plan. The objective shall be to manage the relocation area for the benefit of burrowing owls, with the specific goals of:
 - i. maintaining the functionality of the burrows for a minimum of two years; and
 - ii. Minimizing the occurrence of weeds (species considered "moderate" or "high" threat to California wildlands as defined by CAL-IPC [2006] and noxious weeds rated "A" or "B" by the California Department of Food and Agriculture and any federal-

rated pest plants [CDFA 2009]) at less than 10 percent cover of the shrub and herb layers.

4. Surveys of Relocation Area. The Designated Biologist shall survey the relocation area(s) containing the artificial burrows installed in accordance with Item 3 above during the nesting and wintering seasons to assess use of the artificial burrows, using methods consistent with Phase II and Phase III California Burrowing Owl Consortium Guideline protocols (CBOC 1993). Surveys shall start upon completion of artificial burrow construction and shall continue for a period of five years. If survey results indicate burrowing owls are not using the relocation area, remedial actions shall be developed and implemented in consultation with the CPM, Western, BLM, CDFG, and USFWS to correct conditions at the site that might be preventing owls from using it. A report describing survey results and remedial actions taken shall be submitted to the CPM, Western, BLM, CDFG, and USFWS no later than January 31st of each year for five years.
5. Acquisition and protection of compensatory mitigation lands for burrowing owls. The Project owner shall provide, in fee or in easement, for the management and protection in perpetuity of 19.5 acres of land for each single burrowing owl or breeding pair or burrowing owls that is displaced by construction of the Project. This compensation acreage of 19.5 acres per single bird or pair of nesting owls assumes that there is no evidence that the compensation lands are occupied by burrowing owls. If burrowing owls are observed to occupy the compensation lands, then only 9.75 acres per single bird or pair is required, per CDFG (1995) guidelines. If the compensation lands are contiguous to currently occupied habitat, then the replacement ratio will be 13.0 acres per pair or single bird.

Compensation land acreage and cost estimates described here are based on the applicant's report that as many as five single burrowing owls or breeding pairs may occur on the solar generator site and one or two single owls or breeding pairs may occur along the generator tie-line alignment. No estimates of burrowing owl numbers on the 161-kV Parker-Blythe transmission line are available. At 19.5 acres of compensation land per single owl or nesting pair, the project owner shall be responsible for dedicating and protecting 136.5 acres of burrowing owl habitat. This estimated acreage shall be adjusted based upon pre-construction survey data and the occurrence of burrowing owls on proposed compensation lands (above).

The project owner shall transfer fee title or a conservation easement on the compensation lands to CDFG under terms approved by CDFG. Alternatively, a non-profit organization qualified to manage compensation lands (pursuant to California Government Code section 65965) and approved by CDFG and the CPM may hold fee title or a conservation easement over the habitat mitigation lands. If the approved non-profit organization holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If the approved non-profit

holds a conservation easement, CDFG shall be named a third party beneficiary. If a Security is provided, the project owner or an approved third party shall complete the proposed compensation lands acquisition within 18 months of the start of project ground-disturbing activities. Acquisition funding shall be based on the adjusted land values at the time of construction. In lieu of acquiring lands itself, the Project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as described in Section 3.i. of Condition of Certification **BIO-16**.

In addition, the Project owner shall provide funding for the enhancement and long-term management of these compensation lands. The acquisition or easement and subsequent management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG, Western, BLM, and USFWS prior to land acquisition or management activities. Management funding shall be based on the adjusted transaction and management expenses at the time of construction to acquire and manage habitat.

- a. Criteria for Burrowing Owl Compensation Lands. The terms and conditions of this acquisition or easement shall be as described in Paragraph 1 of **BIO-16** (Desert Tortoise Compensatory Mitigation), with the additional criteria to include: 1) the burrowing owl compensation land must provide suitable habitat for burrowing owls, and 2) the compensation lands must either currently support burrowing owls or be within dispersal distance from areas occupied by burrowing owls (generally approximately 5 miles). The burrowing owl compensation lands may be included with the desert tortoise compensation lands only if these two burrowing owl criteria are met. If the burrowing owl compensation land is separate from the acquisition required for desert tortoise compensation lands, the Project owner shall fulfill the requirements described below in this condition.
- b. Security. If the burrowing owl habitat compensation land is separate from the acreage required for desert tortoise compensation lands, then the Project owner or an approved third party shall complete acquisition of the proposed compensation lands prior to initiating ground-disturbing Project activities. Alternatively, financial assurance can be provided by the Project owner to the CPM with copies of the document(s) to Western, CDFG, BLM and the USFWS, to guarantee that an adequate level of funding is available to implement the mitigation measure described in this condition. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the CPM in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing Project

activities. Prior to submittal to the CPM, the Security shall be approved by the CPM, in consultation with Western, CDFG, BLM and the USFWS to ensure funding. As of the publication of the SA/DEIS, this amount is \$358,701.17 but this amount may change based on land costs or adjustments to the estimated costs of enhancement and endowment (see **Biological Resources Table 6** and Compensatory Mitigation Land Security in **BIO-16** for a discussion of the assumptions used in calculating the Security, which are based on an estimate of \$2,622 per acre to fund acquisition, enhancement, and long-term management). The final amount due will be determined by the PAR or PAR-like analysis conducted pursuant to **BIO-16**.

Verification: If pre-construction surveys detect burrowing owls or active burrows outside the project disturbance area but within 500 feet of proposed construction activities, the Designated Biologist shall provide to the CPM, CDFG, USFWS, BLM, and Western a Burrowing Owl Monitoring and Mitigation Plan at least 10 days prior to the start of any project-related site disturbance activities. The project owner shall report monthly to the CPM, CDFG, USFWS, BLM, and Western for the duration of construction on the implementation of burrowing owl avoidance and minimization measures described in the Burrowing Owl Monitoring and Mitigation Plan. Within 30 days after completion of construction the project owner shall provide to the CPM, CDFG, USFWS, BLM, and Western a written construction termination report identifying how mitigation measures described in the plan have been completed.

If pre-construction surveys detect burrowing owls within 500 feet of proposed construction activities, the Designated Biologist shall provide to the CPM, Western, BLM, CDFG and USFWS documentation indicating that non-disturbance buffer fencing has been installed at least 10 days prior to the start of any construction-related ground disturbance activities. The Project owner shall report monthly to the CPM, Western, CDFG, BLM and USFWS for the duration of construction on the implementation of burrowing owl avoidance and minimization measures. Within 30 days after completion of construction the Project owner shall provide to the CPM, Western, BLM, CDFG and USFWS a written construction termination report identifying how mitigation measures described in the plan have been completed.

If pre-construction surveys detect burrowing owls within the Project Disturbance Area, the Project owner shall notify the CPM, Western, BLM, CDFG and USFWS no less than 10 days of completing the surveys that a relocation of owls is necessary. The Project owner shall do all of the following if relocation of one or more burrowing owls is required:

- a. Within 30 days of completion of the burrowing owl pre-construction surveys, submit to the CPM, Western, CDFG and USFWS a Draft Burrowing Owl Relocation and Mitigation Plan.
- b. No less than 90 days prior to purchase or dedication of the burrowing owl compensation lands, the Project owner, or an approved third party, shall submit a formal acquisition proposal to the CPM, Western, CDFG, and USFWS describing the parcel intended for purchase or dedication. At the same time the Project owner shall

submit a PAR or PAR-like analysis for the parcels for review and approval by the CPM, CDFG and USFWS.

- c. Within 90 days of the purchase or dedication, as determined by the date on the title, the Project owner shall provide the CPM with a management plan for review and approval, in consultation with Western, CDFG, BLM and USFWS, for the compensation lands and associated funds.
- d. No later than 30 days prior to the start of construction-related ground disturbing activities, the Project owner shall provide written verification of Security in accordance with this condition of certification.
- e. No later than 18 months after the start of construction-related ground disturbance activities, the Project owner shall provide written verification to the CPM, Western, BLM, CDFG and USFWS that the compensation lands or conservation easements have been acquired and recorded in favor of the approved recipient.
- f. On January 31st of each year following construction for a period of five years, the Designated Biologist shall provide a report to the CPM, USFWS, BLM and CDFG that describes the results of monitoring and management of the replacement burrow area. The annual report shall provide an assessment of the status of the replacement burrow area with respect to burrow function and weed infestation, and shall include recommendations for actions the following year for maintaining the burrows as functional burrowing owl nesting sites and minimizing the occurrence of weeds.

AMERICAN BADGER AND DESERT KIT FOX IMPACT AVOIDANCE AND MINIMIZATION MEASURES

BIO-20 Prior to ground disturbance the project owner shall conduct pre-construction surveys for American badgers and desert kit fox. These surveys may be conducted concurrently with the desert tortoise pre-construction surveys (Condition of Certification **BIO-14**, above). Surveys shall be conducted as described below:

1. Biological Monitors shall perform pre-construction surveys for badger and kit fox dens throughout the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. If dens are detected, each den shall be classified as inactive, potentially active, or definitely active.
2. Inactive dens within the proposed security and perimeter fences, or that would be directly impacted by any construction activities, shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox. Potentially active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species

are captured after three nights, the den shall be excavated and backfilled by hand.

3. If present, occupied badger or kit fox dens shall be flagged; monitored daily to determine whether the den is occupied by a female with young (i.e., a maternity den) and ground-disturbing activities avoided within 100 feet of the den as long as it remains occupied. Maternity dens shall be avoided during the pup-rearing season (15 February through 1 July) and a minimum 200-foot disturbance-free buffer established. Buffers may be modified with the concurrence of CDFG and the CPM. Maternity dens shall be flagged for avoidance, identified on construction maps, and a biological monitor shall be present during any construction activity within 500 feet of the maternity den.
4. If avoidance of an occupied non-maternity den is not feasible, badgers or kit foxes shall be passively relocated by slowly excavating the burrow (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more than 4 inches at a time) and allowing the animal to disperse from the site (e.g., by providing a temporary monitored opening in the tortoise exclusion fence and directing the animal toward the opening with temporary plastic construction fencing). Female kit foxes or badgers with young would not be directed off-site until the young are ready to leave the dens. Any forced dispersal of badgers or kit foxes shall occur only after consultation with the CDFG and approval by the CPM. A written report documenting the animal's removal or forced dispersal shall be provided to the CPM within 30 days of relocation. In the event that passive relocation techniques fail for badgers, the Applicant will contact CDFG to explore other relocation options, which may include trapping.

Verification: The project owner shall submit a report to the CPM and CDFG within 30 days of completion of badger and kit fox surveys. The report shall describe survey methods, results, further mitigation measures (if any) to be implemented, and shall specify reporting and verification requirements (e.g., CDFG approval for forced dispersal plans) for those measures. Results of any follow-up measures shall be reported to the CPM in monthly and annual compliance reports and on any reporting schedule required or recommended by CDFG.

FENCE LOCATIONS: LOGISTICS, LAY-DOWN AREA, AND ACCESS ROAD

BIO-21 To allow east-west wildlife passage alongside the highway and to minimize road mortality during project construction, the project owner shall design and build the facility to provide a minimum 100-foot unfenced wildlife passage area south of SR-62 and north of the solar field and any contiguous project components that would interrupt wildlife passage. These include temporary and permanent project components, including but not limited to logistics and lay-down areas, administrative area, cultural resources interpretive site, permanent or temporary fencing, security gate, and any other project component, excluding unfenced linear facilities such as access roads or electrical distribution lines. With the exception of minimal disturbance

necessary for linear project features, this wildlife passage area shall consist of undisturbed or revegetated desert shrubland. .

Verification: The project owner shall submit final plan drawings to the CPM and Western no less than 30 days prior to scheduled commencement of ground-disturbing activities, to indicate the location of the wildlife passage area. No fence construction or other ground-disturbing activities shall proceed within the designated wildlife passage area without written authorization of the CPM.

STREAMBED IMPACT MINIMIZATION AND COMPENSATION MEASURES

- BIO-22** The project owner shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts to waters of the State and to satisfy requirements of California Fish and Game Code sections 1600 and 1607.
1. Eliminate Proposed Storm Water Detention Basins: The project owner shall eliminate the proposed detention basins from the project design. The owner shall design and construct the perimeter road at existing grade in the southern portion of the project site to allow runoff to cross the road freely, as shown in the applicant's Response to CEC Staff Workshop Query 12 (SR 2010a). The project owner may adopt the road design as submitted (SR 2010a) or provide an alternate design to minimize potential for road damage during heavy rains (e.g., the owner may elect to pave the road or install periodic low-water crossings that would not impede runoff).
 2. Finalize Acreages of Impacts to State Waters: Staff estimates that 82.8 acres of state-jurisdictional waters would be directly or indirectly impacted by the project (excluding impacts during construction of the OHGW on the existing Western Parker-Blythe 161 kV transmission line). Upon completion of final engineering, the project owner shall review and quantify the project's permanent and long-term impacts to state-jurisdictional waters. The calculated acreage of permanent and long-term impacts shall include all ephemeral drainages impacted by construction within or adjacent to the fenced boundary of the solar field site, including the proposed logistics and lay-down areas and diversion channels, as well as impacts to drainages resulting from the construction or widening of access for new or existing transmission line access road; transmission line tower access; logistics, staging, and lay-down areas; road turnouts; pull sites; interconnection substation; and any other project-related disturbance to jurisdictional waters.
 3. Acquire Off-Site State Waters: Permanent and long-term impacts to waters of the State shall be mitigated by compensation at a 1:1 ratio. The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes at least the same acreage of State jurisdictional waters as would be impacted by construction of the project, as determined in Item 1 above. The parcel or parcels comprising the off-site State waters shall include similar vegetation and habitat types as those mapped in the project footprint. The terms and conditions of this acquisition or easement

shall be as described in Condition of Certification **BIO-16**. Mitigation for impacts to State waters shall occur within the surrounding watersheds, as close to the project site as possible. State waters occurring on desert tortoise compensation lands (Condition of Certification **BIO-16**) may be used to fulfill the requirements of this condition. Additional off-site State waters shall be acquired if desert tortoise compensation lands do not contain the minimum acreage of State waters as required for compliance with this Condition of Certification.

4. Preparation and Implementation of Habitat Management Plan for Off-site Compensation Land: The project owner shall prepare and implement a Management Plan that describes site-specific enhancement measures for the acquired compensation lands, as described in Condition of Certification **BIO-16**. The Management Plan, as developed for Condition of Certification **BIO-16**, shall include site-specific enhancement measures for all drainages on compensation lands that will be used to fulfill the requirements of this Condition of Certification. Any additional lands beyond those required for compliance with Condition of Certification **BIO-16** that may be required for compliance with this Condition of Certification shall also be included in the Management Plan. The management plan shall be submitted for the CPM'S review in consultation with CDFG, Western, and BLM.
5. Code of Regulations: The project owner shall provide a copy of the Streambed Impact Minimization and Compensation Measures from the Energy Commission Decision and Western and BLM Records of Decision to all contractors, subcontractors, and the project owner's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel or personnel from another agency upon demand. The CPM reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the project owner and the CPM, if the CPM in consultation with CDFG determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:
 - a. The information provided by the project owner regarding streambed alteration is incomplete or inaccurate;
 - b. New information becomes available that was not known to it in preparing the terms and conditions; or
 - c. The project or project activities as described in future environmental documentation or in decision documents prepared by the Energy Commission, Western or BLM have changed.
6. Best Management Practices: The project owner shall also comply with the following conditions to protect drainages near the Project Disturbance Area:

- a. The project owner shall not operate vehicles or equipment in ponded or flowing water except as described in this condition.
- b. With the exception of the detention basin(s) and drainage control system installed for the project, the installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade.
- c. When any activity requires moving of equipment across a flowing drainage, such operations shall be conducted without substantially increasing stream turbidity.
- d. Vehicles driven across ephemeral drainages when water is present shall be completely clean of petroleum residue and water levels shall be below the vehicles' axles.
- e. The project owner shall minimize road building, construction activities, and vegetation clearing within ephemeral drainages to the extent feasible for all project components both within and outside the perimeter fence.
- f. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter off-site state-jurisdictional waters or be placed in locations that may be subjected to high storm flows.
- g. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the project owner to ensure compliance.
- h. Spoil sites shall be located and protected as necessary to prevent spoils from eroding into any off-site state-jurisdictional waters. No spoils shall be placed in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.
- i. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering off-site state-jurisdictional waters. These materials, placed within or where they may enter a drainage by the project owner or any party working under contract or with the permission of the project owner, shall be removed immediately.
- j. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or

associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, off-site state-jurisdictional waters .

- k. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any category 3, 4, or 5 streambed or any streambed greater than 10 feet wide.
 - l. No equipment maintenance shall occur within 150 feet of any category 3, 4, or 5 streambed or any streambed greater than 10 feet wide and no petroleum products or other pollutants from the equipment shall be allowed to enter these areas or enter any off-site state-jurisdictional waters under any flow.
 - m. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to a drainage, shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak. Clean up equipment such as booms, absorbent pads, and skimmers shall be on site prior to the start of construction.
 - n. The cleanup of all spills shall begin immediately. The CPM, Western, CDFG, and BLM shall be notified immediately by the project owner of any spills and shall be consulted regarding clean-up procedures.
7. Non-Native Vegetation Removal. The project owner shall remove any non-native vegetation (Consistent with the Weed Management Plan, Condition of Certification **BIO-11**) from any drainage on the project site that requires the placement of a bridge, culvert, or other structure. Removal shall be done at least twice annually (Spring/Summer) throughout the life of the project.
8. Reporting of Special-Status Species: Consistent with Condition of Certification **BIO-2**, if any special-status species are observed on or in proximity to the project site, or during project surveys, the project owner shall submit California Natural Diversity Data Base (CNDDDB) forms and maps to the CNDDDB within five working days of the sightings and provide the regional CDFG office with copies of the CNDDDB forms and survey maps. The CNDDDB form is available online at: www.dfg.ca.gov/whdab/pdfs/natspec.pdf. This information shall be mailed within five days to: California Department of Fish and Game, Natural Diversity Data Base, 1807 13th Street, Suite 202, Sacramento, CA 95814, (916) 324-3812. A copy of this information shall also be mailed within five days to the CPM, Western, USFWS, CDFG, and BLM.
9. Avoidance (North of Desert Center Alternative): If the North of Desert Center Alternative is selected, project design and implementation shall avoid direct or indirect impacts to the primary wash on the site and a 100-

foot buffer area surrounding the wash, including associated native vegetation.

10. **Notification:** The project owner shall notify the CPM, Western, BLM, and CDFG, in writing, at least five days prior to initiation of project activities in jurisdictional areas and at least five days prior to completion of project activities in jurisdictional areas. The project owner shall notify the CPM, Western, BLM, and CDFG of any change of conditions to the project, the jurisdictional impacts, or the mitigation efforts, if the conditions at the site of the proposed project change in a manner which changes risk to biological resources that may be substantially adversely affected by the proposed project. The notifying report shall be provided to the CPM, Western, BLM, and CDFG no later than 7 days after the change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the project, as described below. A copy of the notifying change of conditions report shall be included in the annual reports.
- a. **Biological Conditions:** a change in biological conditions includes, but is not limited to, the following: 1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or 2) the presence of biological resources within or adjacent to the project area, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.
 - b. **Physical Conditions:** a change in physical conditions includes, but is not limited to, the following: 1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or changes in stream form and configuration caused by storm events; 2) the movement of a river or stream channel to a different location; 3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or 4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.
 - c. **Legal Conditions:** a change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

Verification: Within 30 days of the completion of final engineering, the project owner shall notify the CPM, Western, BLM, and CDFG of the total acreage of impacts to jurisdictional waters. No fewer than 30 days prior to the start of any site or related facilities mobilization activities, the project owner shall implement the construction-related mitigation measures described above, shall verify that appropriate compensation lands have been identified, and shall submit a draft Habitat Management Plan for the identified compensation lands. No fewer than 30 days prior to the start of work potentially affecting waters of the State, the project owner shall provide written

verification (i.e., through incorporation into the BRMIMP) to the CPM, Western, BLM, and CDFG that the above best management practices will be implemented and provide a discussion of planned work in waters of the State in Compliance Reports for the duration of the project.

Within 30 days after completion of the first year of project construction, the project owner shall provide to the CPM, Western, BLM, and CDFG for review and approval a report identifying that appropriate compensatory mitigation lands have been obtained, that the Habitat Management Plan has been reviewed and approved by all responsible agencies, that implementation as specified in the Plan has been initiated, verification of ongoing enhancement techniques, and a summary of all modifications made to the existing channels.

Verification of non-native vegetation removal from drainages on-site, and reporting of special-status species shall be included in monthly and annual compliance reports (Condition of Certification **BIO-2**). Verification of implementation and completion of the compensation land Habitat Management Plan shall be as specified in that Plan.

COUCH'S SPADEFOOT SURVEYS AND BREEDING HABITAT AVOIDANCE

BIO-23 The Project Owner shall implement focused surveys to delineate any potential Couch's spadefoot breeding habitat along the lengths of the generator tie-line alignment and the existing 161-kV Parker-Blythe #2 transmission line alignment and delineate these areas for avoidance in consultation with Western, CDFG, and BLM. These surveys shall be conducted prior to the initiation of ground disturbance for transmission line construction work and shall be conducted by a biologist knowledgeable with Couch's spadefoot biology and habitat. No disturbance shall take place within suitable breeding ponds while water is present. If suitable breeding ponds, adult spadefoots, eggs, or larvae/tadpoles are found, a 200 foot buffer shall be placed around these areas and shall remain in place until the larva/tadpoles complete metamorphosis and retreat to upland areas or until the pools are completely dry.

Impacts to all potential breeding habitat for Couch's spadefoot shall be avoided to the extent feasible. If work within this habitat cannot be avoided, work shall be conducted only while any potential breeding pools are completely dry.

Verification: No less than 30 days prior to initiating ground disturbing activities along either transmission line alignment, the project biologist shall provide a written report detailing the survey results and compliance with avoidance measures to the CPM for review in consultation with Western, CDFG, and BLM.

EVAPORATION POND DESIGN, MONITORING, AND MANAGEMENT PLAN

BIO-24 The project owner shall cover the evaporation ponds prior to any discharge with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. Netting with mesh sizes other

than 1.5-inches may be installed if approved by the CPM in consultation with CDFG and USFWS. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and shall be designed such that the netting shall never contact the water.

The project owner shall also design and implement an Evaporation Pond Design, Monitoring, and Management Plan (Evaporation Pond Plan) that meets the approval of the CPM, USFWS, CDFG, and Western. The goal of the Evaporation Pond Plan shall be to avoid the potential for bird and wildlife mortality associated with the evaporation ponds. The Evaporation Pond Plan shall include:

1. A discussion of the objectives of the Evaporation Pond Plan;
2. A description of project design features such as side slope specifications, freeboard and depth requirements, covering, and fencing;
3. A discussion on the placement of the evaporation ponds as to reduce the potential of collision or electrocution of wildlife near the transmission line;
4. Monitoring of the ponds, which shall include:
 - a. Monthly Monitoring. The Designated Biologist or Biological Monitor shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to determine if the netted ponds are effective in excluding birds, if the nets pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the nets. Surveys shall be of sufficient duration and intensity to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Surveyors shall be experienced with bird identification and survey techniques. Operations staff at the project site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within one day of the detection of the carcass. The Designated Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the CPM, Western, CDFG, and USFWS.
 - b. Dead or Entangled Birds. If dead or entangled birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the CPM, Western, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds.

- c. Quarterly Monitoring. If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits.
 - d. Biannual Monitoring. If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist, and with approval from the CPM, USFWS and CDFG, future surveys may be reduced to two surveys per year, during spring and fall migration.
5. Management actions such as bird deterrence/hazing and water level management and triggers for those management actions; and
 6. Reporting requirements.

Verification: No less than 30 days prior to operation of the evaporation ponds the project owner shall provide to the CPM as-built drawings and photographs of the ponds indicating that the bird exclusion netting has been installed. At least 30 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM, Western, USFWS, and CDFG with the final version of the Evaporation Pond Plan that has been reviewed and approved by USFWS, CDFG, and staff. The CPM shall determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved Evaporation Pond Plan must be made only after consultation with the CPM, Western, USFWS, and CDFG. The project owner shall notify the CPM no less than 5 working days before implementing any CPM-approved modifications to the Evaporation Pond Plan.

Within 30 days after completion of project construction, the project owner shall provide to the CPM for review and approval a report identifying which items of the Evaporation Pond Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and as-built drawings of the evaporation ponds.

For the first year of operation the Designated Biologist shall submit quarterly reports to the CPM, Western, CDFG, and USFWS describing the dates, durations and results of site visits conducted at the evaporation ponds. Thereafter the Designated Biologist shall submit annual monitoring reports with this information. The quarterly and annual reports shall fully describe any bird or wildlife mortality or entanglements detected during the site visits or at any other time, and shall describe actions taken to remedy these problems. The annual report shall be submitted to the CPM, Western, CDFG, and USFWS no later than January 31st of every year for the life of the project.

AVIAN AND BAT PROTECTION PLAN / MONITORING OPERATIONAL IMPACTS OF SOLAR COLLECTION FACILITY ON BIRDS AND BATS

BIO-25 Avian and Bat Protection Plan: The project owner shall prepare and implement an Avian and Bat Protection Plan adopting all applicable guidelines recommended by the USFWS (2010e) in coordination with the Heliostat Positioning Plan (Condition of Certification **TRANS-5**) to minimize death and injury of birds or bats from (1) collisions with facility features

including the heliostat structures, central tower, and generator tie-line towers or transmission lines and (2) focused light and heat at and near the central tower or at “standby points” while the heliostats are focused away from the tower. The Avian and Bat Protection Plan shall include modifications to proposed plant operation to avoid or minimize focusing heliostats at standby points and, instead, move heliostats into a stowed position or another alternative configuration when the power plant is in standby mode. The Avian and Bat Protection Plan shall identify additional adaptive management measures to minimize collisions and incinerations. The Avian and Bat Protection Plan shall also provide documentation that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code, Section 668) and shall provide specific construction activity and scheduling guidelines for installation of the overhead fiber-optic ground wire along Western’s existing 161-kV Parker-Blythe #2 transmission line to avoid disturbance to golden eagle nesting territories. The Avian and Bat Protection Plan shall provide a reporting schedule for all actions taken during project construction or operation. Upon USFWS approval, it shall be reviewed and approved by the CPM in consultation with Western, CDFG, and BLM. Upon review and approval, it shall be incorporated into the project’s BRMIMP and implemented.

Bird and Bat Monitoring Study: The project owner shall prepare and implement a Bird and Bat Monitoring Study to monitor the death and injury of birds and bats from collisions with project facilities including heliostats and solar receiver tower, and burning caused by flying through focused sunlight around the solar receiver tower or standby points. The study design shall be approved by the CPM in consultation with Western, CDFG and USFWS, and shall be incorporated into the project’s BRMIMP and implemented by the Designated Biologist in coordination with the project owner, CPM, Western, CDFG, BLM, and USFWS. The Bird and Bat Monitoring Study shall include detailed specifications on data and carcass collection protocol, to include identification of each carcass to species wherever possible and a proposed schedule of carcass searches to be based upon a valid sampling rationale. All bird or bat carcasses shall be retained in a freezer on-site, with all collection data written on an attached data form, pending disposition to CDFG or a certified museum (e.g., San Bernardino County Museum; Western Foundation of Vertebrate Zoology or California Academy of Sciences) pending recommendation of the wildlife agencies. For any special-status species carcasses, the Biological Monitor shall contact CDFG and USFWS (for golden eagle or any federally-listed species) within one working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall report the special-status species record as described in Conditions of Certification **BIO-2**, **BIO-7**, and **BIO-22**.

The study shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias.

Adaptive management and mitigation strategies that may be implemented in the event that the Bird and Bat Monitoring Study identifies the need for

additional mitigation could include the use of visual or auditory deterrents, or the acquisition and conservation of offsite habitat of similar type and quality as was present at the RSEP site prior to project development.

Verification: No more than 60 days following the docketing of the Energy Commission Final Decision or publication of Western's Record of Decision, whichever comes first, the project owner shall submit for approval by the CPM, in consultation with Western, BLM, and CDFG a final Avian and Bat Protection Plan which has already been reviewed and approved by USFWS. The Plan shall include documentation that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code Section 668). This documentation shall include a written or electronic transmittal from the USFWS indicating its approval of the Avian and Bat Protection Plan, the status of any permit that may be required, and any follow-up actions required by the applicant. Modifications to the Avian and Bat Protection Plan shall be made only after approval from the CPM, in consultation with Western, BLM, USFWS, and CDFG.

Implementation and results of the Avian and Bat Protection Plan shall be described in periodic reports, scheduled according to the reporting schedule set forth in the approved Plan. The project owner shall submit reports to the CPM for review and approval, in consultation with Western, CDFG, BLM, and USFWS.

No more than 30 days following the publication of the Energy Commission Decision, the project owner shall submit to the CPM, Western, USFWS, and CDFG a draft Bird and Bat Monitoring Study. At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of the Bird and Bat Monitoring Study, as reviewed and approved by the CPM in consultation with Western, CDFG and USFWS. Modifications to the Bird and Bat Monitoring Study shall be made only with the approval of the CPM in consultation with Western, CDFG and USFWS.

For at least two years following the beginning of operation the project owner shall submit quarterly reports to the CPM, Western, CDFG, and USFWS describing the dates, durations, and results of monitoring. The quarterly reports shall provide detailed descriptions of any project-related bird or wildlife deaths or injuries detected during the monitoring study or at any other time.

Following the completion of the fourth quarter of monitoring each year, the Designated Biologist shall prepare an Annual Report that summarizes the year's data, analyzes any project-related bird and/or bat fatalities or injuries detected, and provides recommendations for future monitoring and any adaptive management actions needed. The Annual Report shall be provided to the CPM, Western, CDFG, and USFWS.

Quarterly reporting shall continue until the CPM, in consultation with Western, CDFG and USFWS, determine whether further monitoring is needed, and whether mitigation (e.g., development and/or implementation of bird deterrent technology, etc.) and/or adaptive management measures are necessary. After the Bird and Bat Monitoring Study is determined by the CPM to be complete, the project owner or contractor shall prepare a paper that describes the study design and monitoring results to be submitted

to a peer-reviewed scientific journal. A copy of the manuscript and proof of submittal shall be provided to the CPM within one year of concluding the monitoring study.

IN-LIEU FEE MITIGATION OPTION

BIO-26 The Project owner may choose to satisfy its mitigation obligations identified in this Decision by paying an in lieu fee instead of acquiring compensation lands, pursuant to Fish and Game code sections 2069 and 2099 or any other applicable in-lieu fee provision, provided that the project's in-lieu fee provision is found by the Commission to be in compliance with CEQA and CESA requirements. If the in-lieu fee proposal is found by the Commission to be in compliance, and the Project Owner chooses to satisfy its mitigation obligations through the in-lieu fee, the Project Owner shall provide proof of the in-lieu fee payment to the CPM.

Verification: If electing to use this provision, the Project Owner shall notify the Commission and all parties to the proceeding that it would like a determination that the Project's in-lieu fee proposal meets CEQA and CESA requirements. If the project owner elects to use this provision prior to posting security required by the conditions of certification, the Project Owner shall provide proof of the in-lieu fee payment to the CPM prior to any ground disturbance. If the Project owner elects to use this provision after posting such security, the Project owner shall provide proof of the in lieu fee payment prior to the time required for habitat compensation lands to be surrendered in accordance with the Condition of Certification.

CONCLUSIONS

With implementation of staff's proposed conditions of certification, construction and operation of the proposed RSEP solar generator, generator tie-line and interconnector substation would comply with all federal, State, and local laws, ordinances, regulations, and standards relating to biological resources. Staff's generally does not reach conclusions with regard to the proposed OPGW on Western's existing 161-kV Parker-Bythe #2 transmission line, pending availability of additional information on biological resources and delineation of state and federally jurisdictional streambeds, on the alignment. For this project component, significance of potential impacts to biological resources and compliance with LORS remain uncertain. The assessment of RSEP's effects to Biological resources associated with the telecommunications option to attach a fiber optic cable on the Parker-Blythe #2 Transmission Line will be updated for the CEC's record and the FEIS when additional information is received from the applicant. A more complete summary of staff's conclusions is provided in the first section of this chapter.

Four of staff's recommended Conditions of Certification would require the Project owner to acquire compensation lands to mitigate the Project's impacts to biological resources. The most significant of these is **BIO-16** (Desert Tortoise Compensatory Mitigation). The others are Conditions of Certification **BIO-12**, **BIO-19**, and **BIO-22**. **BIO-12** (Special-Status Plant Impact Avoidance and Minimization) provides the option of mitigating impacts to rare plants that may be discovered on the site during late-season botanical surveys through habitat compensation. **BIO-19** (Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures) would require compensation for project

impacts to this animal. **BIO-22** (Streambed Impact Minimization and Compensation Measures) would require compensation for jurisdictional streambed acreage impacted by the project. In each of these conditions, staff recommends a financial security to ensure adequate funding to acquire and manage the compensation lands. Staff recommends that this security should be equal to staff's estimated costs for habitat compensation and management. Staff recognizes that some potential compensation lands may support more than one of these resources, and staff recommends that, wherever applicable, the project owner should seek compensation lands meeting selection criteria for more than one of these resources, as described in these Conditions of Certification, below. However, pending acquisition of compensation lands, staff recommends separate securities for each resource.

Staff has calculated the acreage and estimated costs for desert tortoise compensation lands, as described in Condition of Certification **BIO-16**. Staff provides estimates of acreage and costs for burrowing owl compensation in **BIO-19**. Any potential compensation acreage for rare plants, pursuant to **BIO-12**, would be determined upon completion of late-season field surveys and cannot be estimated at this time. Staff anticipates that all compensation lands for state jurisdictional streambeds as required under **BIO-22** would be "nested" within desert tortoise compensation lands, avoiding necessity for additional compensation lands. However, as described in **BIO-22**, further compensation lands may be required dependent upon the extent of state jurisdictional waters on the desert tortoise compensation lands. For streambed compensation, available private land parcels would rarely if ever be made up only of suitable streambed habitat. However, staff bases its estimated cost for compensation of streambed impacts (and recommended security) on the acreage of state-jurisdictional streambed habitat as provided by the applicant. **Biological Resources Table 10**, below, provides staff's cost estimates and recommended security for each of these recommended conditions of certification.

**Biological Resources Table 10
Summary of Compensation Lands Costs¹**

	Desert tortoise compensation	Burrowing owl compensation	Rare plant compensation	Streambed compensation
Number of acres	1988	136.5	Undetermined (pending further surveys)	89
Estimated number of parcels to be acquired, at 160 acres per parcel ²	13	1	n/a	1
Land cost at \$500/acre ³	\$994,000.00	\$68,250.00	n/a	\$44,500.00
Level 1 Environmental Site Assessment at \$3000/parcel	\$39,000.00	\$3,000.00	n/a	\$3,000.00
Appraisal at no less than \$5,000/parcel	\$65,000.00	\$5,000.00	n/a	\$5,000.00
Initial site clean-up, restoration or enhancement, at \$250/acre ⁴	\$497,000.00	\$34,125.00	n/a	\$22,250.00
Closing and Escrow Cost at \$5000/parcel ⁵	\$65,000.00	\$5,000.00	n/a	\$5,000.00
Biological survey for determining mitigation value of land (habitat based with species specific augmentation) at \$20,000/parcel	\$260,000.00	\$20,000.00	n/a	\$20,000.00
3rd Party Administrative Costs (Land Cost x 10%) ⁶	\$99,400.00	\$6,825.00	n/a	\$4,450.00
Agency cost to accept land ⁷ [(Land Cost x 15%) x 1.17] (17% of the 15% for overhead)	\$174,447.00	\$11,977.88	n/a	\$7,809.75
Subtotal - Acquisition and Initial Site Work	\$2,193,847.00	\$154,177.88	n/a	\$112,009.75
Long-term Management and Maintenance Fund (LTMM) fee at \$1450/acre⁸	\$2,882,600.00	\$197,925.00	n/a	\$129,050.00
NFWF Fees				
Establish Project Specific Account	\$12,000.00	n/a	n/a	n/a
Pre-proposal modified RFP or RFP processing ⁹	\$30,000	n/a	n/a	n/a
NFWF Management fee For Acquisition and Enhancement Actions (Subtotal x 3%)	\$65,815.41	\$4,625.34	n/a	\$3,360.30
NFWF Management Fee for LTMM account (LTMM x 1%)	\$28,826.00	\$1,972.95	n/a	\$1,290.50
Subtotal of NFWF Fees	\$136,641.41	\$6,598.29	n/a	\$4,650.80
TOTAL Estimated cost for	\$5,213,088.41	\$358,701.17	n/a	\$245,710.55

deposit in project specific REAT-NFWF Account				
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1. Estimates prepared in consultation with CDFG, USFWS, and BLM. All costs are best estimates as of summer 2010. Actual costs will be determined at the time of the transactions and may change the funding needed to implement the required mitigation obligation. All acreages are staff's estimates based on available data; final acreages to be adjusted.
2. For the purposes of determining costs, a parcel is defined at 40 acres, recognizing that some will be larger and some will be smaller, but that 40 acres provides a good estimate for the number of transactions anticipated (based on input from CDD).
3. Generalized estimate taking into consideration a likely jump in land costs due to demand, and an 18-24 month window to acquire the land after agency decisions are made. If the agencies, developer, or 3rd party has better information on land costs in the specific area where project-specific mitigation lands are likely to be purchased, that data overrides this general estimate. Note: regardless of the estimates, the developer is responsible for providing adequate funding to implement the required mitigation.
4. Based on information from CDFG.
5. Two transactions: landowner to 3rd party; 3rd party to agency.
6. Includes staff time to work with agencies and landowners; develop management plan; oversee land transaction; organizational reporting and due diligence; review of acquisition documents; assembling acquisition acreage, and related tasks)
7. This amount covers the estimate of BLM's cost to accept the land into the public management system and costs associated with tracking/managing the costs associated with the donation acceptance, includes two physical inspections; review and approval of the Level 1 ESA assessment; review of all title documents; drafting deed restrictions; issue escrow instructions; mapping the parcels, and related tasks.
8. Estimate for purposes of calculating general costs. The actual long term management costs will be determined using a PAR (Property Assessment Report) or PAR-like analysis tailored to the specific acquisition. Includes land management; enforcement and defense of easement or title [short and long term]; and monitoring.
9. If determined necessary by the REAT agencies if multiple 3rd parties have expressed interest; for transparency and objective selection of 3rd party to carry out acquisition.

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The tn: 00000 in the references below indicates the transaction number under which the item is catalogued in the Energy Commission's Docket Unit. The transaction number allows for quicker search and retrieval of individual items docketed for a case or used for ease of reference and retrieval of exhibits cited in briefs and used at Evidentiary Hearings.

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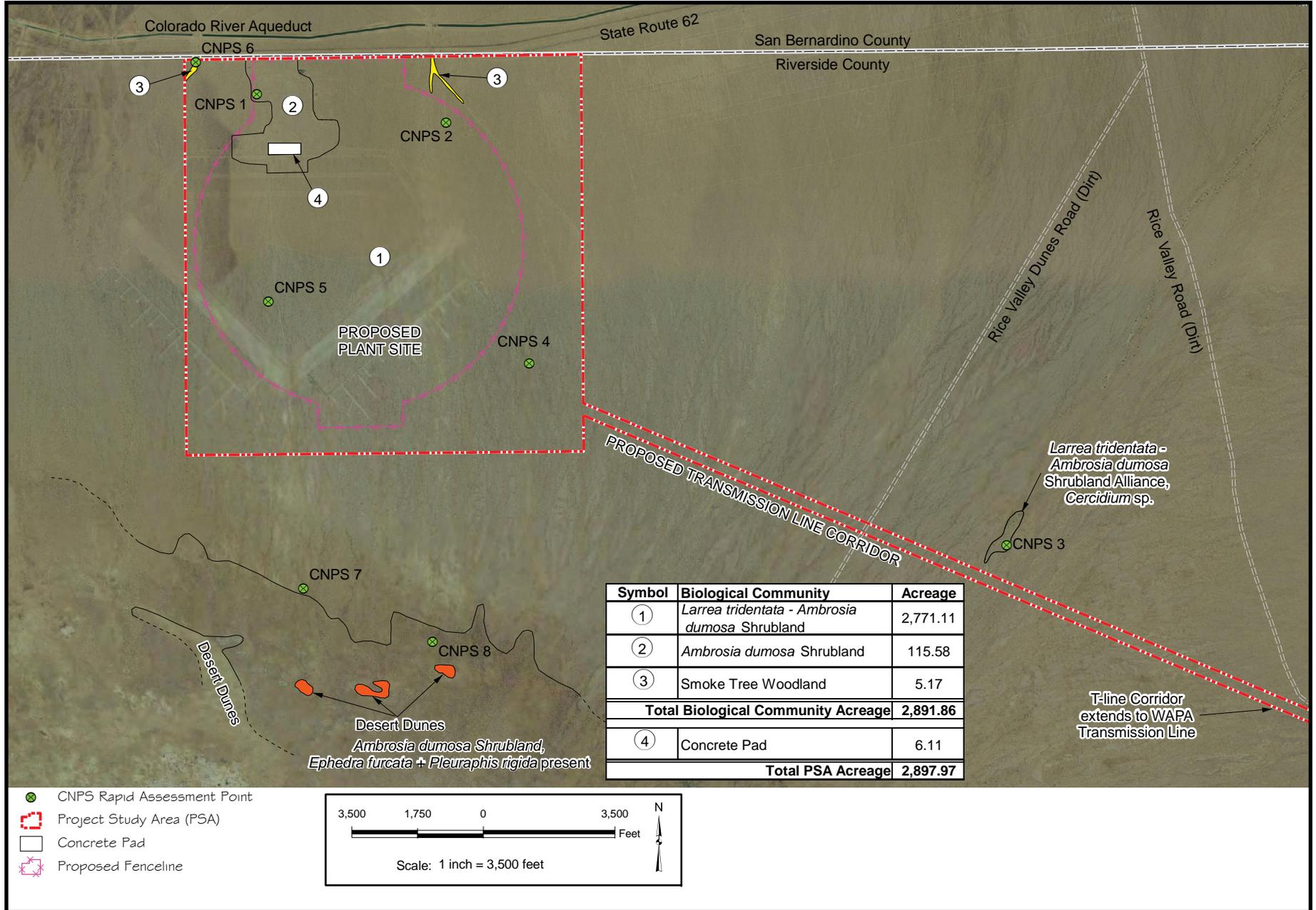
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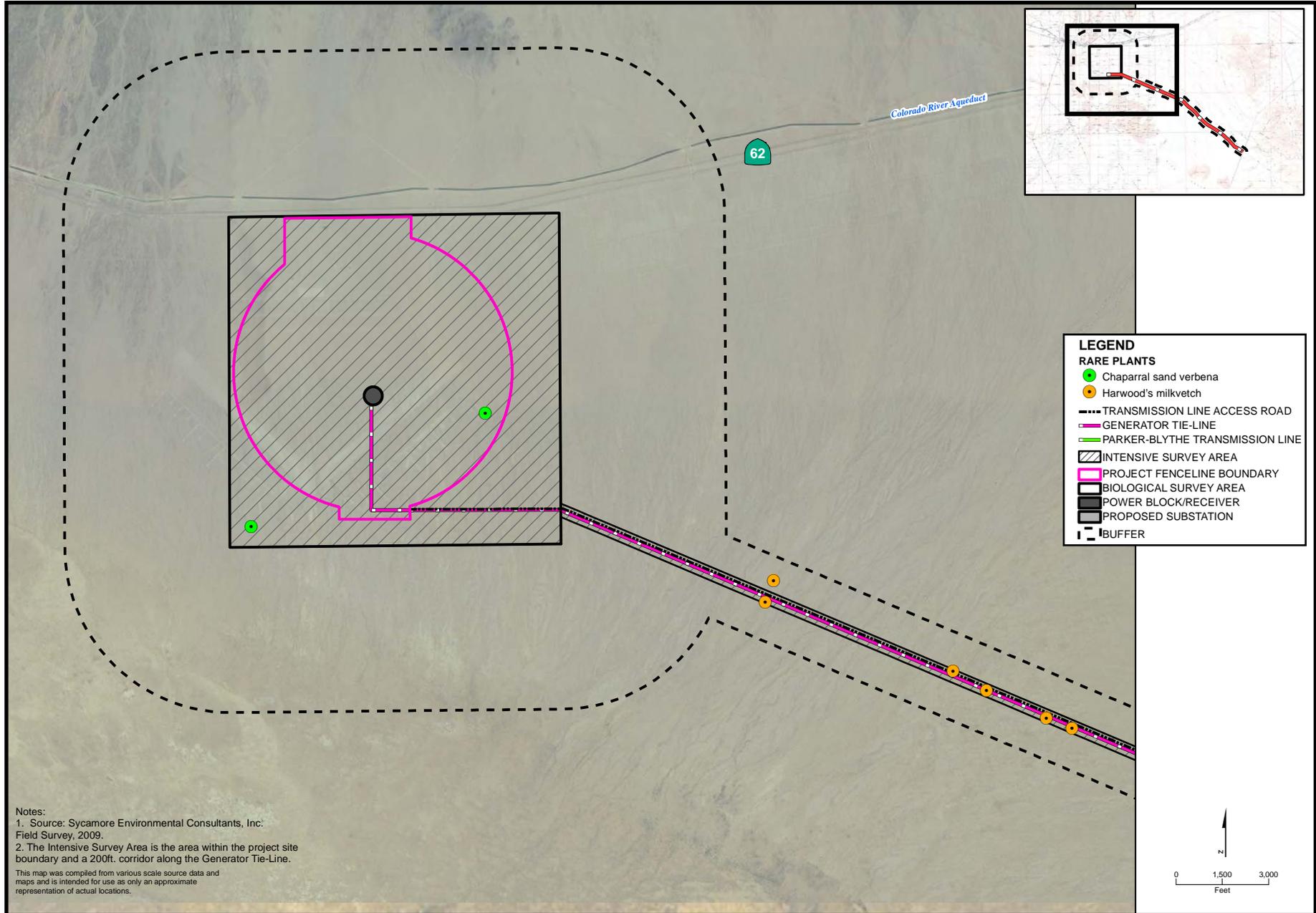
BIOLOGICAL RESOURCES - FIGURE 1

Rice Solar Energy Project - Biological Communities



BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES - FIGURE 2A
 Rice Solar Energy Project - Special Status Plant Locations



LEGEND

RARE PLANTS

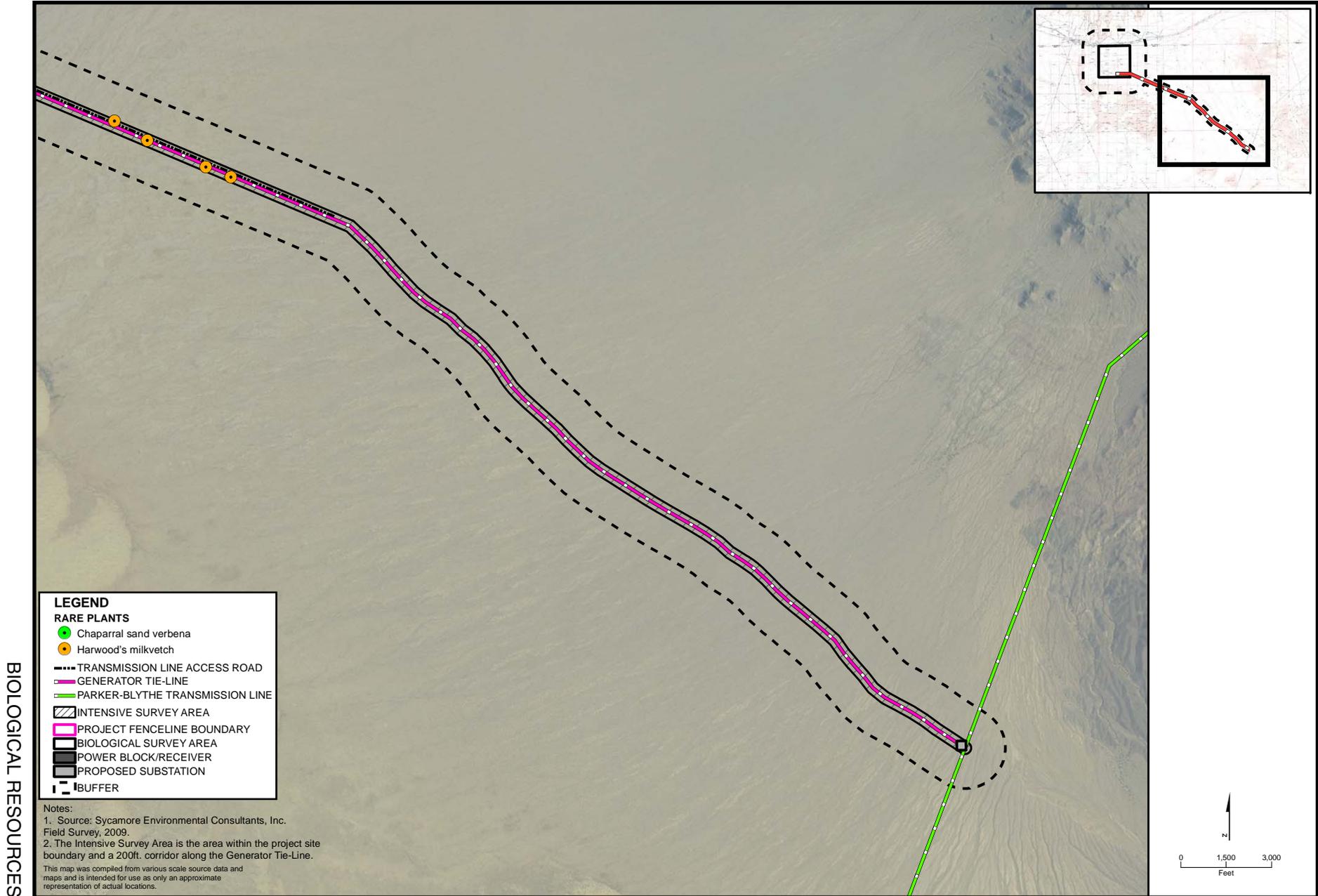
- Chaparral sand verbena
- Harwood's milkvetch

- - - TRANSMISSION LINE ACCESS ROAD
- GENERATOR TIE-LINE
- PARKER-BLYTHE TRANSMISSION LINE
- ▨ INTENSIVE SURVEY AREA
- PROJECT FENCELINE BOUNDARY
- ▭ BIOLOGICAL SURVEY AREA
- ▭ POWER BLOCK/RECEIVER
- PROPOSED SUBSTATION
- - - BUFFER

Notes:
 1. Source: Sycamore Environmental Consultants, Inc. Field Survey, 2009.
 2. The Intensive Survey Area is the area within the project site boundary and a 200ft. corridor along the Generator Tie-Line.
 This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES - FIGURE 2B
 Rice Solar Energy Project - Special Status Plant Locations



LEGEND

RARE PLANTS

- Chaparral sand verbena
- Harwood's milkvetch

- TRANSMISSION LINE ACCESS ROAD
- GENERATOR TIE-LINE
- PARKER-BLYTHE TRANSMISSION LINE
- ▨ INTENSIVE SURVEY AREA
- ▭ PROJECT FENCELINE BOUNDARY
- ▭ BIOLOGICAL SURVEY AREA
- ▭ POWER BLOCK/RECEIVER
- ▭ PROPOSED SUBSTATION
- - - - - BUFFER

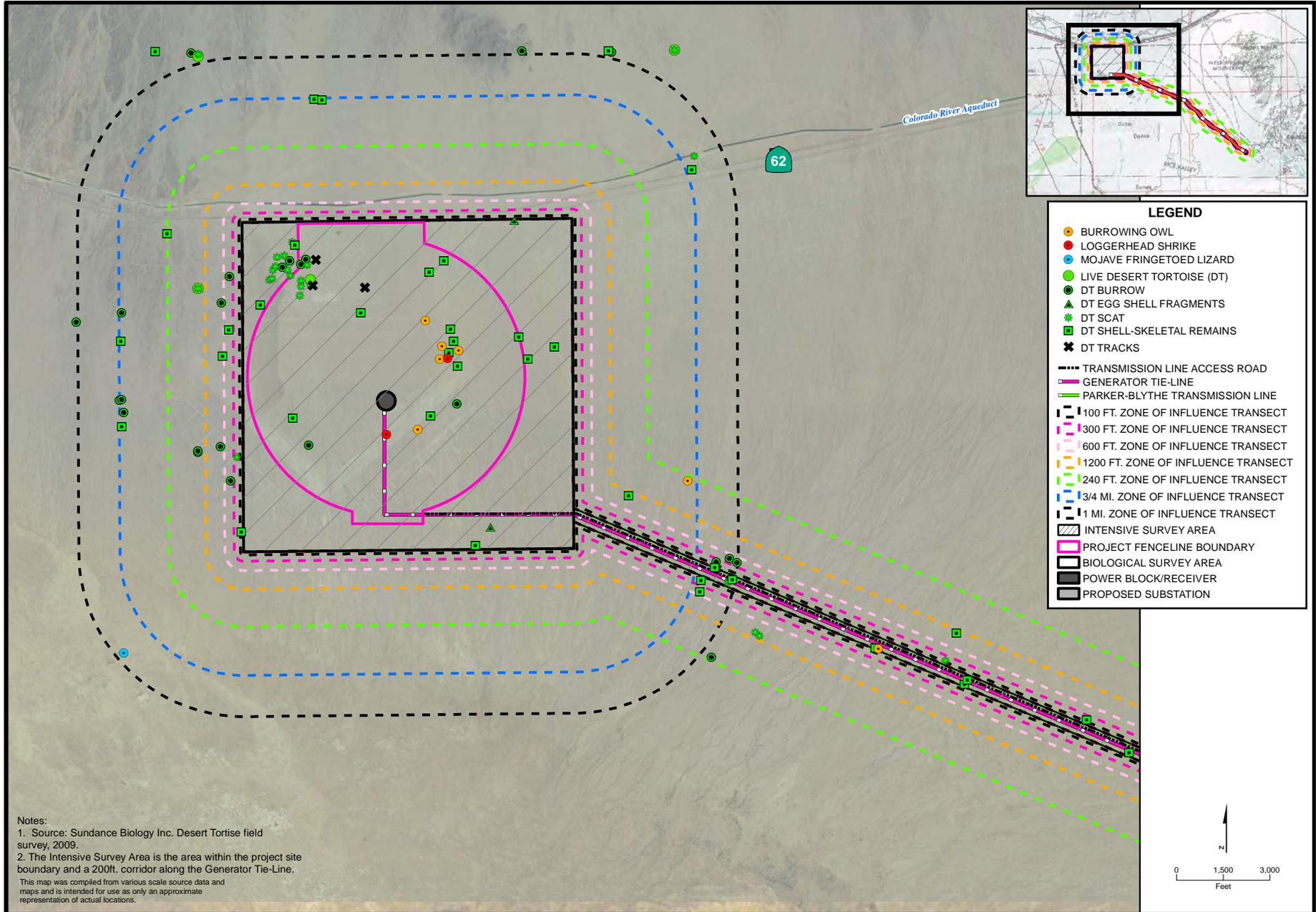
Notes:

1. Source: Sycamore Environmental Consultants, Inc. Field Survey, 2009.
2. The Intensive Survey Area is the area within the project site boundary and a 200ft. corridor along the Generator Tie-Line.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

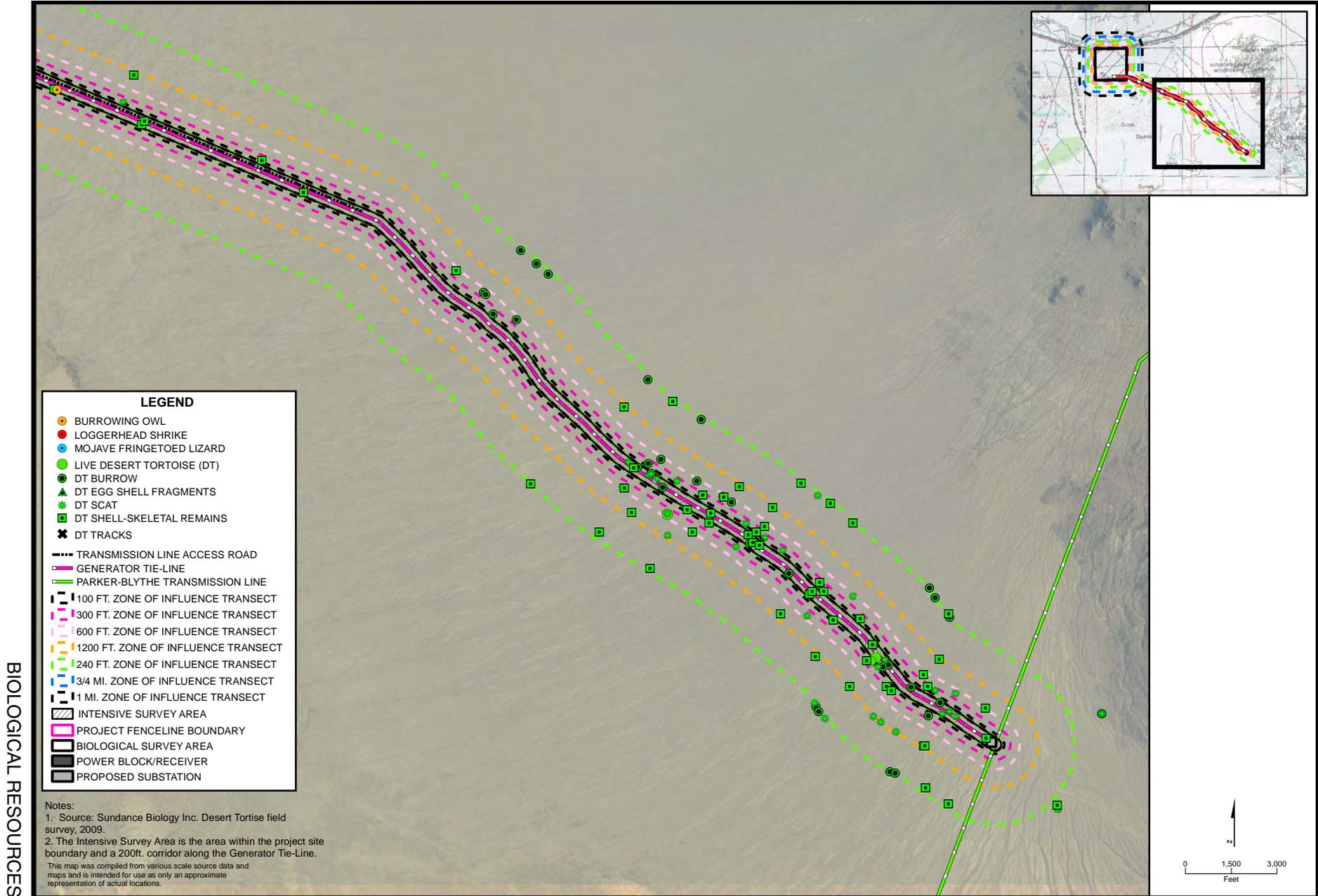
BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES - FIGURE 3A
 Rice Solar Energy Project - Special Status Wildlife Sighting Locations

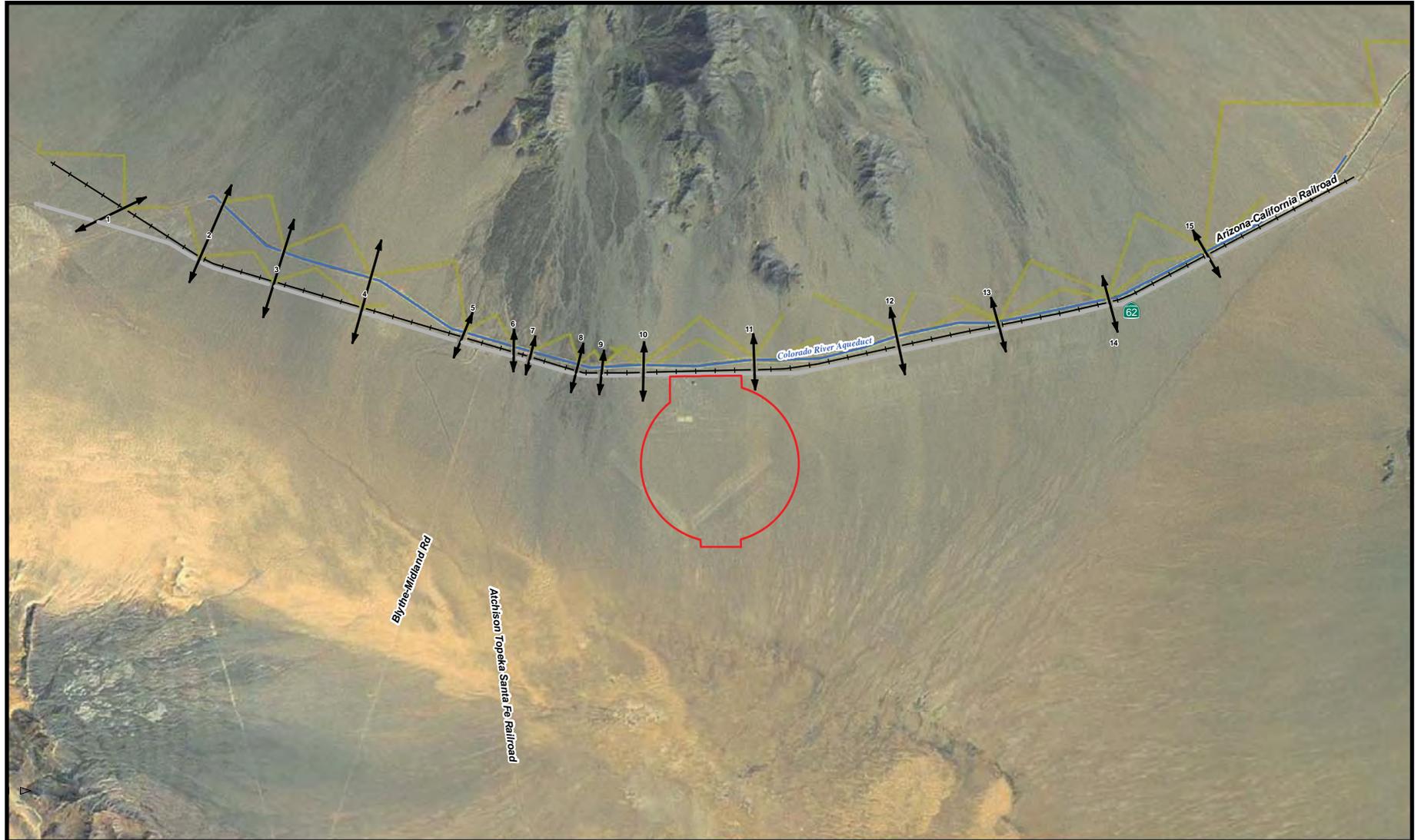


BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES - FIGURE 3B
 Rice Solar Energy Project - Special Status Wildlife Sighting Locations



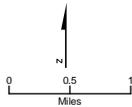
BIOLOGICAL RESOURCES - FIGURE 4
 Rice Solar Energy Project - Wildlife Movement Routes 5 Miles East and West of Project



BIOLOGICAL RESOURCES

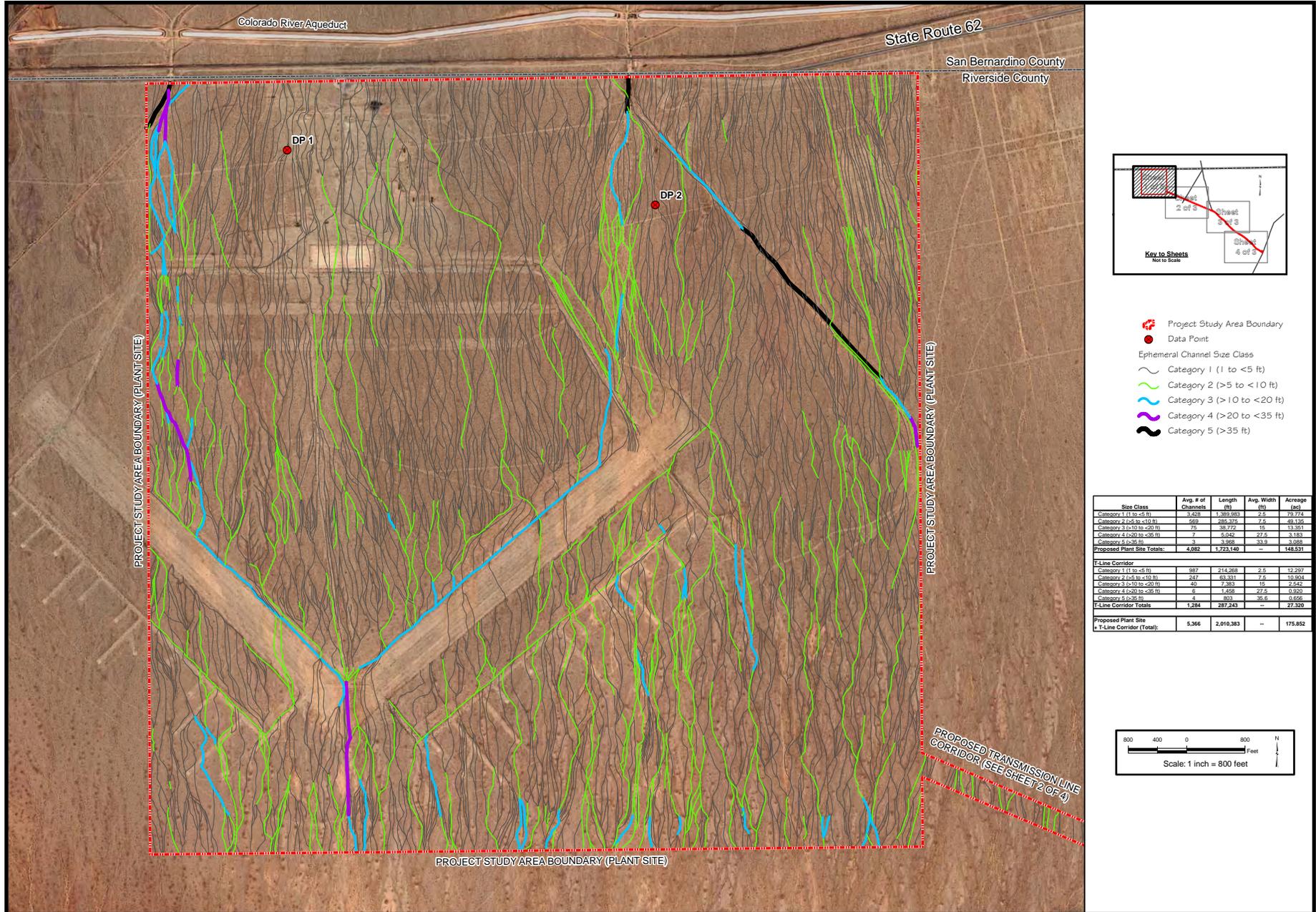
LEGEND

- AQUEDUCT
- ROAD
- + RAILROAD
- ← WILDLIFE PASSAGE
- V DITCH
- PROJECT FENCELINE BOUNDARY



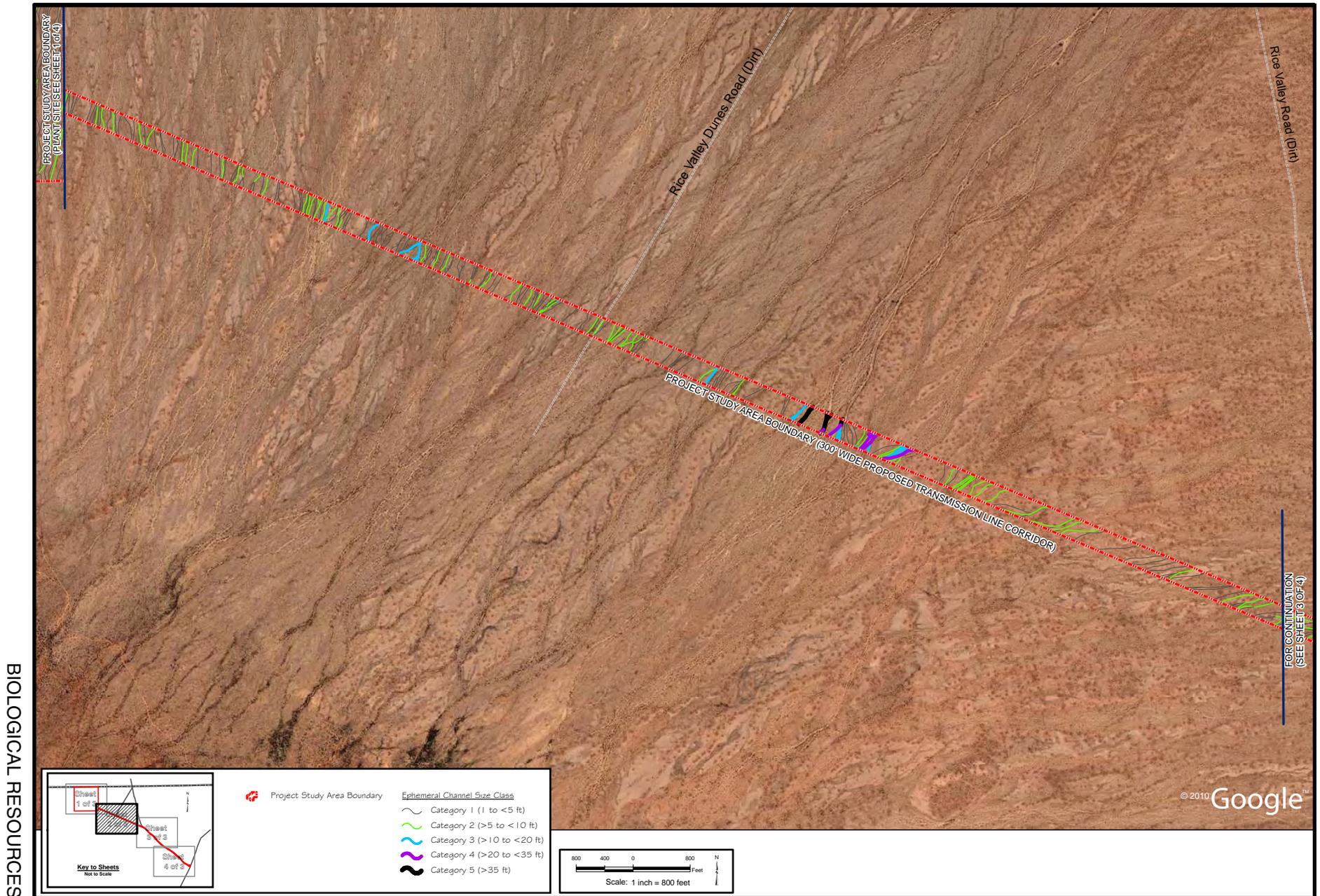
BIOLOGICAL RESOURCES - FIGURE 5A

Rice Solar Energy Project - State-Jurisdictional Streambeds



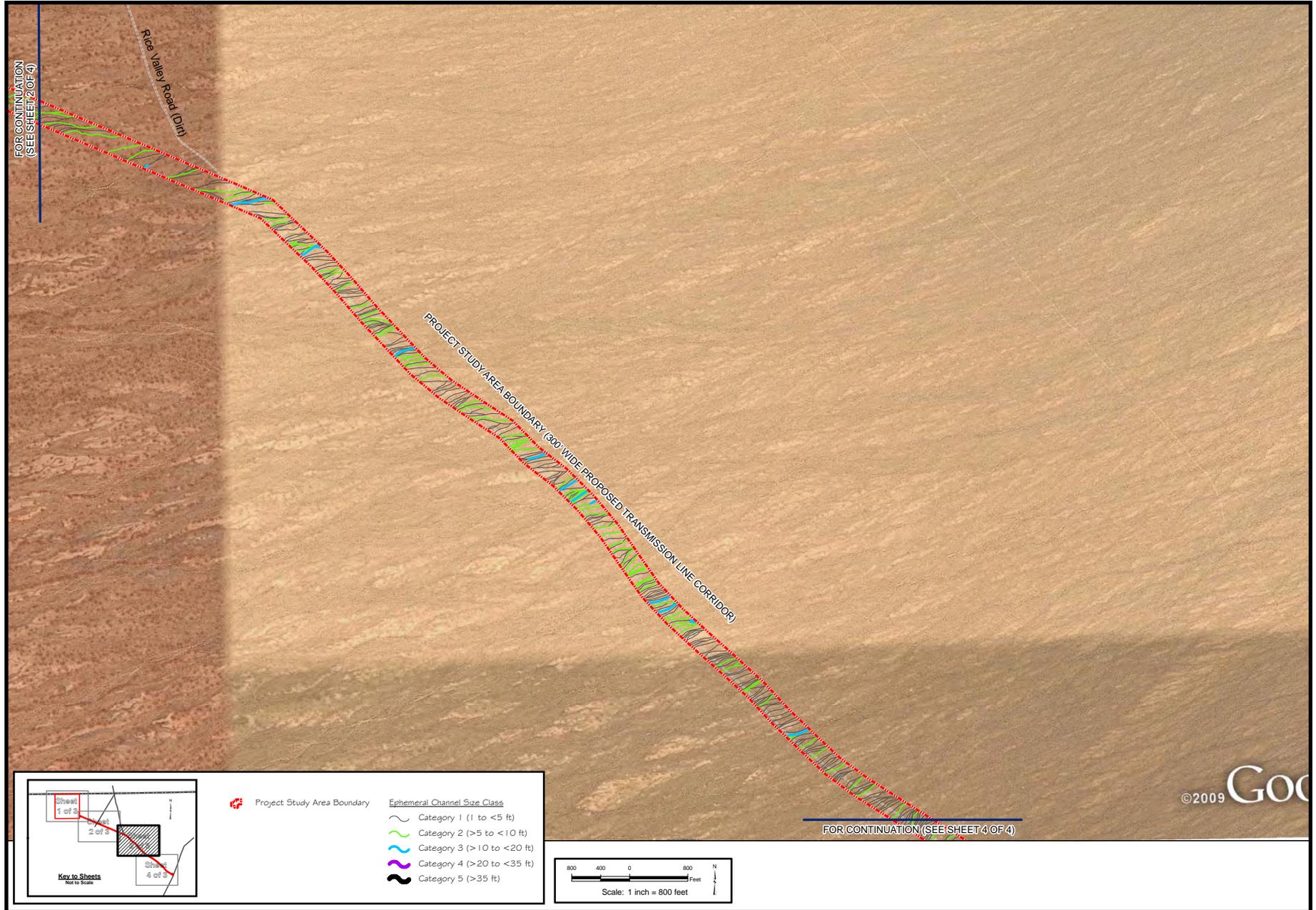
BIOLOGICAL RESOURCES - FIGURE 5B

Rice Solar Energy Project - State-Jurisdictional Streambeds



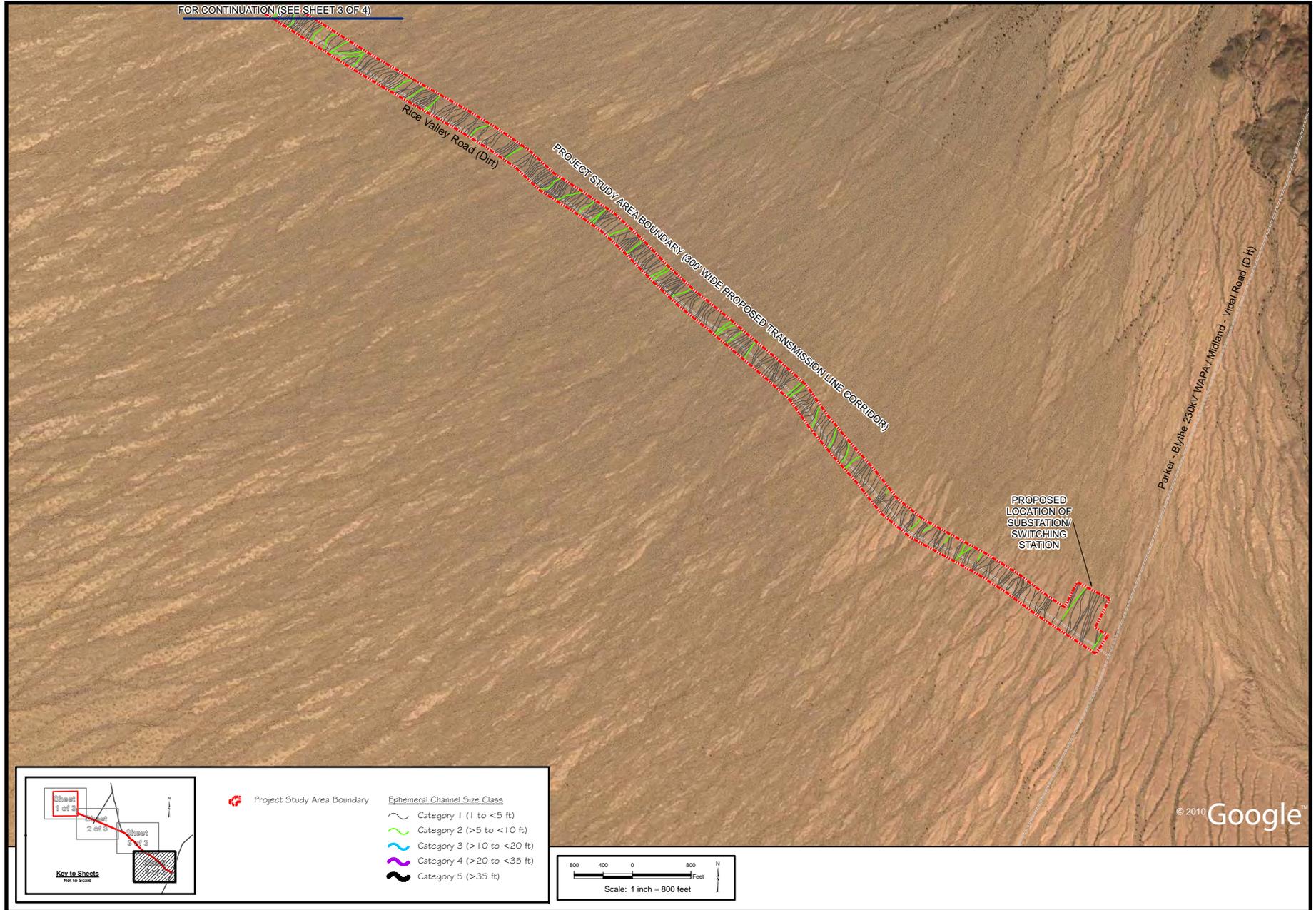
BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES - FIGURE 5C
 Rice Solar Energy Project - State-Jurisdictional Streambeds



BIOLOGICAL RESOURCES

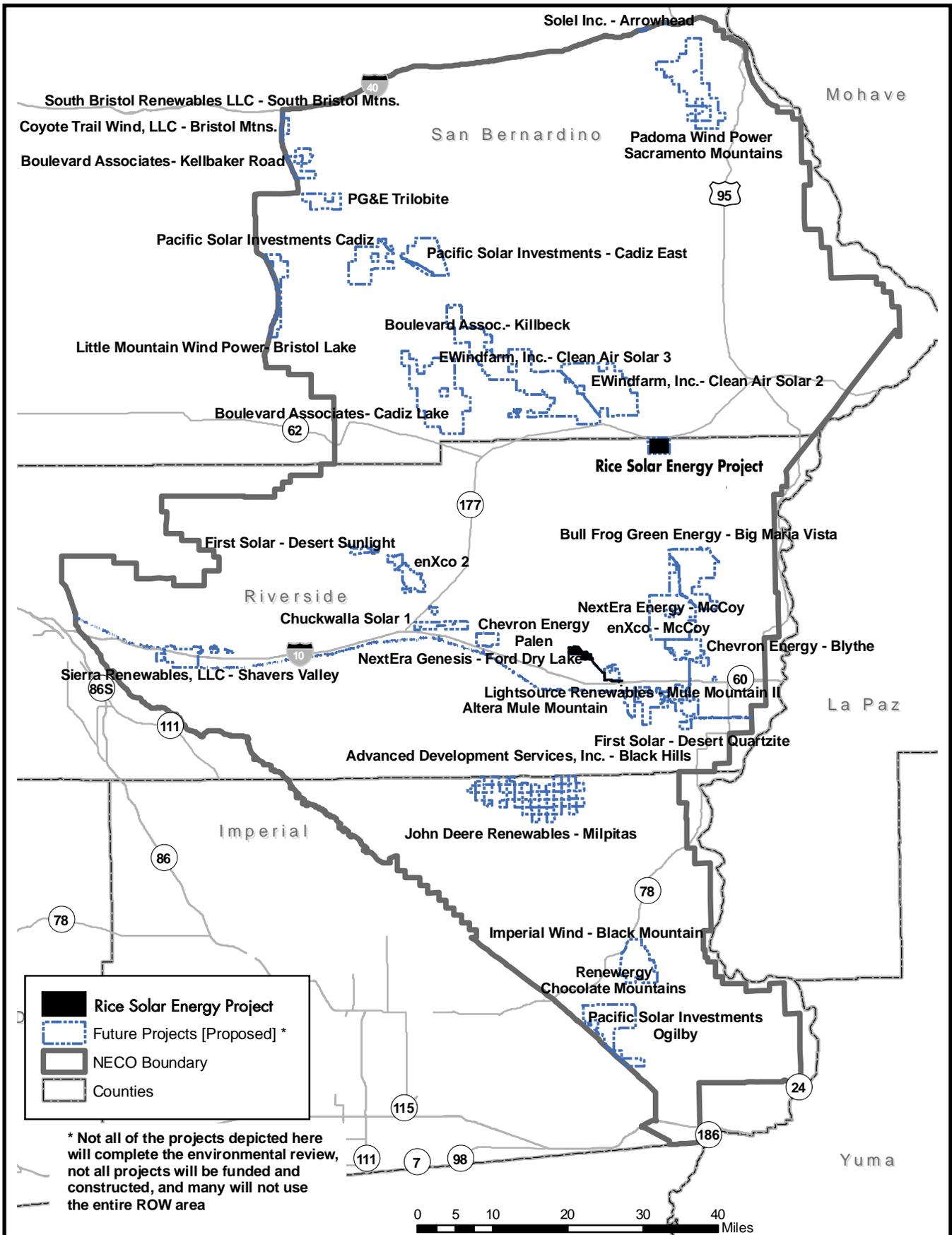
BIOLOGICAL RESOURCES - FIGURE 5D
 Rice Solar Energy Project - State-Jurisdictional Streambeds



BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES - FIGURE 6

Rice Solar Energy Project - NECO Foreseeable Future Projects



* Not all of the projects depicted here will complete the environmental review, not all projects will be funded and constructed, and many will not use the entire ROW area

Cultural Resources

Testimony of Kim J. Tremaine (Energy Commission), Stephen Tromly (Western Area Power Administration), and George Kline (Bureau of Land Management)¹

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as the agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

- Staff² concludes that the proposed Rice Solar Energy Project (RSEP) would have significant direct impacts to the features and artifact concentrations associated with the historic Rice Army Airfield (Rice AAF)³ and the western periphery of Camp Rice (CA-SBA-10526H), as well as potential direct impacts to 23 other eligible or assumed eligible archaeological sites. Implementation of Energy Commission Conditions of Certification **CUL-2** through **CUL-12** would reduce these impacts to a less than significant level under CEQA.
- Staff finds that the RSEP construction impacts, when combined with impacts from the past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts to cultural resources at the regional level. Implementation of **CUL-1** would reduce that contribution to a less than significant level under CEQA.

Staff recommends adoption of conditions of certification **CUL-1** through **CUL-12**. Implementation of these conditions, as recommended by Energy Commission staff, would satisfy the Energy Commission's responsibility to comply with CEQA, ensure consistency with the applicable LORS, and reduce impacts to cultural resources to a less than significant level. The identification of relevant and reasonable mitigation measures also conforms to NEPA requirements for the BLM/Western analysis that can be considered in the Record of Decision (ROD).

INTRODUCTION

This cultural resources assessment identifies the potential impacts of the Rice Solar Energy Project (RSEP) on cultural resources. Cultural resources are categorized as buildings, sites, structures, objects, and districts under federal law (for the purposes of NEPA and the National Historic Preservation Act (NHPA), Section 106), and under California state law (for the purposes of CEQA). Three kinds of cultural resources, classified by their origins, are considered in this assessment: prehistoric, ethnographic, and historic.

¹ With contributions by Dwight Simons, Beth Bagwell, and Beverly E. Bastian

² "Staff" means Energy Commission staff unless otherwise indicated.

³ No primary number or trinomial has been assigned yet to this resource.

Prehistoric archaeological resources are associated with the human occupation and use of California lands prior to sustained European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. Groupings of prehistoric resources are also recognized as archaeological districts and as cultural landscapes. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans permanently settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts and as historic vernacular landscapes. Under both federal and state historic preservation laws, most cultural resources must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the NRHP or CRHR. A resource less than 50 years of age must be of exceptional historical importance to be considered for listing.

For the RSEP, staff provides an overview of the environmental setting and history of the project area, an inventory of the cultural resources identified in the project vicinity, an analysis of the project's potential impacts to significant cultural resources, and recommendations of measures by which the project's adverse impacts to significant cultural resources may be avoided or mitigated.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Projects licensed by the Energy Commission are reviewed to ensure consistency with applicable laws, ordinances, regulations, standards, plans, and policies. **Cultural Resources Table 1** provides a general description of the LORS applicable to the proposed project, all alternatives, and surrounding lands.

CULTURAL RESOURCES Table 1
Applicable Laws, Ordinances, Regulations, and Standards

<u>Applicable LORS</u>	<u>Description</u>
Federal	
Antiquities Act of 1906 16 United States Code (USC) 431–433 National Historic Preservation Act of 1966 (NHPA)	Establishes criminal penalties for unauthorized destruction or appropriation of “any historic or prehistoric ruin or monument, or any object of antiquity” on federal land; empowers the President to establish historical monuments and landmarks. Establishes a process to identify historic properties, determine effect and consultation to reduce, minimize or avoid effects.
Archaeological Resources Protection Act of 1979 (ARPA) 16 USC 470aa et seq.	Protects archaeological resources from vandalism and unauthorized collecting on public and Indian lands.
Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) 25 USC 3001–3013	Provides for the protection of Native American graves, funerary objects, and “objects of cultural patrimony” on federal land; Establishes the procedures for determining ownership for Native American human remains, funerary objects, and other sacred objects under federal jurisdiction.
State	
Public Resources Code (PRC), Section 5097.98(b) and (e)	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to re-inter the remains elsewhere on the property in a location not subject to further disturbance.
PRC, Sections 5097.99 and 5097.991	5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness Native American remains or funerary artifacts. 5097.991 establishes as state policy the repatriation of Native American remains and funerary artifacts.
Health and Safety Code (HSC), Section 7050.5	Makes it a misdemeanor to mutilate, disinter, wantonly disturb, or willfully remove human remains found outside a cemetery; Requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Local	
Riverside County General Plan, Multipurpose Open Space Element (Chapter 5), Open Space Policies OS 19.2– 19.4	OS 19.2 requires the review of all proposed development for archaeological sensitivity; OS 19.3 Employs procedures to protect the confidentiality and prevent inappropriate public exposure of sensitive archaeological resources when soliciting the assistance of

<u>Applicable LORS</u>	<u>Description</u>
	<p>public and volunteer organizations.</p> <p>OS 19.4 Require a Native American Statement as part of the environmental review process on development projects with identified cultural resources.</p>
<p>Riverside County General Plan, Multipurpose Open Space Element (Chapter 5), Open Space Policies OS 19.5–19.7</p>	<p>OS 19.5 allows the History Division of the Riverside County Regional Park and Open-Space District to evaluate large project proposals for their potential preservation or destruction of historic sites; requires projects to provide feasible mitigation for impacts to historic sites prior to county approval.</p> <p>OS 19.6 enforces the California State Historic Building Code so that historic buildings can be preserved and used without posing a hazard to public safety.</p> <p>OS 19.7 endorses the allocation of resources and/or tax credits to prioritize retrofit of historic structures.</p>
<p>Riverside County General Plan, Exhibit A, CEQA Findings of Fact and Statement of Overriding Considerations, Mitigation Monitoring Program, Measures 4.7.1A, 4.7.1B, and 4.7.1C</p>	<p>Outlines mitigation measures for cultural resources monitoring programs.</p>

Proposed Project (Alternative 1)

SETTING/AFFECTED ENVIRONMENT

Information provided regarding the setting of the proposed project places it in its geographical and geological context and specifies the technical description of the project. Additionally, the prehistoric, ethnographic, and historical background provides the context for the evaluation of the NRHP and CRHR eligibility of any identified cultural resources within staff's area of analysis for this project.

Project Site

The applicant, Rice Solar Energy, LLC (RSE), a subsidiary of Solar Reserve, LLC, is proposing a 150-megawatt (MW) concentrating solar thermal power project with a central receiver tower, sun-tracking heliostat field, and an integral thermal storage for the liquid salt-based system. The power block and solar arrays would cover approximately 1,410 acres of a 2,560-acre project site, immediately south and adjacent to State Route (SR) 62, at milepost 109, approximately 20 miles east of the SR62/177 intersection, and 15 miles west of Vidal Junction, in unincorporated Riverside County. The generating facility would be constructed on privately owned land and connected to the Western Area Power Administration's (Western) Parker-Blythe #2 transmission line by a 10.0-mile-long generation tie-line. The transmission line would be situated primarily on BLM-managed public lands, although it would cross a portion of two privately-owned

parcels. Buildout coverage on the site (final footprint) would be about 55% (1,410 acres), including mirror fields, access roads, and buffer areas outside the fenceline.

From the interconnection substation, telecommunications would be established by: 1) replacing one of two existing overhead ground wires on the Parker-Blythe #2 transmission line with a fiber optic core overhead ground wire to either or both of Western's existing Parker and Blythe substations; 2) microwave (radio-frequency) transmission from either RSEP or the new substation, to terminate at Western's Blythe, Headgate Rock, or Black Point substations, or at an existing telecommunications site at Cunningham Mountain; or 3) by power line carrier/ broadband-over-power-line.

The project would have minimal to moderate ground disturbance impacts on the site area. Within the heliostat field, vegetation would be removed to near ground level and, overall, would retain the existing terrain without any significant grading for placement of the heliostat pylons or piers. The most significant grading would occur in the power block area and for development of the stormwater detention (30 acre-foot capacity) and wastewater evaporation ponds (three ponds at 5 acres each or a total of 15 acres). Trenching for installation of utilities (water, electric, gas, and communication) would occur to a depth of ten feet. Drainage diversion channels would be excavated around the northern half of the perimeter of the project facility, with the perimeter access road acting as a berm to prevent storm water from running onto the RSEP site from upslope areas. Grading and excavation would be necessary for the foundations of the project structures, including the central tower, heliostats, pipe racks, turbine, administration buildings, storage tanks for water and liquid salt, and transmission poles. Estimated foundation depths for the central tower range between 6 and 20 feet, with a diameter of about 115 feet. The donut foundation would have a central depth (immediately beneath the tower) of 20 feet and decreasing to a depth of 8 feet at the outer edges. Foundations for the heliostats would be 10 to 12 feet deep and 33 inches in diameter. Installation of the two project wells would require boring to a depth of about 190 feet.

The project's power block and solar arrays would be located on the site of the Rice AAF and a portion of Camp Rice, a World War II (WWII) desert training base that was part of the infantry and artillery Desert Training Center, California-Arizona Maneuver Area (DTC/C-AMA). It was used by General George S. Patton, Jr., from 1942-1944 to prepare American soldiers for combat in the North African desert. This location, a municipal airfield prior to WWII, reverted to civilian/public airport status again about 1949, then to a private airfield around 1952. Apparently abandoned between 1955-1958, the airport continued to be used sporadically by private pilots until the runways became unsafe. To the east, Camp Rice (Rice Divisional Camp) housed the 5th Armored Division during its training at the CAMA and maintained a large quartermaster depot at that location. The area was also used for Joint Exercise Desert Strike in 1964 (SR2009a). Little remains of Camp Rice or the Rice Army Airfield on the ground, aside a few foundations, concrete pads, and defunct runways. However, the outline of both the airport and Camp Rice can still be easily discerned from the air.

The site is generally flat, with elevations ranging from about 720 feet (220 meters) above sea level (ASL) at the southern boundary to approximately 820 feet (250 meters) ASL in the north, along SR 62. Native plant revegetation is sparse to moderate and interrupted by the remains of the asphalt, gravel, concrete pads, foundations, runways,

and taxiways. A number of small, dry desert washes traverse the project area, but no large ephemeral washes are present. There are no structures on the site, except for a few decaying foundations stemwalls, and no active use. The proposed project site can best be described as extensively disturbed land that has been unused for about 50 years and is gradually reverting to desert.

Surrounding Area

The proposed project site is located in the northeastern portion of unincorporated Riverside County, approximately 15 miles west of Vidal Junction and 3 miles east of the abandoned town of Rice. The San Bernardino County line is just north of SR 62, which is immediately adjacent to the project's northern boundary. Access to the site is along SR62, a two-lane state highway (also known as Aqueduct Road and Twenty-nine Palms Highway) that bounds the project site to the north, and provides a direct route between Vidal Junction, to the east, and Twenty-nine Palms to the west. SR177 intersects SR62 approximately 17 miles west of the project site and connects to Desert Center and Interstate 10 (I-10) to the south. The Colorado River Aqueduct (Aqueduct) parallels SR62 to the north of the project site. The Aqueduct is a 242-mile (389-kilometer) water conveyance operated by the Metropolitan Water District of Southern California (MWD). The Arizona and California Railroad (ARZC) shortline also parallels SR62 at the project site and extends nearly 300 miles between Matthie, Arizona and Cadiz, California, with a 50-mile southern branch to Ripley.

The area surrounding the project site also played an important role during WWII as part of the infantry and artillery DTC/C-AMA. In addition to Camp Rice and the Rice AAF, the 3d Armored Division used Camp Iron Mountain and Camp Granite, at the SR 62/177 intersection, about 17 miles west of the project site, from 1942-44. Camp Iron Mountain was designated as an Area of Critical Environmental Concern (ACEC) for its cultural significance in 1980, and is perhaps the best known and certainly the best preserved of all the training camps. Despite the ravages of time, a contour map, many rock mosaics, two alters, and numerous rock alignments along roads and walkways have survived. The area has been fenced to provide protection from vehicular traffic and both Camp Iron Mountain and Camp Granite are visible to the north and south of SR 62,

The habitat is represented by southwestern basin and range topography, characterized by numerous, generally north-south oriented mountain ranges alternating with valleys and alluvial plains. The terrain surrounding the project site consists of a number of broad shallow valleys that generally trend to the southeast, draining into the Colorado River. These valleys contain five playas or closed basin sinks formed by low-lying obstructions on the valley floor. Desert pavement is common and is often well-developed and present in broad patches. Elevations range between 700 and 1600 feet above mean sea level. Soils range from loose-sandy to coarse-sandy loams on the bajadas and valley floors to cobbles, boulder outcrops, and talus on the mountain slopes.

The Rice Valley is a long shallow valley system that is contiguous with Ward Valley to the northwest. Under more pluvial conditions, these valleys had the potential to overflow their blockades and become a continuous drainage (McCarty 1980, p. 7). The climate of the RSEP project site and vicinity is hot and arid and is classified as sub-humid or sub-

tropical with evaporation greatly outstripping precipitation (McCarty 1980). Summer temperatures from July through September average above 86 degrees Fahrenheit with daytime maximum temperatures often nearing 110 degrees Fahrenheit and ground temperatures exceeding 140 degrees Fahrenheit. Winter temperatures are mild, averaging 50–70 degrees Fahrenheit from December through February. Precipitation is around three inches per year, with substantial annual variability occurring between locations. The range of variability is 0–10 inches.

Sonoran Creosote Bush Scrub is the dominant vegetation community present through most of the eastern Mojave/Colorado Desert, with Desert Saltbush community in the immediate project vicinity. (Keeler-Wolf 2007; Kuchler 1977; Schoenherr 1992; Schoenherr and Burk 2007). Along the Colorado River floodplain, riparian communities are dominated by cottonwood and sycamore trees close to the river, and mesquite in drier parts of the floodplain. Two species of mesquite were key food sources for native inhabitants along the river. Mesquite, along with cottonwood, was also used to make arrow shafts, digging sticks, mortars, and pestles. Dense stands of willow and arrow weed are found bordering the river. Today, this area is used primarily for agriculture and recreation. In portions of the floodplain, saltcedar or tamarisk has replaced much of the mesquite and other native vegetation (Minckley and Brown 1994). The nearest native fish species are found in the main channel of the Colorado River mainly are Colorado pikeminnow, razorback sucker, and bonytail chub. (Minckley and Brown 1994; Moyle 2002). The historic-period settlement and land use pattern of the Rice Valley is largely related to early mining activities and early transportation corridors. Other activities playing minor roles in development of the region include: early expeditions, railroads, construction of the Colorado River Aqueduct, and military training.

Much of the surrounding land is managed by BLM, which allows livestock grazing and a variety of recreational activities. The land surrounding the project footprint, excluding Camp Rice and the former Rice AAF, is relatively undisturbed desert. There are no residences or commercial developments, other than the Iron Mountain Pumping Station (IMPS), within visual range of the project site or surrounding desert lands. The closest services to the project site are at Vidal Junction, approximately 13 miles to the east, at the SR 62/95 intersection. The closest towns with full services are Earp, California and Parker, Arizona, on SR62, approximately 17 miles west of Vidal Junction. The larger towns of Blythe and Twenty-nine Palms are about 65 miles south and 75 miles to the west, respectively.

Geology

The following discussion is primarily excerpted from Spaulding (2009). The RSEP is located within the geomorphic province known as the basin and range, situated in the Rice Valley between the Turtle Mountains to the north and the Big Maria and Little Maria Mountains to the south. The geomorphic landscape consists of a broad bajada (a coalescing of neighboring alluvial fans into a single apron of deposits) from the Turtle Mountains, with parallel drainages of parallel rills, gullies, and washes flowing south-southwest toward a dune field southwest of the project area.

The underlying geology consists of alluvial deposits derived from Quaternary dune sands, and recent alluvium composed of sand, silt, clay, and gravel. These range from

Pleistocene (1 million years old) to Holocene (8,000 BC to Recent) in age. Holocene alluvium less than 11,000 years old often is similar to older Pleistocene alluvium. It is typified by moderately to poorly bedded sands, silts, and gravels.

Quaternary alluvium, composed of eolian sand sheets/dunes, locally derived fill, and disturbed sediment mantles underlies most of the proposed receiver tower/heliostat and transmission line. Alluvial fans extending south from the Turtle Mountains contain fine-grained clasts (coarse gravel and finer clastic sediment). Within the heliostat field, they are uniformly fine-grained sediments.

Hubbs and Miller (1948, pp. 90, 164) observed that Late Pleistocene Lake Ward occupied the Danby Dry Lake Basin, northwest from Rice, while Lake Amboy was present in the Bristol-Cadiz Dry Lake Basins. These lakes may have been interconnected, and possibly provided a drainage route from the Death Valley-Mohave River pluvial lakes into the Colorado River (also see Enzel et al. 2003; Gallegos et al. 1980, pp. 22-30). However, only Danby Lake has evidence (the presence of former shorelines) for an expanded pluvial lake (Gallegos et al. 1980; Hubbs and Miller 1948; Smith and Street-Perriott 1983, p. 200; Thompson 1929, p. 708). Lake Ward in the Danby Basin may have been up to 59.5 m deep (Gallegos et al. 1980, pp. 27-28). Williams and Bedinger (1984) concluded Bristol, Cadiz, and Danby Lakes contained Late Pleistocene-Early Holocene marshes.

Paleoclimate and Paleoenvironment

Information on paleoclimate and paleoenvironment for the southern Mojave and northern Sonoran (Colorado) deserts are derived primarily from plant macrofossils found in packrat middens (Cole 1986; Grayson 1993; Spaulding 1990; Tausch et al. 2004; Thompson 1990; Van Devender 1990; Wigand and Rhode 2002, pp. 332–342; Cole 1986; West et al. 2007, pp. 30–33), and stratigraphic studies of playa and dry lake deposits years (Enzel et al. 1989, 1992, 2003; Gallegos et al. 1980, pp. 22-30). The Holocene, the geologic epoch following the Late Pleistocene during which humans probably first occupied North America, began approximately 12,000 years ago. For purposes of this discussion, it is divided into four periods: Early, Middle, Early Late, and Late Late.

Early Holocene (10,000-6,000 BC)

During the Late Pleistocene-Early Holocene, as the climate became warmer and drier, extensive lowland conifer woodlands retreated upslope and were replaced by desert scrub associations. In the northern Sonoran Desert, around 9,500 BC, hot desert plants (Mormon tea, desert thorn, cactuses, Joshua tree, pigmy cedar, cat claw acacia) began dispersing into the region, replacing cooler desert taxa (sagebrush, rabbitbrush, shadscale). From about 8,400 BC on, creosote bush white bursage, and other desert thermophiles began appearing. This warmer drier period, however, also was characterized by episodes of greater precipitation. In the Mohave Desert, three high lake-stands have been identified at Silver Lake playa, dating between 13,000 and 7,300 BC (Enzel et al. 1989). Gallegos et al. (1980, p. 93) postulate that two moister climatic intervals, dating between 11,500 and 12,500 years ago, occurred, based on a pair of caliche beds near Cadiz Dry Lake that contained flaked stone artifacts.

Middle Holocene (6,000-3,500 BC)

The Middle Holocene was the warmest, driest part of the entire Holocene, and has been referred to as the Altithermal (Grayson 1993). Desert shrub vegetation dominated lowland and mid-level elevation localities. White burrobush and creosote bush greatly increased in abundance. A dearth of vegetation data from the Middle Holocene suggests plant cover was probably very sparse as a consequence of severe drought conditions. Between approximately 4,800 and 3,000 BC, little evidence exists for summer rainfall. Gallegos et al. (1980, p. 93) suggest a wetter climatic interval, dating around 8,000 to 8,500 years ago, probably filled desert lakes, based on the presence of a site dating from that time located in the fossil dunes near Bristol Dry Lake.

Early Late Holocene (3,500 BC–1 AD)

The Early Late Holocene has been characterized as a period of relatively cooler, moister climate, interspersed with evidence of warmer drier (sometime drought) conditions. This period has been termed the Neoglacial. Peat deposits, dating to about 5,000 years ago, occur at various spring localities in the Mojave Desert. Around 1,800 BC, a significant increase in the density of pinyon-juniper woodland occurred in southern Nevada, suggesting cooler temperatures and *winter*-precipitation. Denser vegetation appears to have characterized the period between c. 2,000 B.C. and A.D. 1.

A high lake-stand at Silver Lake occurred at approximately 1,620 BC (Enzel et al. 1989, 1992). Gallegos et al. (1980, p. 93) conclude wetter climate occurring about 3000 years ago, produced lake filling, based on evidence of shoreline camp sites at Cadiz Dry Lake. It would have formed a marshy, shallow lake in the Cadiz Dry Lake Basin, containing resources favorable for lakeshore hunting and gathering. However, use of Danby Dry Lake to the southeast probably was limited by its probable high salt content (Gallegos et al. 1980, p. 28).

Late Late Holocene (AD 1–present)

During the Late Late Holocene, temperature and precipitation patterns fluctuated widely. Periods of *summer*-dominant precipitation and milder winters, occurred, contrasting with periods of cooler, somewhat drier conditions and increased *winter*-precipitation. The most significant period of warmer, drier climate, the Medieval Climatic Anomaly, occurred c. 1,200-800 years ago (Meko et al. 2001; Stine 1994, 1996, 1998, 2000). Cooler, wetter climate, dominated from about 1,600 to 1,200 B.P., and again during the Little Ice Age approximately 650 to 150 years ago (Fagan 2000; Grove 1988; Meko et al. 2001; Scuderi 1987a, 1987b, 1990, 1993). Cooler, wetter climatic episodes expanded pinyon-juniper woodland, while warmer, drier conditions favored expansion of saltbush and the creosote bush/white burrobush associations in the lowlands. Enzel et al. (1989, 1992) note a highstand occurred at Silver Lake approximately 390 B.P., corresponding to the Little Ice Age.

Prehistory

During the 1970s, the Bureau of Land Management conducted a large-scale cultural resources inventory of the Central Mojave and Colorado Desert Regions (Gallegos et al. 1980). In an overview of the region, Crabtree (1980) summarized the history of archaeological study, plotted the cultural chronology, identified common site types, and

outlined research topics of interest at the time. Subsequent regional overviews cultural resources management investigations have contributed additional information refining our understanding of the prehistory of this region (cf., Arnold et al. 2002, pp. 43–48; Basgall 1993; Gilbreath and Hildebrandt 1997; Love and Dahdul 2002; Schaefer 1994; Schaefer and Laylander 2007; Schroth 1994; Sutton 1988, 1996; Sutton et al. 2007; Warren 1984; Yohe 1992).

Regional Chronology and Culture History

An initial cultural chronology-culture history scheme for the Colorado Desert was developed in the 1930s and 1940s (Campbell 1931, 1936; Campbell and Campbell 1935; Campbell et al. 1937; Rogers 1939, 1945). This scheme formed the foundation for subsequent efforts, most recently expressed by Sutton et al. (2007, pp. 233–243, table 15.4), relating the temporal periods and complexes delineated to those found in the Mojave Desert. The presentation below of the culture history of the RSEP region is largely drawn from this source.

Paleo-Indian Period (about 10,000–8,000 BC)

In the Southern California deserts, the Paleo-Indian Period dates to the first half of the Early Holocene, and possibly earlier (cf., Beck and Jones 1997; Dillon 2002; Erlandson et al. 2007; papers in Graf and Schmitt 2007; Grayson 1993, pp. 236-244; Jones and Beck 1999; Moratto 1984, Chapters 2 and 3; Rondeau et al. 2007; papers in Willig et al. 1988). This early period is characterized by the presence of various types of leaf-shaped, often fluted, lanceolate, and stemmed points, assigned to the Clovis and Western Pluvial Lakes Traditions. The Clovis Tradition generally dates earlier, and is characterized by large fluted and square-based spear points, large bifaces, heavy core tools, backed scrapers, burins, and graters. Stemmed point (Western Pluvial Lake Tradition) assemblages usually date later in time, and include slightly-shouldered stemmed points, crescents, and other percussion-made bifacial tools, along with ground stone tools. These assemblages often occur in lowlands, and along former pluvial lakeshore margins. Presence of a possibly earlier tool assemblage has been claimed for artifacts recovered from the Calico site.

Dating of fluted and stemmed points in the Southern California desert is complicated by their frequent occurrence as surface finds. A number of sites have produced fluted or stemmed points. Among the most noteworthy Southern California sites are the China Lake site, the Lake Mojave and Pinto Basin localities, and the Awl, Henwood, Rogers Ridge, and Stahl sites (Beck and Jones 1997). It has been suggested that Paleo-Indian peoples were highly mobile, and repeatedly occupied preferred sites. A preference for lowland occupation and increasing use of upland habitats through time is suggested. A possible early emphasis upon hunting large, sometime extinct, terrestrial mammals, and exploiting marsh resources appears to have shifted through time to increased use of seeds and other plant resources along with small game.

Lake Mojave Complex (8,000–6,000 BC)

The Lake Mojave complex, also known as the Western Pluvial Lakes/Western Stemmed Tradition (Beck and Jones 1997; Erlandson et al. 2007; papers in Graf and Schmitt 2007; Schaefer 1994, pp. 63–64; Sutton et al. 2007; papers in Willig et al. 1988), occurs during the second half of the Early Holocene. It is characterized by Great Basin

Stemmed Series projectile points (Lake Mojave and Silver Lake types), abundant bifaces, steep-edged unifaces, crescents, and occasional cobble tools and ground stone tools. These artifacts often occur in undated surface contexts. Assemblage composition and site structure suggest highly mobile foragers, often traveling considerable distances. Little reliance upon vegetal resources is evidenced. The value of wetland habitats remains unclear. Lake Mojave lifeways may result from relatively rapidly changing climate and habitats during the Early Holocene. This would have produced unpredictability in resource distribution and abundance, producing a high degree of residential mobility.

Deadman Lake Complex (7,500–5,200 BC)

Currently, the Deadman Lake complex appears confined to the Twenty-nine Palms area. Sites usually are surficial and located on old alluvial pediments. Artifacts include small-to-medium-size contracting stemmed or lozenge-shaped points, large concentrations of battered cobbles and core tools, and abundant bifaces, simple flake tools, and ground stone tools. The abundance of cobble tools suggests an emphasis upon plant processing. The Deadman Lake and Pinto complexes may represent two different human populations practicing different seasonal/annual rounds, or Deadman Lake may represent a component of the overall Pinto complex adaptation.

Pinto Complex (8,000–3,000 BC)

The Pinto complex spans portions of the Early and Middle Holocene. Toolstone use, based on sites attributed to this complex, focus upon materials other than obsidian and cryptocrystalline silicate (CCS). Pinto Series points are stemmed with indented bases, and display high levels of reworking. Bifacial and unifacial cores/tools are common. Ground stone tools are moderately to very abundant, indicating greatly increased use of plant resources. Pinto sites occur in a broad range of topographic and environmental settings, especially within remnant pluvial lake basins. Moderate to large numbers of people, practicing a collector subsistence strategy, occupied large residential base camps for prolonged periods. Logistical forays into surrounding resource patches probably were made from these sites.

Possible Abandonment (3,000–1,000 BC)

Beginning roughly at this time, conditions in the Mojave Desert were warmer and drier. Few archaeological sites date to this period. This suggests population densities were very low. It is possible some areas were largely abandoned. This period corresponds, in part, to the latter portion of the proposed “Altitheermal Abandonment,” recognized by some prehistorians as characterizing portions of the Great Basin (see Kelly 1997, pp. 8–9).

Gypsum Complex (1,000 BC–AD 200)

The Gypsum complex, spanning most of the Early Late Holocene, is characterized by the presence of corner-notched Elko Series points, concave-base Humboldt Series points, and well-shouldered contracting-stemmed Gypsum Series points. Numerous bifaces also occur. Manos and metates are relatively common. During the early portion of the Gypsum complex, settlement-subsistence appears focused near streams. At this time, increased trade and social complexity apparently occurred. Gypsum components

are smaller, more abundant, and occur over a more diverse suite of settings than those dating previously. Evidence for ritual activities include quartz crystals, paint, split-twig animal figurines, and rock art. Gypsum sites are uncommon in the southern and eastern Mojave Desert.

Rose Spring Complex (AD 200–AD 1000)

Cultural systems profoundly changed in the southern California deserts during Late Late Holocene with the introduction of the bow and arrow, represented by Rosegate Series points. During this time, a major increase in population is thought to have occurred, possibly resulting from a more productive environment and a more efficient hunting technology. Sites often are located near springs, along washes, and sometimes along lakeshores. Intensive occupation is indicated by the presence of wickiups, pit houses, and other types of structures. Well-developed middens have yielded artifact assemblages containing knives, drills, pipes, bone awls, various ground stone tools, marine shell ornaments, and large amounts of obsidian. Obsidian procurement and processing apparently significantly structured settlement-subsistence. During the middle of this period, a major drought (the Medieval Climatic Anomaly) occurred, resulting in hypothesized resource shortages.

Late Prehistoric Period (AD 1000–AD 1700)

During the Late Prehistoric period, horticultural practices and pottery were introduced (most likely from the Hohokam area in southern Arizona or from northern Mexico), having its greatest impact along the Lower Colorado River (McGuire and Schiffer 1982; Schaefer 1994, pp. 65–74; Schaefer and Laylander 2007, pp. 253–254). Ceramic artifacts began to appear in the Colorado Desert approximately AD 1000, assigned to the Lowland Patayan (Lower Colorado Buff Ware) and Tizon Brown Ware traditions (Lyneis 1988; Waters 1982).

A complex cultural landscape composed of rock art, trails, and geoglyphs (explained below) developed during the Late Prehistoric period. Trade and exchange were elaborated, with an emphasis on links between coastal southern California and the Southwest. In addition to pottery, artifact assemblages include Desert Series projectile points, shell and steatite beads, and a variety of milling tools. Obsidian use declines significantly, with CCS becoming the dominant toolstone.

Prehistory of the Rice Valley

Prehistoric sites in the immediate vicinity of the RSEP are rare, most likely attributable to the lack of a stable water supply throughout prehistory. It is unclear whether there was ever a fresh water supply. However, seasonal vegetation patterns suggest that past peoples inhabiting the area were very mobile. During early historic times, native peoples inhabited towns/hamlets located along the Colorado River, within the Coachella Valley, and at major desert springs/oases.

Prehistoric Research Topics

Prehistoric research topics include chronology, subsistence-settlement, technological organization, and trade and exchange.

Cultural Chronology

Concerns regarding prehistoric projectile point typology in the Southern California desert have been focused upon the contention that broken, reworked projectile points assigned to one type may produce points assigned to another, possibly obviating their usefulness as chronological markers. This is the Flenniken Challenge (cf., Arnold et al. 2004, p. 45). Dating Early Holocene points is complicated by their frequent occurrence as surface finds. Attempts to date them using obsidian hydration has produced varying results (cf., Basgall 1993, 1995; Jenkins 1987; Jenkins and Warren 1984; Schroth 1994). The chronological parameters and function(s) of Elko, Rosegate, and Humboldt points also have been issues (Bettinger and Eerkens 1997, 1999; Garfinkel and Yohe 2004; Yohe 1992, 1998, 2000). Of particular interest is introduction of the bow-and arrow sometime around A.D. 500.

The Middle Holocene has been viewed by some as a period during which most people left the Great Basin as a consequence of warmer, dryer climate, the so-called Altithermal Abandonment (cf., Antevs 1948; Baumhoff and Heizer 1965; Grayson 1993; Kelly 1997; Madsen 2002; Rhode 1999). This time is characterized by decreased archaeological visibility, suggesting people either were drawn to localities with more reliable resources, or migrated out of the Great Basin to more productive areas.

The Late Holocene is marked by a substantial increase in the number of archaeological sites and greater numbers of artifacts, suggesting increased populations as well as population movements. These include the Anasazi Intrusion into southern Nevada/southwest Utah, focused upon the Virgin and Muddy River Valleys (cf., Kelly 1997; Larson 1987, 1996; Larsen and Miichaelson 1990; Lyneis 1992, 1994, 1995). On a larger scale was the apparent expansion of Numic-speaking peoples throughout much of the Great Basin (Bettinger and Baumhoff 1982; Grayson 1993; Kelly 1997; papers in Madsen and Rhode 1994). This is marked by changes in pottery, basketry, projectile points, and other artifacts. The Late Holocene also marked introduction of Hakataya/Lowland Patayan Ceramic Series buffware pottery into the Colorado Desert/Salton Basin (Arnold et al. 2004; Love and Dahdul 2002; Schaefer and Laylander 2007; Schroeder 1958, 1979; Waters 1982). Contemporaneous use of Tizon Brownware pottery in the Peninsular Ranges and along the Pacific Coast also occurred (Lyneis 1988; Griset 1996).

Subsistence-Settlement

In the Southern California desert, prehistoric subsistence-settlement strategies can be regarded as expressions of Holocene Archaic "Broad Spectrum" adaptation marked by increasing dependence through time upon exploitation of an extremely diverse suite of resources, and increasingly complex resource procurement behavior (cf., Arnold et al. 2004; Basgall 2000; Bettinger 1993, 1999; Elston 1982, 1986; Hockett 2007; Kelly 1995, 1996, 1997; Sutton 1996; Simms 1986, 1987; Thomas 1983a, 1983b; Warren 1984; Warren and Crabtree 1986). This is manifested by development through time of resource and land use intensification (cf., Barlow and Metcalfe 1996; Bettinger 1993, 1999; Elston and Zeanah 2002; Kelly 1997, 2001; papers in McGuire 2002; McGuire et al. 2004; Metcalf and Barlow 1992; Simms 1985a, 1985b, 1987; Thomas 1983a, 1983b, 1988; Zeanah 2004; Zeanah and Simms 1999).

These factors have expressed themselves in Holocene development of hunting and

gathering practices. The focal point of the former has been the emphasis upon taking large versus small game animals, with causative factors including resource depression and intensification, climatic change, and social signaling (cf., Broughton and Bayham 2003; Broughton et al. 2008; Byers and Broughton 2004; Byers and Smith 2007; Byers et al. 2005; Coddington and Jones 2007; Hildebrandt and McGuire 2002; Hockett 2005, 2007; Hockett and Murphy 2009; McGuire and Hildebrandt 2005; McGuire et al. 2004, 2007; Ugan 2005a, 2005b; Ugan and Bright 2001). Gathering studies have emphasized pine nut and hard seed utilization, with transport and processing costs, increased use of upland habitats, and sexual division of labor viewed as critical issues (cf., Bettinger 1993, 1999; Hildebrandt and Ruby 2006; Kelly 1997, 2001; Thomas 1983a, 1983b, 1988; Zeanah 2004; Zeanah and Simms 1999).

Prehistoric hunting and gathering may have led to the evolution of hunting and/or gathering “landscapes”, which influenced the location, distribution, and configuration of habitation sites and task sites utilized for specific resource procurement (cf., Basgall 2000; Bettinger 1999; Eerkens 1999, 2003 b & c, 2004; Fowler 1985, 1994, 1995, 1996; Gilreath and Hildebrandt 1997; Simons 2009; Simons et al. 2009; Zeanah 2004; Zeanah and Simms 1999). Through the Holocene, group mobility decreased and the length of site occupancy increased as growing population size appears to have increased territoriality and decreased foraging territory size (Arnold et al. 2004; Bamforth 1990, Basgall 2000; Bettinger 1999).

Eerkens (2003c; 2004) suggests a significant increase in small seed use and the advent of brownware pottery around AD 1300–AD 1400 are linked. Seed use was intensified because seeds could easily be individually owned, and not subject to unrestricted sharing. Pots were a critical component of small seed intensification, because they usually were individually made and owned, and could be used within houses, allowing food preparation and consumption to occur in private. Privatization of small seeds may have resulted from increased population size, which produced more potential “freeloaders,” new community kinship structures, and creation of resource surpluses.

Horticulture/Agriculture

At the time of initial Euroamerican contact approximately 240 years ago, native peoples living along the Colorado River and within the Colorado Delta grew a wide variety of domesticates and wild grasses, which provided 30-50 percent of their subsistence economy (Castetter and Bell 1951; Schaefer and Laylander 2007, pp. 253-254). Annual flooding of the Colorado River rejuvenated the soil, and provided enough moisture to sustain crops. Colorado River agriculture appears to have begun around 1,300 years ago. It probably was introduced either from the Hokokam area to the east, or from northern Mexico to the southeast (McGuire and Schiffer 1982).

Horticulture appears to have spread west from the Colorado River, possibly reaching the western Colorado Desert 300-200 years ago. Human coprolites and seed caches found in ceramic jars and cache pits from this region contain remains of native cultigens (cf., Bayman et al. 1996; Swenson 1984; Wilke 1978a, 1978b; Wilke and McDonald 1989; Wilke et al. 1977). However, native cultigens may have reached this area through trade instead of local production (Schaefer and Laylander 2007, p. 254).

In the Mojave Desert and adjacent areas, irrigation agriculture was first practiced as a consequence of the Anasazi Intrusion (Kelly 1997; Larson 1987, 1996; Larsen and Michaelson 1990; Lyneis 1992, 1994, 1995; Warren 1984, p. 421, fig. 8.25). It occurred along with foraging for native wild plant and animal resources. Agriculture/horticulture subsequently was practiced by various Numic-speaking peoples, such as the Owens Valley Paiute, Death Valley peoples, Panamint and Timbisha Shoshone, and several Southern Paiute groups, including the Chemehuevi (Fowler 1995:, pp. 110-112, 1996, pp. 91-98; Lawton et al. 1976; Liljeblad and Fowler 1986, pp. 417-418; Steward 1930, 1933, 1938, 1940, 1970; Winter and Hogan 1986, pp. 125-129; Yohe 1997).

Maize, beans, squash, sunflowers, and amaranth were grown in gardens near springs, irrigated communal fields and garden plots, and along streams. Land management and plant husbandry techniques directed at non-domesticates included burning to encourage growth of new plants, clearing, pruning, and coppicing, transplanting plants, broadcast seed sowing, and irrigation of wild stands of bulb and seed plants. Mojave Desert agriculture/horticulture has been interpreted as a response to increased population pressure during late prehistoric times, possibly resulting from climatic change and/or immigration (Bouey 1979).

Cultural Landscapes

In the Colorado and Mojave Deserts, trails, cairns, geoglyphs, cleared circles, rock rings, other desert pavement features, rock art sites, and artifact scatters appear to be elements of prehistoric-ethnohistoric cultural landscapes⁴ (Gilreath 2007; Schaefer and Laylander 2007, pp. 254–255; Cleland and Apple 2003; Cleland 2007). Geoglyphs were constructed on desert pavements by rearranging and/or clearing pebbles and rocks to form alignments, clearings, and/or figures (Arnold et al. 2002; Gilreath 2007, pp. 288–289; Solari and Johnson 1982). These “gravel pictographs” and rock alignments (Harner 1953) occur throughout the deserts of southeast California and adjacent portions of southern Nevada and western Arizona. Rock alignments are present throughout this region, while representational figures only occur close to the Lower Colorado River. An elaborate system of prehistoric-ethnohistoric trails crossed the southern California deserts, leading to or passing adjacent to many of these features (cf., Davis 1961; Earle 2005; Johnson 1980; Johnson and Johnson 1957; Sample 1950; von Werlhof 1988)

Colorado Desert localities include the Pilot Knob Complex, the rock art complex at Palo Verde Point, the Ripley Locality, the Quien Sabe-Big Maria complex, the Topock Maze (Rogers 1929), and a few dozen giant ground figures (Harner 1953; Setzler and Marshall 1952), often first observed from the air. In the Mojave Desert, large rock alignments are found in Panamint Valley, Death Valley, Eureka Valley, and the Owens River Valley (Davis and Winslow 1965; Gilreath 2007, pp. 288–289; von Werlhof 1987). Cation ratio dating⁵ of desert varnish has provided estimated ages of approximately AD

⁴ Cultural landscapes, when related to specific ethnic groups, are referred to as Ethnographic Landscapes (Hardesty 2000).

⁵ Cation ratios between weathered rock varnish and unweathered rock are used as a relative dating technique to roughly determine the age of prehistoric rock carvings (petroglyphs). The quantity of positively-charged ions within the varnish (a chemically-changed layer built up of calcium and potassium leachate over time) is compared to those within the unweathered rock beneath the varnish.

800–AD 1000 for the Colorado geoglyphs (Dorn et al. 1992; Schaefer 1994, p. 63; von Werlhof 1995), although use of the technique remains controversial (Gilreath 2007, p. 289).

These geoglyph, rock alignment, and rock art sites may represent prehistoric ceremonial centers, located along routes between sacred places, representing creation/origin stories/myths, cosmology, iconography, and religion of prehistoric peoples (Altschul and Ezzo 1995; Cleland 2005; Ezzo and Altschul 1993; Gregory 2005; Hedges 2005; Johnson 1985, 2003; von Werlhof 1995, 2004; Whitley 2000; Woods et al. 1985). They also may have functioned as focal points for shamanistic activities, vision quests, curing, and group rituals/ceremonies. Their construction has been interpreted as resulting from group ritual(s) (von Werlhof 1987). Many appear characterized by multiple-use episodes, with portions added through the years as part of ongoing rituals/ceremonies.

Symbolic activities also were represented by intentional pot-drop distributions along trails near water sources. The importance to Native Americans of water sources for survival during long-distance trips and seasonal rounds is obvious. Water sources also manifested significant spiritual values and often were associated with major rock art complexes (McCarthy 1993; Schaefer 1992).

Technological Organization

Prehistoric quarry/lithic artifact manufacture behavior in the Mojave Desert is manifested by differences in tool manufacture and behavior related to the presumed user's gender (Welch 2000), formal versus the expedient procurement of tool stone (Wilke and Schroth 1989); and scales of production occurring at ground stone tool quarries (Schneider et al. 1995). Bamforth (1990, 1992) considers Holocene settlement, raw material, and lithic procurement at several quarry sites in the central Mojave Desert. He suggests prehistoric quarry use was conditioned upon mobility strategies, regional quality and abundance of tool stone, as well as quarry location. Bamforth suggests that an emphasis on transporting prepared cores during the period 2,000 BC–AD 500 may have resulted from the formation of relatively large and stable communities in areas with concentrated plant resources. Basgall's (2000) study of tool stone use during the Late Pleistocene-Early Holocene concluded tool stone selection mainly reflected functional attributes of various tool stone types.

With respect to social and cultural factors governing pottery adoption and use within the Southern California deserts, one concern has been determining if ceramic vessels were locally made (Eerkens 2001; Eerkens et al. 1999, 2002a, 2002b; Griset 1996). Pots generally appear to have been locally produced and used, with limited exchange of pots between different groups. Production appears to have been organized at an individual or family level, emphasizing production of largely utilitarian wares.

Pottery from northern Mojave sites has a relatively high number of elemental signatures suggesting high levels of residential mobility (Eerkens 2003b; Eerkens et al. 2002b). Additionally, prehistoric people produced a fairly large number of pots. The combination of high mobility and a fairly high level of pottery production is seen as leading to caching

pots near lowland wetlands, which were fixed in the landscape, development of pottery attributes promoting fuel consumption, and a high degree of standardization of largely utilitarian ceramics.

Trade and Exchange

Prehistoric and ethnohistoric Southern California desert peoples had a highly developed network of trail connections linking locations within and beyond the region (cf., Davis 1961; Earle 2006; Johnson 1980; Johnson and Johnson 1957; Sample 1960; von Werlhof 1988). High mobility produced considerable cross-cultural interaction and integration in spite of frequent open aggression and warfare between different groups. This integration and interaction occurred between mobile hunter-gatherers and sedentary horticultural peoples. They are archaeologically manifested by the spatial distribution of site types, rock art, artifacts (especially ceramics and shell ornaments), and tool stones, especially obsidian.

Archaeologists monitor the dynamics of prehistoric trade in the Southern California desert by analyzing distributions of artifacts made from various tool stones, shell beads and ornaments, and ceramic types and composition (Schaefer and Laylander 2007, pp. 255–256). Radiocarbon dates ranging between 11,200 and 7860 B.P. on shell beads from several Mojave Desert sites indicate regional trade began early (Fitzgerald et al. 2005). Jones et al. (2003) note Early Holocene desert peoples may have had foraging territories 200-300 km on a side.

The Southern California desert provided prehistoric peoples with a variety of lithic materials for artifact production. These included obsidian, cryptocrystalline silicates (chert), crystalline volcanics (basalt, rhyolite), quartz, and plutonic, metamorphic, and sedimentary rocks. Coso obsidian was the dominant source of obsidian used by desert peoples prior to c. AD 700 when its use dramatically declined (Arnold et al. 2004; Eerkens and Rosenthal 2004; Ericson 1989; Gilreath and Hildebrandt 1997; Hughes 1988; Mazer et al. 1991; Rhode 2000; Stevenson and Sheetz 1989; Stevenson et al. 1993).

Other obsidian sources in the southern Mojave Desert include Bristol Mountains and Devil Peak (Shackley 1994). Johnson and Wagner (2005) and Johnson and Haarklau (2005) note obsidian from a host of sources located along the boundary between the northernmost Mojave Desert and the south-central Great Basin were utilized. Approximately a dozen sources located in Baja California, extreme northwest Sonora, and western Arizona also possibly were used (McFarland 2000; Shackley 1988, 1995, 2005). During the last thousand years, Obsidian Butte glass became the principal obsidian used in the Colorado Desert and coastal southern California (Hughes 1986; Hughes and True 1983; Laylander and Christenson 1988; Schaefer and Laylander 2007, p. 251).

Artifacts made from shellfish species inhabiting the northern Sea of Cortez occur in coastal southern California and the Great Basin (Bennyhoff and Hughes 1987; Fitzgerald et al. 2005) and may have been traded through the Colorado Desert (Schaefer and Laylander 2007, p. 255). Shells from southern California coastal species occur at a number of Southern California desert sites and at others in the Southwest

(Ford 1983). Late Period interregional connections are suggested by the frequent occurrence of Lower Colorado Buffware (i.e., Patayan/Hakataya) pottery throughout the Colorado Desert (Cordell 1997; McGuire 1982; Plymale-Schneeberger 1993; Schaefer and Laylander 2007, p. 255; Schroeder 1979; Shaul and Hill 1998; Waters 1982).

Ethnographic Background

The Chemehuevi are the most likely Native American group ethnohistorically inhabiting the Ward/Rice Valley region. Adjacent groups included the Serrano, Cahuilla, Mojave, Maricopa, and Halchidhoma. The Rice project area is located within the southern part of Chemehuevi territory. Mohave territory was to the east. The Las Vegas group of Southern Paiute were to the north-northwest. The Serrano were to the west-southwest.

The Chemehuevi

Sources for the Chemehuevi include Drucker (1937), Kelly (1934; 1936), Kelly and Fowler (1986), Kroeber (1925, pp. 593–600), Miller and Miller (1967), and Roth (1976; 1977). Carobeth Laird married a Chemehuevi and collected a large corpus of data, primarily on ritual, religion, and myth (Laird 1974a; 1974b; 1975a; 1975b; 1976; 1977a; 1977b; 1977c; 1978a; 1978b; 1984). The Chemehuevi spoke a language belonging to the Southern Group of the Numic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978). Many traits characterizing Chemehuevi culture are very similar or identical to those of the Mohave, discussed below. Several probable Quechan traits also were noted for the Chemehuevi.

For the territory traditionally claimed by the Chemehuevi, the Colorado River formed the eastern boundary south to the Palo Verde Mountains. The boundary then ran northwest, passing east of the Ironwood Mountains, crossing the middle of the Maria Mountains, paralleling the east side of the Iron Mountains, and then running between Old Woman Mountain and just east of Cadiz Dry Lake (Kelly 1934; Kelly and Fowler 1986, p. 369, fig. 1).

The Chemehuevi lacked any form of overall “tribal” organization. Anthropologists refer to territorial subdivisions among the Chemehuevi as “bands.” Each band was composed of a small number of camps/communities/villages. Bands most likely corresponded to economic clusters (Kelly 1964). Each group was a geographic unit, associated with a definite territory. In general, each band was economically self-sufficient.

In general, Chemehuevi settlement was mobile and scattered, with residence recurring within a fixed area. Houses were closely grouped. Their occupants usually were related by blood or marriage. Settlement size ranged from 1–2 households up to 10–20. Springs often were inherited private property. Married siblings often camped at the same spring.

The Chemehuevi traveled widely. They had amicable contact with the Serrano, Cahuilla, Quechan/Yumans, and other Native American groups. The Chemehuevi sometimes joined with the Mohave/Quechan to fight the Cocopa/Halchidhoma. The Chemehuevi often crossed the Colorado River and hunted deer in Quechan, Yavapai, and Western Walapai territory. They also traded, intermarried, and competed in games with the Yavapai. To the west, the Chemehuevi hunted in the Tehachapi area and went

to the Pacific Coast along the Santa Barbara Channel to get abalone shell. Sometimes, a party of 8–10 Chemehuevi men joined men from neighboring groups to make a two-month journey to the Hopi villages (in what is now New Mexico) to trade.

The Chemehuevi apparently did not eat fish, but bighorn sheep, deer, pronghorn antelope, and desert tortoise were among the animal food resources they used (Kelly and Fowler (1986, p. 369). Plant foods in this region included pinyon nuts and mescal. Men inherited rights to hunt large game within certain tracts, defined in songs using geographic references. Women gathered a great variety of plant foods, which were more important in the Chemehuevi diet than game. In addition to pinyon nuts and mescal, agave and seeds were staples. Along the Colorado River, the Chemehuevi practiced floodplain agriculture. They grew corn, squash, gourds, beans, sunflowers, amaranth, winter wheat, grasses, and devil's claw using techniques similar to Mohave agricultural practices (see below).

Chemehuevi winter houses were conical/sub-conical structures. They also built earth-covered houses without a front wall, similar to those constructed by the Mohave. During the summer, many Chemehuevi lived outside, often building and occupying armadas and windbreaks.

With respect to material culture, Chemehuevi baskets and cradles were made from plant fibers. Plant fibers also provided materials for rope, string, and cordage nets. Pottery, which followed Mohave patterns and styles, included cooking pots, water jars, seed germination and storage pots, spoons/scoops, and large pots for ferrying children across the Colorado River. Watercraft included log rafts and reed balsas. Clothing consisted of double skin or fiber aprons and sandals for men and women. The Chemehuevi commonly had pierced ears and wore body paint.

Monogamy was the commonest form of marriage among the Chemehuevi, but some men had more than one wife. Women gave birth in a special enclosure, followed by a 30-day period of seclusion for mother, father, and child. Puberty rites for boys and girls were held, with the former focused on acquisition of hunting skills. Cremation of the dead was traditional, replaced by in-ground burial in the historic period.

In general, no central political control existed. Territorial boundaries were not rigid, and some bands were named, while others were not. The closest known Chemehuevi tribal unit to the RSEP project area is in the Providence Mountains (roughly 90 miles northwest), named "Tumpisagavatsits" or "Timpashauwagotsits" (Kroeber 1925, p. 595). The basic social and economic unit was the nuclear family and could include other close kin. Groups of individual households moved together on hunting and gathering trips, returning to the same spring or agricultural site. Most large bands had a headman whose leadership was more advisory than authoritative. He was usually succeeded by his eldest son.

The principal role of Chemehuevi shamans was curing illness. They acquired their healing powers through dreams rather than through the use of datura or a trance. Chemehuevi families held a mourning ceremony ("cry"), with which several speeches and songs were associated, within the year after the death of a relative. The "cry" was sponsored by the family and included the ceremonial burning of material goods.

The Chemehuevi had deer and mountain sheep song-dances, held for entertainment and hunting success. The Chemehuevi had other songs, as well: bird, salt, quail, and funeral songs. During winter evenings, men narrated a rich body of traditional stories and myths. These performances often included mimicry, song, and audience participation. Oral tradition related people to social norms, their territories, and to the subsistence resources present within them.

The Serrano

Sources for the Serrano include Bean and Smith (1978), Benedict (1924,1929), Drucker (1937), Gifford (1918), Johnston (1965), Kroeber (1925, pp. 615–619), and Strong (1929, pp. 5–35). The Serrano shared many traits and artifacts with the Cahuilla, discussed above. The Serrano spoke a language belonging to the Serean Group of the Takic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978).

It is nearly impossible to assign definite boundaries to Serrano territory. Territory traditionally claimed by the Serrano included the San Bernardino Mountains east of Cajon Pass, lands at the base and north of the San Bernardinios in the desert near Victorville, and territory extending east in the desert to Twenty-nine Palms and south to, and including, the Yucaipa Valley.

The Serrano occupied small village-hamlets located mainly in the foothills near water sources. Others were at higher elevations in coniferous forest, or in the desert. The availability of water was a critical determinant of the nature, duration, and distribution of Serrano settlements.

Women gathered, and men hunted and occasionally fished. Topography, elevations, and biota present within the Serrano territory varied greatly. Primary plant foods varied with locality. In the foothills, they included acorns and pinyon nuts. In the desert, honey mesquite, pinyon, yucca roots, and cactus fruits were staples. In both areas they were supplemented by a variety of roots, bulbs, shoots, and seeds, especially chia. Among primary game animals were deer, mountain sheep, pronghorn, rabbits, rodents, and quail. Large game was hunted with bows and arrows. Small game was taken with throwing sticks, traps, snares, and deadfalls. Meat was cooked in earth ovens. Meat and plant foods were parched or boiled in baskets. Plant foods were ground, pounded, or pulverized in mortars and pestles or with manos and metates. Processed meat and plant foods were dried and stored. Occasional communal deer and rabbit hunts were held. Communal acorn, pine nut, and mesquite gathering expeditions took place. These communal activities involved several lineages under a lineage leader's authority.

Serrano houses were circular, domed, individual family dwellings, with willow frames and tule thatching. They were occupied by a husband and wife along with their children, and often other kin. Houses were mainly used for sleeping and storage. Most daily activities occurred outside, often in the shade of a ramada (a flat-roofed, open-sided shade structure) or other sun cover.

Settlements usually had a large ceremonial house where the lineage leader and his family lived. It was the social and religious center for each lineage/lineage set. The latter was two or more lineages linked by marriage, economic reciprocity, and ritual

participation. Other structures included semi-subterranean, earth-covered sweathouses located near water, and granaries.

Serrano material culture was very similar to that of the Cahuilla. Stone, wood, bone, plant fibers, and shell were used to make a variety of artifacts. These included highly decorated baskets, pottery, rabbit skin blankets, bone awls, bows and arrows, arrow straighteners, fire drills, stone pipes, musical instruments, feathered costumes, mats, bags, storage pouches, cordage, and nets.

The clan was the largest autonomous landholding and political unit. No pan-tribal union between clans existed. Clans were aligned through economic, marital, and ceremonial reciprocity. Serrano clans often were allied with Cahuilla clans and Chemehuevi groups. The core of a clan was the lineage. A lineage included all men recognizing descent from a common ancestor, their wives, and their descendants. Serrano lineages were autonomous and localized, each occupying and using defined, favored territories. A lineage rarely claimed territory at a distance from its home base.

The head of a clan was a ceremonial and religious leader. He also determined where and when people could hunt and gather. Clan leadership was passed down from father to son. The clan leader was assisted by a hereditary ceremonial official from a different clan. This official held ceremonial paraphernalia (the sacred bundle), notified people about ceremonies, and handled ceremonial logistics.

Serrano shamans were primarily healers who acquired their powers through dreaming. A shaman cured illness by sucking it out of the sick person and by the administration of herbal medicines. Various phases of an individual's life cycle were occasions for ceremonies. After a woman gave birth, the mother and baby were "roasted," and a feast held. Differing puberty ceremonies were held for boys (datura ingestion used in a structured ceremonial vision quest) and girls ("pit roasting," ingestion of bitter herbs, dietary restrictions, instruction on how to be good wives). The dead were cremated, and a memorial service was held. During the annual seven-day mourning ceremony, the sacred bundle was displayed, the eagle-killing ceremony took place, a naming ceremony for all those born during the preceding year was held, images were made and burned of those who had died in the previous year, and the eagle dance was performed.

The Cahuilla

A wealth of information exists regarding traditional and historic Cahuilla society and culture (see Bean and Lawton 1967 for a comprehensive bibliography of sources). Primary sources for the Cahuilla include Bean (1972; 1978), Bean and Saubel (1972), Drucker (1937), Gifford (1918), Hooper (1920), James (1960), Kroeber (1908; 1925, pp. 692–708), and Strong (1929, pp. 36–182). The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Takic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978).

Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean (1978, p. 375) described it as, "...from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert

west of Orocopia Mountain to the east, and the San Jacinto Plain near Riverside and the eastern slopes of Palomar Mountain to the west.” The natural boundaries of the desert, mountains, hills, and plains separated the Cahuilla from surrounding Native American groups. The Cahuilla interacted with surrounding peoples via intermarriage, ritual, trade, and war. The Cahuilla, Gabrielino, Serrano, and Luiseño shared common cultural traditions, with the Cahuilla having especially close ties to the two former groups.

Cahuilla villages usually were located in canyons or on alluvial fans near water and food patches. The area immediately around a village was owned in common by a lineage. Other lands were divided into tracts owned by clans, families, and individuals. Numerous sacred sites with rock art were associated with each village. Trail networks used for hunting, trading, and social visiting connected villages. Trading was a prevalent economic activity. Some Cahuilla were trading specialists. The Cahuilla went as far west as the Channel Islands and east to the Gila River to trade.

Men hunted deer, mountain sheep, pronghorn, rabbits, rodents, and birds. This game was stalked/pursued/trapped by individuals and communal hunting groups. Blinds, pits, bows and arrows, throwing sticks, nets, snares, and traps were used to procure game. Communal hunts using fire drives sometimes occurred.

The Cahuilla had access to an immense variety of plant resources present within a diverse suite of habitats (Barrows 1900; Bean and Saubel 1972). Several hundred plant species were used for food, manufacture, and medicine. Acorns, mesquite and screw beans, pinyon nuts, and cactus fruits were the most important plant foods. They were supplemented by a host of seeds, tubers, roots, bulbs, fruits and berries, and greens. Corn, beans, squash, and melons were cultivated. Over 200 species of plants were used as medicines.

Structures varied in size from brush structures to dome-shaped or rectangular houses, 15–20 feet long, and ceremonial houses. The chief’s house usually was the largest. Used for many social, ceremonial, and religious functions, it was located near a good water source. It generally was next to the ceremonial house, which was used for rituals, curing, and recreational activities. Other structures included communal men’s sweathouses and granaries.

Mortars and pestles, manos and metates, pottery, and baskets were used to process and prepare plant and animal foods. Cahuilla material culture included a variety of decorated and plain baskets; painted/incised pottery; bows, arrows, and other hunting-related equipment; clothing, sandals, and blankets; ceremonial and ritual costumes and regalia; and cordage, rope, and mats. Games and music were important social and ritual activities for the Cahuilla.

The Cahuilla had named clans, composed of 3–10 lineages, with distinct dialects, common genitors, and a founding lineage. Each lineage owned particular lands, stories, songs, and anecdotes. Each lineage occupied a village and controlled specific resource areas. All clan members jointly owned clan territory. Territory ownership was established by marked boundaries (rock art, geographic features), and oral tradition. Most of a clan’s territory was open to all Cahuilla. Kinship rules determined rights to assets and responsibilities within a lineage. Each lineage cooperated in defense, large-

scale subsistence activities, and ritual performance. The founding lineage within a clan often owned the office of ceremonial leader, the ceremonial house, and sacred bundle. Artifacts and equipment used in rituals and subsistence was owned by individuals and could be sold or loaned.

The office of lineage leader usually passed from father to eldest son. He was responsible for correct performance of rituals, care of the sacred bundle, and maintenance of the ceremonial house. The lineage leader also determined when and where people could gather and hunt, administered first-fruits rites, and stored food and goods. He knew boundaries and ownership rights, resolving conflict with binding decisions. The lineage leader met with other lineage leaders concerning various issues. He was assisted in his duties by a hereditary official responsible for arranging details for performance of rituals. Other functionaries included song leaders/ceremonialists, assisted by singers and dancers.

Laws were enforced by ritual, stories, anecdotes, and direct action. Supernatural and direct sanctions were used. Tradition provided authority. The past was the referent for the present and future. Old age provided access to privilege, power, and honor. Reciprocity was a significant expectation. Doing things slowly, deliberately, and thoughtfully was stressed. Integrity and dependability in personal relations were valued. Secrecy and caution were exercised in dealing with knowledge.

Disputes between Cahuilla villages usually arose over access to resources. Other causes included sorcery, personal insults, kidnapping of women, nonpayment of bride price, and theft. Armed conflict occurred after all other efforts to resolve things had failed. A lineage leader and/or skillful warrior lead a temporary war party. Community rituals were held before and after a fight, which usually involved ambush.

Ritual and ceremony were a constant factor in Cahuilla society. Some ceremonies were scheduled and routine, while others were sporadic and situational. The most important ceremonies were the annual mourning ceremony, the eagle ceremony, rites of passage (especially those associated with birth, naming, puberty, marriage), status changes of adults, and rituals directed towards subsistence resources. The main focus was upon performance of cosmologically oriented song cycles, which placed the Cahuilla universe in perspective, reaffirming the relationship(s) of the Cahuilla to the sacred past, present, to one another, and to all things.

The Mohave

Information regarding the traditional lifeways of the Mohave has mainly been drawn from the accounts of early explorers and/or fur trappers who were among the first to encounter native groups, as well as from the later ethnographic accounts of anthropologists, usually well after the influences of Euro-American contact had begun to alter traditional ways of life. The following summary derives mainly from Kroeber (1925) and Stewart (1983a, 1983b).

The name Mohave is a variation on the name Hamakhava, which is what the tribal people called themselves (Kroeber 1925, p. 727). The Mohave language is classified into the Yuman subfamily of the Hokan language family. The Mohave were the northernmost and largest tribe of the River and Delta Yumans, who comprised a series

of agricultural tribes that occupied the lower Colorado and Gila Rivers. The traditional ethnographic territory attributed to the Mohave includes the Mojave, Chemehuevi, and Colorado River Valleys along the lower Colorado River at the intersection of the borders of Arizona, Nevada, and California. In pre-contact times, Mohave tribal settlement is reported to have centered in the Mohave Valley where their population densities were observed to be the greatest (Stewart 1983b, p. 55).

The Colorado River served as an oasis in the otherwise harsh, dry environment that surrounded the river valleys. The spring overflow of the river, which spread gently over the bottomlands, left behind a rich silt deposit in its recession. It is within these bottomlands that the Mohave cultivated crops, which served as the foundation of their subsistence economy. Their agricultural methods were relatively simple, consisting of planting seeds on the richly silted floodplains and allowing their crops to mature with a minimum of maintenance or effort. Corn was the primary crop, but several varieties of tepary beans, pumpkins, melons, and other plants were also grown. Once harvested, the portions of the harvest that were not immediately consumed were dried in the sun and stored in large basketry granaries. The Mohave supplemented their diet mainly by gathering wild plants and by fishing, which served as their principle source of meat. Hunting played a minor role in the Mohave subsistence economy (Stewart 1983b, pp. 56–59).

Technology of the Mohave was relatively simple, with tools crafted to meet only the minimum requirements of utility (Stewart 1983b, p. 59). According to Kroeber (1925, p. 736), the farming implements consisted of only two items: a heavy wooden staff or digging stick for planting and a spatulate wooden hoe-like implement, whose square edge was pushed flat over the ground to control weeds. Metates, consisting of a rectangular block of stone, were used for grinding corn, wheat, and beans, and both stone and wooden pestles, as well as stone mortars, were also used for food processing (Kroeber 1925, pp. 736–737). Fish were commonly taken with seines, large basketry scoops, sieves, dip nets, and weirs. The bow and arrow and cactus-spine fish hooks were also used for fishing. Mojave basketry was crudely woven, and their pottery was basic and utilitarian (Stewart 1983b, p. 59). Since hunting was of relatively little significance to the Mohave, hunting devices and techniques were not well developed, consisting mainly of snares, nets, bow and arrow, or curved throwing sticks (Stewart 1983b, pp. 59–61).

Mohave political and social organization was very informal, and no one individual or group had significant authority over another. Despite the Mohave's loose division into bands or local groups that were spread out over great distances, their cohesion as a tribe was very strong, and they considered themselves as one people occupying a nation with a well-defined territory (Stewart 1983a, 1983b).

The nuclear family was the basic unit of economic and social cooperation, although the extended family constituted the core of a settlement. Rather than large centralized villages, Mohave settlements were widely distributed along the riverbanks in close proximity to arable lands. Houses were situated on low rises above the floodplain and often separated by as much as a mile or two (Stewart 1983b, p. 57). During most of the year, the Mohave slept under ramadas; however, during the colder season, they occupied more substantial, semi-subterranean, rectangular earth-covered houses.

Warfare was a dominant strain in River Yuman culture, and the Mohave's strong tribal unity served them well in times of warfare. They apparently traveled great distances to do battle, and their principle weapons were bows and arrows and hard wood clubs. According to Kroeber (1925, p. 727), their main motivation was sheer curiosity, as they liked to see other lands and were eager to know the manners of other peoples, but was not heavily interested in trade.

The Mohave were culturally similar to the other River and Delta Yumans: the Quechan, Halchidhoma, Maricopa, and Cocopa. During ethnohistoric times, the Quechan were considered friends and allies of the Mohave, while the Halchidhoma, Maricopa, and Cocopa were considered to be enemies with whom the Mohave engaged in warfare (Stewart 1983b, p. 56). The Mohave were also friendly with the Upland Yuman tribes of the Yavapai and Walapai of western Arizona, although relations with the Walapai were somewhat mixed.

One of the most important rituals observed by the Mohave centered on death, namely the funeral and subsequent commemorative mourning ceremony. As soon as possible after death, the deceased was cremated upon a funeral pyre along with all of his or her possessions. The house and granary of the deceased were also burned. It was believed that by burning, these things would be transmitted to the land of the dead along with the soul of the deceased (Stewart 1983b, pp. 65–67).

Due to their relatively remote location inland, the Mohave maintained their independence throughout the Spanish period of the sixteenth and seventeenth centuries and were only rarely visited by explorers during that time. The few Spanish accounts of encounters with the Mohave provided similar descriptions of Mohave lifeways as those reported later by ethnographers. It is believed that the ancestors of the Mojave resided in the area for at least 1000 years and the mode of life in prehistoric times is thought to be similar to that observed historically (Stewart 1983b, p. 56).

The Maricopa and the Halchidhoma

Ethnographic information for the Maricopa and Halchidhoma is meager in comparison to the Mohave and the Quechan. The following brief summary is derived from Harwell and Kelly (1983) and Stewart (1983a).

The Halchidhoma first entered written history in the early seventeenth century with the account of Juan de Oñate, who encountered the "Alebdoma" or "Halchedoma" during a Spanish expedition on the lower Colorado River, below its junction with the Gila River. When later encountered by missionary-explorer Eusebio Francisco Kino in the early eighteenth century, the Halchidhoma (or "Alchedoma," as they were referred to by Kino) had moved farther north up the Colorado beyond the Gila. The traditional territory attributed to the Halchidhoma lay along the lower Colorado between the Mohave and the Quechan territories. They were later driven from that area under pressure from their hostile Mohave and Quechan neighbors and moved to the middle Gila River area, where some merged with the Maricopa (Stewart 1983a).

The term Maricopa refers to the Yuman-speaking groups who in the early nineteenth century occupied the area along or near the Gila River and its tributaries (in what is now

southern Arizona), but who earlier had occupied the lower Colorado River area. The Maricopa language is closely related to Quechan and Mohave, all three of which are classified as members of the River branch of the Yuman language family (Harwell and Kelly 1983, p. 71). The Maricopa call themselves pi•pa•s, “the people.” The name Maricopa is an English abbreviation of the name Cocomaricopa, first used by Eusebio Kino in the late seventeenth century (Harwell and Kelly 1983, p. 83).

The Maricopa, who by the early nineteenth century included remnant tribes of the Halyikwamai, Kahwan, Halchidhoma, and Kavelchadom, share common origins and are culturally similar to both the Quechan and the Mohave, the most prominent traits of which included floodwater agriculture and cremation of the dead. Their material culture was also essentially the same (Harwell and Kelly 1983, p. 71). The Colorado River Maricopa lived in low, rectangular, earth-covered houses, but the Maricopa of the Gila River had adopted the round houses of their Piman neighbors. Technology was of little interest to the River Yumans and remained at a low level of development (Stewart 1983a).

Historical Background

The RSEP is located in an area that has historically been and remains remote from centers of development and settlement. The primary historic themes in this discussion focus on Spanish and Mexican routes through the desert, early American traffic, mining, transportation, military training, power transmission, and agriculture/ranching.

Transportation

Spanish and Mexican Routes through the Desert

Sixteenth-century maritime Spanish explorer, Hernando de Alarcon, made the first Euroamerican incursion into the region in 1540, ascending 85 miles up the Colorado River to a point near present-day Yuma. Alarcon was sent to supply Coronado’s land expedition that had set out on foot from Compostela, Mexico, in search of the fabled seven cities of gold. He eventually cached the supplies and departed after waiting many days. Melchior Diaz, leading a small contingent of Coronado’s land unit, later arrived and recovered the supplies. Both Alarcon and Diaz noted the bleak nature of the country. The interior of the Colorado Desert was not explored further until 1702 when Father Eusebio Francisco Kino, a Jesuit missionary from Sonora, began seeking an overland route to coastal California (Rice et al. 1996; Hague 1976; Warren 1980, pp. 83–88).

Nearly seventy years later, Francisco Garcés (a Franciscan Padre) also seeking a route to the coast, forded the Colorado River at the mouth of the Gila River, and went west through the desert before turning back. His efforts were eventually rewarded in March 1774, when he arrived at Mission San Gabriel, accompanying the expedition of Captain Juan Bautista de Anza (Rice et al. 1996, Hague 1976). In 1779, two mission outposts were subsequently established near present-day Yuma to minister to the native Quechan, and strengthen Spain’s hold on this strategic point of entry into California. All passage along this route, later known as the Anza or Yuma Trail, was discontinued in 1781 when the Quechan revolted, killing over thirty missionaries, settlers, and soldiers, including Garcés.

Early American Trans-Desert Crossings

In 1846, during the opening stages of the Mexican-American war, General Stephen Watts Kearny led an advance column of the United States Army into the southern California desert. From Santa Fe, Kearny's troops entered California by way of Yuma, reaching San Diego in December, having abandoned their wagons shortly after crossing the Rio Grande. The war ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo, ceding California and the adjacent Southwest to the United States.

Only days after the Mexican-American War ended, gold was discovered in California, beginning the Gold Rush. It is estimated more than 100,000 travelers entered California by way of the Yuma Crossing.⁶ The presence of so many travelers along this route highly impacted the desert. Whereas previous expeditions made the journey in isolation, during the Gold Rush, trails became de facto highways. Companies of miners frequently encountered one another, or encountered recently vacated campsites. The desert floor also became littered with articles abandoned when they either fell apart or proved too heavy or cumbersome for transport. Broken wagons, furniture, articles of clothing, tools and even weapons left by the side of the road became a bonanza for scavengers (Lamb n.d.).

After 1851, travel to California along the southern route through the Colorado Desert declined (Lamb n.d.). Horse traders and livestock drovers still used the trail to drive herds from Texas and Mexico to California, and the U.S. Army continued to send caravans of provisions from San Diego to its outpost Fort Yuma, at least until 1852. Emigrants, moving west, however, were more apt to be settling in Southern California as farmers or ranchers rather than prospecting for mineral resources.

The Weaver Route/Trail

Sometime during the 1850s, Pauline Weaver, a mountain man, scout, rancher, and miner, blazed a trail across the desert to the Colorado River. The route appears to have passed by Rice (von Till Warren and Roske 1981, p. 20), following in part the route of current Highway 62. Weaver kept his route a secret, and it was little used. He may have been shown the route by local Native Americans whom he had lived among.

Automobile Roads

Automobiles began replacing buckboards (four-wheeled wagons drawn by a horses or mules) about 1910.⁷ Because of bad roads, the high-centered Model-T was the vehicle of choice. At that time, no maps, road signs, or service stations existed. Venturesome motorists in Southern California, faced with these circumstances, banded together in 1900 to form a touring club, and began publishing a monthly magazine with tips on travel and directions to popular destinations (Warren 1980, p. 92). Because desert driving could be perilous, motorists began advocating for better information and road assistance. In 1917, the U.S. Geological Survey erected signs directing travelers to water at 167 localities in California's desert (Thompson 1921).

⁶ <http://www.yumaheritage.com/history.html>

⁷ <http://www.dustyway.com/2008/12/desert-driving-in-early-days.html>

The California Department of Engineering, after paving its first auto road in 1912, began issuing maps in 1918 (Warren 1980, p. 92). Roads remained unpaved for the most part through the 1920 with the exception of a two-mile wood planked section between Brown's Well and Blythe Junction (Brown 1920, pp. 64-65, fig. 1; 1923, pp. 180-181, fig 11). A decade later, during the construction of the Colorado River Aqueduct, Parker Dam Road (renamed California State Route 62 in 1970) became part of the paved road network (Metropolitan Water District 1941, p. 25). This road runs along the northern boundary of the Project.

Railroads

Many rail lines cross the Mojave and Sonora Deserts including the Union Pacific, the Central Pacific (CP), the Southern Pacific (SP), and the Atchison, Topeka, and Santa Fe (ATSF). Of these railroads, lines formerly part of the ATSF run parallel to and north of the RSEP ownership property. The ATSF was initially established in 1860 to run from Atchison and Topeka, Kansas to Santa Fe, New Mexico (Bryant 1974; Marshall 1945; Waters 1950). After completing this mainline segment, the railroad quickly expanded both east and west.

Between February 1882 and August 1883, the Atlantic and Pacific (AP) Railroad constructed a line between Mojave and Needles, California (Myrick 1963, pp. 762-793). Crossing the southern Mojave Desert, the railroad passed through Barstow, Ludlow, Amboy, Cadiz, and Goffs. From Needles the route proceeded east across north-central Arizona and New Mexico to Albuquerque, New Mexico. Operating control of the Mojave Desert portion of the line immediately passed to the SP.

The following year, an agreement was reached turning control of the AP over to the ATSF. During the rest of the 1880s, the ATSF expanded its presence in California, reaching San Diego and San Francisco. Needles and Mojave became important operational centers. Two decades later, ATSF recognized a need for a line from Phoenix into California (Bryant 1974, pp. 186-187; Marshall 1945:p. 183, pp. 267-268; Myrick 1963, p. 792; Waters 1950, pp. 357-358). Beginning in March 1904, construction began along the 100-plus miles across western Arizona. Progress was slowed by a shortage of workers who could withstand the heat. Parker was finally reached on June 17, 1907.

Construction of a bridge across the Colorado River was difficult, and was not completed until Summer 1908. The national recession (i.e., "panic") of 1907 further delayed construction of the 82-mile segment from Parker via Rice to Cadiz. It finally was completed on July 1, 1910. During 1916, the 41-mile Palo Verde branch line was built by the California Southern Railroad. It extended from Rice (originally known as Blythe Junction) south to Blythe.

Harnessing the Colorado - The Colorado River Aqueduct

The paucity of water in the Southern California desert made agriculture a challenge. Plans to improve matters began as early as the 1880s. Thomas Blythe, an investor from San Francisco, backed construction of a canal in the Palo Verde Valley,⁸ 65-miles south

⁸ <http://www.pvid.org/History.html>

of the RSEP. Water, taken from a swamp area called Olive Lake, was used to irrigate pasturelands and small agricultural plots. With Blythe's death in 1883, no further agricultural development in the valley occurred, until the turn of the century. In 1904, the Palo Verde Land and Water Company purchased the Blythe Estate, and began constructing additional canals and intake structures. Two years later, the California state legislature was petitioned to pass the Palo Verde Irrigation District Act to better administer irrigation and drainage.

The Colorado River Aqueduct, which runs immediately north of Rice, was part of a series of 20th century projects designed to utilize water from the Colorado River for agricultural and urban development. Although schemes to appropriate Colorado River waters began as early as 1859, it was not until the first decade of the 20th century that a significant effort was made to harness the Colorado (Starr 1990, Chapter 2; Stevens 1988, pp. 10-16). Private developers formed the California Development Company, and dug a canal to convey Colorado River water to irrigate farms in the Imperial Valley. Following completion of the canal in May 1901, over 10,000 people came to the Imperial Valley during the next three years. Problems with silting and seasonal water supplies led to construction of a new canal without a headgate in 1904.

Disaster struck in Spring 1905 when a series of Colorado River floods overwhelmed the canal. The river began cutting a new channel into the Imperial Valley, with its waters forming the Salton Sea. When efforts to return the Colorado to its original course failed, the California Development Company turned to the Southern Pacific Corporation for financial and engineering assistance in June 1905. After spending \$3.1 million, the SP finally returned the river to its former course in February 1907.

Following the 1905-1907 disaster, continuing problems with siltation, floods, and seasonal lack of water plagued Imperial Valley farmers. During the 1910s, it was increasingly evident that a dam(s) on the Colorado was needed to control flooding and provide dependable water storage, along with construction of a new water delivery system to the Imperial Valley (Hundley 2001, pp. 211-234; Starr 1996, Chapter 11; Stevens 1988).

In April 1922, the Swing-Johnson Bill for the Boulder (i.e., Black) Canyon Project was introduced in the U. S. Congress. A subsequent U.S. Supreme Court decision (*Wyoming vs. Colorado*) held that the doctrine of prior water appropriation governed water allotments from a shared water source to individual states. This produced immediate opposition to the Boulder Canyon Project by six of the seven states located within the Colorado River Basin, who feared that California would obtain most of the basin's water as a consequence of the court decision.

In November 1922, U.S. Secretary of Commerce Herbert Hoover presided over a conference attended by representatives from the seven Colorado Basin states. The resultant Colorado River Compact established formulas for sharing and distributing Colorado River water and hydroelectric power. After several years of political maneuvering by basin states and further amendments, the terms of the compact were approved by six states, and ratified by Congress. In December 1928, Congress passed the Boulder Canyon Project bill.

One of the first acts of Herbert Hoover's presidency in early 1929 was to authorize the Boulder Canyon Project to proceed. In March 1931, the \$48 million construction contract was awarded to the Six Companies. With Frank Crowe as construction supervisor, work on Hoover Dam immediately began. Dedicated at the end of September 1935, the dam provided a massive storage facility for Colorado River water in Lake Mead, effectively ending downstream flooding, and ensuring a year-round water supply.

William Mulholland, anticipating the high demand for water in Southern California, began sending survey crews into the desert in 1923 to find an aqueduct route to transport water from the Colorado River to the coastal plain (Hundley 2001; Metropolitan Water District 1941; Mulholland 2001; Starr 1996, Chapter 11). In 1928, fearing droughts and future water shortages, 13 Southern California cities (Los Angeles, Burbank, Glendale, Pasadena, San Marino, Beverley Hills, Santa Monica, Torrance, Compton, Long Beach, Fullerton, Anaheim, and Santa Ana) formed the Metropolitan Water District of Southern California (MWD). During November-December 1930, the Parker route for the aqueduct was adopted. On September 29, 1931, by a five-to-one margin, MWD voters approved a \$220 million bond issue to construct the Colorado River Aqueduct.

Construction was completed on October 14, 1939. The first water reached Southern California's coastal plain in June 1941. The aqueduct is recognized as one of the engineering marvels of the modern world, and was nominated as a National Historic Engineering Landmark by the American Society of Civil Engineers.^{9,10} It involved the labors of an estimated 35,000 people.

A portion of this aqueduct runs along the northern edge of the RSEP ownership property. It is a concrete-lined canal, 20-55,12 feet wide and 11,71 feet deep (Metropolitan Water District 1941, pp. 36-37 (map), 39). The Colorado River Aqueduct was constructed between 1933 and 1941 (Hundley 2001, pp. 227-234; Metropolitan Water District 1941; Starr 1996, Chapter 11). It runs 242 miles from Lake Havasu on the Colorado River to Lake Matthews in western Riverside County, using five pumping plants, 92 miles of tunnels, 63 miles of concrete-lined canals, 55 miles of concrete conduits, and 144 siphons, totaling 29 miles. Parker Dam, impounding Lake Havasu on the Colorado River was built between 1934 and 1938 (Hundley 2001, pp. 229-230; Reisner 1993, pp. 257-259).

⁹ <http://www.mwdh2o.com/mwdh2o/pages/about/history4.swf>

¹⁰ The Los Angeles Aqueduct, which conveys water 238 miles from the Owens River on the east side of the Sierra Nevada Mountains, was mastermind of William Mulholland and his associates. Their deceptive tactics were used to obtain Bureau of Reclamation water rights and subsequently secure a bilateral monopoly of one buyer and one seller (the Los Angeles Water Board and the Owens Valley Irrigation District). Construction began in 1908 and was completed in 1913.

Mining

Riverside County is known mostly for sporadic, small-scale mining of gold, silver, lead, copper, uranium, fluorite, and manganese. Shumway et al. (1980), provide an overview of mining in region, focusing on areas adjacent to the project area. Large numbers of prospectors were attracted to the region during the gold boom in La Paz, located in western Arizona approximately six miles north of present day Ehrenberg, in 1862. During 1865, the Mule Mountains, approximately 90 miles south from the project area, became the first discovery of gold in Riverside County. Not long after, miners began prospecting in the mountains located on either side of the Rice Valley. As early as 1865, iron ore was being mined in the Eagle Mountain District southwest of the RSEP.

The RSEP project area is surrounded by a number of mining districts. They include the Arrow (90 miles northwest of the project), Freeman (located 40 miles northwest of Project Area from the Old Woman Mountains east to the Chemehuevi Mountains), Chemehuevi (northeast of Project Area, approximately 30 miles, within the Whipple Mountains), Copper Basin (also located in the Whipple Mountains), and Sunrise (roughly 15 miles north in the Turtle Mountains) Districts (Shumway et al. 1980). In addition, several local mountain ranges also have produced significant commodities, including the Arica and Little Maria mountains.

The Arica Mountains, roughly 5 miles southwest of the RSEP was heavily mined for gold and copper, along with small amounts of lead, silver, and iron. Lum Gray and John L. Thomas Brown were the first prospectors in the area, and discovered gold in 1894. Lum went on to develop the Onward Claim with this brother (Shumway et al. 1981). By 1912, this area was known as the Arica group of claims,¹¹ and was operated by Lum's son, Jack Gray. In March 1913, the mines were leased to J.V. Priest, of Assets Realizing Mines Company, who set up a mill, and pumped water from Brown's Well three miles away. The mines continued to change hands over the years, and experienced limited periods of operation.

Rock salt was mined at Danby Lake, 15 miles to the west/northwest (Bailey and Aubury 1902; Ver Planck 1958). From 1890 to 1894, one of the earliest rock salt mining operations in California was conducted by the Crystal Salt Company, which had prospected in 1882. Most of the salt was shipped to mines at Calico by steam traction wagons. Subsequent mining occurred on a smaller scale during World War I, the 1920s, and from 1934 to 1942. In addition, sizeable sustained gypsum mining began in the early 1920s in and around Midland, 15 miles due south of the project area, in the Little Maria Mountains (Murdoch and Webb 1956; <http://vredenburgh.org>). A railroad from the Palo Verde Valley to Rice (formerly Blythe Junction) and south to Midland was eventually built by 1916 to import supplies and export gypsum.

A review of the BLM's National Integrated Land System (NILS) GeoCommunicator website,¹² shows that the majority of the RSEP project area lacks prior disturbance by mining activities. Some mining may have occurred along the western boundary of the RSEP ownership property (mostly mining associated with the Arica Mountains).

¹¹ Other mines in the area include: Brown Mine North, Brown Mine, Mountain Queen, Randolph and Hamilton, and other unnamed prospects.

¹² <http://www.geocommunicator.gov/GeoComm/index.shtml>

Former Community of Rice

Rice, originally named Blyth Junction, was a small community, adjacent to a subdivision and siding on the AP/ATSF Railroad (Brown 1920, pp. 64-65, fig. 1; 1923, pp. 180-181, fig. 11). A well, which ultimately was abandoned, was driven to 355 feet to provide water for railroad locomotives (Brown 1923, pp. 88-101). In the late 1910s-early 1920s, the community had a post office, Blythe Junction, open from November 5, 1910 to September 30, 1916 (Frickstad 1955, pp. 138), and provided water, meals, and sometimes gasoline and general supplies to desert travelers (Thompson 1921, pp. 223-225). During the mid-1930s, Rice had about 15 inhabitants, and a two-pump Shell gasoline station run by the Weaver Family. The Rice Post Office was open between March 1, 1933 and May 31, 1943, and was reestablished on July 1, 1946, closing again at a later date sometime after 1955 (Frickstad 1955, pp. 145).

A Union 76 service station, now in ruins, was open until the late 1970s. Currently, Rice is a vacant site with no standing structures or residents. Along the right-of-way of the Arizona and California Railroad (formerly the ATSF), travelers along Highway 62 have spelled out their names and other forms of graffiti with ballast stones taken from the railroad grade.

Military Activities

19th Century- Camp Cady

With the increase in traffic along southern California desert routes, the U.S. government thought it necessary to establish military outposts to protect travelers from Native American attacks. Major facilities were established at Fort Yuma from 1850-1883, Fort Mojave (1859-1890), and Camp Cady between, 1860 to 1871 (Hart 1965, pp. 57-60, 112-115, 124-126; Ruhge 2005, pp. 408-411, 445-447, 470-475; Waitman 1954, 1968).

By order of General N.S. Clarke, Camp Cady was established on April 14, 1860, roughly 130 miles northwest of Rice Army Air Field. This camp was not intended to be permanent, and therefore, Major Carleton only constructed temporary shelters made of grasses for his men. Carlton subsequently established Fort Beale as a subpost of Camp Cady. This installation was located about 10 miles north of Goffs.

Camp Cady was officially re-activated on April 23, 1865, housing Company C, 4th California Volunteer Infantry for a little over a year until July 6, 1866. Before this time, the only "structures" at the camp were hastily made brush shelters. After 1866, permission was received to construct 35 adobe buildings (Hart 2009). Despite this, the government attempted to close the camp during the same year, but public pressure for continued military protection was too strong. Later in 1866, five soldiers were killed. Threats to the area required continual patrols and wagon train escorts increasing the number of soldiers in the camp to 120 men.

Eventually the need for Camp Cady was less important, and it was moved one-half mile west in 1868 to a location with sufficient area for a parade ground, which was not possible at its former site. In 1868, the number of troops was cut in half as safer, more efficient, travel routes were established elsewhere. Finally in 1871, the camp's buildings were sold to civilians, and used by missionaries.

20th Century Military Activities

The Desert Training Center

In 1942, during World War II, General George S. Patton established the Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA) in a sparsely populated region located in southeastern California, Arizona, and Nevada. Its purpose was to prepare tank, infantry, and air units for the harsh conditions of North Africa by practicing maneuvers, developing tactics, and field testing equipment (Bischoff 2000; Crossley 1997; Howard 1985; Meller 1946). The installation, operated for two years, was originally 10,000 square miles in extent, reaching 28,000 square miles by mid-1943 (Crossley 1997). The facility was the first simulated theater of operations in the United States. Its location was chosen for its unforgiving desert heat, rugged terrain, telephone communications system, accessibility by established railroads and highways, and its proximity to the Colorado River Aqueduct that ensured a reliable water supply (Bischoff 2000; Crossley 1997; Henley 1992, pp. 5–7; Howard 1985, pp. 273–274).

A number of military camps were established in California, Nevada, and Arizona (Bischoff 2000; Crossley 1997; USACCE 1993). California installations included Camps Clipper/Essix, Coxcomb, Desert Center, Goffs, Granite, Iron Mountain, Ibis, Ono, Pilot Knob, Rice, and Young. Camp Young, near Indio, served as the main headquarters, activated on April 28, 1942. Army Air Fields were established at Blythe, Desert Center, Rice, Shavers, and Thermal. Between 1942 and 1944, 20 divisions, 13 infantry and 7 armored, participated in maneuvers at the Desert Training Center. With the exception of one National Guard division, all were Regular Army formations (Crossley 1997). Training followed an eight-week regimen.

Throughout its existence the Desert Training Center, renamed the California-Arizona Maneuver Area in October 1943, experienced logistical problems with obtaining supplies and transporting troops, compounded by a chronic lack of service units. As a result, the War Department closed the facility in April 1944, turning it over to the 9th Service Command which policed the area, closed the camps, and collected/salvaged all equipment and materials. Following the end of World War II, little was left of the post's facilities, except foundations, road grids, and other features.

Camp Rice

Camp Rice was a divisional camp of the DTC/C-AMA, located three miles east of the community of Rice, California, immediately adjacent to Rice Army Air Field (AAF). As with all divisional camps, Camp Rice was constructed as a temporary facility to create a realistic wartime conditions training atmosphere for stationed military personnel. Built during early 1942, the camp housed the 5th Armored Division from August to October 1942. Men of the 6th Armored Division resided there from November 1942 to March 1943 (Bischoff 2000, p. 84). Training included field exercises such as night movements use of firing ranges, anti-aircraft firing, and training with anti-tank weaponry (Meller 1946, p. 60). The 6th Armored participated in training exercises with the 4th Armored in early 1943. Shortly following this exercise, the division was moved to Camp Coxcomb, located southwest of Camp Rice. This facility had better amenities for the troops (Fergusson and Calvit 2009, p. 2-12).

Rice Army Air Field

Rice Field pre-dated World War II. It began as a municipal airport for the community of Rice constructed sometime after 1932 (Freeman 2010). A decade later, the airport was acquired by the 4th Air Support command and was in military use by October 26, 1942. As part of the combat training, the Army Air Force and the Army Service Force were included, serving as support to Army Ground Forces (AGF).

Air squadrons were primarily assigned supporting roles to the ground units, providing tactical support and generally creating a realistic combat environment (Blake, 1996). During maneuvers and other training operations, planes flew low over the troops in order to prepare them for strafing in actual combat. Air crews also practiced bombing and gunnery on several ranges spaced throughout the DTC/CAMA. For the most part, air-to-ground gunnery practice was focused on the toes of nearby mountains (Hazenbush, 1944).

A variety of airplanes were used. L-1 and L-4 Piper Cubs were common for surveillance, proving invaluable in spotting enemy units and directing artillery fire more effectively. Low flying, twin-engine A-20 Havoc attack airplanes (light bombers) were perhaps the most frequently encountered by ground troops. Because of the presence of these aircraft, small units learned the importance of camouflage, dispersion, and the digging of slit trenches. In several instances, C-50 cargo planes were used to supply troops during maneuvers. Douglas C-47, P-39 Airacobra, P-40 Warhawk, and P-38 Lightning were also known to have been used at the DTC/CAMA.

The Rice AAF had two 5,000-foot runways and numerous dispersal pads. The airfield contained barracks, recreation and mess halls, powerhouses, and support facilities to house 3,000 men. By 1943, 4,000 men were reportedly stationed there (Bischoff 2000, p. 93; Fergusson and Calvit 2009, p. 2-10). The 836th Engineer Aviation Battalion was temporarily stationed in adjacent Camp Rice to assist in construction/improvement of the airfield before being moved to Camp Young which had better amenities.

After the DTC/C-AMA was closed on April 30, 1944, Rice AAF was assigned to March Field as a sub-base. It ceased operating on August 2, 1944. In 1949, the field was reopened as a civilian airport. The air field was privately owned from 1951 through 1955. Its final abandonment occurred sometime between 1955 and 1958 (Freeman 2010).

Operation Desert Strike

During the Cold War years, relations between the United States and the Soviet Union were fragile. While a campaign promoting the nonproliferation of nuclear weapons began in 1958, a treaty was not signed until 1970. Amid worries of nuclear war, a two-week training exercise occurred in 1964 called Desert Strike. It involved over 100,000 men, 780 aircraft, 1,000 tanks, and 7,000 other vehicles ranging over 150,000 square miles in California, Nevada, and Arizona, along the banks the Colorado River and adjoining desert valleys (Garthoff 2001, p. 199; Nystrom 2003). Four Army divisions, three Army Reserve and National Guard brigades, and fifteen tactical Air Force squadrons participated in the exercise.

The exercise was a two-sided enactment, with fictitious world powers “Calonia” and “Nezona” sharing a common border along the Colorado River. The premise of the conflict between these two entities, each led by a Joint Task Force, was a dispute over water rights. Major tactical operations during the exercise included deep armor thrusts, defensive operations along natural barriers, counterattacks including airmobile and airborne assaults, and the simulated use of nuclear weapons. The Air Force provided fighter, air defense, interdiction, counterair reconnaissance, and troop carrier operations in support of both joint task forces (Desert Strike n.d., p. 316).

In the first phase of Desert Strike, Calonia initiated mock battle with a full-scale invasion of Nezona. A new technique for military river crossings was put into operation during this invasion. It was accomplished with a combination of assault boats, amphibious armored personnel carriers, ferries, bridges, and fords at eight major sites across a 140-mile long stretch of the Colorado River. Attack and counterattack continued into a second phase during which simulated nuclear strikes and airborne assaults occurred. Heavy equipment, such as M60 tanks, was used during the maneuvers, and their track marks can still be seen across the desert (Prose and Wilshire 2000).

CULTURAL RESOURCES INVENTORY

A project-specific cultural resources inventory is a necessary step in staff’s effort to determine whether the proposed project may cause significant impacts to historically significant cultural resources and would therefore have an adverse effect on the environment.

The development of a cultural resources inventory entails working through a sequence of investigatory phases. Generally the research process proceeds from the known to the unknown. These phases typically involve doing background research to identify known cultural resources, conducting fieldwork to collect requisite primary data on not-yet-identified cultural resources within and near the proposed project, assessing the results of any geoarchaeological studies or environmental assessments completed for the proposed project site, and compiling recommendations or determinations of historical significance for any cultural resources that are identified.

This subsection describes the research methods used by the applicant and Energy Commission staff for each phase and provides the results of the research, including literature and records searches (California Historical Resources Information System (CHRIS) and local records), archival research, Native American consultation, and field investigations. It also provides a brief description of cultural resource types identified by the applicant. Thus, the inventory consists of the body of resources the applicant identified in the AFC, and the descriptions are limited to what the applicant provided, either with the AFC or in response to staff’s data requests. Staff’s assessments of project’s impacts are presented in a separate subsection below.

Area of Potential Effects

The concept and general definition of the Area of Potential Effects (APE), similar to the CEQA project area for the purpose of analysis, are discussed under “Methodology and Thresholds for Determining Environmental Consequences. Archaeological and built-

environment APEs are defined below for the RSEP, considering both the horizontal and vertical dimensions (above and below ground) of the project.

Archaeological APE

For archaeological resources, staff has defined the horizontal extent of the APE to include the project ownership property; the CEC mandated minimum 200-foot buffer around the ownership property, the approximately 10-mile long generator tie-line with an associated 100-foot buffer, substation with a 100-foot buffer, and the fiber optic telecommunications line that will replace the existing ground wire along the Parker-Blythe No. 2 - 161kV Transmission Line. Following these CEC mandates, the RSEP horizontal archaeological APE encompasses a total of 4,002-acres (3,772.8 for the ownership property/generator tie-line/switchyard and 228.9 for the buffer area) and 2,291 acres for the fiber optic overhead groundwire replacement (764 acres in the existing right-of-way and 1,527 acres for the buffer area).

The archaeological APE is located on the following USGS 7.5-Minute Quadrangles: *Big Maria Mountains NW, California* (1971), *Grommet, California* (1971), and *Rice, California* (1983), *Gene Wash, California-Arizona* (1959), *Cross Roads, California-Arizona* (1977), *Parker, Arizona-California* (1975) , *Parker NW., California* (1975), *Parker SW., California-Arizona* (1975), *Vidal, California* (1975), *Big Maria Mountains SW, California* (1972), *Mc Coy Wash, California* (1975), and *Ripley, California* (1975).

The study area is located in portions of the following survey sections: Township 1 South, Range 20 East: Sections 24 and 25; Township 1 South, Range 21 East: Sections 19, 20, 29, 30, 33, 34, and 35; Township 2 South, Range 21 East: Sections 1 and 2; Township 2 South, Range 22 East: Sections 6 (presumed), 7, 8, 16, 17, 21, and 22); Township 2 North, Range 27 East: Sections 4, 5, 8, 17, and 18; Township 2 North, Range 26 East: Sections 13 and 24; Township 2 North, Range 26 East: Sections 22, 23, 24, 27, and 28; Township 2 North, Range 26 East, Sections: 28, 31, 32, 33; Township 1 North, Range 26 East, Section: 6; Township 1 North, Range 25 East, Section: 1, 10, 11, 12, 15, 16, 17 (presumed), 20 (presumed); Township 1 North, Range 25 East: Sections 19 (presumed), 20 (presumed), and 30 (presumed); Township 1 North, Range 24 East: Sections. 25, 26, 33, 34, and 35; Township 1 South, Range 24 East: Sections 4, 5, 6, and 7; Township 1 South, Range 23 East: Sections 12, 13, 14, 15, 21, 22, 29, 31, and 32; Township 2 South, Range 23 East: Section 6 (presumed); Township 2 South, Range 22 East: Section 1 (presumed), Township 2 South, Range 22 East: Sections 1 (presumed), 2 (presumed), 11 (presumed), and 14 (presumed); Township 2 South, Range 22 East: Sections 14 (presumed), 15 (presumed), 22 (presumed), 27 (presumed), 33 (presumed), and 34 (presumed); Township 3 South, Range 22 East: Sections 4, 8, 9, 17, 20 (presumed), and 29 (presumed); Township 3 South, Range 22 East: Section 32 (presumed); Township 4 South, Range 22 East: Sections 5 (presumed), 6 (presumed), 7 (presumed), 18 (presumed), 19 (presumed), 30 (presumed), and 31 (presumed); Township 5 South, Range 22 East: Sections 5 (presumed), 6 (presumed), 7 (presumed), and 8 (presumed); Township 5 South, Range 22 East: Sections 8, 17, 20, 29, 32, and 33; Township 6 South, Range 22 East, Sections 4, 9, 16, 21, and 28; Township 6 South, Range 22 East: Sections 29 and 33.

The archaeological APE also includes a vertical dimension determined based on the maximum depth that would be reached by all foundation excavations and pipeline trenches. At the time of the submitted AFC, the structures included in the RSEP proposal include pipe racks, a turbine, water tanks, a liquid salt tank, heliostats, and the central tower/receiver. The maximum depth (below finished grade) for these structures is roughly 20 feet and the minimum depth (below finished grade) is 12-inches. At the time of these plans, a grading strategy had not been put into effect – to date, cut and fill depths, at various locations across the site, are presumed to be between 0 and 8 feet. The previously mentioned structures will have vertical heights and depths as follows: turbine with a mat foundation¹³ and height of 8 feet; water tanks with a 2-foot deep foundation and height of 30-feet; two liquid salt tanks also with a 2-foot deep foundation and height of 40-feet; the heliostat foundations may reach a depth of 10 to 12 feet and 33 inches diameter and a height above ground of 28 feet); and the central tower which will be situated on a donut shaped foundation with a height of 538-feet. The donut foundation (diameter of 115-feet) will have a central (immediately beneath the tower) depth of 20-feet and will thin out as it moves farther away from the middle, reaching a depth of 8 feet. If the fiber optics line is installed to replace the existing overhead ground wire the Parker-Blythe Transmission Line #2, it would be hung at a height of 60-70 feet, at the top of the H-frame wood pole structures.

Built-Environment APE

For built-environment resources, staff has defined the horizontal extent of the APE to include the project footprint and a surrounding half-mile buffer.

Ethnographic APE

For this project, staff identified no ethnographic resources and so defined no APE for them.

Background Inventory Research

Various repositories in California hold compilations of information on the locations and descriptions of cultural resources older than 45 years that have been identified and recorded in past cultural resources surveys. Applicants acquire information specific to the vicinity of their project from certain repositories and to provide it to staff as part of the AFC submitted to the Energy Commission. Additionally, to acquire further information on potential cultural resources in the vicinity of a proposed project, the applicant is required to make inquiries of knowledgeable individuals in local agencies and organizations and to consult Native Americans who have expressed an interest in being informed about development projects in areas to which they have traditional ties.

CHRIS Records Search

The California Historical Resources Information System, or CHRIS, is a federation of eleven independent cultural resources data repositories overseen by the California State Office of Historic Preservation. These centers are located around the state, and

¹³ In areas where shallow or mat foundations are planned and the existing grades are more than one-foot below the bottom of the footing, the upper \pm 2-feet of existing soils should be over-excavated to expose firm, native soils, prior to placement of engineered fill.

each holds information about the cultural resources of several surrounding counties. Qualified cultural resources specialists obtain data on known resources from these centers and in turn submit new data from their ongoing research to the centers. The Project falls within the jurisdiction of the Eastern Information Center, which is housed in the Anthropology Department at the University of California, Riverside.

Rice Solar's cultural resources consultant, CH2MHILL, conducted a records search at the Eastern Information Center, University of California, Riverside and at the San Bernardino Archaeological Information Center on April 23, 2009. This study area included the project ownership property and 1-mile buffer. A 0.5-mile buffer was established around the generator tie-line.

Previous Surveys

Seven previous studies have been conducted within the 1-mile radius of the Project, three of which lie within the proposed RSEP archaeological APE (Ri-1690; Ri-7753; Sb-5332). Ri-1690 was a linear survey (for a seismic testing line in 1983) that crossed the RSEP ownership property in the southeast corner. Ri-7753 was a survey for the Parker-Blythe Transmission Line No. 2. Sb-5332 was conducted in the northeastern corner of the RSEP area (at the location of existing telecommunications towers); resources were identified. Two of the remaining studies (Ri-1210 and Ri-7172) were block surveys of varying sizes located outside of the project area, but within the 1-mile search radius. The Tennessee Valley Authority conducted Ri-1210, located north of the generator tie-line, roughly 1.7-miles northwest of the generator tie-in's southeastern terminus, to survey two uranium exploration sites. Ri-7172 was a small study conducted for the implementation of telecommunications equipments near existing towers. The two remaining reports, Ri-1211 and Ri-1244, consist of overview studies for Rice Valley and the surrounding areas.

Cultural Resources Table 2
Previous Surveys within the Study Area (Records Search Limits)

Report No.	Date	Within APE	Author(s)	Title
RI-7172 (25006A)	2003	N	Pletka	Cultural Resource Assessment for the AT&T Wireless Services Facility No. 25006A, Unincorporated Riverside County, California
RI-1690	1983	Y	Wilke	Negative Letter Report to BLM from the Archaeological Research Unit of the University of California Riverside
RI-1210	1981	N	Lippencott	A Cultural Resources Survey of Two Proposed Uranium Exploration Sites in Rice Valley, Riverside County, California
RI-7753	1998	Y	Schaefer	A Cultural Resources Inventory and Evaluation of the Parker-Blythe 161 kV Transmission Line No. 2, Riverside and San Bernardino Counties, California
RI-1211	1980	Y	Von Till Warren et al.	A Cultural Resources Overview of the Colorado Desert Planning Units
RI-1244	1978	N	BLM	Planning Unit Archaeological Survey Sample Unit Records
SB-5332	1999	Y	Duke	Cultural Resources Assessment for Pacific Bell Mobile Services Facility CM-688-01, County of San Bernardino, California

Previously Recorded Resources

The records search identified 81 previously recorded resources (64 prehistoric and 17 historical) within the RSEP study area, the vast majority of which are situated along the existing Parker -Blythe Transmission Line No. 2 (Cultural Resources Table 3 – Appendix A). Of these, 77 are located within the archaeological APE. The prehistoric sites include 29 trail segments (two with associated petroglyphs, several with associated lithic scatters and/or quarries), 26 lithic scatters, 7 quarry sites, one geoglyph, and one ceramic scatter. The historical sites include 3 small unnamed temporary Desert Training Center camp sites, Camp Rice, 2 mining camps, two historic roads, the Atchison-Topeka-Santa Fe Railroad, the Colorado River Aqueduct, the structural remains of a former Vidal power substation, and 6 refuse scatters and/or dumps.

Archival and Library Research

Detailed resource-specific information needed by staff may entail primary and secondary research in various archives and libraries. The applicant may include archival information as part of the information provided to staff in the AFC or may undertake such research to respond to staff's data requests. Staff may also undertake such research to supplement information provided by the applicant.

As such, CH2MHILL also visited the General Patton Memorial Museum (on July 30,

2009) in order to learn more about regional history¹⁴. CH2MHILL also performed other archival research including the examination of historic topographic maps including: several iterations of *Rice, California* (War Department 1:62,000 scale, 1943; War Department 1:62,500 scale, 1943; USGS 1:62,500 scale, 1954; USGS 1:34,000 scale, 1977) and *Big Maria Mountains* (USGS 1:62,500 scale, 1951). In addition, other historic maps were referenced online from California State University, Chico and University of Alabama. Also reviewed were maps from the Malcolm Rogers collection on file at the Museum of Man in San Diego.

Staff executed additional archival research, visiting the University of California, Davis Shield Library and conducted additional online searches for historic maps depicting the project area. The following maps were examined:

- Beale (1861), Map of Public Surveys in California, Scale 1:1,140,000.
- American Photo-Lithographic Company (1865), California, Scale 1:5,069,000.
- Asher and Adams (1872), California and Nevada- South Portion, Scale 1:1,267,000.
- Williams (1873), Map of California and Nevada, Scale 1:3,485,000.
- Colton (1873), Colton's California and Nevada, Scale 1:2,091,000.
- Mitchell (1875), Map of the State of California, Scale 1:2,408,000.
- Hardesty (1882), Map of California and Nevada, Scale 1:2,000,000;
- Hardesty (1883), Map of Southeastern California, Scale 1:1,140,000.
- Rand McNalley (1884), California, Scale 1:2,028,000.
- Punnett Brothers (1897), Map of the State of California, Scale 1:2,218,000.
- Rand McNalley (1897), California, Scale 1:1,190,000.
- U.S. Geological Survey (1914), Lithologic Map of California, Scale 1:2,000,000.
- Smith (1916), Geological Map of the State of California, Scale 1:760,320.
- Executive Order 11652, Section 3(E) and 3(D) or (E) (1972), Arizona-California-Nevada Desert Training Center Maneuver Area, Sheet 5.
- U.S. Geological Survey (1978), Rice Quadrangle, Scale 1:24,000.
- War Department (1944), California, Scale 1:62:500.

Local Agency and Organization Consultation

California counties and cities may recognize particular cultural resources as locally historically important by ordinance, in general plans, or by maintaining specific lists. To facilitate the environmental review of their projects, applicants acquire information on locally recognized cultural resources specific to the vicinity of their project by consulting local planning agencies and local historical and archaeological societies.

CH2MHILL contacted various institutions requesting information for the ownership

¹⁴ The General Patton Museum is located at Chiriaco Summit near Desert Center and contains information about the Desert Training Facility and other military history related to the Project area.

property and surrounding area. The following institutions were contacted by formal letter (dated October 8, 2009) General Patton Memorial Museum and Riverside County Historical Society.

Local Agency and Organization Consultation Results

CH2MHILL received no responses from the various institutions contacted. As portions of the RSEP falls on BLM land, a Fieldwork Authorization Request form was filed and approved. Contact with the CEC is ongoing to coordinate of project activities.

Native American Consultation

The NAHC maintains two databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans, referred to by staff as Native American ethnographic resources. The NAHC's Sacred Lands database has records for places and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials.

The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specified areas. Both applicants and staff request information from the NAHC on the presence of sacred lands in the vicinity of a proposed project and also request a list of Native Americans to whom inquiries will be made to identify both additional cultural resources and any concerns the Native Americans may have about a proposed project.

CH2MHILL contacted the NAHC on August 31, 2009, requesting a list of local Native Americans who might have concerns about the RSEP and a search of the Sacred Lands Files for any known resources that might be affected by project impacts. The NAHC responded on September 9, 2009, indicating that there were no known Native American cultural resources in the area and supplied CH2MHILL with a list of individuals representing local Native American communities. At the time of CH2MHILL's inquiry, the co-lead federal agencies (Western and BLM) had decided to conduct further consultation with the identified Native American tribes.

Steve Tromly of Western corresponded with local Native Americans by letters dated January 26, 2010 (initial consultation) and June 30, 2010 (project status up-date). Cultural Resources Table 4 provides a list of those contacted, their affiliations, and responses, if any. Among those contacted were individuals from the Ramona Band of Cahuilla Mission Indians, Twenty-Nine Palms Band of Mission Indians, the Chemehuevi Reservation, the Colorado River Indian Tribe Reservation, the AhaMaKav Cultural Society (Fort Mojave Indian Tribe), the Morongo Band of Mission Indians, the San Manuel Band of Mission Indians, and the Torres-Martinez Desert Cahuilla Indians. A tribal meeting and site visit was held on April 8, 2010, with representatives from three tribes (Fort Mojave, Fort Yuman-Quechan, and Twenty-Nine Palms Band) in attendance. These tribes expressed interest in conducting an ethnohistory study for the proposed project area. Western sent a Scope of Work for the study to the three tribes on April 12, 2010.

CULTURAL RESOURCES Table 4
Summary of Applicant's Native American Consultation*

Contact	Affiliation	Sent	Response
Joseph Hamilton	Ramona Band of Cahuilla Mission Indians	Letter	None to date
Darrell Mike	Twenty-Nine Palms Band of Mission Indians	Letter	None to date
Joseph R. Benitez	None provided by the NAHC	Letter	None to date
Charles Wood	Chemehuevi Reservation	Letter	None to date
Michael Tsosie	Colorado River Reservation Indian Tribes	Letter	None to date
Linda Otero	AhaMaKav Cultural Society, Fort Mojave Tribe	Letter	6/17/2010 – states that the tribe would like to stay involved with the progress of the RSEP
Michael Contreras	Moronggo Band of Mission Indians	Letter	None to date
Ann Brierty	San Manuel Band of Mission Indians	Letter	None to date
Diana L. Chihuahua	Torres-Martinez Desert Cahuilla Indian	Letter	None to date
Ernest H. Silva	Moronggo Band of Mission Indians	Letter	None to date

* Notice of project sent 1/26/10; Project Update with Cultural Results sent 6/30/10

Results of Inquiries Made to Native Americans

Western and CH2MHILL have received few comments to date. The Cultural Society director for the Fort Mojave Indian tribe requested continued consultation by e-mail on June 17, 2010. Consultation with the Tribes is ongoing.

Field Inventory Investigations

To facilitate the environmental review of their projects, CH2MHILL conducted surveys of the main project footprint (heliostat field) and gen-tie line (4,002 acres) to identify previously unrecorded cultural resources in both the archaeological and built environment APEs. The CH2MHILL survey included a pedestrian archaeological survey and a built-environment windshield survey. No survey of the Parker-Blythe Transmission Line No. 2 was conducted as it had been previously surveyed in 1997. The applicant also conducted a geoarchaeological study to determine the likelihood of encountering buried cultural deposits.

Results of Pedestrian Archaeological Survey

CH2MHILL performed the pedestrian survey of the RSEP between August 31 and September 16, 2009 (Fergusson and Calvit 2009). A four-member crew and one field director walked transects spaced no more than 15 meters. Identified sites (i.e., artifact groups of 5 or more items) were recorded, photographed and their positions determined with handheld global position system (GPS) unit. Isolates (i.e., artifact concentrations of 4 or less) were not recorded. Isolated features were recorded as sites. An arbitrary

distance of 50-meters between artifacts and features or a change in landform was used to create boundaries between individual sites.

Cultural Resources Identified

CH2MHILL survey team recorded two new resources: an historic road segment along the transmission generator tie-line, and the Rice Army Air Field (AAF). They also recorded features at the western periphery of previously recorded Camp Rice, producing a site record update. They found 141 archaeological features and 98 artifact concentrations associated with the RAAF/Camp Rice (Fergusson and Calvit 2009, pp. 5:1-9). Documentation consisted of a listing of features/concentrations, very brief descriptions, a map of their locations, and some photographs. Feature forms were prepared of a representative sample of the features/concentrations (23%) identified during the field survey to demonstrate their general nature with the intent of completing the full documentation as part of the mitigation measures. Information on these features and artifact concentrations are presented in Cultural Resources Tables 5 and 6.

Historic Features

Rice AAF/Camp Rice contain 141 features including: 18 debris features (burned & unburned, piled or placed in pits); 14 earthen features (emplacements, a firing butt, a mound, and berms); 52 pits (unlined, rock lined, wood lined); 5 trenches; 31 concrete slabs (remnants of structures within the RAAF including, but limited to, kitchens, bathhouses, lavatory, barracks/officer's quarters, dispensary, headquarters, enlisted mess hall, and airfield operations building); 12 stone features (rock piles, rock alignments, aerial markers); and 9 miscellaneous features such as a drain, sign bases, sidewalk, wells, and wooden posts) (Cultural Resources Table 5, Appendix A).

Historic Artifact Concentrations

Artifact concentrations associated with Rice AAF include 39 localities, all of which are either refuse scatters or burned debris dumps, composed primarily of fuel cans, miscellaneous metal, paint cans, and food/beverage cans (Cultural Resources Table 6). Of these 39 locations, 27 (70%) are located within the receiver tower area and the remaining 12 (30%) are within the ownership property block. Fifty-nine artifact concentrations were found associated with the western periphery of Camp Rice. The majority (n=41) are debris scatters primarily comprised of food cans (i.e., sanitary cans, hole-in-top cans, food bottles, and army ration cans), but also glass, and construction debris. The rest are burned debris dumps. All are located outside of the solar tower outline, but within the ownership property boundary. (See Cultural Resources Table 6, Appendix A).

Results of Geoarchaeological Investigations

Geoarchaeological monitoring of a geotechnical investigation within the RSEP APE took place August 5, 2009 (Terracon 2009). Excavations of two test trenches were observed by Dr. Geoff Spaulding for presence/absence of paleosols, archaeological artifacts, or other evidence of archaeological deposition. Each trench was excavated to a depth of roughly 10 feet (~3-meters). Strata and stratigraphic boundaries were then described, identified, and recorded for each trench. Two alluvial units, each possessing several horizons, were identified. Trench 1 provided the most complete stratigraphic sequence.

The upper portion of Trench 2 was apparently removed during grading/construction of the RAAF and replaced by 16 to 30 cm of recompacted fill and rubble. From these observations, Spaulding concluded that the Holocene (the last 10,000 years) is restricted to roughly the top 20 cm. He also regarded it unlikely that subsurface archaeological resources exist within the project area.

Results of Windshield Survey for Built-Environment Resources

The field survey for the built-environment APE was conducted congruently with the archaeological resources survey (August 31 – September 16, 2009) (CH2MHILL 2009 5.3b, pp. 5-7). The CEC mandates a minimum 0.5 mile radius from the plan site and generator tie-line. The only structures over 45 years of age within the vicinity of the RSEP site are State Route 62, the Colorado River Aqueduct, and the Atchison, Topeka, and Santa Fe Railroad, all of which have been previously recorded and are outside the APE. As Rice AAF and Camp Rice structures were dismantled when they were closed, the architectural survey instead relied heavily on the literature review and historic aerials in order to create a complete context for the area (CH2MHILL 2009 5.3b, pp. 5-7).

Summary of Identified Cultural Resources in the Archaeological APE

A total of 77 sites are present within the APE, including both *previously* recorded resources and *newly discovered* ones identified during field investigations (Cultural Resources Table 7). Two of the resources, the Rice AAF and Camp Rice, contained numerous features and artifact concentrations, including refuse scatters, pits, and rock alignments [Cultural Resources Table 6 (Appendix A) and Table 7(see below)].

**Cultural Resources Table 7
Summary of Cultural Resources within the Archaeological APE
(Previously Identified & Newly Discovered)**

Site Era	Site Type	Total
Historic	Small Unnamed Military Camps	2
	Camp Rice	1
	Rice Army Air Field	1
	Mining Camps	2
	Roads	1
	Refuse Scatters/Dumps	6
	Historic Structural Remants	1
Prehistoric	Ceramic Scatters	1
	Geoglyphs	1
	Lithic Scatters/Quarries	32
	Trail Segments (some with lithics, quarries, geoglyphs, ceramics)	29
	Total	77

A summary of the resources within the archaeological APE is presented in Cultural Resources Table 8.

Cultural Resources Table 8
Summary of Features and Artifact Concentrations found within
the Rice AAF/Camp Rice Facility Footprint portion of the APE

Aerial Markers	2
Barracks	1
Barrier	1
Berms	4
Burned Debris Dump/Pit	13
Charcoal Dump	2
Concrete Slab	28
Dirt Mound	1
Drain	1
Dump/Pile	2
Emplacement	8
Firing butt	1
Pit	18
Rock-Lined	20
Wood-Lined	2
Posts	1
Rock Alignment	4
Rock Pile	6
Septic Pit	1
Sidewalk	1
Sign Base	2
Trench	3
Rock-Lined	2
Wood-Lined	1
Well Features	2
Wood Posts	1
Burned Debris	6
Can Scatter	12
Construction Debris	2
Debris Scatter	18
Dump	1
Burned Debris Dump	1
Capped Well	1
Debris Scatter/Dump	2
Emplacement	1
Pit	7
Rock-Lined	1
Burned Debris	7
Can Scatter	14
Construction Debris	1
Debris Scatter	34
Glass Scatter	3
TOTAL	238

NRHP and CRHR Evaluations of Cultural Resources

Previously recorded and newly recorded resources are discussed below in separate subheadings, followed by discussions of two proposed cultural landscapes (the Desert Training Center and the Prehistoric Trails Network).

Previously Recorded Resources within the APE

All previously recorded resources along the existing Parker-Blythe Transmission Line No. 2 were evaluated by Schaefer et al. (1998). Their eligibility recommendations (eligible, not eligible, and indeterminate¹⁵) are assumed valid for the purposes of this Staff Assessment and are listed in Cultural Resources Table 9, Appendix A. It is acknowledged that these recommendations have not received concurrence from the Office of Historic Preservation. Of the 77 resources considered, 23 were recommended eligible for the NRHP, 35 were indeterminate (therefore possibly eligible), and 18 ineligible. The only other resource previously recorded within the APE (not recorded as part of the Parker-Blythe Transmission Line No. 2) is Camp Rice. It has not been evaluated.

Newly Recorded Resources

Two new resources were identified during the CH2MHill surveys of the RSEP heliostat field and gen-tie line: the historic Rice AAF and an unnamed, unimproved dirt road. In addition, new features and artifact concentrations, associated with the previously recorded Camp Rice, were also identified. The road, while still having physical integrity, does not appear to be significant, thus, for purposes of this analysis, is considered ineligible for both the NHRP and CRHR. Eligibility recommendations for Rice AAF and Camp Rice are discussed below.

Bischoff (2007), the Applicant's historian for RSEP, argues that the Rice AAF and Camp Rice should be considered eligible for listing in the NRHP, having sufficient integrity to reflect their important historical association with the DTC/C-AMA. He regards Rice AAF to be, by far, the best example of a DTC/C-AMA airfield. It was a multifaceted facility containing many important elements, still evidenced by elaborate, improved-surface runways, taxiways, dispersal pads, streets, rock-lined walkways associated with a tent area, and foundations for various temporary structures such as barracks, mess halls, kitchens, lavatories, bathhouses, operations, etc. Staff concurs with Bischoff's eligibility recommendations for both the Rice AAF and Camp Rice. These resources meet all NRHP Criteria A, B, C, and D (also CRHR Criteria 1-4). See next section, Desert Training Center Cultural Landscape, for discussion regarding each criterion, as the arguments for the specific facilities (Rice AAF and Camp Rice) and the DTC/C-AMA as a whole are similar.

Condition of certification **CUL-11** requires the creation of a Historic Interpretive Area, providing: (1) consistency with the requirements of the Warren-Alquist Act and (2) a portion of the mitigation for the loss of the majority of features associated with the Rice

¹⁵ Resources listed as indeterminate are either: (1) very large lithic scatters with chipping station complexes that extended beyond the project ROW, precluding ability to record in entirety or to properly consider the archaeological context; or (2) resources that had been previously recorded and could not be relocated in 1998, possibly because they were originally mismatched or destroyed in the interim.

AAF and impact to Camp Rice. The Historic Interpretive Area would be located along the west side of the project's secondary access (fire access road), adjacent to several remaining artifacts of the Rice AAF (e.g., stem wall foundations and rock-lined paths), which would become part of an interpretive path. All sensitive site information related to the Rice AAF would be documented (and curated, if appropriate) prior to completion of the interpretive area and public access. Location of the Historic Interpretive Area at a considerable distance from the remaining Camp Rice would help limit additional public impacts to the Camp's remaining features.

Desert Training Center Cultural Landscape (DTCCCL)

In 1986, the BLM planned to nominate each of the seven camps to the NRHP, to develop an interpretive program for the DTC/C-AMA, and to provide historical resources protection through designation as an Area of Critical Concern (ACEC) (Bischoff 2000, p. 134). Bischoff (2000, p.133; 2007, p.159-160), developing an historical context for the DTC/C-AMA, concluded it was a significant resource under all four criteria of the NRHP.

In a later publication, Bischoff (2007, p.159) argues that the DTC/C-AMA meets Criterion A being associated with events that made a significant contribution to the broad patterns of our history. The DTC/C-AMA was one of a kind in U.S. military history. It was here that the tactical, strategic, and logistical doctrines were developed and refined and subsequently applied overseas. More than one million men trained here, representing more than ten percent of those serving in the war. The training left a lasting impression on them. Undoubtedly, this training contributed to the fighting capabilities of U.S. soldiers in WWII.

Under Criterion B, Bischoff (2007, p.159) argues that the DTC/C-AMAA is also associated with the lives of persons significant to our past. In this case, he argues that several preeminent figures in the U.S. Army served there and helped shape the facility. General George S. Patton, one of the best-known military figures of the twentieth century, was instrumental in the development of the training center. Other famous military personages included General Walton Walker, General Terry Allen.

Under Criterion C, Bischoff (2007, p.160) argues that the DTC/C-AMA, with its unique layouts of camps and airfields, embodies a distinctive characteristic of a type, period, or method of construction.

Lastly, Bischoff (2007, p.160) argues that the archaeological resources (e.g., refuse deposits, the footprints of runways and landing strips, tank tracks, barracks foundations, foxholes, bivouacs), many of which have artifactual components, may yield information important to America's history of desert training during WWII, meeting Criterion D.

He recommends that the facility be nominated to the NRHP as a discontinuous district of clearly functionally- and temporally-related cultural resources. He further proposes that the facility be recorded as multiple properties consisting of contributing and noncontributing elements to the district. Consequently, the DTC/C-AMA can be thought of as an interconnected landscape of World War II training sites that are highly significant for their contributions to our understanding of how American soldiers were trained during World War II.

Energy Commission staff, Western, and BLM supports the designation of a noncontiguous cultural landscape (historic district) that incorporates historical archaeological sites associated with Gen. Patton's World War II DTC/C-AMA, to be known as the Desert Training Center Cultural Landscape (DTCCL). The NRHP guidance for districts and cultural landscapes requires identifying certain characteristics, including boundaries, one or more periods of significance, thematic associations, and property (resource) types. The boundaries of the DTCCL need to be refined, based on the historical record. The period of significance is 1942–1944. The thematic associations include the nation's preparation for World War II, U.S. Military Training, Gen. George S. Patton, Jr., and Gen. Walton Walker. The DTCCL site types include, but are not limited to depots, airfields, ranges, bivouacs, maneuver areas, camps, and hospitals.

Energy Commission staff, Western, and BLM recommend that DTCCL is eligible for listing on the NRHP under Criteria A through D (CRHR Criteria 1-4). The DTC/C-AMA was the largest and the only such military training facility in American military history. The training that took place here undoubtedly helped to win World War II. Contributors to this landscape associated with the RSEP include the following: Rice AAF, Camp Rice, two other small military training camp sites and a military refuse dump (Cultural Resources Table 10).

Prehistoric Trail Network Cultural Landscape (PTNCL)

Energy Commission staff, Western, and BLM supports the designation of a noncontiguous cultural landscape (historic district) that incorporates prehistoric archaeological sites associated with the Halchidhoma Trail (CA-Riv-0053T) referred to here as the Prehistoric Trails Network Cultural Landscape (PTNCL). This landscape consists of important destinations in the Colorado Desert near Blythe, California, the network of trails that tie them together, and the features and sites associated with the trails. The foundation of this cultural landscape is a core group of 224 sites originally recorded by McCarthy (1993) and those found during survey of the Parker Dam-Blythe Transmission Line No. 2. Those from the Parker Dam-Blythe Transmission Line are found primarily at the south end of the Whipple Mountains and are thought by Schaefer et al. (1998:90) to be associated with an important route from Parker to Needles that may have been part of the *keruk* trail system, citing Altschul and Ezzo (1994) and Stone (1991:82).

In the 1990s McCarthy (1993) and a group of volunteers recorded 20 km of the Halchidhoma Trail (CA-Riv-0053T) as it curves around the southern and western side of the McCoy Mountains leading from the Blythe Intaligos (geoglyphs) through the Chuckwalla Valley. They identified 224 trail-associated sites and subsidiary trails associated with the Halchidhoma Trail. McCarthy's report provides the basis for preliminary definitions of the boundaries, period of significance, thematic associations, and property types of the PTNCL.

The NRHP guidance for districts and cultural landscapes requires identifying certain characteristics, including boundaries, one or more periods of significance, thematic associations, and property (resource) types. The boundaries of the PTNCL need to be refined as additional pieces are identified, but in broad terms the boundary extends

along the length of the historically known route of the Halchidhoma Trail, from where it begins near Blythe at the Colorado River, continuing to the west through the Chuckwalla Valley towards modern Los Angeles, with a suggested width of 10 miles. The period of significance also needs to be refined, but it appears that the prehistoric trail systems of southern California were used for thousands of years. Therefore, as a preliminary measure, Energy Commission staff defines the period of significance as the entire prehistoric and early historic periods. The thematic associations currently include travel, trade, and ritual. Resource exploitation, particularly the collection of stone tool and ground stone raw materials, is also an important theme. The PTNCL site types are divided into three categories: destinations, trails, and trail-associated sites or features.¹⁶

Destinations primarily include water sources, but also include residential, religious, and resource-collection sites. Water-oriented destinations include natural features such as rivers, springs, lakes, rainwater tanks, as well as man-made wells. Residential sites include villages and camps with evidence of a full range of activities. Religious sites include geoglyphs and petroglyphs. The importance of particular destinations is indicated by the web of multiple trails that converge on certain places, often mountain passes or water sources.

Trails can either be created by the movement of traveling feet or formally constructed. They average 30 cm in width and can be traced for many km, interrupted only by gullies and washes. Trails are usually the shortest and most convenient routes from one point on the landscape to another.

Trail-associated sites or features could include: concentrations of ceramics/pot drops, cleared circles, rock rings, rock clusters, rock cairns, rock alignments, petroglyphs, and geoglyphs. When the trail itself is not preserved, its route can often be approximately traced by distinctive patterns of trail-associated sites and features.

Energy Commission staff recommends that the PTNCL is eligible for listing on the NRHP under Criteria A and D and for the CRHR under Criteria 1 and 4. Under Criterion A/1, a resource is eligible if it is associated with “events that have made a significant contribution to the broad patterns of our history”. In the context of a Native American site where its importance is not recorded in written form, National Register Bulletin 38 (NPS 1998, pp. 12–13) makes it clear that the word “our” refers to the group that finds the property significant and “history” includes both traditional oral and written history. Important events can include specific events, or repetitive trends. Places referred to in Native American oral histories and creation stories, therefore, are potentially eligible.

Native American groups in the Mojave Desert consistently accord mythological importance to springs, petroglyph sites, and particularly trails systems. Trails across the desert mark the locations of travels of ancestral groups as they migrated to the confluence of the Gila and Colorado Rivers. Trails also facilitate dream travel to these places and the times when events mentioned in story and song occurred (Cleland 2005, p. 132). The particular trail that forms the backbone for this cultural landscape, the Halchidhoma Trail (CA-Riv-0053T), is well known from multiple historical and

¹⁶ The list of property types included in the PTNCL is not comprehensive; it should be added to as needed as new patterns are discovered.

ethnographic sources. It was an essential trade, transportation, and ritual route for Native American peoples and early European visitors in the Colorado Desert during prehistoric and historic times. This route was an essential connection between the Pacific Coast and the Southwestern deserts of Arizona and New Mexico.

Energy Commission staff, Western, and BLM consider the resources that make up the PTNCL to be significant under NRHP Criterion A (CRHR Criterion 1), for their ties to important events in American history. However, most property types associated with the PTNCL exist today as archaeological resources, such as petroglyphs, pot drops, cleared circles, and webs of intersecting trails. These sites are also considered Register-eligible under Criterion D/4 for their ability to yield information important in history and prehistory.

There are 29 trail segments with, and without, associated trailside features recorded along Parker-Blythe Transmission Line No. 2¹⁷. Fourteen have been recommended eligible for the NRHP and thus contributors (Cultural Resources Table 9). The other 15 segments have been recommended ineligible or indeterminate. These recommendations may need to be revisited as the Office of Historic Preservation has not reviewed or concurred with them.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The purpose of this cultural resources analysis is to provide evidence of the ongoing public process by which the Energy Commission, Western, and BLM are jointly complying with local, state, and federal regulations to which each agency is variously subject. The Energy Commission, pursuant to section 25519, subsection (c) of the Warren-Alquist Act of 1974 (Act), is the lead agency for the purpose of complying with CEQA in relation to the certification of the proposed facility and the site on which the facility would operate, and is further responsible, pursuant to Section 25525 of the Act, for ensuring that the facility would conform with applicable State, local, or regional standards, ordinances, or laws.

THE PROJECT AREA OF ANALYSIS AND THE AREA OF POTENTIAL EFFECTS

A useful precursor to a cultural resources analysis under CEQA and NEPA and a requisite part of the Section 106 process (36 CFR Part 800) is to define the appropriate geographic limits for an analysis. The area that Energy Commission staff typically considers when identifying and assessing impacts to cultural resources under CEQA is referred to here as the “project area of analysis.” Energy Commission staff defines the Project Area of Analysis (PAA) as the area within and surrounding a project site and associated linear facility corridors. The area reflects the minimum standards set out in the Energy Commission Power Plant Site Certification Regulations (Cal. Code Regs., tit.

¹⁷ Trail segments identified along the Parker-Blythe Transmission Line No. 2 may be considered contributors to the PTNCL. These include: CA-SBR-1498, -1499, -1506, -1508, -1524, -8004, -8871, -8872, -8873, -8874, -8875, -8876/H, -8877, -8878, -8889, -8893, -8898, -8902, -8903, -8904, -8906, -8908, -8909, -8910, ; and CA-RIV-160, 872, -5984, -5985, 5987/H.

20, § 1701 et seq., appen. B, subd. (g)(2)) and is sufficiently large to facilitate considerations of archaeological, ethnographic, and built-environment resources. The project area of analysis is a composite, though not necessarily contiguous geographic area that accommodates the analysis of each of these resource types:

- For archaeological resources, the project area of analysis is minimally defined as the project ownership boundary, plus a buffer of 200 feet, the project tie line and access road routes, plus 100 feet to either side of the rights-of way for these routes and the project fiber optics on the existing transmission line, 25 feet either side of the transmission line, and access road rights-of-way..
- For ethnographic resources, the project area of analysis is expanded to take into account traditional use areas and traditional cultural properties which may be far-ranging, including views that contribute to the significance of the property. These resources are often identified in consultation with Native Americans and other ethnic groups, and issues that are raised by these groups may define the area of analysis.
- For built-environment resources, the project area of analysis is confined to one parcel deep from the project site footprint in urban areas, but in rural areas is expanded to include a half-mile buffer from the project site and above-ground linear facilities to encompass resources whose setting could be adversely affected by industrial development.
- For a historic district or a cultural landscape, staff defines the project area of analysis based on the particulars of each siting case.

Western and BLM conclude here that the PAA concept provides an appropriate areal scope for the consideration of cultural resources under NEPA and is consistent with the definition of the Area of Potential Effects (APE) in the Section 106 process (36 CFR § 800.16(d)). The PAA will, therefore, be equivalent to the APE for the purpose of the present analysis.

Inventory of Cultural Resources in the Project Area of Analysis

A cultural resources inventory, specific to each proposed or alternative action under consideration, is a necessary step in the staff effort to determine whether such actions may cause a substantial adverse change in the significance of any cultural resources (under CEQA) that are on or would qualify for the California Register of Historical Resources (CRHR); may significantly affect important historic and cultural aspects of our national heritage (under NEPA); or may, adversely affect any cultural resources that are on or would qualify for the NRHP, as required under Section 106.

The development of a cultural resources inventory entails working through a sequence of investigatory phases to establish the universe of cultural resources that will be the focus of the analysis of each proposed or alternative action. Generally the research process proceeds from the known to the unknown. These phases typically involve background research to identify known cultural resources, fieldwork to collect requisite primary data on not-yet-identified cultural resources in the vicinity of an action, and assessment of the results of any geotechnical studies or environmental assessments completed for a project site. The results of this research then support the development of determinations of historical significance for the cultural resources that are found.

Determining the Historical Significance of Cultural Resources

A key part of a cultural resources analysis under CEQA, NEPA, or Section 106 is to determine which of the cultural resources that a proposed or alternative action may affect are important or historically significant. (Each of these three regulatory programs uses slightly different terminology to refer to historically significant cultural resources. Clarifications on the use of the terms “historical resource,” “important historic and cultural aspects of our national heritage,” and “historic property” may be found in the “Cultural Resources Glossary” subsection at the end of this section.) Subsequent effects assessments are only made for those cultural resources that are determined to be historically significant. The criteria for evaluation and the requisite thresholds of resource integrity that, taken together, are the measures of historical significance vary among the three regulatory programs.

Evaluation of Historical Significance Under CEQA

CEQA requires the Energy Commission, as a lead agency, to evaluate the historical significance of cultural resources by determining whether they meet several sets of specified criteria. Under CEQA, the definition of a historically significant cultural resource is that it is eligible for listing in the CRHR, and such a cultural resource is referred to as a “historical resource,” which is a “resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR”, or “a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of section 5024.1(g) of the Public Resources Code,” or “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency’s determination is supported by substantial evidence in light of the whole record” (Cal. Code Regs., tit. 14, § 15064.5(a)). The term, “historical resource,” therefore, indicates a cultural resource that is historically significant and eligible for listing in the CRHR.

Consequently, under the CEQA Guidelines, to be historically significant, a cultural resource must meet the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one (and may meet more than one) of the following four criteria (Pub. Resources Code, § 5024.1):

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (Cal. Code Regs., tit. 14, § 4852(c)).

Additionally, cultural resources listed in or formally determined eligible for the National Register of Historical Places (NRHP) and California Registered Historical Landmarks numbered No. 770 and up are automatically listed in the CRHR and are therefore also historical resources (Pub. Resources Code, § 5024.1(d)). Even if a cultural resource is not listed or determined to be eligible for listing in the CRHR, CEQA allows a lead agency to make a determination as to whether it is a historical resource (Pub. Resources Code, § 21084.1).

Assessing Action Effects

The core of a cultural resources analysis under CEQA, NEPA, or Section 106 is to assess the character of the effects that a proposed or alternative action may have on historically significant cultural resources. The analysis takes into account three primary types of potential effects which each of the three above regulatory programs defines and handles in slightly different ways. The three types of potential effects include direct, indirect, and cumulative effects. Once the character of each potential effect of a proposed or alternative action has been assessed, a further assessment is made as to whether each such effect is significant, relative to specific regulatory criteria under CEQA, NEPA, and Section 106.

Direct and Indirect Effects

Direct and indirect effects are those that are more clearly and immediately attributable to the implementation of proposed or alternative actions. Direct and indirect effects are conceptually similar under CEQA and NEPA. The uses of the concepts vary under Section 106 relative to their uses under CEQA and NEPA.

Direct and Indirect Impacts Under CEQA

In the abstract, direct impacts to cultural resources are those associated with project development, construction, and co-existence. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources may result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic built-environment resources when those structures must be removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, and when the new structures produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations.

Generally speaking, indirect impacts to archaeological resources are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction creates improved accessibility and vandalism or greater weather exposure becomes possible.

Ground disturbance accompanying construction at a proposed plant site, along proposed linear facilities, and at a proposed laydown area has the potential to directly

impact archaeological resources, unidentified at this time. The potential direct, physical impacts of the proposed construction on unknown archaeological resources are commensurate with the extent of ground disturbance entailed in the particular mode of construction. This varies with each component of the proposed project. Placing the proposed plant into this particular setting could have a direct impact on the integrity of association, setting, and feeling of nearby standing historic structures

Direct and Indirect Effects Under NEPA

The concepts of direct and indirect effects under NEPA are almost equivalent to those under CEQA. Direct effects under NEPA are those “which are caused by the [proposed or alternative] action and [which] occur at the same time and place” (40 CFR § 1508.8(a)). Indirect effects are those “which are caused by the [proposed or alternative] action and are later in time or farther removed in distance, but are still reasonably foreseeable” (40 CFR § 1508.8(b)).

Direct and Indirect Effects Under Section 106

The Section 106 regulation narrows the range of direct effects and broadens the range of indirect effects relative to the definitions of the same terms under CEQA and NEPA. The regulatory definition of “effect,” pursuant to 36 CFR § 800.16(i), is that the term “means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.” In practice, a “direct effect” under Section 106 is limited to the direct physical disturbance of a historic property. Effects that are immediate but not physical in character, such as visual intrusion, and reasonably foreseeable effects that may occur at some point subsequent to the implementation of the proposed undertaking are referred to in the Section 106 process as “indirect effects.”

Cumulative Impacts

Cumulative Impacts are slightly different concepts under CEQA and NEPA, and are, under Section 106, undifferentiated as an aspect of the potential effects of an undertaking, of a proposed or alternative action. The consideration of cumulative impacts reaches beyond the project area of analysis or the area of potential effects. It is a consideration of how the effects of a proposed or alternative action in those areas contributes or does not contribute to the degradation of a resource group or groups that is or are common to the project area of analysis and the surrounding area or vicinity.

Cumulative Impacts Under CEQA

A cumulative impact under CEQA refers to a proposed project's incremental effects considered over time and taken together with those of other nearby past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project” (Pub. Resources Code sec. 21083; Cal. Code Regs., tit. 14, secs. 15064(h), 15065(a)(3), 15130, and 15355). Cumulative impacts to cultural resources in a project vicinity could occur if any other existing or proposed projects, in conjunction with the proposed project, had or would have impacts on cultural resources that, considered together, would be significant. The previous ground disturbance from prior projects and the ground disturbance related to the future construction of a proposed project and other proposed projects in the vicinity could have

a cumulatively considerable effect on archaeological deposits, both prehistoric and historic. The alteration of the natural or cultural setting which could be caused by the construction and operation of a proposed project and other proposed projects in the vicinity could be cumulatively considerable, but may or may not be a significant impact to cultural resources.

Cumulative Impacts Under NEPA

As noted in 40 CFR § 1508.7, “a [C]umulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over a period of time.” Cumulatively significant impacts are part of the consideration when determining the intensity of a significant effect [40 CFR § 1508.27(b)(7)].

Cumulative Effects Under Section 106

The Section 106 regulation makes explicit reference to cumulative effects only in the context of a discussion of the criteria of adverse effect (36 CFR § 800.5(a)(1)). Cumulative effects are largely undifferentiated as an aspect of the potential effects of an undertaking. Such effects are enumerated and resolved in conjunction with the consideration of direct and indirect effects.

Assessing the Significance of Action Effects

Once the character of the effects that proposed or alternative actions may have on historically significant cultural resources has been determined, the severity of those effects needs to be assessed. CEQA, NEPA, and Section 106 each have different definitions and tests that factor into decisions about how severe, how significant the effects of particular actions may be.

Significant Impacts Under CEQA

Under CEQA, “a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment” (Pub. Resources Code, § 21084.1). Thus, staff analyzes whether a proposed project would cause a substantial adverse change in the significance, that is, the CRHR eligibility, of all historical resources identified in the Cultural Resources Inventory. The degree of significance of an impact depends on:

- The cultural resource impacted;
- The nature of the resource’s historical significance;
- How the resource’s historical significance is manifested physically and perceptually;
- Appraisals of those aspects of the resource’s integrity that figure importantly in the manifestation of the resource’s historical significance; and how much the impact will change those integrity appraisals.

Significant Effects Under NEPA

Significant effects under NEPA require considerations of both context and intensity (40

CFR § 1508.27). In the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR § 1508.27(a)). A consideration of intensity involves the consideration of the severity of an impact.

Adverse Effects Under Section 106

As noted in 36 CFR § 800.5(a)(1), “[A]n adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.” A formal effect finding under Section 106 relates to the proposed or alternative action as a whole, rather than to the individual resources.

Resolving Significant Effects

The concluding phase in a cultural resources analysis, whether under CEQA, NEPA, or Section 106, is to (avoid) or mitigate those effects of a proposed or alternative action that have been found to be significant. The terminology used to describe the process of effects resolution differs among the three regulatory programs. The resolution of significant effects under CEQA involves the development of mitigation measures that would avoid the adverse impact or reduce the potential impact to a less than significant level or to the extent feasible (14 CCR § 15126.4). Mitigation under NEPA includes proposals that avoid or minimize any potential significant adverse effects of a proposed or alternative action on the quality of the human environment (40 CFR § 1502.4). The definition of mitigation in the NEPA regulation includes the development of measures that would avoid, minimize, or rectify significant adverse effects, progressively reduce or eliminate such effects over time, or provide compensation for such effects (40 CFR § 1508.20). The Section 106 process directs the resolution of adverse effects through the development of proposals to avoid, minimize, or mitigate such effects (36 CFR § 800.6(a)).

The present analysis seeks to resolve the potentially significant adverse effects of the proposed and alternative actions on cultural resources through the development of measures that satisfy the common conceptual threads of effects resolution in CEQA, NEPA, and Section 106. Energy Commission staff proposes Condition of Certification **CUL-10** as the basis for coordinating CEQA compliance requirements with those required of Western and BLM under NEPA and Section 106. The Western/BLM proposes to use the present cultural resources analysis and its consultation efforts under Section 106, which includes the negotiation and drafting of a Memorandum of Agreement (MOA), to evidence its compliance with NEPA. Energy Commission staff also proposes additional conditions of certification (**CUL-1** through **CUL-9** and **CUL 11-12**) that the applicant would implement in the event that the staffs of the Energy Commission and the Western/BLM should become unable to resolve differences of professional opinion on the disposition of a cultural resource during the construction,

operation, maintenance, or decommissioning and closure of the proposed, or alternative actions. The applicant's implementation of the terms of the MOA and of the additional conditions of certification would ensure compliance with applicable LORS, in addition to compliance with CEQA, NEPA, and Section 106.

Assessment of Impacts and Mitigation Discussion

Construction Effects

The main facility footprint will adversely and substantially impact nearly all of the features and artifact concentrations recently recorded within the Rice AAF and western periphery of Camp Rice. Because these resources are assumed to be contributing properties to the World War II DTC/C-AMA, the proposed project will also directly impact the DTC Cultural Landscape (DTCCL). In addition, possible construction impacts may also occur to 23 previously recorded sites recommended eligible for the NRHP along the Parker-Blythe Transmission Line No. 2. These include: RIV-5983H, -5985T, -5987/H, -5988H, -5990H; SBR-1511, -1506, -1508, -2525, -8871/H, -8877, -8878, -8882, -8908, -8892, -8897, -8902, -8903, -8904, -8906, -8907, -8909, and -8910. Cultural Resources Table 10 lists assumed eligible resources subject to direct project impacts.

CULTURAL RESOURCES Table 10
NRHP and CRHR-Assumed Eligible Cultural Resources Subject to Direct Project Impacts

Resource	Resource Descriptions	NRHP/CRHR Eligibility
DTC/C-AMA Cultural Landscape	Rice AAF/Camp Rice (with associated features and artifact concentrations), as well as Riv-5987, -5988, and -5990	Assumed Eligible
Prehistoric Trails Network Cultural Landscape	Prehistoric Trails and contributing sites noted along the Parker-Blythe 161 kV Transmission Line No. 2 (Riv-5985, -5987(Locus A); SBR-1506, -1508, -8871, -8877, -8878, -8901, -8903, -8904, -8906, -8908, -8909, -8910)	Assumed Eligible
Lithic Scatters/ Quarries	SBR-1511, -8882, -8892-, -8897, -8907	Assumed Eligible*
Geoglyph	SBR-2525	Assumed Eligible*
Mining Camp	RIV-5983H	Assumed Eligible*
Historic Road	Road-1	Assumed Eligible

* Assumed Eligible resources with asterisks are ones that were recommended eligible by Schaeffer et al. (1998) but that have not received concurrence from the Office of Historic Preservation.

Operation Effects

With respect to direct impacts, if, during operation of the RSEP, the project owner should plan any changes or additions entailing significant amounts of ground disturbance, the project owner would have to petition the Energy Commission to review the environmental impacts of those activities and approve the plan. Cultural resources staff would then determine if previously undisturbed sediments would be affected by the planned activities and, if so, recommend the application of existing conditions or devise new ones to mitigate any impacts to significant known or newly identified cultural resources. Consequently, at this time staff has recommended no conditions of certification addressing operation direct impacts.

Project Closure and Decommissioning Effects

Cultural resources within the proposed RSEP main facility footprint are expected to be destroyed during facility construction. Therefore the closure and decommissioning of the proposed project is unlikely to cause additional impacts to known or previously unknown cultural resources. However, sites within the linear facilities corridor and near the boundary of the proposed project footprint may still exist after RSEP construction and associated archaeological data recovery. These sites could be impacted by activities associated with project closure and decommissioning.

As for any changes or additions to the RSEP during operation, as discussed above, the project owner, prior to any decommissioning activities, would petition the Energy Commission to review and approve a decommissioning plan, and cultural resources staff would then determine if previously undisturbed sites or sediments would be affected by the decommissioning. If so, staff could then recommend conditions to mitigate any decommissioning impacts to significant known or newly identified cultural resources. Consequently, at this time staff has recommended no conditions of certification addressing decommissioning impacts.

CUMULATIVE IMPACTS AND MITIGATION

The RSEP is proposed to be sited on private lands and is subject to CEQA review. A portion of the proposed generation tie line would traverse land managed by the BLM. The project would interconnect with a Western transmission line. Under CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (14 Cal Code Regs §15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects is “cumulatively considerable” (14 Cal Code Regs §15130(a)). Such incremental effects are to be “viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (14 Cal Code Regs §15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

CEQA also states that both the severity of impacts and the likelihood of their occurrence are to be reflected in the discussion, “but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness,

and shall focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact” (14 Cal Code Regs §15130(b)).

NEPA states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR §1508.7). Under NEPA, both context and intensity are considered. When considering intensity of an effect, we consider “[w]hether the action is related to other actions with individually minor but cumulatively significant impacts. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.” 40 CFR §1508.27(b)(7).

The intensity, or severity, of the cumulative effects should consider the magnitude, geographic extent, duration and frequency of the effects (CEQ, 1997). The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent, or chronic (CEQ, 1997).

Geographic Extent

The geographic scope for this project is fairly localized around the RSEP ownership boundary, however, given the nature of the Colorado Desert Valley system, the RSEP project area should not be limited to the Rice Valley, but should also include its northwest continuation into the Ward Valley (that includes Bristol and Cadiz Dry Lake system). As mentioned above, the valleys in this region are contiguous and drainages often flowed into one another. In terms of temporal limits, the immediate mountain ranges should also be included in this scope: Turtle Mountains, Whipple Mountains, Chemehuevi Mountains, Old Woman Mountains, and Arica Mountains. These mountains represent the mining activities that took place in the immediate area and should be considered a part of this scope in order to encompass a broader historic context for the region (i.e., pre-dates the construction, operation, and closure of Rice AAF and Camp Rice).

Existing Cumulative Conditions

Four existing projects occur within the immediate vicinity of the RSEP project site: (1) the Rice Valley Grazing Allotment (which roughly borders the western, southern, and eastern boundaries of the RSEP); (2) the Arizona-California Railroad (parallels the northern boundary of the RSEP Project Area); (3) the Colorado River Aqueduct (also parallels the northern RSEP site boundary); and (4) Westerns’ Parker Dam-Blythe transmission line #2. The railroad and aqueduct hold particular significance, as they contribute to the development of the area (transportation, mining, etc.).

Modification/maintenance of these features may impact the archaeological components of Camp Rice. Seven other existing projects are located within Rice Valley; however, they are well outside of the range of possible impacts to cultural resources for the RSEP proposed project area. As the RSEP will affect the Rice AAF and Camp Rice archaeological resources, the project will significantly alter the cultural environment of the area.

Future Foreseeable Projects

Foreseeable Projects in the Project Area

A solar thermal power plant is proposed for the Ward Valley (Table 3, ID# B), approximately 5 miles northwest of the RSEP Project area. Impacts caused by the construction of this project will not impact the RSEP site, although it may affect the overall context of the area (that is mining districts in the immediate area).

Foreseeable Renewable Project in the California Desert

A solar thermal power plant (Table 3, ID# F) roughly 26 miles west of the RSEP at Cadiz Lake may affect drainage systems from Bristol/Cadiz Lakes into the Danby Dry Lake and subsequently Rice Valley.

Overall Conclusion – Cumulative Impacts

The RSEP impacts, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources at both the local and regional levels. The majority of the proposed future projects examined in this analysis would likely undergo CEQA and/or NEPA review. Sites that could not be avoided would be tested to evaluate significance. Register-eligible sites would be subject to historical documentation or data recovery excavations to mitigate impacts. To mitigate to the extent reasonable the region-wide, substantial cumulative impact to the DTCCCL identified in this analysis, staff recommends Condition of Certification **CUL-1**

DTCCCL Landscape Documentation and Possible Nomination Program

RSEP shares the historical military training sites associated with the DTC/C-AMA with three other projects currently under consideration in the southern desert: Blythe Solar Power Project, Genesis Solar Energy Project, and Palen Solar Power Project. The DTCCCL Program would provide the data for consideration of the DTCCCL eligibility for NRHP nomination.

It is staff's intention to allow future projects, under Energy Commission jurisdiction, that would contribute to the cumulative impacts to cultural resources in the region to contribute to this mitigation program, along with any contemporaneous and future projects not under Energy Commission jurisdiction that would contribute to the cumulative impacts to cultural resources in the region. It is staff's intention to allow future projects that would contribute to the cumulative impacts to cultural resources in the region to contribute to this mitigation program, whether under Energy Commission jurisdiction or not.

The cost of this program would be divided among the project owners in direct proportion to the number of acres each project would enclose or otherwise disturb. Staff feels that the number of acres disturbed is the most equitable measure of impacts to cultural resources for all related projects. Each project area has a different relative density of archaeological sites, but the number of buried archaeological sites for each is unknown. So the site counts may change dramatically and unexpectedly during future archaeological exploration and construction.

Considering these unknown and unquantifiable factors, staff considers the number of acres disturbed by each project to be a reasonable and concrete proxy. Condition of Certification **CUL-1** require the RSEP owner to contribute \$25 per acre disturbed to a special Energy Commission fund to finance the documentation and possible NRHP nomination of the DTCCL. Staff arrived at this amount by estimating what the cost of each program would be, including overhead costs (\$300,000), dividing that by the total number of acres the projects together would disturb or enclose (11,903 acres), and rounding to the nearest \$5.00 increment, for a levy of \$25 per acre. It is likely that RSEP would start construction after the DTCCL study is already in progress. Therefore, it is reasonable to partially exempt RSEP from contributing to the first phase of the study, which would produce the historic context, evaluation criteria, and research questions that will guide data recovery from DTCCL archaeological sites. It would not, however, be reasonable to exempt RSEP from the entire cost of the first phase, as the PI-Historian would have to revise the context to include those aspects of the DTCCL that are specific to the RSEP. This is expected to take approximately one-quarter (25%) of the total phase one hours for the RSEP site, compared to the hours necessary on the other three projects. The hours allocated to the first phase of the study represent 16 percent (16%) of the total hours in the DTCCL budget. Therefore, RSEP would be credited with a 12% discount, for a levy of \$22 per acre disturbed.

Staff is recommending an identical condition for the project owners of the Palen Solar Power Project, Genesis Solar Energy Project, and Blythe Solar Power Project. Any additional coordination among project owners that can be negotiated, beyond that specified here, is welcomed and encouraged. Applicants may make their contributions to the DTCCL fund prior to certification. Pre-certification contributions to the two funds would not affect a project's certification prospects in any way. The applicants making such contributions would do so, at their own risk, as a means of advantaging their schedule. Western and BLM concur with this strategy.

DTCCL Program Elements

The DTCCL program will have a historian for a principal investigator, who will collaborate with a historical archaeologist in the tasks of documenting and nominating the DTCCL to the NRHP. The DTCCL Historical Archaeologist will also train the individual project historical archaeologists and their crews in the accurate and consistent field identification and recording of historic-period artifacts, with an emphasis on those associated with the DTC/C-AMA. The funding for this program, would utilize the mechanism and contribution basis indicated in **CUL-1**.

Energy Commission staff will engage a historian to serve as the principal investigator (PI) and historian for the following research on the DTCCL. The DTCCL PI-Historian must have the following qualifications:

1. At a minimum, an Master of Arts (M.A.) in history, with a specialization in World War II military history.
2. Education and training that meet the U.S. Secretary of the Interior's Professional Qualifications Standards for Historian, as published in Title 36, Code of Federal Regulations, part 61;

3. Demonstrated ability to conduct and report on historical research; and
4. At least three years of full-time professional experience managing research projects.

The Energy Commission will engage a DTCCL Historical Archaeologist to collaborate with the PI-Historian. The PI-Historian will manage and coordinate the research activities required in this condition, report on progress to staff, and complete Task A. Staff will have final decisionmaking authority regarding budget and technical cultural resources matters.

The Energy Commission will provide copies of the AFC, data responses, confidential cultural resource documents, Revised Staff Assessment (RSA), Supplemental Staff Assessment, and other relevant documents for this project to the DTCCL PI-Historian and Historical Archaeologist.

A. Historical Study:

The DTCCL PI-Historian will:

1. Develop an annotated bibliography, including oral history sources, to establish the context, themes, contributing resource types, material culture, period of significance, and boundaries for the DTCCL;
2. Create a time line of DTC/C-AMA activities across the entire maneuver area, including Arizona;
3. Write the context, emphasizing material culture, and define the themes, contributor resource types, and period of significance;
4. Produce a general map of the historical DTC/C-AMA;
5. Compile a detailed map charting the maneuvers conducted on each of the four project sites (RSEP, Palen Solar Power Project, Blythe Solar Power Plant, and Genesis Solar Energy Plant);
6. Compile a list of known DTCCL contributors, with a description and individual map plot of each; and
7. Assist Energy Commission staff in drafting a map showing all DTCCL elements and drawing a provisional boundary for the DTCCL from the historical perspective; and provide written justification for the boundary.

The DTCCL PI-Historian will provide the products of 2 through 6 to the three project CRSs.

The DTCCL PI-Historian will submit the draft DTCCL historical documentation to staff and to the BLM Palm Springs Field Office archaeologist for review and approval.

B. Historical Archaeological Study

The Energy Commission will obtain the services of a historical archaeologist to serve as DTCCCL Historical Archaeologist. The DTCCCL Historical Archaeologist's training and background must meet the U.S. Secretary of Interior's Professional Qualifications Standards for Historical Archaeology, as published in Title 36, Code of Federal Regulations, part 61. The resume of the DTCCCL historical archaeologist must demonstrate familiarity with the artifacts, environmental modifications (deliberate and incidental, including tank tracks), and trash disposal patterns associated with World War II land-based army activities, and knowledge of the full range of late nineteenth and early-to-mid-twentieth-century domestic can, bottle, and ceramic diagnostic traits. The resume of the proposed DTCCCL Historical Archaeologist will be submitted to staff for review and approval.

The DTCCCL Historical Archaeologist will:

1. Synthesize the present state of knowledge of DTCCCL historical archaeology in the Rice Valley, Chuckwalla Valley, and Palo Verde Mesa and identify significant gaps in this knowledge, based on all pertinent literature, including published monographs and papers, unpublished reports in the files of the CHRIS and the BLM's Palm Springs Field Office, and on consultation with archaeologists actively conducting research in this region, particularly those based in academia;
2. Develop a comprehensive historic-period archaeological context for the DTCCCL;
3. Have low-altitude aerial photography of the Rice Valley, Chuckwalla Valley, and Palo Verde Mesa flown, and analyze the results for evidence of larger-scale DTCCCL (or other historic-period) activities and any unrecognized site types. If any such sites are identified within the project areas of the RSEP, Palen Solar Power Project, Blythe Solar Power Project, or Genesis Solar Energy Project, notify the appropriate CRS(s) and have these resources recorded and added to the project's cultural resources inventory;
4. From the historical archaeological context, literature synthesis, and aerial photography, identify and describe the full range of archaeological resources known for the DTCCCL and posit any additional resources that, while not known, are strongly suggested by the context and synthesis;
5. From the historical archaeological context and the literature synthesis, formulate specific research questions:
 - a. To fill significant gaps in our knowledge of the DTCCCL history of this area
 - i. Specify what kinds of resources have the relevant data
 - b. Answerable with data from known archaeological resources
 - i. Specify the methods for making this determination
 - c. To determine the presence or absence of additional archaeological resources not presently known but likely

- d. To definitively distinguish Desert Strike sites from DTC/C-AMA sites
 - i. Army records for locations of Desert Strike activities may facilitate eliminating some ambiguous sites not in those locations as Desert Strike sites;
6. Develop criteria for definitively attributing archaeological sites to the DTCCL based on archaeological traits;
7. Compile location data on known DTCCL archaeological elements, direct the drafting of detailed GIS-based maps of the various site types and their spatial distributions, and draw on a map a provisional boundary for the DTCCL from the archaeological perspective, with a written justification for the boundary. The Energy Commission will contract with an outside firm to perform the drafting;
8. Train the Project Historical Archaeologists for the RSEP, Palen Solar Power Project, Genesis Solar Energy Project, and Blythe Solar Power Project to correctly and consistently identify and record the historic-period military and domestic artifacts likely to be encountered on the these project sites and assist them in the development of field recording forms for these artifacts and sites; and
9. Assist the Project Historical Archaeologists for the RSEP, Palen Solar Power Project, Genesis Solar Energy Project, and Blythe Solar Power Project to train their field crews to correctly and consistently identify and record the historic-period military and domestic artifacts likely to be encountered on the these project sites and to correctly and completely fill out the field forms developed for historic-period sites.

The Energy Commission will provide the products of 1–8 to the four project CRSs.

The DTCCL PI-Historian will submit the draft DTCCL historic-period archaeological documentation to staff and the BLM Palm Springs Field Office archaeologist for review and approval.

C. Possible NRHP nomination of the DTCCL:

After all data recovery for the four projects is completed and reported, the DTCCL PI-Historian will confer with the DTCCL Historical Archaeologist to decide if the DTCCL is probably eligible for the NRHP and, if so, will collaborate on a NRHP multiple property nomination for the DTCCL under Criteria A, C, and D. If the DTCCL PI-Historian and the DTCCL Historical Archaeologist agree that a DTCCL nomination is appropriate, the DTCCL nomination will include:

1. Definition of the resource;
2. DTCCL probable contributing resource types, known and as-yet-unknown:
 - a. tank tracks,
 - b. refuse (primarily food can) scatter,
 - c. refuse (other activities, e.g., auto-related; ± food) scatter,
 - d. multiple-episode refuse dump,

- e. foxhole/temporary defensive position,
 - f. temporary camp-related (cleared areas for tents),
 - g. semi-permanent camp-related (paths, activity areas, varied shelter sizes and shapes),
 - h. features (hearths, other), and
 - i. other;
3. Historical background and context;
 4. Justification of eligibility;
 5. Period of significance and justification for POS;
 6. Identification of contributors; assistance to Energy Commission staff in the creation of a map of contributors, archaeologically confirmed sites, and site descriptions of all; and
 7. Provision for adding additional contributing resources to the district as further survey is done.

The BLM will submit the approved DTCCCL NRHP nomination to the State Historical Resources Commission, to initiate the process of formal consideration by the Keeper of the National Register and track and facilitate the review of the nomination to acceptance, including required revisions and additions, or final rejection.

If the DTCCCL PI-Historian and the DTCCCL Historical Archaeologist agree that a DTCCCL nomination is not appropriate, the DTCCCL PI-Historian will write and submit a report that will include a summary of the evidence justifying the ineligibility determination, documenting all research activities conducted on the basis of the applicant's funding, and synthesizing all data from the DTCCCL investigation to create a document that BLM can use to manage the DTCCCL resources..

D. Management Plan and Information Dissemination:

The Energy Commission will assist the BLM Palm Springs Field Office archaeologist in seeking BLM recognition for the DTCCCL as a resource requiring special management status, if NRHP eligibility is not supported:

1. For managing known, unimpacted resources
2. For adding further contributing resources to the district as further survey is done

The DTCCCL PI-Historian will collaborate with the DTCCCL Historical Archaeologist to prepare a research paper, interpreting the implications of the DTCCCL data for our understanding of WWII combat training history, and submit it to a peer-reviewed journal.

The DTCCCL PI-Historian will create or direct the creation of an provide an instruction module for use in local school districts, based on the data compiled by the DTCCCL PI-Historian and the DTCCCL Historical Archaeologist. The Energy Commission will obtain the services of an exhibit preparer and the PI-Historian will direct the preparer to craft materials and/or a display for existing public interpretation venues at local museums (such as the nearby George S. Patton Memorial Museum or Wiley's Well rest area) that interpret the DTCCCL for the public, based on the data compiled by the DTCCCL PI-Historian and the DTCCCL Historical Archaeologist. The Energy Commission and the BLM will offer the materials for use and display.

The DTCCCL PI-Historian will also explore other modes of public dissemination of DTCCCL data and propose these, with budgets, to staff. The PI-Historian and Historical Archaeologist will act as technical advisers for these products, but the Energy Commission will contract with another firm to create them. Some possibilities are noted here, but the PI-Historian's proposals should not be limited to these:

- A DTCCCL website and chatroom for WWII veterans and history buffs to acquire and exchange information;
- A hiking or off-road-vehicle trail connecting DTCCCL archaeological remains of particular interest (and locations where artifacts of archaeological interest are no longer present), such as the more permanent camps and air bases. This trail and a map providing GPS coordinates, descriptions, historical information, and historic-period photographs could be developed with BLM and made available to visitors; a model for such a trail is the California Backcountry Discovery Trails system;
- An over-flight video, with a narration identifying and providing the history of the DTCCCL contributors that are better observed from the air, such as the airbases, interspersed with historic-period film footage of related DTCCCL activities.

DTCC/C-AMA Cultural Landscape, Project-Specific Mitigation for RSEP Impacts to Contributors

The DTCCCL and its potential contributors will be defined and impacts to these resources will be evaluated by two specialists: a DTCCCL PI and Historian and a DTCCCL Historical Archaeologist. The responsibilities of each specialist are outlined below and in condition of certification **CUL-2**.

The DTCCCL PI-Historian will be a specialist in World War military history who will write a context for the DTCCCL expanding upon, but not duplicating the efforts of Bischoff (2000 and 2009). The context will emphasize material culture, create a timeline of activities across the entire maneuver area and result in detailed maps that focus on the four project areas and the maneuvers that took place in each. This specialist will also conduct oral history interview with veterans and synthesize previously recorded interviews.

The DTCCCL Historical Archaeologist will be a specialist in the identification, analysis and interpretation of the artifacts, environmental modifications (e.g. tank tracks), and trash disposal patterns associated with the early phases of WWII land-based army activities. In addition, the specialist will be knowledgeable of the full range of late

nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits. As some of these skills are rare, the DTCCL Historical Archaeologist will be responsible for training the field crews with the above skills so they can accurately complete in-field artifact analyses. The specialist will also be responsible for accurately and consistently determining if each RSEP site is associated with the DTCCL, or some other historic time period such as pre-1940s mining and ranching. This specialist will also ensure that the field work on the historic archaeological sites at all four solar project sites is consistent, and of high quality. This person will also facilitate data sharing between different projects, project owners, and companies, if necessary.

Together, the DTCCL PI-Historian and the DTCCL Historical Archaeologist will write a context that: refines the research questions that will be addressed, identifies the specific data sets needed to answer these questions, develops mitigation measures for the relevant site types, and establishes the analytical standards that will be met. Until these refinements take place, research and mitigation will be modeled on Bischoff's (2000 and 2009) context, under the guidance of BLM and Energy Commission archaeologists.

Finally, if both DTCCL specialists agree that the DTCCL is eligible for listing on the NRHP, they will jointly write a nomination form under Criterion D and any other Criterion they think is appropriate. The nomination will list the resources that they have identified from all four projects as contributors. Resources will be identified as contributors or non-contributors on the basis of the contexts developed by the specialists and on the basis of the data recovered from each potential contributor during the evaluation and data recovery activities that staff has recommended for each known resource that would be impacted by the RSEP and the other two projects. The evaluation of each resource as a potential DTCCL contributor would suffice as well to evaluate it as an individual resource if the DTCCL specialists should agree that the DTCCL is not eligible for listing on the NRHP.

PROJECT ALTERNATIVES

	Proposed Alternative	Acres	MW	Federal Nexus
1	Proposed Project	1,410 acres + 10.0 mile long transmission line corridor	150	Yes
2	Reduced Acreage (same site location)	1,270 acres + 10.0 mile long transmission line corridor	~148	Yes
3	North of Desert Center (alternate location), includes realignment and reconductoring of existing SCE 161/230kV line.	1,410 acres + 4.6 mile long transmission line corridor	150	Yes
4	Rice Valley Road Transmission Line	1,410 acres + 13.9 mile long transmission line corridor	250	Yes
5	No Project/No Action	0	0	No

Reduced acreage Alternative

The Reduced Acreage Alternative would be 7.2 percent smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe #2 transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker-Blythe #2 161-kV transmission line.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice Airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while reducing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

Setting and Existing Conditions

All of the aspects of the setting and existing conditions as set out above for the proposed project are also pertinent to this alternative except the project description. As configured, the reduced heliostat field would be located on land that was previously surveyed for cultural resources in connection with the proposed project. As the ownership property dimensions remains the same, the same number of previously recorded resources still fall with the project area. Until final plans are set, staff cannot determine what impacts will occur for the Rice AAF.

Cultural Resources Inventory

CH2MHILL's record search and field survey for the proposed Reduced Alternative configuration falls within the boundary of the proposed project ownership property. Thus, additional records search and field survey were not required. Future actions, as part of the Conditions of Certification, will be required to update site records and address any deficiencies in documentation.

Assessment of Impacts and Discussion of Mitigation

Staff concludes that impacts would be nearly identical to the proposed Project, with most of the features and artifact concentrations associated with Rice AAF will still be destroyed. Staff recommends that impacts of this alternative on cultural resources would have to be avoided or mitigated by means of data recovery, with specific modes of data recovery detailed in a Memorandum of Agreement (MOA), to be negotiated and

signed by the Western, BLM, the State Historic Preservation Officer, the Energy Commission, any Native American tribes or groups who opt to sign, and, possibly, the applicant. Western has initiated consultation with the State Historic Preservation Officer discussing the area of potential effects, eligible sites, effects and the MOA.

CEQA/NEPA Level of Significance of Impacts

Staff, Western, and BLM would assume that all construction impacts, direct, indirect, and cumulative, to all eligible and staff-assumed-eligible cultural resources located in the APE of this alternative would be substantial and adverse, and significant with respect to CEQA. Staff, Western, and BLM also assume that these impacts would be reduced to a less-than-significant level by the implementation of **CUL-1** through **CUL-12** and mitigation measures outlined in the MOA, and would be less-than-significant with respect to CEQA. Staff would also provide mitigation measures for the appropriate treatment of potentially eligible archaeological resources discovered during construction of this alternative, should it be built, and these measures would reduce the alternative's impact on discovered Register-eligible archaeological resources to less than significant.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

Setting and Existing Conditions

The North of Desert Center Alternative is composed largely of private properties (agricultural land) but also includes undeveloped BLM land, and some County of Riverside land. The alternative site is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10 in Riverside County, California. The alternative site is roughly 38 miles southwest of the RSEP with a varying environmental setting, in that nearly 70% of the land proposed for the North of Desert Center Alternative is disturbed by past and current agricultural operations. The remaining landscape is similar to the Palen Solar Project and consists of desert washes, sandy dunes, and lower alluvial fan sediments. Major water sources are limited to the Colorado River, which lies approximately 50 miles east of the alternative site. However, when rainwater exceeds evaporation and occasional flooding occurs, Palen Lake (approximately 12 miles east of the alternative) will fill, creating a temporary water source. The Colorado Desert has a long and culturally rich past beginning thousands of years ago and continuing through the World War II desert training activities.

A Cultural Resources Class III Report for the Proposed Palen Solar Power Project, Riverside County, California (Tennyson and Apple, 2009) and *Palen Solar Power Project Application for Certification, Volume I* (AECOM, 2009) provide a brief cultural context for the North of Desert Center Alternative. Staff of Applied Earth Works, Inc. conducted a records search for the North of Desert Center Alternative at the Eastern Information Center of the California Historical Resources Information System on February 16, 2010. The records search indicated that a total of nine surveys had been conducted within a one-mile radius of the alternative site. Of these, four surveys included minor portions of the proposed alternative site. The records search documents two sites (one prehistoric habitation site and one historical ceramic cup fragment) within a one-mile radius of the alternative site. No previously recorded sites have been documented within the North of Desert Center Alternative.

Less than 1% of the North of Desert Center Alternative appears to have been subject to reliable pedestrian surveys. No cultural resources were documented during these surveys. Because so little of the alternative site has been surveyed, the lack of known sites is not a reliable indicator for the archaeological potential of the alternative site. As previously mentioned, a large portion of the alternative site is devoted to and disturbed by agricultural activities. The alternative site has high potential for encountering resources related to the DTC/C-AMA Cultural Landscape, and more specifically, to Camp Desert Center, an atypical and dispersed layout of facilities adjacent to the Desert Center Airfield and surrounding the community of Desert Center.

Assessment of Impacts and Discussion of Mitigation

For staff, Western, and BLM to more fully assess direct, indirect, and cumulative impacts for this proposed alternative, additional information would be needed. Similar to the proposed project, staff, Western, and BLM would make recommendations that the impacts of this alternative on cultural resources would have to be avoided or mitigated by means of data recovery, with specific modes of data recovery detailed in a MOA, to be negotiated and signed by the Western, BLM, the State Historic Preservation Officer, the Energy Commission, any Native American tribes or groups who opt to sign, and, possibly, the applicant.

CEQA/NEPA Level of Significance of Impacts

Staff, Western, and BLM assume that all construction impacts, direct, indirect, and cumulative, to all eligible and staff-assumed-eligible cultural resources located in the APE of this alternative would be substantial and adverse, and significant with respect to CEQA. Staff, Western and BLM also assume that these impacts would be reduced by the implementation of **CUL-1** through **CUL-12** and the mitigation measures outlined in the MOA, and would be less-than-significant with respect to CEQA. Staff, Western, and BLM would also provide mitigation measures for the appropriate treatment of potentially eligible archaeological resources discovered during construction of this alternative, should it be built, and these measures would reduce the alternative's impact on discovered Register-eligible archaeological resources to less than significant.

STATE ROUTE 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The State Route (SR) 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe transmission line #2 at the same location as the proposed project generation tie line. This alternative generation tie line would exit the proposed solar facility at the northeast corner and follow SR 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.0 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 3**.

The SR 62/Rice Valley Road Generation Tie Line Alternative is evaluated in this SA/DEIS because it would: (1) Avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise and (2) Avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

Setting and Existing Conditions

All of the aspects of the setting and existing conditions as set out above for the proposed project are also pertinent to this alternative except the project description.

Cultural Resources Inventory

CH2MHILL's field survey for the proposed RSEP did not cover this alternative transmission alignment. However, since this alternative transmission line route travels through historic Camp Rice and follows the course of both the historic Colorado River Aqueduct and historic California SR 62, additional cultural resources are likely to be impacted. An additional pedestrian survey will be required in order for staff, Western and, BLM to properly assess impacts for this alternative.

Assessment of Impacts and Discussion of Mitigation

Staff, Western, and BLM would make recommendations that the impacts of this alternative, on cultural resources to be avoided or mitigated by means of data recovery, with specific modes of data recovery detailed in a MOA, be negotiated and signed by Western, BLM, the State Historic Preservation Officer, the Energy Commission, any Native American tribes or groups who opt to sign, and, possibly, the applicant.

CEQA/NEPA Level of Significance of Impacts

Staff, Western, and BLM would assume that all construction impacts, direct, indirect, and cumulative, to all eligible and staff-assumed-eligible cultural resources located in the APE of this alternative would be significant and adverse. Staff, Western, and BLM also assume that these impacts would be reduced to a less-than-significant level by the

implementation of **CUL-1** through **CUL-11** and the MOA. Staff, Western, and BLM would also provide mitigation measures for the appropriate treatment of potentially eligible archaeological resources discovered during construction of this alternative, should it be built, and these measures would reduce the alternative's impact on discovered Register-eligible archaeological resources to less than significant.

NO PROJECT/NO ACTION ALTERNATIVE

Under this alternative, the proposed Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker-Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the impacts (such as destruction of the Rice AAF and Camp Rice) from the proposed project would occur and none of the benefits of the proposed project (meaning the production of solar energy) would occur. In the absence of this project, other renewable energy project would have similar impacts in other locations.

COMPARISON OF ALTERNATIVES AND RECOMMENDATION OF LEAST IMPACT CULTURAL RESOURCES ALTERNATIVE

CH2MHILL's record search and field survey, and staff's review for the proposed RSEP, identified 26 eligible or assumed eligible resources. Because the Reduced Acreage Alternative would use the same ownership property boundary, the potential impact to the archaeological resources is the same for those two options.

The number of archaeological sites identified as subject to impacts from the SR62/Rice Valley Road Transmission Line Alternative is unknown, but likely greater than Project impacts, as it bisects Camp Rice.

The number of archaeological sites identified as subject to impacts from the North of Desert Center Alternative is unknown, thus no comparison can be made, and thus remains unanalyzed.

The number of archaeological sites identified as subject to impact from the No-Project/No-Action Alternative is 0.

From a comparison based on the number of archaeological sites that would be impacted, the No-Project/No-Action Alternative would have the least impact on cultural resources. If a project were to be built, of the analyzed options, the proposed Project and/or Reduced Acreage Alternative would have the least impacts on cultural resources.

NOTEWORTHY PUBLIC BENEFITS

Significant direct physical impacts to cultural resources often result in the complete destruction of the resource. Mitigation of these impacts frequently involves the collection of information (data recovery). This analysis and interpretation of the data collected through archaeology teaches us about the lives of historic people. This knowledge of American history enriches the lives of the general public. Therefore, although an important resource is lost forever, some of the information about that resource is retained. In the case of the history associated with Rice AAF, Camp Rice, and the DTC/C-AMA, the public's access to information would be significantly enhanced by implementation of the recommended mitigation measures/Conditions of Certification. This allows us to argue that these significant impacts can be mitigated to a less-than-significant level.

COMPLIANCE WITH LORS

The County of Riverside's General Plan has language promoting the general county-wide preservation of cultural resources. The programmatic agreement requires specific actions not just to promote but to effect historic preservation and mitigate impacts to all cultural resources in order to ensure NEPA and CEQA compliance. Consequently, if RSEP implements the recommended conditions of certification, its actions would be consistent with the general historic preservation goals of the County of Riverside.

Warren-Alquist Act (Pub. Resources Code § 25500 et seq.)

Pursuant to § 25529 of the Warren-Alquist Act, the Energy Commission shall require the establishment of an area for public use as a condition of certification of a facility proposed in an area of recreational, scenic, or historic value.

Staff concludes that this section of the Warren-Alquist Act is applicable on the basis that the project area has both historic and scenic values. Historic values are recognized within the project area and locale by the prior existence of Rice AAF, part of the greater DTC/C-AMA. The DTC/C-AMA can be thought of as an interconnected landscape of World War II training sites that are highly significant for their association with General George S. Patton and for their contributions to our understanding of how American soldiers were trained during World War II. Scenic values of the RSEP site are recognized considering the site is within large open areas of level topography and the absence of intervening landscape features. SR 62, north of the RSEP site, is part of a 143-mile segment of SR 62 eligible for State Scenic Highway designation. Called the "29 Palms Highway", the eligible scenic highway serves as the principal public access to Joshua Tree National Park roughly 25 aerial miles west of the project site. In addition, there are four BLM wilderness areas within 10 miles of the project site: Rice Valley, Turtle Mountain, Riverside Mountains and Palen/McCoy. (Please see the **Visual Resources and Land Use** sections of this document for more information.)

Selection Criteria

Staff used the following criteria as guidance for selecting an appropriate public use area:

- Would the public use area provide a specific and tangible benefit to the community?
- Are the public use area plans prepared or can they be readily prepared within the time frame of other plan preparations for the proposed RSEP project?
- Is the public use area environmental review and permitting underway or completed, or can it be integrated with the RSEP project?
- Would the public use area cause a public nuisance?
- Would the public use area be properly operated and maintained?
- Can the public use area that would be funded by the applicant be developed without dependency on additional funding sources?

Based on the above criteria, staff determined that a Historic Interpretive Area, developed immediately adjacent to the Project's Administration Area, with easy access from SR 62, would best meet the needs of the public, as well as the statutory requirement for a public use area.

Staff proposes Condition of Certification **CUL-11**, which would require the project owner to construct and maintain a Historic Interpretive Area, with visitor services, including parking, water, restrooms, and shade, appropriate to a desert environment. Although not specifically related to the interpretive value of the site, requirements for restrooms, drinking fountain, garbage cans, and shaded areas have been included to address relevant sanitary concerns and acknowledge the area's unique desert conditions. Providing self-closing containers and collection of refuse would minimize litter that could attract wildlife and invite increased predation on desert tortoise and other at-risk species. There are no existing restrooms or source of drinking water along SR62 for many miles in either direction. Restrooms would prevent the inappropriate use of the land surrounding the interpretive area and provide a means to properly contain and dispose of human waste. A properly maintained drinking fountain would provide public access to potable water in an environment where outside activities could contribute to dehydration and heat-related illness. Shaded areas would also reduce heat-related impacts.

CONDITIONS OF CERTIFICATION

Applicant Recommended Mitigation Measures

The applicant has provided the following recommendations for measures to mitigate adverse effects of the RSEP on the Rice AAF and Camp Rice.

Oral History

The applicant proposes to contact unit historians for information on units known to have trained at Rice AAF and Camp Rice and to identify living WWII veterans. These veterans would be requested to participate in an oral history interview. Transcriptions of interviews and video materials would be deposited in the General George Patton

Museum, the Special Collections Department at the University of California at Riverside, or other qualified repository.

Archival Research

The applicant proposes accessing archives of WWII historical record groups housed in the National Archives system and other sources, such as the General George Patton Museum, locating records associated with units or persons who trained at Rice AAF and Camp Rice. The end products of this effort would be a summary technical report of findings and an article to be published in a scholarly journal.

Site Mapping

The applicant proposes taking low-altitude, high-resolution aerial photographs of the Rice AAF and using these as a base map to outline the physical features, including foundations, refuse pits, stone alignments, and roads, visible from the air. The features should be annotated to indicate feature function as indicated on the 1942/1944 plan view. Sub-meter accuracy global positioning system devices would be used to record each of the major physical features in detail and generate a map using geographic information systems (GIS) on a topographic or aerial photographic base. The final product would be a detailed map of the associated features.

Public Education

The applicant proposes the creation of an internet site administered by Solar Reserve or other entity (such as BLM or General George Patton Museum) on which historical summaries, illustrations, and documents can be posted. In addition, the applicant proposes the development of a pamphlet and construction of an interpretive kiosk in Project land set aside as a public use area.

Public Access

The applicant proposes to establishing a Public Use Area consisting of a turnoff from SR 62, parking area for up to 8 vehicles, an interpretive kiosk protected by a shade structure that displays panels of text and illustrations (photographs, maps, and diagrams) that illustrate and interpret Rice AAF and Camp Rice as components of the larger DTC-AMA. This would contribute to meeting the provisions of the Warren-Alquist Act (California PRC 25529) as discussed in the **Compliance with LORS** subsection. Staff has identified some additional features of the public use area that it believes are necessary to complement those proposed by the applicant. Staff has incorporated the recommendations of the applicant into the Energy Commission proposed conditions of certification in a manner that would mitigate both project-specific and cumulative impacts to a less than significant level.

PROPOSED CONDITIONS OF CERTIFICATION

CUL-1 DESERT TRAINING CENTER CALIFORNIA-ARIZONA MANEUVER AREA CULTURAL LANDSCAPE (DTCCL) PROGRAM

The project owner shall contribute to a special fund set up by the Energy Commission and/or Western to finance the DTC/C-AMA Cultural Landscape Documentation and Possible NRHP Nomination Program (DTCCL Program) presented in the RSEP

SA/DEIS.

The amount of the contribution shall be \$22 per acre that the project encloses or otherwise disturbs. Any additional contingency contribution is not to exceed an amount totaling 20% of the original contribution. The contribution to the special fund may be made in installments, with the approval of the Compliance Project Manager (CPM), with the first installment to constitute 1/3 of the total original contribution amount.

If a project is not certified, a project owner does not build the project, or for any reason deemed acceptable by the CPM, a project owner does not participate in funding the DTCCCLProgram, the other project owner(s) may consult with the CPM to adjust the scale of the DTCCCL Program research activities to match available funding. A project owner that funds the DTCCCL Program and then withdraws shall be able to receive a refund of their contributions on a prorated basis.

Verification: Within two weeks (14 days) of the receipt of an invoice from the Energy Commission or BLM, the project owner shall contribute the entire amount of the required contribution or the first of three installments, equal to one-third of the total contribution amount, to the established funding vehicle for the Program. The delivery dates for the remaining installments shall be determined by the CPM, based on program requirements.

The project owner shall provide a copy of the notice of successful transfer of funds for any payment or installment to the DTCCCL fund to the CPM within 10 days of receipt.

CUL-2 CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance (includes preconstruction site mobilization and construction grading, boring, and trenching, as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation, and reporting activities in accordance with the Conditions of Certification (Conditions).

The CRS may obtain the services of Cultural Resources Monitors (CRMs), as needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS implements the cultural resources conditions providing for data recovery from known historical resources and makes recommendations regarding the eligibility for listing in the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to Compliance Project Manager (CPM) approval of the CRS and alternates, unless such activities are specifically approved by the CPM. Approval of a CRS may be denied or revoked for reasons including, but not limited to, non-compliance on this or other Energy Commission projects.

Cultural Resources Specialist

The resumes for the CRS and alternate(s) shall include information demonstrating, to the satisfaction of the CPM, that their training and backgrounds conform to the U.S.

Secretary of Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61. In addition, the CRS shall have the following qualifications:

1. A background in anthropology and prehistoric archaeology;
2. At least 10 years of archaeological resource mitigation and field experience, with at least 3 of those years in California; and
3. At least 3 years of experience in a decision-making capacity on cultural resources projects, with at least 1 of those years in California, and the appropriate training and experience to knowledgeably make recommendations regarding the significance of cultural resources.

The project owner shall ensure that the CRS obtains the services of a qualified historical archaeologist to conduct the research specified in **CUL-9**. The Project Historical Archaeologist's (PHA) training and background must meet the U.S. Secretary of Interior's Professional Qualifications Standards for historical archaeology, as published in Title 36, Code of Federal Regulations, part 61.

The resumes of the CRS, alternate CRS, and PHA shall include the names and telephone numbers of contacts familiar with the work of these persons on projects referenced in the resumes and demonstrate to the satisfaction of the CPM that these persons have the appropriate training and experience to undertake the required research. The project owner may name and hire the CRS, alternate CRS, and PHA prior to certification.

Field Crew Members and Cultural Resources Monitors

CRMs and field crew members shall have the following qualifications:

1. A B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field, and one year experience monitoring in California; or
2. An A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years experience monitoring in California; or
3. Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of monitoring experience in California.

Verification:

1. Preferably at least 120 days, but in any event no less than 75 days prior to the start of ground disturbance, the project owner shall submit the resumes for the CRS, the alternate CRS(s) if desired, and the PHA to the CPM for review and approval.
2. At least 65 days prior to the start of data recovery on known archaeological sites, the project owner shall confirm in writing to the CPM that the approved CRS (or alternate CRS) and PHA will be available for on-site work and are prepared to implement the cultural resources conditions of certification.

3. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the CPM for review and approval. At the same time, the project owner shall also provide the AFC and all cultural resources documents, field notes, photographs, and other cultural resources materials generated by the project to the proposed new CRS. If no alternate CRS is available to assume the duties of the CRS, a monitor may temporarily serve in place of a CRS, for a maximum of three days, to allow ground disturbance to continue uninterrupted. If cultural resources are discovered, ground disturbance shall be halted until there is a CRS or alternate CRS to make a recommendation regarding significance.
4. At least 20 days prior to data recovery on known archaeological sites, the CRS shall provide a letter to the CPM for review and approval, naming anticipated field crew members for the project, providing resumes or other proof of qualifications, and attesting that the identified field crew members meet the minimum qualifications for cultural resources data recovery required by this Condition.
5. At least 20 days prior to ground disturbance, the CRS shall provide a letter to the CPM for review and approval, naming anticipated CRMs for the project providing resumes or other proof of qualifications, and attesting that the identified CRMs meet the minimum qualifications for cultural resources monitoring required by this Condition.
6. At least 5 days prior to additional CRMs beginning on-site duties during the project, the CRS shall provide letters to the CPM for review and approval, identifying the new CRMs, providing resumes or other proof of qualifications, and attesting to their qualifications.

CUL-3 PROJECT DOCUMENTATION FOR CULTURAL RESOURCES PERSONNEL

Prior to the start of ground disturbance, the project owner shall provide the CRS and PHA with copies of the AFC, data responses, confidential cultural resources documents, Staff Assessment (SA), and any subsequent revised or supplemental SA. The project owner shall also provide the CRS, PHA, and CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and maps at an appropriate scale (e.g., 1:2400 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless such activities are specifically approved by the CPM.

If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS, PHA, and CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Until ground disturbance is completed, the project construction manager shall provide

the CRS and CPM with a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur. The project owner shall notify the CRS and CPM of any changes to the schedule of construction phases.

Verification:

1. Preferably at least 115 days, but in any event no less than 60 days prior to the start of ground disturbance, the project owner shall provide the CRS, PHA, and CPM with copies of the AFC, data responses, confidential cultural resources documents, the Staff Assessment (SA), and any revised or supplemental SAs. The project owner shall also provide the CRS, PHA, and CPM with the subject maps and drawings. Staff, in consultation with the CRS, and PHA, will review and approve maps and drawings as suitable for cultural resources monitoring and data recovery activities.
2. At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS, PHA, and CPM.
3. At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS, PHA, and CPM.
4. Weekly, during ground disturbance, a schedule of anticipated following week's project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.
5. Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

CUL-4 CULTURAL RESOURCES MONITORING AND MITIGATION PLAN

Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, with the contributions of the PHA, to the CPM for review and approval. The authors' name(s) shall appear on the title page of the CRMMP. The CRMMP shall specify the impact mitigation protocols for all known cultural resources and identify general and specific measures to minimize potential impacts to all other cultural resources, including those discovered during construction. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, PHA, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless such activities are specifically approved by the CPM. Prior to certification, the project owner may have the CRS, alternate CRS, , and PHA complete and submit the CRMMP to the CPM for review and approval, except for those portions to be contributed by the DTCCCL programs.

The CRMMP shall include, but is not limited to, the elements and measures listed below.

1. The following statement shall be included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification in this CRMMP is

intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A.”

2. The duties of the CRS shall be fully discussed, including coordination duties with respect to the completion of the Desert Training Center California-Arizona Maneuver Area Cultural Landscape (DTCCCL) documentation and possible NRHP nomination program, and oversight/management duties with respect to site evaluation, data collection, monitoring, and reporting at both known prehistoric and historic-period archaeological sites and any CRHR-eligible (as determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction.
3. A general research design shall be developed that:
 - a. Charts a timeline of all research activities, including those coordinated under the DTCCCL documentation and possible NRHP nomination program;
 - b. Recapitulates the existing historic contexts developed in the DTCCCL historic context and adds to these the additional context of the non-military, historic-period occupation and use of the Rice Valley, to create a comprehensive historic context for the RSEP vicinity;
 - c. Poses archaeological research questions and testable hypotheses specifically applicable to the archaeological resource types known for Rice Valley, based on the research questions developed under the DTCCCL research and on the archaeological and historical literature pertinent to Rice Valley; and
 - d. Clearly articulates why it is in the public interest to address the research questions that it poses.
4. Protocols, consistent with the guidance provided in **CUL-9**, shall be specified for the treatment of known and newly discovered prehistoric and historic-period archaeological resource types.
5. Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to cultural resources materials and documentation resulting from evaluation and data recovery at both known prehistoric and historic-period archaeological sites and any CRHR- or NRHP-eligible (as determined by the CPM) prehistoric and historic-period archaeological sites discovered during construction. A prescriptive treatment plan may be included in the CRMMP for limited data types.
6. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground-disturbance analysis phases of the project shall be specified.
7. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation

and monitoring team shall be identified.

8. The manner in which Native American observers or monitors will be included, in addition to their roles in the activities required under CUL-1; the procedures to be used to select them; and their roles and responsibilities shall be described.
9. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.
10. The commitment to record on Department of Parks and Recreation (DPR) 523 forms, to map, and to photograph all encountered cultural resources over 50 years of age shall be stated. In addition, the commitment to curate all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum shall be stated.
11. The commitment of the project owner to pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project shall be stated. The project owner shall identify a curation facility that could accept cultural resources materials resulting from RSEP cultural resources investigations.
12. The CRS shall attest to having access to equipment and supplies necessary for site mapping, photography, and recovery of all cultural resource materials (that cannot be treated prescriptively) from known CRHR-eligible archaeological sites and from CRHR-eligible sites that are encountered during ground disturbance .
13. The contents, format, and review and approval process of the final Cultural Resource Report (CRR) shall be described.

Verification:

1. Preferably at least 90 days, but in any event no less than 30 days prior to the start of ground disturbance, the project owner shall submit the CRMMP to the CPM for review and approval.
2. At least 20 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected as a result of the archaeological investigations (survey, testing, data recovery).
3. At least 30 days prior to the initiation of ground disturbance, the project owner shall provide to the CPM a copy of a letter from a curation facility that meets the standards stated in the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, stating the facility's

willingness and ability to receive the materials generated by RSEP cultural resources activities and requiring curation. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-5 CULTURAL RESOURCES REPORT (CRR)

The project owner shall submit the final Cultural Resources Report (CRR) to the CPM for review and approval and to Western's archaeologist for review and comment. The final CRR shall be written by or under the direction of the CRS. The final CRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, revised and final Department of Parks and Recreation (DPR) 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as appendices to the final CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM and to Western's archaeologist for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the CPM for review and approval.
2. Within 180 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CRR to the CPM for review and approval and to the BLM Palm Springs archaeologist and Western's archaeologist for review and comment. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.
3. Within 10 days after the CPM and Western's archaeologist approve the CRR, the project owner shall provide documentation to the CPM confirming that copies of the final CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Tribal Chairpersons of any Native American groups requesting copies of project-related reports.

CUL-6 WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP)

Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when

ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.
10. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the CPM.

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the CPM for review and approval.
2. At least 15 days prior to the beginning of ground disturbance, the CPM will provide the project owner with a WEAP Training Acknowledgement form for each WEAP trained worker to sign.
3. Monthly, until ground disturbance is completed, the project owner shall provide, in the Monthly Compliance Report (MCR), the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-7 CONSTRUCTION MONITORING PROGRAM

The project owner shall ensure that the CRS, alternate CRS, or CRMs monitor, full time, all ground disturbance, to prevent construction impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner,.

Full-time archaeological monitoring for this project shall include the archaeological monitoring of ground-disturbing activities by approved CRS or CPM in the areas specified, for as long as the activities are ongoing. Where excavation equipment is actively removing dirt and hauling the excavated material farther than fifty feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than fifty feet from the location of active excavation, one monitor shall both observe the location of active excavation and inspect the dumped material. The research design in the CRMMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of noncompliance with the Conditions and/or applicable LORS. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the CPM. From these logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM. In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring. The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural resources monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM shall provide to the CRS an electronic copy of a form to be used as a daily monitoring log.
2. Monthly, while monitoring is on-going, the project owner shall include, in each MCR, a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS and shall attach any new DPR 523A forms completed for finds treated prescriptively, as specified in the CRMMP.
3. At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.
4. Daily, as long as no cultural resources are found, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the CPM as an e-mail or in some other form of communication acceptable to the CPM.
6. At least 24 hours prior to reducing or ending daily reporting, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for reducing or ending daily reporting.
7. No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit, to the CPM, copies of the information transmittal letters sent to the Chairpersons of the Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.
8. The project owner shall submit to the CPM copies of any comments or information provided by Native Americans in response to the project owner's transmittals of information within 15 days of receipt,

CUL-8 AUTHORITY TO HALT CONSTRUCTION; TREATMENT OF DISCOVERIES

The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, PHA, and the CRMs in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CPM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting, as provided in other conditions, shall continue during the project's ground-disturbing activities elsewhere. The halting or redirection of ground

disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of CRHR eligibility has been made.
2. If the discovery would be of interest to Native Americans, the CRS has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. Unless the find can be treated prescriptively, as specified in the CRMMP, the "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the CRHR eligibility of the discovery. The project owner shall submit completed forms to the CPM.
4. The CRS, the project owner, and the CPM have conferred, and the CPM has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery plan, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, alternate CRS, PHA, and CRMs have the authority to halt ground disturbance in the vicinity of a cultural resources discovery, and that the project owner shall ensure that the CRS notifies the CPM within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.
2. Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. Unless the discovery can be treated prescriptively, as specified in the CRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural resource.

CUL-9 DATA RECOVERY FOR RICE ARMY AIR FIELD AND CAMP RICE FEATURES

Prior to the start of ground disturbance, the project owner shall ensure that records for

all 298 historic-period features be upgraded. The focus of the recordation upgrade is to recover any additional data associated with these features before they are destroyed during construction. A plan shall specify in detail the location recordation equipment and methods to be used and describe any anticipated post-processing of the data. The project owner shall then ensure that the CRS, the PHA, and/or archaeological team members implement the plan, if allowed by the CPM, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a PHA with the qualifications described in **CUL-2** to supervise the field work.
2. The project owner shall ensure that, prior to beginning the field work, the PHA and all field crew members are trained by the DTCCCL Historical Archaeologist, or equivalent qualified person approved by the CPM and hired by the project owner should the DTCCCL Historical Archaeologist not be available, to identify the specific landform for each site; in the identification, analysis and interpretation of the artifacts, environmental modifications, and trash disposal patterns associated with the early phases of WWII land-based U.S. army activities, as researched and detailed by the DTCCCL PI-Historian and the DTCCCL Historical Archaeologist.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are also trained in the consistent and accurate identification of the full range of late nineteenth and early-to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.
4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features (previously known and newly found in the metal detector survey), using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).
5. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, documenting the measurements and the types of seams and closures for each bottle, and the measurements, seams, closure, and opening method for all cans. Photographs shall be taken of maker's marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker's marks on ceramics. Artifacts shall not be collected.
6. The project owner shall ensure a systematic metal detector survey be completed at each site, and that each "hit" is investigated. All artifacts and features thus found must be mapped, measured, photographed, and fully described in writing.
7. The project owner shall ensure that all structures are mapped, measured, photographed, and fully described in writing, and that all associated features having subsurface elements are excavated by a qualified historical archaeologist. All features and contents must be mapped, measured, photographed, and fully described in writing.
8. The project owner shall ensure that the details of what is found at each site shall be

presented in a letter report from the CRS or PHA which shall serve as a preliminary report, that details what was found at each site, as follows:

- a. Letter reports may address one site or multiple sites depending on the needs of the CRS; and
 - b. The letter report shall be a concise document that provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.
 - c. The letter report shall make a recommendation on whether each site is a contributor to the DTTCL.
9. The project owner shall ensure that the data collected from the field work shall be provided to the DTCCCL Historical Archaeologist to assist in the determination of which, if any, of the historic-period sites are contributing elements to the DTCCCL.
10. The project owner shall ensure that the PHA analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (**CUL-5**). Relevant portions of the information gathered shall be included in the possible NRHP nomination for the DTCCCL (funded by **CUL-1**).

Verification:

1. At least 90 days prior to ground disturbance, the project owner shall notify the CPM that mapping and upgraded in-field artifact analysis has ensued.
2. Within one week of completing data recovery at a site, the project owner shall submit to the CPM for review and approval a letter report written by the CRS, evidencing that the field portion of data recovery at each site has been completed. When the CPM approves the letter report, ground disturbance may begin at the site location(s) that are the subject of the letter report.

CUL-10 COMPLIANCE COORDINATION WITH FEDERAL SECTION 106 MOA

If stipulations in the RSEP Section 106 Memorandum of Agreement (MOA), should such a document be prepared and executed, conflict in a mutually exclusive manner with or precisely duplicate the conditions of certification in the Energy Commission Decision, the MOA provisions shall take precedence. Where provisions for the implementation of historic preservation treatments in the conditions of certification are in addition to or exceed such provisions in the MOA, the applicant shall implement treatment in a manner that fulfills both the provisions of the MOA and the conditions of certification. Where the applicant believes that a mutually exclusive conflict exists between these conditions and the provisions in the MOA, or that the said conditions and provisions appear to require a precisely duplicative effort, the applicant shall submit, for the review and approval of the CPM, formal correspondence that states the applicant's determination that such a conflict or effort exists and provides evidentiary support for that determination. Where provisions in the conditions of compliance appear to augment or exceed the provisions in the MOA, the project owner shall coordinate historic preservation treatment with the CPM. Such coordination may, at the discretion of the

applicant, be on a formal or informal basis. However, the CPM shall make the final determination of the consistency of project activities with Energy Commission conditions of compliance.

Verification:

1. Prior to the implementation of any historic preservation treatments in these conditions that may conflict in a mutually exclusive manner with any analogous treatments that a Federal MOA may provide or that may precisely duplicate such analogous treatments, the project owner shall consult with the CPM concerning any such conflicts and provide, for the review and approval of the CPM, formal correspondence that relates the outcome of said consultation, states the applicant's determination that a mutually exclusive conflict or precisely duplicative effort exists, and provides evidentiary support for that determination. The applicant shall not proceed with the implementation of any historic preservation treatments that are subject to consultation under this condition until the CPM approves the applicant's determination thereon.

CUL-11: PUBLIC ACCESS TO HISTORIC FEATURES

Prior to the start of construction, the project owner shall provide conceptual plans for the Historic Interpretive Area to the CPM for review and approval. The plans shall also identify existing historic features of Rice AAF and Camp Rice that would be protected from disturbance during construction and preserved in accordance with the MOA. Prior to commercial operation of RSEP, the project owner shall provide the final plans for the Historic Interpretive Area to Western, BLM, and Riverside County for review and comment, and to the CPM, for review and approval, that would illustrate and interpret Rice AAF and Camp Rice as components of the larger DTC/C-AMA. Construction of the Historic Interpretive Area shall be complete prior to the start of commercial operations. The project owner's plans for the Historic Interpretive Area may be coordinated with Caltrans and Riverside County, and shall be developed in a manner that does not compromise site or public safety or security.

The Historic Interpretive Area shall include and make accessible to the public the following features:

1. An encroachment off SR 62 (proposed Fire Access road encroachment) to the Historic Interpretive Area and vehicle parking area, consistent with Riverside County and the Americans with Disabilities Act (ADA) requirements parking requirements;
2. An interpretive kiosk protected by a shade structure that displays panels of text and illustrations (e.g. photographs, maps, and diagrams) that illustrate and interpret Rice AAF and Camp Rice as components of the larger DTC/C-AMA;
3. Identification of existing historic features of Rice AAF, adjacent to the kiosk, with signage and interpretive information along an ADA-accessible walking trail;
4. A shade-covered area, with minimum of two picnic tables and benches;
5. Self-closing, wildlife-resistant trash cans;

6. A two-stall, ADA-accessible, contained restroom facility; and
7. A drinking fountain.

Verification:

1. At least 30 days prior to the start of construction, the project owner shall submit conceptual plans for the Historic Interpretive Area to Western, BLM, and Riverside County for review and comment, and to the CPM for review and approval. The plan shall identify existing historic features of Rice AAF and Camp Rice that would be protected from disturbance during construction and preserved in accordance with the MOA.
2. No later than one year following commencement of RSEP construction, the project owner shall submit final plans for the Historic Interpretive Area to Western, BLM, and Riverside County for review and comment, and to the CPM for review and approval.
3. At least 30 days prior to RSEP commercial operation, the project owner shall complete construction of the Historic Interpretive Area and obtain approval from the CPM that the Historic Interpretive Area meets the requirements of this condition. The Historic Interpretive Area shall be open to the public within 10 days from the start of commercial operations and shall be maintained for the life of the project.

In each Annual Compliance Report, the project owner shall provide a summary of the following:

1. Estimated public visitation to the Historic Interpretive Area;
2. Any issues associated with operating and maintenance;
3. Proposed maintenance and improvements, and a schedule for completion;
4. A log of all completed maintenance and improvements to the Historic Interpretive Area from the start of RSEP commercial operation to the present day.

CUL-12 FLAG AND AVOID

Resources within the Warren-Alquist Public Use Area (in the northwestern corner of the main facility footprint) will be preserved through avoidance. Previously recorded resources along Western's Parker Dam-Blythe Transmission Line No. 2, subject to possible project impacts, shall be revisited prior to construction. In the event that new resources are discovered during construction or previously recorded resources would be additionally affected, where impacts can be reduced or avoided, the project owner shall:

1. Ensure that a CRS, alternate CRS or CRM re-establish the boundary of each site, add a 10-meter-wide buffer around the periphery of each site boundary, and flag the resulting space in a conspicuous manner;
2. Ensure that a CRM enforces avoidance of the flagged areas during RSEP construction; and

3. Ensure, after completion of construction, boundary markings around each site and buffer are removed so as not to attract vandals.
4. Site records for previously documented resources shall be updated.

Verification:

Within 90 days of transmission line construction, the project owner shall submit for CPM review and approval, site record updates of resources subject to possible impacts.

Within 90 days of the completion of plant construction, the project owner shall submit for CPM review and approval a letter, with photograph and maps, evidencing the removal of boundary markings.

CONCLUSIONS AND RECOMMENDATIONS

With respect to CEQA, staff¹⁸ concludes that the proposed Rice Solar Energy Project (RSEP) would have significant direct impacts to the features and artifact concentrations associated with the historic Rice Army Airfield (Rice AAF)¹⁹ and the western periphery of Camp Rice (CA-SBA-10526H), as well as potential direct impacts to 23 other eligible or assumed eligible archaeological sites.

Staff finds that the RSEP construction impacts, when combined with impacts from the past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts to cultural resources at the regional level. Staff recommends the adoption of **CUL-1**, which would reduce RSEP's cumulative impacts to a less than significant level. The program established by this condition of certification would define, document, and nominate the Desert Training Center Cultural Landscape to both the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR). Other solar projects in the southern desert, including Blythe Solar Power Project, Palen Solar Power Project, and Genesis Solar Energy Project, are also included in this regional effort.

Staff also recommends that the Energy Commission adopt Conditions of Certification **CUL-2** through **CUL-12**, to mitigate RSEP's project-specific cultural resource impacts. These conditions of certification include the following:

- **CUL-2** identifies the positions and qualifications of personnel responsible for implementing and monitoring the Energy Commission cultural resource conditions of certification .
- **CUL-3** specifies the information and project documentation to be supplied by the project owner.
- **CUL-4** requires the preparation and implementation of a Cultural Resources Monitoring and Mitigation Plan (CRMMP), which would structure and govern the implementation of the broader treatment program.
- **CUL-5** would require the preparation of a final Cultural Resources Report (CRR) that

¹⁸ "Staff" means Energy Commission staff unless otherwise indicated.

¹⁹ No primary number or trinomial has been assigned yet to this resource.

would analyze, interpret, and document the results of all field activities and research findings for the RSEP cultural resources management program.

- **CUL-6** would require training of all project personnel to identify, avoid, protect, and provide appropriate notice of potential cultural resources in the project construction area.
- **CUL-7** and **CUL-89** would provide construction monitoring and cultural resources discovery protocols.
- **CUL-9** identifies data recovery protocols for the Rice AAF/Camp Rice.
- **CUL-10** identifies a process for resolving any inconsistencies in impact significance and mitigation requirements, as it would relate to stipulations within an Energy Commission/Western/BLM Memorandum of Agreement (MOA), Section 106 consultation. The MOA may be included in the Western Final Environmental Impact Statement (FEIS) for the RSEP right-of-way application or be released as a separate document. However, the Energy Commission's Staff Assessment (SA) will be published in advance of the FEIS and completion of the MOA. Therefore, there is the possibility that staff's recommended conditions of certification may conflict with the mitigation measures or monitoring protocols identified in this document. A revised or supplemental SA may be needed to identify or clarify any differences between the energy Commission conditions of certification and proposed Federal cultural resources mitigation.
- **CUL-11** would require construction of a public use area on the project site as partial mitigation for the impacts to historic and scenic values of the area, consistent with the requirements of Section 25529 of the Warren-Alquist Act.
- **CUL-12** would ensure previously documented and newly discovered cultural resources within Western's Parker Dam-Blythe Transmission Line No. 2 corridor and Historic Interpretive Area are flagged and avoided during proposed construction.

Implementation of the proposed conditions of certification included in this Cultural Resources section would satisfy the Energy Commission's responsibility to comply with CEQA, ensure consistency with the applicable LORS, and reduce impacts to cultural resources to a less than significant level. The identification of relevant and reasonable mitigation measures also conforms to NEPA requirements for the BLM/Western analysis that can be considered in the Record of Decision (ROD).

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GLOSSARY

CULTURAL RESOURCES ACRONYM GLOSSARY

AD	After the Birth of Christ
AFC	Application for Certification
ARMR	Archaeological Resource Management Report
BC	Before the Birth of Christ
RSEP	the proposed project, Palen Solar Power Project
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
Conditions	California Energy Commission Conditions of Certification
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRMMP	Cultural Resources Monitoring and Mitigation Plan
CRR	Cultural Resource Report
CRS	Cultural Resources Specialist
DEIS	Draft Environmental Impact Statement
DPR 523	Department of Parks and Recreation cultural resource inventory form
EIC	Eastern Information Center (CHRIS), University of California, Riverside
FAR	Fire-Affected Rock
LORS	laws, ordinances, regulations, and standards
MCR	Monthly Compliance Report
MLD	Most Likely Descendent
NAHC	Native American Heritage Commission
NEPA	National Environmental Protection Act
NHPA	National Historic Preservation Act

NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PAA	Project Area of Analysis consists of the project site (see below) plus what additional areas staff defines for each project that are necessary for the analysis of the cultural resources that the project may impact.
Project Site	The bounded area(s) identified by the applicant as the area(s) within which they propose to build the project.
SHPO	State Historic Preservation Officer
Staff	Energy Commission cultural resources technical staff
SA	Staff Assessment
WEAP	Worker Environmental Awareness Program

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CULTURAL RESOURCES APPENDIX A

**Cultural Resources Table 3
Previously Recorded Sites within the Study Area (Records Search Limits)**

Site	Prehistoric/ Historic	Associated Project Component	Description	Within APE
RIV-872	P	P-B T/L #2*	Trail	yes
SBR-8872	P	P-B T/L #2	Trail	yes
SBR-8873	P	P-B T/L #2P	Trail	yes
SBR-8874	P	P-B T/L #2	Trails	yes
SBR-8875	P	P-B T/L #2	Trail	yes
RIV-160	P	P-B T/L #2	Trail and quarry	yes
RIV-3418	P	P-B T/L #2	Lithic Scatter, quarry	yes
RIV-5985T	P	P-B T/L #2	Trail	yes
RIV-1135	P	P-B T/L #2	Quarry	yes
RIV-5984T	P	P-B T/L #2	Trail	yes
SBR-1498	P	P-B T/L #2	Trail	yes
SBR-1499	P	P-B T/L #2	Trail	yes
SBR-1500	P	P-B T/L #2	Sparse lithic scatter with chipping stations	yes
SBR-1506	P	P-B T/L #2	Trail and flake scatter	yes
SBR-1507	P	P-B T/L #2	Ceramics	yes
SBR-1508	P	P-B T/L #2	Trail with lithic	yes
SBR-1511	P	P-B T/L #2	Quarry area	yes
SBR-1514	P	P-B T/L #2	Lithic quarry area , sparse lithic scatter	yes
SBR-1521	P	P-B T/L #2	Lithic quarry area	yes
SBR-1522	P	P-B T/L #2	Lithic quarry area	yes
SBR-1523	P	P-B T/L #2	Lithic quarry area	yes

Site	Prehistoric/ Historic	Associated Project Component	Description	Within APE
SBR-1524	P	P-B T/L #2	Lithic quarry, sparse lithic scatter; trail, lithics rock art	yes
SBR-1525	P	P-B T/L #2	Quarry	yes
SBR-2525	P	P-B T/L #2	Geoglyph	yes
SBR-8004	P	P-B T/L #2	Trail	yes
SBR-8018	P	P-B T/L #2	Lithics	yes
SBR-8025	P	P-B T/L #2	Lithics	yes
SBR-8877	P	P-B T/L #2	Trail, pot drop	yes
SBR-8878	P	P-B T/L #2	Trail, pot drop	yes
SBR-8879	P	P-B T/L #2	Lithics, 2 chipping stations	yes
SBR-8880	P	P-B T/L #2	Lithics with 3 concentrations	yes
SBR-8881	P	P-B T/L #2	Lithic scatter	yes
SBR-8882	P	P-B T/L #2	Lithics with 4+ concentrations	yes
SBR-8883	P	P-B T/L #2	Sparse lithic scatter	yes
SBR-8884	P	P-B T/L #2	Extensive lithic scatter	yes
SBR-8885	P	P-B T/L #2	Sparse lithic scatter with 3+ c.s.*	yes
SBR-8886	P	P-B T/L #2	Small chipping stations and lithic scatter	yes
SBR-8887	P	P-B T/L #2	Chipping station	yes
SBR-8888	P	P-B T/L #2	Lithic scatter with two c.s.	yes
SBR-8889	P	P-B T/L #2	Trails with lithic scatter, one c. s.	yes
SBR-8890	P	P-B T/L #2	Lithic scatter with 4 c.s.	yes
SBR-8892	P	P-B T/L #2	Lithic scatter with at least 3 c.s., rock alignment, and a cairn	yes
SBR-8893	P	P-B T/L #2	Trail	yes
SBR-8894	P	P-B T/L #2	Lithic scatter with 3 c.s.	yes
SBR-8895	P	P-B T/L #2	Small lithic scatter	yes

Site	Prehistoric/ Historic	Associated Project Component	Description	Within APE
SBR-8896	P	P-B T/L #2	Single chipping station	yes
SBR-8897	P	P-B T/L #2	Sparse lithic scatter with 4 small c.s.	yes
SBR-8898	P	P-B T/L #2	Trails	yes
SBR-8899	P	P-B T/L #2	Lithic	yes
SBR-8900	P	P-B T/L #2	Lithic scatter	yes
SBR-8901	P	P-B T/L #2	Trail, Lithic scatter, Rock Art	yes
SBR-8902	P	P-B T/L #2	Trail	yes
SBR-8903	P	P-B T/L #2	Trail segment and petroglyphs	yes
SBR-8905	P	P-B T/L #2	Lithics including two c.s.	yes
SBR-8906	P	P-B T/L #2	Trail, lithics, ceramics	yes
SBR-8907	P	P-B T/L #2	Sparse lithic scatter with a pecked rock	yes
SBR-8908	P	P-B T/L #2	Trail with lithics	yes
SBR-8909	P	P-B T/L #2	Trail with lithics	yes
SBR-8910	P	P-B T/L #2	Trail and lithics	yes
SBR-8876/H	P	P-B T/L #2	Trail	yes
SBR-8871/H	P	P-B T/L #2	Trail	yes
SBR-8891/H	P	P-B T/L #2	Lithic scatter with 6 + c.s.	yes
SBR-8904/H	P	P-B T/L #2	Trail, lithics, and glass trade bead	yes
SBR-9853	H	Outside Project Footprint	Atchison, Topeka, & Santa Fe Railway segment with associated trestles and culvers	no
SBR-10521	H	Outside Project Footprint	Colorado River Aqueduct with two dirt access roads on either side of canal	no
SBR-10525	H	Outside Project Footprint	State Route 62 historic road segment with associated water tanks	no
SBR-10526	H	Western periphery inside Project Footprint	Camp Rice	yes

Site	Prehistoric/ Historic	Associated Project Component	Description	Within APE
RIV-8830	H	Outside Project Footprint	Features associated with Camp Rice (rock alignment, rock piles, bottle glass, can scatters)	no
RIV-5982H	H	P-B T/L #2	Historic trash scatter	yes
RIV-5987/H	P/H	P-B T/L #2	Prehistoric trail; Historic WWII training camp	yes
RIV-5988H	H	P-B T/L #2	Historic WWII training camp with rock rings	yes
RIV-5989H	H	P-B T/L #2	Historic WWII training camp with one feature	yes
RIV-5990H	H	P-B T/L #2	Historic WWII dump	yes
RIV-5983H	H	P-B T/L #2	Historic miners camp with tent pads, structures, privy	yes
RIV-5986H	H	P-B T/L #2	Historic miners camp with tent pad cans, lumber, bottles	yes
SBR-4370H	H	P-B T/L #2	Historic road	yes
SBR-8005H	H	P-B T/L #2	Remains of Historic structure (Vidal Substation- 1933)	yes
SBR-8006H	H	P-B T/L #2	Historic dump	yes
SBR-8868H	H	P-B T/L #2	Historic can dump	yes
SBR-8869H	H	P-B T/L #2	Historic can dump	yes
SBR-8870H	H	P-B T/L #2	Historic can dump	yes

* c.s.- chipping station; P-B T/L- Parker Dam-Blyth Transmission Line

**Cultural Resources Table 5
Newly Discovered Historic Features within the
Rice Army Air Field/Camp Rice Facility Footprint**

SITE: RICE ARMY AIR FIELD					
No.	Type	Description	Date	Associations	Other
F001	Well Features	Well casing, abutment (6'x12'), excavated area and backdirt pile. Modern Cans, glass, steel cable, bands, and lumber.	Unknown	None	Surficial
F002	Aerial Marker	Large stone cross (x) aerial marker? Measures 12 m across, made from single course of locally obtained basalt rocks. NE end has an arrow point. Cross is oriented NE/SW and NW/SE. Single hinged lid tobacco tin (Prince Albert) in area.	Post-1950s	None	Surficial
F003	Rock Pile	Small rock pile – baseball sized rocks, a broken Coke bottle, measures 60 cm x 210 cm	1942-1944	Similar to rock pile features F4, F5, and F6, roughly 125-feet east	Surficial
F004	Rock Pile	Teardrop shaped rock pile of baseball sized rocks, 2 m x 3.5 m	Unknown	Similar to rock pile features F3 (125-feet west), F5, and F6 (within 45-feet)	Surficial
F005	Rock Pile	Rock pile, 2.0 m x 1.5 m	Unknown	Similar to rock pile features F3 (125-feet west) F4 (within 45-feet)	Surficial
F006	Rock Pile	Rock pile, 2.5 m x 1.6 m ~40 cm high	Unknown	Similar to rock pile features F3 (125-feet west) F4 (within 45-feet)	Surficial
F007	Rock Pile	2 m x 3 m x 45 cm high of locally available basalt rocks	Unknown	Similar to rock pile features F3, F4, F5, and F6 (700-feet south)	Surficial
F008	Emplacement	Emplacement measuring 12 m x 14 m with earthen embankments about 40 cm high. Opening/entrance to the SE corner. Overall the emplacement is approximately 1 m deep	1942-1944	Parking aprons of the airfield	Low probability of subsurface materials

No.	Type	Description	Date	Associations	Other
F009	Emplacement	Emplacement measuring 8 m x 8 m with earthen berms approximately 30 cm high – entrance to the west. Overall pit is approximately 1 m deep.	1942-1944	Eastern runway	Low probability of subsurface materials
F010	Pit	Small earthen pit measuring 5 x 5 m, approximately 60 cm deep. Inside the pit is a 5 gal. paint bucket, outside is a 1 gal. fuel can and fuel hose	1942-1944	None	Moderate potential of subsurface materials
F011	Rock Pile	2.2 m x 14 m rock feature of basalt rocks, one course deep	Unknown	None	Low potential of subsurface features
F012	Firing Butt	6 m high dirt mound. Has been partially excavated and ATV trails cross over the mound in several spots. The mound is surrounded by modern debris.	Unknown	Taxiways	Low potential of subsurface features
F013	Concrete Slab	Small concrete slab measuring 59" x 59" with four anchor bolts 10" high. Feature is surrounded by a 3 m diameter ring of basalt rocks. This feature is very near the center of the airfield.	1942-1944	None	Low potential of subsurface features
F014	Rock Lined Pit	5 m x 5m rock lined pit, only 30 cm deep. Associated artifacts include an amber glass bottle and a D-cell battery.	1942-1944	None	Moderate potential of subsurface features
F015	Dump Pile	8 m diameter debris dump pile/pit. Pit and banks are filled with burned debris, metal, glass, cans, batteries, fuses, aluminum aircraft parts, hinges, and an antenna.	1942-1944	Runways and the taxiway on west side of field	High potential of subsurface features
F016	Pit	Small pit filled with a 55 gal. drum. Burned debris is around the edges and steel cables and a Coca Cola bottle.	1942-1944	Runways and the taxiway on the west side of field	High potential of subsurface features

No.	Type	Description	Date	Associations	Other
F017	Burned Debris Pit	Pit filled with burned debris including hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", glass jars, misc. metal fragments and modern aluminum cans. Pit measures 1.5 m x 1.5 m and 30 cm deep.	1917-1929; 1964	Two other pits, F-18 and F-19	Low potential of subsurface features
F018	Burned Debris Pit	Pit nearly 1 m deep and 1.5 m x 1.5 m, filled with cans, glass jar and bottle fragments, and a C-cell battery.	1942-1944	Two other pits, F-17 and F-19	Low potential of subsurface features
F019	Burned Debris Pit	Pit measuring 2 m x 1 m, approximately 1 m deep. Filled with burned cans, metal, and glass fragments.	1942-1944	Two other pits, F-17 and F-18	Low potential of subsurface features
F020	Rock Alignment	2.4 m long 60 cm high, and 30 cm wide. Single course of stacked basalt rocks.	Unknown	None	Low potential of subsurface features
F021	Emplacement	10m x 10m emplacement with 60 cm high earthen berms, open to the NE			
F022	Pit	10m x 10m pit with low earthen berms, but pit is 1.25 m deep			
F023	Concrete Slab	10' x 10' concrete slab with 3 1" pipes sticking up out of ground. 10' SE of the slab are fragments of broken concrete and a cut-off 4"x6" post.			
F024	Pit	10 m x 10 m pit with earthen embankments. Near the center of the pit is a 1 m x 1 m pit like a sink hole that is 1 m deep.			
F025	Emplacement	5 m x 5 m emplacement approximately 30 cm deep. Located near the center of the airfield.			

No.	Type	Description	Date	Associations	Other
F026	Burned Debris Pit	2 side by side burn pits. Southern one is 5 m dia x 1 m deep. Northern looks to be filled in. Artifacts include melted glass, burned cans and metal debris, tobacco tins, HIT cans measuring 2 ^{15/16} " x 3 ^{14/16} ", #10 cans, clear glass jars, charcoal, batteries, and misc. metal fragments			
F027	Pit	Square pit 1.5 m x 2 m with straight walls and 2 m deep			
F028	Pit	3 m x 3 m pit, 1 m deep. There is a 1.5 m wide trench dug 6 m to the north, but only 50 cm deep. 2 railroad ties span across the pit with a more recent washing machine base within.			
F029	Pit	Square pit 1.5 m x 1.5 m and 1.5 m deep			
F030	Aerial Marker	Rock alignment 'X' of basalt rocks, 24 m x 24 m, likely to indicate that the runway or taxiway is closed	Post-1950s	None	Surficial
F031	Pit	2 pits with earthen berms. #1 is 5 m x 5 m and #2 is 5 m x 10m. The pits basically share a wall, but pit #2 appears to have entryways to the east and west.			
F032	Pit	2 pits. #1 is 7 m x 7 m and 6 m deep and contains HIT cans and 2 glass jars. Pit #2 is 5 m x 5 m and shares a wall with a basalt rock pile			
F033	Pit	Deep pit, roughly 30 ft deep. Opening measures 1 m x 1.5 m with 4" x 12" beam across the opening			
F034	Barrier	Steel post barrier to block access to the runway. Spaced about every 1'			

No.	Type	Description	Date	Associations	Other
F035	Pit	8m dia pit, very shallow. Contains 15 C and K ration cans, glass jars, and a 1 gal fuel can			
F036	Emplacement	Shallow pit, 50 cm deep, 10 m x 10 m with low embankments			
F037	Trench	Trench ~3 ft deep w/ assoc berm along S			
F038	Berm	Berm ~6-8 ft wide x ~1-2 ft high w/ hollow wood posts 12 x 8 in every ~150-200 ft			
F039	Dirt Mound	Dirt mound with borrow pit, surrounded by can and debris scatter			
F040	Dump	~10 burned trash pits & debris piles with army ration cans and bottles	1942-1944	Road connecting Camp Rice to Rice AAF	Moderate potential of subsurface features
F041	Burned Debris Dump	Burned debris dump 4' area with melted glass fragments			
F042	Emplacement	Square pit, 1 m deep, open to west			
F043	Emplacement	Square pit, 1 m deep, open to west			
F044	Burned Debris Dump	Burned debris 5 m dia area of dumped, burned debris including aqua glass bottle fragments, misc. metal and wood, dump wire, paint cans, chicken wire, metal hanger, oil filter, clear and green glass, nails, and a hinge			
F045	Burned Debris Dump	Charcoal, broom, white ceramic frags, ~30 cans, brn/blu/grn/clr glass frags, &c			
F046	Pit	Pit ~30 ft diameter w/ ~40 cans, grn/brn/clr glass frags			
F047	Burned Debris Dump	~30 cans, grn/brn/clr bottles & frags, wire hanger, &c			
F048	Burned Debris Dump	Berm-bounded pit w/ ~20 cans, grn/brn/clr bottles & frags, wood, &c			

No.	Type	Description	Date	Associations	Other
F049	Well Features	2 well head ~8" diameter and about 25' apart			
F050	Septic Pit	Wood-lined/braced pit 8' x 8' x 15 ft-deep	1942-1944	Concrete apron and east of F-64	Low potential of subsurface features
F051	Concrete Slab	Concrete pad 19'5" x 100' Likely the Airfield Operations Building			
F052	Concrete Slab	Concrete pad 6'5" x 7'7" w/ 8" well			
F053	Concrete Slab	25' x 107'6" foundation w/ brick and diffuse trash Link Trainer Building			
F054	Concrete Slab	10'3" x 31'10" concrete foundation w/ exterior walls 2.5' high and series of 7" x 8" concrete footings for the Dispensary			
F055	Concrete Slab	Concrete structure foundation 20' x 17'10"			
F056	Concrete Slabs	Array of 33 concrete footings, 11" x 11" x 8" high, 3 columns of 11 rows of Officer's Quarters			
F057	Rock Alignment	Rock alignments			
F058	Sidewalk	Concrete sidewalk			
F059	Charcoal Dump	Charcoal mounds			
F060	Concrete Slab	Concrete foundation (machinery?) 8' x 15'10"	1942-1944	Charcoal dump, F-59	Low potential of subsurface features
F061	Wood Posts	Lumber 6"x6" square footings in grid array, 9'7" post-post			
F062	Rock Lined Pit	Rock-lined pit ~1 ft deep			
F063	Concrete Slab	Concrete foundation ~ ground level 20' x 30' and 2' x 4' wood lined pit Kitchen			
F064	Concrete Slab	Concrete foundation ~ ground-level >1ft-high 100' x 60' Headquarters			
F065	Rock Lined Pit	Rock-lined pit ~1 ft deep			
F066	Rock Lined Pit	Rock-lined pit ~1 ft deep			

No.	Type	Description	Date	Associations	Other
F067	Rock Lined Pit	Rock-lined pit ~1 ft deep			
F068	Concrete Slab	Concrete foundation -ground level 20' x 80' Enlisted Mess			
F069	Wood Lined Pit	Wood 2 x 4 box -ground level			
F070	Concrete Slab	Concrete foundation ~ ground level > 1ft high 20' x 60'3"	1942-1944	"Loop Road"	Surficial
F071	Concrete Slab	Concrete footing 3'6" x 3' to support a tower			
F072	Concrete Slab	Concrete foundation ~ ground level> 1 ft high -partially intact 18' x 36'3"			
F073	Concrete Slab	Concrete foundation ~ ground level> 2ft high 20' x 52'3"			
F074	Concrete Slab	Concrete foundation ~ ground level 20' x 30'			
F075	Rock Lined Pit	Rock-lined pit ~0.5 ft deep			
F076	Rock Lined Pit	Rock-lined pit ~1 ft deep			
F077	Rock Lined Pit	3 ea rock-lined pits ~1 ft deep			
F078	Concrete Slab	Concrete foundation ~ ground level > '1 ft high 20'2" x 52'8" Bath House			
F079	Rock Lined Pit	Rock-lined pit ~3 ft deep			
F080	Rock Lined Pit	Rock-lined pit ~1 ft deep w/ cans, barrel, brn/grn bottle glass frags	1942-1944	None	High potential of subsurface features
F081	Rock Lined Trench	Rock-lined trench w/ 2 ft high berm in parallel immediately N			
F082	Burned Debris Dump	Berm-encircled pit ~3 ft deep w/ charcoal, brn glass bottles/frags			
F083	Rock Lined Pit	Rock-lined pit filled to ground level			
F084	Wood Lined Pit	Wood-lined (N end only) pit ~2 ft deep			
F085	Rock Lined Pit	Wood-bordered rock-lined pit ~2 ft deep			
F086	Rock Lined Pit	Rock-lined pit ~1 ft deep			
F087	Concrete Slab	Concrete foundation -ground level 20' x 30'5" and wood lined 2' x 4' pit Kitchen			

No.	Type	Description	Date	Associations	Other
F088	Pit	Circular pit 4' diameter w/ wood posts			
F089	Rock Lined Pit	Rock-lined pit w/ 2" diameter 3' high pipe at center			
F090	Rock-Lined Trench	Rock-lined trench	1942-1944	F-92	Low potential of subsurface features
F091	Rock Lined Pit	2 ea rock-lined pits ~1 ft deep			
F092	Concrete Slab	Concrete foundation ~ground level > 1 ft high 20' x 30' Kitchen			
F093	Wood Lined Trench	Wood-lined trench 4' x 9'5"			
F094	Rock Alignment	Rock alignments			
F095	Concrete Slab	Concrete foundation ~ ground level > 2 ft high 20' x 40'3" Generator			
F096	Trench	Shallow trench w/ 2" x 4" x 2' high posts every 60'			
F097	Burned Debris Pit	Circular pit '6 diameter w/ ~10 cans and burned metal debris			
F098	Burned Debris Pit	Rock-encircled circular pit ~10' diameter w/ - so cans, brn/clr glass frags, &c			
F099	Sign Base	2 long concrete mounds w/ longitudinal slot			
F100	Sign Base	2 ea -2 long concrete mounds w/ longitudinal slot	1942-1944	None	Low potential of subsurface features
F101	Concrete Slab	Concrete foundation -ground level > 1 ft high 28'4" x 20'4" Possible Bath House			
F102	Rock Lined Pit	Rock-lined pit -filled to ground level			
F103	Concrete Slab	Concrete foundation ~ ground level 20' x 30' Possible Kitchen			
F104	Concrete Slab	Concrete foundation ~ ground level 20' x 30'			
F105	Pit	Wood-lined rectangular pit 4' x 5'			

No.	Type	Description	Date	Associations	Other
F106	Rock Lined Pit	4' x 9' rock lined pit within a partially buried wooden frame			
F107	Pit	2 ea rock-lined circular pits 5' diameter, 15' apart E-W			
F108	Pit	Lumber-lined square pit 5' x 5' x 6' deep			
F109	Concrete Slab	Concrete foundation ~ground level 20' x 28'3" Possible Kitchen			
F110	Rock Lined Pit	Rock-lined pit -filled to ground level	1942-1944	F-113	Low-Moderate potential of subsurface features
F111	Pit	Wood-lined rectangular pit ~4 ft deep			
F112	Emplacement	Berm-encircled pit I artillery emplacement -20' diameter entrance to west			
F113	Berm	Berm on eastern end of area, connected to, or drains from F-123			
F114	Burned Debris Pit	Pit ~30' x 20' w/ charcoal, cans, brn/grn/clr glass frags			
F115	Trench	Trench ~2 ft deep			
F116	Rock Lined Pit	Rock-lined pit			
F117	Concrete Slab	Concrete foundation ~ ground level 20' x 28'4" and wood lined pit 2' x 2' Bath House			
F118	Concrete Slab	Concrete foundation ~ ground level 20' x 28'4" and wood lined pit 2' x 2' Lavatory			
F119	Charcoal Dump	Charcoal mounds ~1 ft high			
F120	Rock Alignment	Rock alignments (rocks on lines of polygon)	1942-1944	F-117	Low potential of subsurface features
F121	Pit	Pit 2' x 4' x 2' deep with signs of modern disturbance			

No.	Type	Description	Date	Associations	Other
F122	Rock Lined Pit	Rock-lined pit			
F123	Concrete Slab	Concrete foundation ~ ground level 5' x 7' Kitchen			
F124	Concrete Slab	Concrete foundation ~ ground level 20' x 30'			
F125	Berm	Berm on western end of area, view from aerial near end of runway			
F126	Drain	46" c 77" concrete drain with cast grate measuring 33" x 65" at the intersection of the two runways			
F127	Posts	Line of 6" x 6" poles 58" apart (cut up at 45 deg angle from ground level)			
F128	Berm	Berm on eastern end of runway			
SITE: CAMP RICE					
No.	Type	Description	Date	Associations	Other
F1	Capped Well	Capped well			
F2	Rock Lined Pit	2-meter-diameter basalt rock lined pit with basalt rocks extending out 6 meters in diameter. Associated with the pit are 2 hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", with another small can scatter 6 meters to the SE with more hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", 8 #10 cans, and two 5 gal. paint buckets			
F3	Pit	Rectangular pit, much like a bulldozer cut. 30 meters long x 5 meters wide. Nearby is an associated debris scatter of cans and glass			
F4	Pit	Small pit measuring 1 m x .5 m and 20 cm deep with 1 HIT can, 2 clear glass bottles, 3 clear glass jars, and 1 amber glass bottle			

No.	Type	Description	Date	Associations	Other
F5	Pit	Small square sided pit measuring 25 cm x 50 cm and 20 cm deep, 2 clear glass bottles outside			
F6	Pit	Square pit measuring 2 m x 1.5 m and 40 cm deep. Backdirt piles have burned can fragments and clear, amber and aqua glass fragments. This pit looks like a looter pit.			
F7	Pit	2 m x 2 m pit with charcoal, complete amber and clear glass bottles, Coca Cola bottles, mason jars, can fragments, milk bottles			
F8	Pit	2 m x 2 m pit, 30 cm deep surrounded by low banks with charcoal, can fragments, glass, complete bottles, metal fragments, complete jars, clear ketchup bottles, and amber beverage bottles.			
F9	Emplacement	Semicircular berm ~30 ft diameter with 50 cm high berm w/ -200 army ration cans inside			
F10	Debris Scatter	~40 cans, brn glass bottle, wood 2" x 4" x 5' in -10 ft diameter area			
F11	Pit	Pit ~20 ft diameter w/ -200 cans, clr glass bottle, wire			
F12	Burned Debris Dump	Charcoal, yellow ceramic plate frag, ~20 cans			
F13	Dump	11 20 ft diameter berm-bounded pits, 4 at SW end w/ cans, grn/brn/clr bottles & frags, wood, & c			

**Cultural Resources Table 6
Newly Discovered Historic Artifact Concentrations within the
Rice Army Air Field/Camp Rice Facility Footprint**

SITE: RICE ARMY AIR FIELD					
No.	Type	Description	Date	Associations	Other
C1	Debris Scatter	25+ cans, glass, and metal strapping	1942-1944	None	Surficial
C2	Debris Scatter	30+ cans including key opened meat and fish cans, C-ration cans, glass, and metal strapping			
C3	Debris Scatter	10 five-gal. fuel cans, 1 gal. fuel cans, nails, metal strapping, 3 ring binder, glass fragments, jars, wood, paint cans, D cell batteries, modern cans and debris			
C4	Debris Scatter	40-1 gal. fuel cans, 1 qt. paint cans, 1 pint paint cans, nails, meat cans, cable, binder fragments, 2 x 4 post near middle of scatter			
C5	Debris Scatter	Single-episode dump of fuel cans, melted glass fragments, misc. metal debris, wood, D-cell batteries			
C6	Can Scatter Small	Scatter of 9 cans, 1 hole-in-top can measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", the rest are sanitary type cans			
C7	Burned Debris Dump	Burned trash pile with glass fragments, batteries, can fragments, misc. metal fragments, sheet metal, and wood fragments			
C8	Burned Debris Dump	Burned trash pile with 20+ cans, can fragments, clear glass fragments within a 3 meter diameter area			
C9	Debris Scatter	Rolls of 1/8" hardware cloth and metal poles with a 'T' joint in middle			

No.	Type	Description	Date	Associations	Other
C10	Can Scatter	Small can scatter of 8 cans within a 3 meter area. Cans include hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", #10 cans, and sanitary cans.			
C11	Debris Scatter	5 meter diameter pit filled with mixed historic and modern debris. Historic items include 5 gal. fuel cans, #10 cans, coffee cans, stove pipe, galvanized metal bucket, 55 gal drum, ammo box lid, ceramic insulator, clear glass fragments, steel cable. Modern debris includes aluminum topped beverage cans. The nature of this debris appears that it was collected from the area and dumped in this pit	1942-1944	Western runway	Surficial
C12	Can Scatter	Small fuel and paint can scatter with 15 cans in a 2 meter area			
C13	Debris Scatter	3 m. diameter debris dump with metal straps, 1 gal fuel cans, aluminum fragments, rubber hose, brackets, galvanized steel pipe, and 5 gal can lids			
C14	Debris Scatter	Small scatter over 5 meter area containing metal wire spool, pipe, paint cans and lids, paint, 1 gal can, misc. metal fragments			
C15	Burned Debris Dump	3 m x 20 m burned debris dump with #10 cans, paint cans, stove pipe, C-rationcans, 5 gal. fuel, amber bottles, wire, food/fruit cans, and hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ "			
C16	Debris Scatter	Debris scatter containing tobacco tins, hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", clear, green, and amber glass fragments, pink ceramic toilet paper holder, Coca Cola bottle, and wire			

No.	Type	Description	Date	Associations	Other
C17	Debris Scatter	Small scatter within a 1.5 meter area. 12 cans including sardine, beverage, and food/fruit cans, also clear glass bottle finish and an amber bottle fragment			
C18	Debris Scatter	21 cans including a brake fluid can, #10 cans, C-ration cans, 1 pint sized paint can, wooden frame, 3 clear glass jars, 2 clear glass bottles			
C19	Can Scatter	16 cans in a 2 m area, C-ration cans			
C20	Can	3 cans in a 1 m area, all C cans			
C21	Can Scatter	20 cans in a 6m area, all Army ration	1942-1944	None	Surficial
C22	Debris Scatter	Approximately 400 cans including Army ration cans, HIT cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", paint cans, 1 gal paint cans, tobacco tins, burned/melted clear, amber and green glass, nails, metal strapping, and rubber hose in a 10 m area			
C23	Debris Scatter	Debris dump in a 15m x 10m area. Contains army ration cans, glass fragments, a padlock, yellow ceramic plate fragments, batteries, metal strapping, cable, light bulb base.			
C24	Burned Debris	100 cans in a 4 m area. All Army ration cans, HIT cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", 1 gal fuel, dump batteries, clear glass fragments, ketchup bottles, wire, and metal strapping			
C25	Burned Debris Dump	Burned debris dump with mostly melted and fragmented glass, a few can fragments, batteries, hose clamp, first aid tape reel, and charcoal in a 7 m area			
C26	Burned Debris Dump	Army ration cans, HIT cans, 1.5 meter charcoal dump, nails, Wire, cable, and glass sparsely scattered over a 12 meter area			

No.	Type	Description	Date	Associations	Other
C27	Can Scatter	50 Army ration cans, #10, C-ration, HIT, in a 3 m x 2 m area			
C28	Can Scatter	100+ flattened food cans			
C29	Debris Scatter	200+ army ration food cans (~50 flattened), c1r glass bottle frags, &c in ~10 ft diameter area			
C30	Debris Scatter	~50 cans, clr glass frags, &c			
C31	Can Scatter Area	~3 ft diameter w/ ~20 cans	1942-1944	None	Surficial
C32	Dump	Metal box beam & ducting, cans, charcoal, brn glass frags, &c			
C33	Debris Scatter Area	~4 ft diameter – ~20 cans + area 4 ft diam 10m N -brn/grn/clr glass + 10m S 2 ft diameter 7 cans			
C34	Can Scatter Area	~4 ft diameter w/ ~20 cans			
C35	Debris Scatter	Yellow ceramic plate frags, 100+ cans, metal pipe, wire, wood, &c			
C36	Can Scatter	Triangular area w/ concentration of ~20-30 cans at each corner			
C37	Can Scatter Area	-8 ft diameter --40 cans, automotive leaf-spring piece			
C38	Construction Debris	Area ~30'x20' w/ lumber, ~10 cans, wire mesh			
C39	Construction Debris	Area ~30'x20' w/ lumber, plumbing, plaster, wire mesh			

SITE: CAMP RICE

SITE: CAMP RICE					
C01	Can Scatter	40+ Hole-in-Top cans measuring 2 ¹⁵ / ₁₆ x 3 ¹⁴ / ₁₆ and metal strapping			
C02	Debris Scatter	60+ cans including #10 and hole-in-top cans measuring 2 ¹⁵ / ₁₆ x 3 ¹⁴ / ₁₆ , clear glass ketchup bottles and quart jars			
C03	Debris Scatter	40+ cans, sanitary type, square/rectangle meat cans with key opening, C-ration cans within a 1 meter square area			
C04	Debris Scatter	29 cans within a 1 meter area, all the same, round with key opened C-ration cans			
C05	Can Scatter	15 cans, 3 #10, sanitary type, HIT 2 ¹⁵ / ₁₆ x 3 ¹⁴ / ₁₆			
C06	Debris Scatter	7 -#10 cans, 60 food/milk cans -sanitary type and HIT 2 ¹⁵ / ₁₆ x 3 ¹⁴ / ₁₆ , 1 glass mason jar, wire			
C07	Debris Scatter	1/8" hardware cloth in rolls, D-cell batteries, 1 gal. fuel can, 5 gal fuel can, metal fragments, and 1" diameter pipe.			
C08	Debris Scatter	50+ cans, hole-in-top cans measuring 2 ¹⁵ / ₁₆ x ¹⁴ / ₁₅ and 2 ⁸ / ₁₆ x 2 ⁶ / ₁₆ , broken mason jar, coffee can, and 1 qt paint cans			
C09	Debris Scatter	100+ cans including 1 qt. paint cans, oil filter, hole-in-top cans measuring 2 ¹⁵ / ₁₆ x 3 ¹⁴ / ₁₆ ", battery fragments, and glass fragments			
C10	Debris Scatter	60+ cans including hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", quart glass jars, 1 qt paint cans, dimensional lumber, and #10 cans .			
C11	Can Scatter	20 cans, 2-#10 cans, 18 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ " with "Punch Here" embossed on lid.			

No.	Type	Description	Date	Associations	Other
C12	Debris Scatter	Rolls of 1/8" hardware cloth, hole-in-top can measuring 2 ^{15/16} x 3 ^{14/16} , C-ration cans, metal strapping, fuel can lid, D-cell battery			
C13	Can Scatter	2 discrete dumps of ~50 cans each, only 3 meters apart, each dump is 1.5 meter in diameter. Each contains hole-in-top cans measuring 2 ^{15/16} x 3 ^{14/16} ", sanitary type cans, meat cans with key opening, metal strapping, C-ration cans			
C14	Debris Scatter	Small scatter of 20+ cans, most crushed, a bottle finish and glass fragments			
C15	Debris Scatter	16 #10 cans, 4 hole-in-top cans measuring 2 ^{15/16} x 3 ^{14/15} , 1 hole-in-top can measuring 2 ^{8/16} x 2 ^{6/16} ", and glass fragments			
C16	Debris Scatter	5 hole-in-top cans measuring 2 ^{15/16} x 3 ^{14/16} ", 5 #10 cans, 2 quart sized juice cans, 2 large meat cans, and at least 6 fragmented jars			
C17	Debris Scatter	80+ cans with another 80 extending down the wash, nails, batteries, misc. metal fragments, wire, drywall material, glass jars			
C18	Can Scatter	40+ cans, most fruit cans, 3 hole-in-top cans measuring 2 ^{15/16} x 3 ^{14/16} ", large square "Roast Beef" can with ingredients embossed			
C19	Debris Scatter	Large dump with a 5 gal. fuel can, 1 5 gal paint bucket, 25 1 gal. fuel cans, 6 1 gal paint cans, 30+ fruit cans, hole-in-top cans measuring 2 ^{5/16} x 3 ^{14/16} ", several #10 cans, charcoal/ash, batteries, lumber, window and jar glass.			

No.	Type	Description	Date	Associations	Other
C20	Debris Scatter	25+ #10 cans, 20 hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", 16 sanitary type fruit cans, and 2 glass quart jars			
C21	Glass Scatter	Glass debris dump with clear, amber, and green glass fragments, some melted. Also present are Coca Cola bottles and some wire and batteries			
C22	Debris Scatter	6 clear glass 1 quart jars, 2 fragmented jars, and 5 crushed cans			
C23	Can Scatter	6 large "Roast Beef" cans, 5 coffee cans, 3 #10 cans, 15 fruit cans, and 4 hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ "			
C24	Debris Scatter	100+ crushed/flattened cans with recognizable #10 cans, food and fruit cans, hole-in-top cans, glass bottle fragments, and a battery			
C25	Glass Scatter	Scatter of glass bottle fragments within a 1 meter area			
C26	Construction Debris	Construction debris scatter with asbestos pipe, cans, ceramic plate fragments, springs, nails, misc. metal fragments			
C27	Debris Scatter	Glass and can scatter with steel cable, metal strapping, muffler, 3 ring binder, 1 gal paint cans all within a 10 meter diameter area.			
C28	Debris Scatter	Can scatter and glass fragments, hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", an auto gauge			
C29	Debris Scatter	can scatter, bottle caps, misc metal fragments, 1 quart juice cans, oil filter, C-ration meat cans, Coca Cola bottle, clear glass bottles			

No.	Type	Description	Date	Associations	Other
C30	Burned Debris	Burned trash pile, no recognizable cans, but had glass fragments, a canteen holder, misc. metal dump fragments, can lids, wire, small			
C31	Glass Scatter	2 episode glass bottle dump. Mostly clear glass bottles and jars with some amber glass. Most glass is melted. Only 5 cans are present. Scatter within a 2 m x 3 m area			
C32	Burned Debris Dump	Burned bottle and debris dump with clear and amber glass bottles and jars. Other items noted include a fuse, paint cans, misc. metal vehicle parts, metal straps, wire hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ " within a 5 meter diameter area.			
C33	Burned Debris Dump	Burned debris pile including melted glass of clear, amber, and green bottles and clear jars, wire spool, tobacco tin, meat can, shoe heel, and batteries			
C34	Burned Debris Dump	Burned debris pile including melted/burned clear, amber, and green bottle glass, metal clothes hanger, Coca Cola bottle, bottle caps, batteries all within a 1 meter diameter area.			
C35	Debris Scatter	Large debris dump, 5 meters in diameter. 200+ cans and lids, clear glass jars, green glass bottle fragments, 5 gal. fuel can lid, 1 gal. fuel can, #10 cans, hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", food/fruit cans, can lids, .50 cal shell casings, ammunition links for linked .50 cal rounds.			
C36	Debris Scatter	Can scatter of all flattened cans with a few melted bottle fragments. Over 100 cans within a 1 meter diameter area. Cans recognized include meat, fish, and food/fruit cans, bottle caps, and a ketchup bottle.			

No.	Type	Description	Date	Associations	Other
C37	Can Scatter	50 cans including hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", #10 cans, sanitary type food/fruit cans. A few meters away are 3 clear glass jars and fragments and a few more cans.			
C38	Debris Scatter	20 cans including 5 #10 cans, hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", ketchup bottle, and clear glass jar fragments			
C39	Can Scatter	20 cans in one dump, all sanitary type food/fruit cans or #10 cans, with a single clear glass bottle			
C40	Burned Debris	30 cans including hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", sanitary type food/fruit cans, #10 cans, meat/roast beef cans, C-rations, clear glass fragments, metal straps, hacksaw blade, and aluminum scrap -all burned with some charcoal present.			
C41	Can Scatter	16 cans in a 1 meter diameter area including food/fruit cans, #10 cans, hole-in-top cans measuring 2 ¹⁵ / ₁₆ " x 3 ¹⁴ / ₁₆ ", square C-ration can, and one ketchup bottle.			
C42	Debris Scatter	Rolls of 1/8" hardware cloth and metal poles with a 'T' joint in middle and 5 can fragments			
C43	Can Scatter	25 cans in a 4 m area, mostly C-ration cans (fruit, vegetable, and meat) fish cans, 2 clear glass jars, and a metal flask			
C44	Debris Scatter	20 Army ration cans and 2 clear glass bottles in a 2 meter area			
C45	Can Scatter	60 Army ration cans and metal strapping in a 8' area			
C46	Debris Scatter	3 trash concentrations -3 ea wood 2 in x 4 in x 3 ft 4m E, ~10 cans 8m NW, ~30 cans 8m SSE			

No.	Type	Description	Date	Associations	Other
C47	Debris Scatter	250 cans, clr glass jars/frags, banding, plumbing pipe in ~20 ft diameter area			
C48	Debris Scatter	~20 cans, clr glass jar frags, wire in ~20 ft diameter area			
C49	Can Scatter	~20 cans in ~10 ft diameter area			
C50	Burned Debris Dump	~100 cans, clr glass frags in ~10 ft diam w/ ~2 ft diam charcoal 5m NW & brn/grn/clr glass 10m SW			
C51	Can Scatter	~30 cans, clr jar frags & grn bottle frags, wire in ~6 ft diameter area			
C52	Can Scatter	~16 cans in ~6 ft diameter area			
C53	Debris Scatter	Area ~8 ft diameter w/ ~20 cans, brn bottles/frags, banding			
C54	Debris Scatter	Area ~9 ft diameter w/ ~60 cans, clr glass bottles/jars/frags, banding			
C55	Debris Scatter	Area ~12 ft diameter w/ ~60 cans, clr glass bottles/jars/frags, wire, &c			
C56	Burned Debris Dump	Area ~20 ft diameter w/ ~10 cans, borrlcaps, brn/grn/clr glass bottles/frags, banding, wire, &c			
C57	Debris Scatter	Cans and glass			
C58	Debris Scatter	Cans and glass			
C59	Debris Scatter	Cans and glass			

**Cultural Resources Table 9
Previously Recorded Resources Eligibility Recommendations**

Site	Prehistoric/ Historic	Description	NRHP Eligibility Recommendations
RIV-5988H	H	Historic WWII training camp with rock rings	eligible
RIV-5989H	H	Historic WWII training camp with one feature	not eligible
SBR-8005H	H	Historic structure (Parker Dam Substation, 1933)	indeterminate
RIV-5983H	H	Historic miners camp with tent pads, structures, privy	eligible
RIV-5986H	H	Historic miners camp with tent pad cans, lumber, bottles	not eligible
SBR-4370H	H	Historic road	not eligible
RIV-5982H	H	Historic trash scatter	not eligible
RIV-5990H	H	Historic WWII dump	eligible
SBR-8006H	H	Historic dump	indeterminate
SBR-8868H	H	Historic can dump	not eligible
SBR-8869H	H	Historic can dump	not eligible
SBR-8870H	H	Historic can dump	indeterminate
SBR-1507	P	Ceramics	indeterminate
SBR-2525	P	Geoglyph	eligible
SBR-8892	P	Lithic scatter with at least 3 c.s.,* rock alignment, and a cairn	eligible
SBR-8897	P	Sparse lithic scatter with 4 small c.s.	eligible
SBR-8882	P	Lithics with 4+ concentrations	eligible
SBR-8907	P	Sparse lithic scatter with a pecked rock	eligible

Site	Prehistoric/ Historic	Description	NRHP Eligibility Recommendations
SBR-8018	P	Lithics	indeterminate
SBR-8025	P	Lithics	indeterminate
SBR-8880	P	Lithics with 3 concentrations	indeterminate
SBR-8886	P	Small chipping stations and lithic scatter	indeterminate
SBR-8887	P	Chipping station	indeterminate
SBR-8888	P	Lithic scatter with two c.s.	indeterminate
SBR-8890	P	Lithic scatter with 4 c.s.	indeterminate
SBR-8905	P	Lithics including two c.s.	indeterminate
SBR-1500	P	Sparse lithic scatter with chipping stations	indeterminate
SBR-1514	P	Sparse lithic scatter and Quarry	indeterminate
SBR-8881	P	Lithic scatter	indeterminate
SBR-8883	P	Sparse lithic scatter	indeterminate
SBR-8884	P	Extensive lithic scatter	indeterminate
SBR-8885	P	Sparse lithic scatter with 3+ c.s.	indeterminate
SBR-8894	P	Lithic scatter with 3 c.s.	indeterminate
SBR-8895	P	Small lithic scatter	indeterminate
SBR-8901	P	Lithic scatter	indeterminate
SBR-8891H	P	Lithic scatter with 6 + c.s.	not eligible
RIV-3418	P	Lithic Scatter, quarry	not eligible
SBR-8879	P	Lithics, 2 chipping stations	not eligible
SBR-8896	P	Single chipping station	not eligible
SBR-8899	P	Lithic	not eligible
SBR-1511	P	Quarry area	eligible
RIV-1135	P	Quarry	indeterminate
SBR-1523	P	Lithic quarry area	indeterminate

Site	Prehistoric/ Historic	Description	NRHP Eligibility Recommendations
SBR-1521	P	Lithic quarry area	indeterminate
SBR-1522	P	Lithic quarry area	indeterminate
SBR-1525	P	Quarry	indeterminate
RIV-5987/H	P/H	Prehistoric trail; Historic WWII training camp	eligible
SBR-1506	P	Trail and flake scatter	eligible
SBR-8907	P	Sparse lithic scatter with pecked rock	eligible
SBR-1508	P	Trail and lithics	eligible
SBR-8909	P	Trail with lithics	eligible
SBR-8910	P	Trail and lithics	eligible
SBR-8904/H	P	Trail, lithics, and trade bead	eligible
SBR-8906	P	Trail, lithics, ceramics	eligible
SBR-8902	P	Trail, lithics, and petroglyph	eligible
SBR-8903	P	Trail segment and petroglyphs	eligible
RIV-5985T	P	Trail	eligible
SBR-8871/H	P	Trail	eligible
SBR-8877	P	Trail, pot drop	eligible
SBR-8878	P	Trail, pot drop	eligible
SBR-8908	P	Trail with lithics	eligible
RIV-872	P	Trail	indeterminate
SBR-1498	P	Trail	indeterminate
SBR-1499	P	Trail	indeterminate
SBR-8889	P	Trails with lithic scatter, one c. s.	indeterminate
SBR-1524	P	Lithic quarry, sparse lithic scatter; trail, petroglyph	indeterminate

Site	Prehistoric/ Historic	Description	NRHP Eligibility Recommendations
SBR-8898	P	Trails	indeterminate
RIV-160	P	Trail and quarry	indeterminate
SBR-8004	P	Trail	indeterminate
SBR-8893	P	Trail	not eligible
RIV-5984T	P	Trail	not eligible
SBR-8872	P	Trail	not eligible
SBR-8873	P	Trail	not eligible
SBR-8874	P	Trails	not eligible
SBR-8875	P	Trail	not eligible
SBR-8876/H	P	Trail	not eligible
SBR-10526	H	Camp Rice	not evaluated

* c.s.- chipping station

HAZARDOUS MATERIALS MANAGEMENT

Testimony of Geoff Lesh, PE and Rick Tyler

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that hazardous materials use at the proposed RSEP would not present a significant impact on the public or environment. With adoption of the proposed mitigation measures/conditions of certification, the proposed project would comply with all applicable laws, ordinances, regulations, and standards (LORS).

These Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as staff's recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of hazardous material-related impacts to less than significant and for the project to conform to all applicable LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision.

INTRODUCTION

The purpose of this **Hazardous Materials Management** section of this Preliminary Staff Assessment/Draft Environmental Impact Statement (PSA/DEIS) is to determine if the proposed RSEP could potentially cause significant impacts on the public from the use, handling, storage, or transportation of hazardous materials at the proposed project site. If significant adverse impacts on the public are identified, Energy Commission staff must evaluate facility design alternatives and additional mitigation measures to reduce those impacts to the extent feasible.

This analysis does not address the potential exposure of workers to hazardous materials used at the proposed project site. Employers must inform employees of hazards associated with their work and provide those employees with special protective equipment and training to reduce the potential for health impacts from the handling of hazardous materials. The **Worker Safety and Fire Protection** section of this document describes the protection of workers from those risks.

For this analysis, staff examines plausible potential loss of containment incidents (spills) for the hazardous materials to be used at the proposed facility. The worst case plausible event, regardless of cause, is considered, and analyzed to see whether the risk to local populations is significant. Hazardous material handling and usage procedures are designed to reduce the likelihood of a spill, to reduce its potential size, and to prevent or reduce the potential migration of a spill off site to the extent that there won't be significant off-site impacts. These measures look at potential direct contact from runoff

of spills, air-borne plume concentrations, and the potential for spills to mix with runoff water and be carried offsite. Generally, staff seeks to confirm that the applicant has proposed secondary containment basins for containing hazardous material liquids, and that volatile chemicals would have a restricted exposure to the atmosphere after capture. Containment basins are designed to be able to hold the contents of a full tank plus the potential rainfall from a 25-year storm without any loss of containment. In the event of a spill, the spilled material, along with any mixed-in water and any contaminated soils, would then be placed into containers and processed and disposed of as required by regulations.

Hazardous materials such as mineral and lubricating oils, corrosion inhibitors, herbicides, and acids and bases to control pH would be present at the proposed project site. Hazardous materials used during the construction phase include gasoline, diesel fuel, motor oil, lubricants, and small amounts of solvents and paint. No acutely toxic hazardous materials would be used on-site during construction. None of these materials pose a significant potential for off-site impacts as a result of the quantities on-site, their relative toxicity, their physical states, and/or their environmental mobility.

Although no natural gas is stored or used, the project would involve the temporary handling of moderate amounts of liquid petroleum gas (LPG, or propane) during the start-up commissioning phase. Propane poses some risk of both fire and explosion. The risk of a fire and/or explosion on-site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices.

The RSEP would also require the transportation of certain liquid and solid hazardous materials to the facility. This document addresses all potential impacts associated with the use, storage, and transport of hazardous materials.

LAWS, ORDINANCES, REGULATION, AND STANDARDS

The following federal, state, and local laws and policies apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

**HAZARDOUS MATERIALS MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable Law	Description
Federal	
The Superfund Amendments and Reauthorization Act of 1986 (42 USC §9601 et seq.)	Contains the Emergency Planning and Community Right To Know Act (also known as SARA Title III).
The Clean Air Act (CAA) of 1990 (42	Establishes a nationwide emergency planning and response program, and imposes reporting requirements for businesses that

USC 7401 et seq. as amended)	store, handle, or produce significant quantities of extremely hazardous materials.
The CAA Section on Risk Management Plans (42 USC §112(r)	Requires states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of both SARA Title III and the CAA are reflected in the California Health and Safety Code, section 25531, et seq.
49 CFR 172.800	Requires that the suppliers of hazardous materials prepare and implement security plans in accordance with U.S. Department of Transportation (DOT) regulations.
49 CFR Part 1572, Subparts A and B	Requires that suppliers of hazardous materials ensure that their hazardous material drivers comply with personnel background security checks.
The Clean Water Act (CWA) (40 CFR 112)	Aims to prevent the discharge or threat of discharge of oil into navigable waters or adjoining shorelines. Requires a written spill prevention, control, and countermeasures (SPCC) plan to be prepared for facilities that store oil that could leak into navigable waters.
6 CFR Part 27	The CFATS (Chemical Facility Anti-Terrorism Standard) regulation of the U.S. Department of Homeland Security (DHS) that requires facilities that use or store certain hazardous materials to submit information to the DHS so that a vulnerability assessment can be conducted to determine what certain specified security measures shall be implemented.
State	
California Health and Safety Code, section 25531 to 25543.4	The California Accidental Release Program (Cal-ARP) requires the preparation of a Risk Management Plan (RMP) and Off-site Consequence Analysis (OCA) and submittal to the local Certified Unified Program Authority (CUPA) for approval.
Title 8, California Code of Regulations, Section 5189	Requires facility owners to develop and implement effective safety management plans to ensure that large quantities of hazardous materials are handled safely. While these requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.
Title 8, California Code of Regulations, Section 5189	Sets forth requirements for design, construction, and operation of the vessels and equipment used to store and transfer ammonia. These sections generally codify the requirements of several industry codes including the American Society for Material Engineering (ASME) Pressure Vessel Code, the American National Standards Institute (ANSI) K61.1, and the National Boiler and Pressure Vessel Inspection Code. These codes apply to anhydrous ammonia but are also used to design storage facilities for aqueous ammonia.
Process Safety	Requires facility owners to develop and implement effective process

Management: Title 8 CCR Section 5189	safety management plans when toxic, reactive, flammable, or explosive chemicals are maintained on site in quantities that exceed regulatory thresholds.
California Health and Safety Code, Sections 13240 – 13243.6	California Propane Storage and Handling Safety Act adopts regulations setting for safety standards for siting and construction of fixed propane storage systems, fire safety compliance requirements, and training requirements
California Health and Safety Code, Section 41700	Requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	Prevents certain chemicals that cause cancer and reproductive toxicity from being discharged into sources of drinking water.
LOCAL	
Riverside County Fire Code, Riverside County Code Chapter 8.32: Ordinance No. 787	Adopts the California Fire Code, 2007 Edition, with some of its appendices, into Riverside County regulations.
Disclosure of Hazardous Materials and the Formulation of Business Emergency Plans: Riverside County Ordinance 651	Requires disclosure where businesses handle hazardous materials and requires the development of response plans; designates Riverside County Department of Environmental Health as responsible for administration and enforcement of local codes.

The Certified Unified Program Agency (CUPA) with the responsibility to review the Hazardous Materials Business Plan (HMBP) is the Riverside County Environmental Health Department (RCEHD). With regard to seismic safety issues, the site is located in a seismically active region of California. Construction and design of buildings and vessels storing hazardous materials will meet the appropriate seismic requirements of the 2007 California Building Code (RSEP 2009a, Section 2.3.1.1.1).

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Staff reviewed and assessed the potential for the transportation, handling, and use of hazardous materials to impact the surrounding community. All chemicals and natural gas were evaluated. Staff's analysis examines the potential impacts on all members of the population including the young, the elderly, and people with existing medical conditions that may make them more sensitive to the adverse effects of hazardous materials. In order to accomplish this goal, staff utilizes the most current acceptable public health exposure levels (both acute and chronic) to protect the public from the effects of an accidental chemical release.

In order to assess the potential of released hazardous materials traveling off-site and affecting the public, staff analyzed several aspects of the proposed use of materials at the facility. Staff recognizes that some hazardous materials must be used at power plants. Therefore, staff conducted its analysis by focusing on the choice and amount of chemicals to be used, the manner in which the applicant would use the chemicals, the manner by which it would be transported to the facility and transferred to facility storage tanks, and the way in which the applicant plans to store those materials on-site.

Staff reviewed the applicant's proposed engineering and administrative controls for hazardous material use. Engineering controls are physical or mechanical systems such as storage tanks or automatic shut-off valves that can prevent a spill of hazardous material from occurring, or that can limit the spill to a small amount or confine it to a small area. Administrative controls are rules and procedures that workers must follow to help either prevent accidents or keep them small if they do occur. Both engineering and administrative controls can act as either methods of prevention or methods of response and minimization. In both cases, the goal is to prevent a spill from moving off-site and harming the public.

Staff reviewed and evaluated the proposed use of hazardous materials, as described by the applicant (RSEP2009a, section 5.5 and CH2MHill 2010v). Staff's assessment followed the five steps listed below:

- Step 1: Staff reviewed the chemicals and amounts proposed for on-site use, as listed in Tables 5.5-1, 5.5-2, and 5.5.3 of the Application for Certification (AFC) (RSEP2009a) and SII1-1 (CH2MHill 2010v), and determined the need and appropriateness of their use. Only those that are needed and appropriate are allowed to be used. If staff feels that a safer alternative chemical can be used, staff would recommend or require its use, depending upon the impacts posed.
- Step 2: Those chemicals, proposed for use in small amounts or whose physical state is such that there is virtually no chance that a spill would migrate off the site and impact the public, were removed from further assessment.
- Step 3: Measures proposed by the applicant to prevent spills were reviewed and evaluated. These included engineering controls such as automatic shut-off valves and different size transfer-hose couplings and administrative controls such as worker training and safety management programs.
- Step 4: Measures proposed by the applicant to respond to accidents were reviewed

and evaluated. These measures also included engineering controls such as catchment basins and methods to keep vapors from spreading, and administrative controls such as training emergency response crews.

- Step 5: Staff analyzed the theoretical impacts on the public of a worst-case spill of hazardous materials even with the mitigation measures proposed by the applicant. When mitigation methods proposed by the applicant are sufficient, no further mitigation is recommended. If the proposed mitigation is not sufficient to reduce the potential for adverse impacts to an insignificant level, staff would propose additional prevention and response controls until the potential for causing harm to the public is reduced to an insignificant level. It is only at this point that staff can recommend that the project be allowed to use hazardous materials.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The RSEP is within a larger, privately owned holding that is 3,324 acres. Within the project parcel will be the administration buildings area, heliostat field with power block, and evaporation pond areas, (collectively, the project site or facility site) totaling 1,410 acres, that will be surrounded by a security fence. Areas outside the facility site but within the project parcel will not be fenced or developed or disturbed as part of the RSEP. The site is primarily on previously disturbed private land (RSEP 2009a, AFC pg. ES-4). Existing use adjacent to the proposed project site consists of undeveloped open space uses to the east, south, and west. Along the northern boundary of the site, State Route 62, the California Aqueduct, and the Arizona-California Railroad run parallel to the site (RSEP 2009a, AFC Section 5.7.2.1).

Several characteristics of an area in which a project is located affect its potential for an accidental release of a hazardous material. These include:

- local meteorology;
- terrain characteristics; and
- location of population centers and sensitive receptors relative to the project.

METEOROLOGICAL CONDITIONS

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as their health risks. When wind speeds are low and the atmosphere is stable, dispersion is severely reduced and can lead to increased localized public exposure.

Recorded wind speeds and ambient air temperatures are described in the Air Quality section (5.1) and Appendix 5.1C of the Application for Certification (AFC) (RSEP2009a).

TERRAIN CHARACTERISTICS

The RSEP will be located in rural eastern Riverside County, California. The project site

is along State Route (SR) 62 between Parker, Arizona, and Twentynine Palms, California. The project will be located on private land that was used during World War II as the site of the Rice Army Airfield, an airfield used to train infantry air support between 1942 and 1944, before being converted to a private airfield for a short time during the 1950s, and then abandoned. The project is located in a sparsely settled portion of the Sonoran Desert. The nearest residences are located in Vidal Junction, about 15 miles northeast of the site; and at the Metropolitan Water District's Iron Mountain Pumping Plant, about 17 miles to the west. The nearest town offering services is Parker, Arizona, approximately 32 miles east by road. Blythe, California is approximately 40 miles south by road. Twentynine Palms, California is 75 miles west (RSEP 2009a, Section 5.12.1).

LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. In addition, the location of the population in the area surrounding a project site may have a large bearing on health risk.

There are no sensitive receptors such as schools, day care facilities, residences, or hospitals within six miles of the project site. The nearest school to the project site is La Pera Elementary School at 19121 Tahbo Road, Parker, Arizona, approximately 24 miles east-southeast of the project site. The nearest hospital is La Paz Regional Hospital at 1200 W. Mohave Road, Parker, Arizona, which is approximately 30 miles to the east-northeast. The nearest residential receptor is in Vidal Junction, about 15 miles northeast. The nearest town is Parker, Arizona (population 3,181), approximately 32 miles east. A residential settlement is located at the Metropolitan Water District of Southern California's Iron Mountain Pumping Plant, approximately 17 miles west (RSEP2009a, sections 5.5.1 and 5.9.1, figure 5.5-1).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT/INDIRECT IMPACTS AND MITIGATION

Proposed Project

Small Quantity Hazardous Materials

In conducting this analysis, staff determined in Steps 1 and 2 that most of the proposed materials, although present at the proposed facility, pose a minimal potential for off-site impacts since they would be stored in either solid form or in small quantities, have low mobility, low vapor pressure, or low levels of toxicity. These hazardous materials, which were eliminated from further consideration, are discussed briefly below.

During the construction phase of the project, the only hazardous materials proposed for use include paint, cleaners, solvents, gasoline, diesel fuel, motor oil, welding gases, and lubricants. Any impact of spills or other releases of these materials would be limited to the site because of the small quantities involved, the infrequent use and hence reduced chances of release, and/or the temporary containment berms used by contractors.

Petroleum hydrocarbon-based motor fuels, mineral oil, lube oil, and diesel fuel all have very low volatility and would represent limited off-site hazards, even in larger quantities.

During operations, hazardous chemicals such as cleaning agents, lube oil, sulfuric acid, sodium hydroxide, diesel fuel and other various chemicals (see **Hazardous Materials Appendix A** for a list of all chemicals proposed to be used and stored at RSEP) would be used and stored on-site and represent limited off-site hazard due to their small quantities, low volatility, and/or low toxicity.

After removing from consideration those chemicals that pose no risk of off-site impact in Steps 1 and 2, staff continued with Steps 3, 4, and 5 to review the remaining hazardous materials: hydrogen, sodium hypochlorite, sulfuric acid, and liquefied petroleum gas.

Large Quantity Hazardous Materials

Aqueous Ammonia

The RSEP facility may utilize aqueous ammonia (19% NH₃) as an option for emissions control of the salt melting and conditioning equipment during plant commissioning activities. The ammonia will be brought onsite by a licensed contractor in tanker trucks. Liquid ammonia tanker trucks have capacities of up to 11,400 gallons. The capacity of the tanker trucks expected to be used for the RSEP is 7,500 gallons. A maximum of two tanker trucks will be onsite at any time; thus, the maximum amount of ammonia onsite at the RSEP will be 15,000 gallons. The trucks will stay onsite until empty and no permanent ammonia storage tanks will be built for the RSEP.

The tanker trucks will be surrounded by a secondary containment structure capable of holding the full contents of the tank and accumulated precipitation. The tanker trucks will only be onsite during plant commissioning. Storage and use of ammonia would be subject to the requirements of the California Fire Code, Article 80, as well as the California Accidental Release Prevention (CalARP) program. Article 80 of the California Fire Code contains specific requirements for control of liquid and gaseous releases of hazardous materials. Secondary containment in the form of a bermed containment area under and surrounding the ammonia tank will be provided for the loading area. The RMP is in accordance with CalARP, which has additional requirements such as specifying safe handling procedures for the ammonia and emergency response procedures in the event of an accidental release. Because sodium hypochlorite and aqueous ammonia are incompatible chemicals, the sodium hypochlorite will be stored in a bermed area for secondary containment (an area capable of capturing any spills) that will be designed such that it is separated from the ammonia, to eliminate potential interactions/reactions in the event that the chemicals are accidentally released.

Because of its hazardous properties, ammonia is classified as a regulated substance, and an accidental release of aqueous ammonia could present a human health hazard. As its name indicates, aqueous ammonia is mixed with water. If the ammonia were to leak or be released without proper controls, the ammonia could escape or evaporate as a gas into the atmosphere. Its vapor is lighter than air and has the same pungent odor as household ammonia. Mixing the ammonia with water makes it less volatile, slows its evaporation, and makes it less likely that concentrations in area will become hazardous, in the event of an accidental release. Pure ammonia (NH₃) is a volatile, acutely

hazardous chemical that is stored under pressure as a liquid and becomes a toxic gas if released. Additionally, ammonia is colorless and flammable. Ammonia gas can be toxic to humans at sufficient concentrations. The odor threshold of ammonia is about five parts per million (ppm), and minor irritation of the nose and throat will occur at 30 to 50 ppm.

The hazard to facility workers will be mitigated by facility safety equipment, hazardous materials training, and emergency response planning (BSEP 2009a, Section 5.16). In a catastrophic accident, toxic ammonia gas could migrate offsite and affect the health of humans at locations surrounding the facility. Facility design will minimize the potential for harm to humans located offsite. The project site is very isolated and about 15 miles from the nearest residence. The site is surrounded by unoccupied, open desert unlikely to be used by members of the public. Furthermore, the RSEP power block, where the ammonia will be used during the liquid salt melting and conditioning process, is approximately one mile from the nearest area with public use, which is SR 62. Staff's experience with modeling of 19% aqueous ammonia indicates that it is highly unlikely that airborne concentrations of ammonia greater than 75 ppm will be reached at the site fence line, even in the worst case accidental release scenario.

Aqueous ammonia consists of ammonia, a colorless, non-flammable liquefied gas, dissolved into water. Under normal storage conditions, ammonia would not evaporate to the atmosphere because it is contained in a sealed tank that maintains the ammonia in a state that precludes evaporation. In the unlikely event that a release were to occur, ammonia could evaporate directly to the atmosphere. Ammonia vapor is combustible only within a narrow range of concentrations in air. It will ignite at a temperature of 1,204°F within vapor concentration limits between 15% and 28% and the presence of a strong ignition source. Outside conditions that would support these vapor concentrations are rare. The evaporation rate of ammonia is similar to water, which is sufficiently low that the lower explosive limit of 15% (or 15,000 ppm) will not be reached. Staff therefore believes that the temporary storage and use of 19% aqueous ammonia at the proposed project poses an insignificant risk to the off-site public.

Hydrogen

Hydrogen would be stored on site as a generator coolant. The amount will be less than the Reportable Quantity as defined in the CalARP regulations, and would be stored in DOT approved "tube trailers" that incorporate safety systems and pressure relief valves. Based upon staff's knowledge about the use of this, an accidental release of hydrogen gas poses an insignificant risk to the off-site public.

Sodium Hydroxide

Sodium hydroxide would be stored on site but would not pose a risk of off-site impacts because it has relatively low vapor pressure and thus spills would be confined to the site. Therefore, no further analysis is needed.

Sodium Hypochlorite

According to the table included in Applicant's Supplemental Information Item 1 - Hazardous Material List (CH2MHill 2010v), 17,000 gallons of sodium hypochlorite would

be stored at the site. Sodium hypochlorite has a low potential to affect the off-site public because its vapor pressure is low and it is in an aqueous solution. In fact, hypochlorite is used at many such facilities as a substitute for chlorine gas, which is much more toxic and much more likely to migrate off-site because it is a gas and is stored in concentrated form under pressure. Thus, the use of a water solution of sodium hypochlorite is much safer to use than the alternative chlorine gas. The amount of sodium hypochlorite that would be stored on the site is below the Reportable Quantity as defined in the Cal-ARP regulations. Based upon staff's knowledge about the use of this material and the modeling of accidental releases, an aqueous solution of sodium hypochlorite poses an insignificant risk to the off-site public. However, the chances for accidental spills during transfer from delivery vehicles to the storage tanks should still be reduced as much as possible. Thus, measures to prevent transfer spills are extremely important and would be required as a standard condition in a Safety Management Plan for delivery of sodium hypochlorite (see Condition of Certification **HAZ-3**).

Sulfuric Acid

Sulfuric acid would be stored on site but would not pose a risk of off-site impacts because it has relatively low vapor pressure and thus spills would be confined to the site. Therefore, no further analysis is needed.

Liquefied Petroleum Gas

Liquefied petroleum gas (LPG), also known as propane, poses a fire and/or possible explosion risk because of its flammability. LPG is composed mostly of propane, but may also contain small amounts of ethane, nitrogen, butane, isobutene, and isopentane. It is colorless, odorless, tasteless, and heavier than air. LPG can cause asphyxiation when propane's concentration exceeds 90%. Propane is flammable when mixed in air at concentrations of 2.2 -9.6%, which is also its detonation range. LPG therefore poses a risk of fire and/or explosion if a release was to occur under certain specific conditions and an unconfined vapor cloud of LPG can explode under certain conditions.

LPG will be used in significant quantities only during the pre-startup salt melting and conditioning phase which will last approximately 140 days. The LPG will be stored on-site in two 7,500 gallon mobile tank truck trailers. The risk of a fire and/or explosion on-site can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association codes (NFPA 54, 58 and 85A) require the use of double block and bleed valves for gas shut-off and automated combustion controls, and adherence to DOT pressure vessel design and construction requirements. These measures will significantly reduce the likelihood of an explosion in gas-fired equipment. The Safety Management Plan proposed by the applicant would address both the handling and use of LPG and significantly reduce the potential for equipment failure due to either improper maintenance or human error.

If loss of containment occurs as a result of tank, piping, valve, or other mechanical failure or external forces, significant quantities of LPG could be released rapidly. Such a release could result in a significant fire and/or explosion hazard, which could cause loss of life and/or significant property damage in the vicinity of the leak. However, the

probability of such an event is extremely low if the temporary storage facility is constructed according to present standards. The risk of an accidental is further reduced because the use and storage of propene will occur only during a temporary period lasting approximately 140 days.

The applicant conducted a worst-case offsite consequence analysis (OCA) (CH2MHill 2010a). Staff believes the worst case scenario for an off-site LPG impact is a large rupture of one the tanks caused by an uncontrolled fire nearby that overheats the tank, causing a boiling liquid expanding vapor explosion (BLEVE) of the tank. This worst case scenario would possibly result in a fire ball and explosion. Staff agrees with the applicant's modeling which conforms to CalARP Off-Site Consequence Analysis Guidance document for flammable materials. The resulting maximum distance of significant impact (thermal impact of five kilowatts per square meter) was less than 1,935 feet, a distance which is well within the fenceline. Thus significant impact from the worst case scenario would not extend beyond the facility fence line. The worst case scenario is primarily a safety hazard to on-site employees. The storage facility will be built in conformance with State and Federal regulations to lower the probability of this occurring and Staff considers the potential for such an event to be very low. Staff considers the potential impact to the public as a result of temporary propane storage at RSEP to be less than significant.

Mitigation

Staff believes that this project's use of hazardous materials poses no significant risk but only if mitigation measures are used. These mitigation measures are discussed in this section. The potential for accidents resulting in the release of hazardous materials is greatly reduced by the implementation of a Safety Management Program, which includes both engineering and administrative controls. Elements of facility controls and the safety management plan are summarized below.

Engineering Controls

Engineering controls help prevent accidents and releases (spills) from moving off-site and impacting the community by incorporating engineering safety design criteria into the project's design. Engineering safety features proposed by the applicant include:

- Usage of secondary containment areas surrounding each of the hazardous materials storage areas, designed to contain accidental releases during storage;
- Physical separation of stored chemicals in isolated containment areas, separated by a noncombustible partition in order to prevent the accidental mixing of incompatible materials, which may in turn cause the formation and release of toxic gases or fumes.

Administrative Controls

Administrative controls help prevent accidents and releases (spills) from moving off-site and impacting the community by establishing worker training programs and process safety management programs.

A Worker Health and Safety Program would be prepared by the applicant and include (but not be limited to) the following elements (see the **Worker Safety and Fire**

Protection section in this analysis for specific regulatory requirements):

- Worker training on chemical hazards, health and safety issues, and hazard communication;
- Procedures to ensure the proper use of personal protective equipment;
- Safety operating procedures for the operation and maintenance of systems that use hazardous materials;
- Fire safety and prevention; and
- Emergency response actions including facility evacuation, hazardous material spill cleanup, and fire prevention.

At RSEP, the project owner would be required to designate an individual who would have the responsibility and authority to ensure a safe and healthful workplace. This project health and safety official would oversee the health and safety program and would have the authority to halt any action or modify any work practice in order to protect the workers, facility, and the surrounding community in the event that the health and safety program is violated.

Staff proposes Condition of Certification **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in the AFC and reviewed for appropriateness, unless there is prior approval by the Energy Commission Compliance Project Manager (CPM). Staff reviewed the chemicals and amounts proposed for on-site use, as listed in Table 5.5-3 of the AFC and determined the need and appropriateness of their use. **HAZ-1** also requires changes to the allowed list of hazardous materials and their maximum amounts as listed in **Hazardous Materials Appendix A** to be approved by the CPM. Only those that are needed and appropriate would be allowed to be used. If staff feels that a safer alternative chemical can be used, staff would recommend or require its use, depending upon the impacts posed.

A Hazardous Materials Business Plan (HMBP) would also be prepared by the project owner that would incorporate state requirements for the handling of hazardous materials (RSEP 2009a, section 5.5.2.3.1). Staff proposes Condition of Certification **HAZ-2** which ensures that the HMBP, which includes the Inventory and Site Map, Emergency Response Plan and Owner/Operator Identification, and Employee Training would be provided to the Riverside County Fire Department (RCFD) so that RCFD can better prepare emergency response personnel for handling emergencies which could occur at the facility. In accordance with Condition of Certification **HAZ-3**, the project owner would also be responsible to develop and implement a Safety Management Plan for delivery of liquid hazardous materials. The plan would include procedures, protective equipment requirements, training and a checklist. It would also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan would be applicable during construction, commissioning, and operation of RSEP.

On-site Spill Response

In order to address spill response, the facility would prepare and implement an emergency response plan which includes information on hazardous materials

contingency and emergency response procedures, spill containment and prevention systems, personnel training, spill notification, on-site spill containment, prevention equipment and capabilities, etc. Emergency procedures would be established which include evacuation, spill cleanup, hazard prevention, and emergency response.

A Spill Prevention Control and Countermeasure Plan (SPCC) is required by Federal Regulations (see LORS above) and would be prepared for the petroleum-containing hazardous materials.

The two closest Riverside County Fire stations that would respond to an incident at the proposed project, located adjacent to the former Rice Army Airfield in Rice, CA are Station # 49, located at 43880 Lake Tamarisk, Desert Center, CA. and Station # 43 located at 140 West Barnard Street, Blythe, CA. Riverside County Fire Station 49 is located approximately 70 miles from the project site and the second Riverside County Fire Station is located approximately 75 miles from the proposed site. From the above listed fire stations, the response time for engine 49 is approximately one hour after dispatch. The second unit, engine 43 will respond to the project area in approximately one hour 15 minutes. Riverside County Fire Department Fire Stations are staffed full-time, 24 hours 7 days a week, with a minimum 3 person crew, including paramedics, operating a "Type-1" structural fire fighting apparatus. Each member of the engine company is a certified Emergency Medical Technician and certified to the level of Hazardous Materials First Responder Operational, (HAZ MAT FRO).

In the event of a hazardous materials incident, The Riverside County Fire Department Hazardous Materials Response Team will respond to the project area. The estimated response time is approximately two hours. The Hazardous Materials Response Team #81 is located at 37955 Washington Street in Palm Desert, CA. (Riverside 2010b).

Staff concludes that, given the remote location, the hazardous material response time is acceptable, and that the Riverside County HazMat Team is adequately trained and equipped to respond to an emergency at RSEP in a timely manner. The remote location lengthens the response but, at the same time, eliminates the risk of off-site consequences to the public.

Transportation of Hazardous Materials

Containerized hazardous materials including sulfuric acid, and cleaning chemicals, would be transported to the facility via truck. While many types of hazardous materials would be transported to the site, previous modeling of spills involving much larger quantities of more toxic materials, (aqueous ammonia and 93% sulfuric acid) - two hazardous materials that would be used, stored, and transported at the proposed power plant – has demonstrated that minimal airborne concentrations would occur at short distances from the spill.

During construction and operation of RSEP, staff believes that minimal amounts and types of hazardous materials (paint, cleaners, solvents, gasoline, diesel fuel, motor oil, lubricants, 20% sulfuric acid, and welding gases in standard-sized cylinders) do not pose a significant risk of either spills or public impacts along any transportation route. Staff therefore does not recommend a specific route.

Liquid hazardous materials can be released during a transportation accident, and the extent of their impact in the event of a release would depend on the location of the accident and the rate of vapor dispersion from the surface of the spilled pool. The likelihood of an accidental release during transport is dependent upon three factors:

- The skill of the tanker truck driver;
- The type of vehicle used for transport; and
- Accident rates.

To address this concern, staff evaluated the risk of an accidental transportation release in the project area. Staff's analysis focused on the project area after the delivery vehicle leaves the main interstate highways. One proposed route from the south involves leaving the main interstate highway (I-10) at Desert Center, proceeding northbound on State Route 177, then eastbound on State Route 62 to the RSEP site. An alternate route from the north involves leaving the main interstate highway (I-40) at Needles, proceeding southbound on State Route 95, then westbound on State Route 62 to the RSEP site. The proposed route to the site will not pass in the vicinity of any schools (RSEP 2009a, section 5.5.2.6). Staff believes it is appropriate to rely upon the extensive regulatory program that applies to shipment of hazardous materials on California Highways to ensure safe handling in general transportation (see the Federal Hazardous Materials Transportation Law 49 USC §5101 et seq, the U.S. Department of Transportation Regulations 49 CFR Subpart H, §172-700, and the California DMV Regulations on Hazardous Cargo). These regulations also address issues of driver competence. See AFC section 5.12 for additional information on regulations governing the transportation of hazardous materials.

Seismic Issues

The possibility exists that an earthquake could cause the failure of a hazardous materials storage tank. A quake could also cause the failure of the secondary containment system (berms and dikes), as well as electrically controlled valves and pumps. The failure of all these preventive control measures might then result in a vapor cloud of hazardous materials that could move off-site and impact residents and workers in the surrounding community. The effects of the Loma Prieta earthquake of 1989, the Northridge earthquake of 1994, and the earthquake in Kobe, Japan, in January 1995, heighten concerns about earthquake safety.

Information obtained after the January 1994 Northridge earthquake showed that some damage was caused to several large and small storage tanks at the water treatment system of a cogeneration facility. The tanks with the greatest damage, including seam leakage, were older tanks, while newer tanks sustained lesser damage with displacements and attached line failures. Therefore, staff conducted an analysis of the codes and standards, which should be followed to adequately design and build storage tanks and containment areas that could withstand a large earthquake. Staff also reviewed the impacts of the February 2001 Nisqually earthquake near Olympia, Washington, a state with similar seismic design codes as California. No hazardous materials storage tanks were impacted by this quake. Referring to the sections on **Geologic Resources and Hazards** and **Facility Design** in the AFC, staff notes that the proposed facility would be designed and constructed to the applicable standards of the

2007 California Building (RSEP 2009a, section 2.3.1.1.1). Therefore, on the basis of occurrences at Northridge with older tanks and the lack of failures during the Nisqually earthquake with newer tanks, staff determined that tank failures during seismic events are not likely and do not represent a significant risk to the public.

Site Security

RSEP proposes to use hazardous materials where special site security measures should be developed and implemented to prevent unauthorized access. US EPA published a *Chemical Accident Prevention Alert* regarding site security (EPA 2000a), the U.S. Department of Justice published a special report on Chemical Facility Vulnerability Assessment Methodology (US DOJ 2002), the North American Electric Reliability Corporation (NERC) published *Security Guidelines for the Electricity Sector* in 2002 (NERC 2002), and the U.S. Department of Energy published a draft *Vulnerability Assessment Methodology for Electric Power Infrastructure* in 2002 (DOE 2002). The energy generation sector is one of 14 areas of critical Infrastructure listed by the U.S. Department of Homeland Security. On April 9, 2007, the U.S. Department of Homeland Security published, in the Federal Register (6 CFR Part 27), an Interim Final Rule requiring facilities that use or store certain hazardous materials to conduct vulnerability assessments and implement certain specified security measures. This rule was implemented with the publication of Appendix A, the list of chemicals, on November 2, 2007. Staff believes that all power plants under the jurisdiction of the Energy Commission should implement a minimum level of security consistent with the guidelines listed here.

In order to ensure that this facility (or a shipment of hazardous material) is not the target of unauthorized access, staff's proposed Conditions of Certification **HAZ-4** and **HAZ-5** address both Construction Security and Operations Security Plans. These plans would require the implementation of site security measures that are consistent with both the above-referenced documents and Energy Commission guidelines.

The goal of these conditions of certification is to provide the minimum level of security for power plants needed to protect California's electrical infrastructure from malicious mischief, vandalism, or domestic/foreign terrorist attacks. The level of security needed for this power plant is dependent upon the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event.

In order to determine the level of security, the Energy Commission staff used an internal vulnerability assessment decision matrix modeled after the U.S. Department of Justice Chemical Vulnerability Assessment Methodology (July 2002), the NERC 2002 guidelines, the U.S. Department of Energy VAM-CF model, and U.S. Department of Homeland Security regulations published in the Federal Register (Interim Final Rule 6 CFR Part 27). Staff determined that RSEP would fall into the "low vulnerability" category, so staff proposes that certain security measures be implemented but does not propose that the project owner conduct its own vulnerability assessment.

These security measures include perimeter fencing and breach detectors, possibly guards, alarms, site access procedures for employees and vendors, site personnel background checks, and law enforcement contact in the event of a security breach. Site

access for vendors would be strictly controlled. Consistent with current state and federal regulations governing the transport of hazardous materials, hazardous materials vendors would have to maintain their transport vehicle fleets and employ only drivers who are properly licensed and trained. The project owner would be required, through its contractual language with vendors, to ensure that vendors supplying hazardous materials strictly adhere to the U.S. Department of Transportation (DOT) requirements that hazardous materials vendors prepare and implement security plans per 49 CFR 172.800 and ensure that all hazardous materials drivers are in compliance with personnel background security checks per 49 CFR Part 1572, Subparts A and B. The CPM may authorize modifications to these measures, or may require additional measures in response to additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electric Reliability Corporation (NERC), after consultation with appropriate law enforcement agencies and the applicant.

Intentional Destructive Acts

Solar generation projects can be the subject of intentional destructive acts ranging from random vandalism and theft to sabotage and acts of terrorism intended to disable the facility. Acts of vandalism and theft are far more likely to occur than sabotage or terrorism. Theft usually involves equipment at substations and switchyards that contain salvageable metal when metal prices are high. Vandalism usually occurs in remote areas and is more likely to involve spontaneous acts such as shooting at equipment.

Pursuant to DOE's policy set out in a December 1, 2006, memorandum, "Need to Consider Intentional Destructive Acts in NEPA Documents," DOE has considered the potential environmental consequences of intentional destructive acts at the Project site. DOE concludes that the risk of damage to the proposed Project from intentional destructive acts would be considered very low, in line with or less than the risk to similar generation facilities in the U.S. Theft or opportunistic vandalism is more likely than sabotage or terrorist acts, which are considered to be a negligible risk.

As indicated above, in order to keep the project infrastructure secure from threats from intentional destructive acts, the project site would be physically secured and staffed. Furthermore, uncontrolled access would be prevented through the use of access controls.

Protection of widely dispersed electrical generation equipment, substations, and thousands of miles of transmission lines from destructive acts is not practical. Damaged equipment and transmission lines may be quickly repaired or replaced in the same manner that storm damaged equipment are returned to service. The results of any such acts could be expensive to repair, but no substantial impacts to continued electrical service would be anticipated. No significant environmental impacts would be expected from physical damage to the proposed Project or from loss of power delivery.

Facility Closure and Decommissioning

The requirements for handling of hazardous materials remain in effect until such materials are removed from the site, regardless of facility closure. Therefore, the facility owners are responsible for continuing to handle such materials in a safe manner, as

required by applicable laws. In the event that the facility owner abandons the facility in a manner that poses a risk to surrounding populations, staff would coordinate with the California Office of Emergency Services, Riverside County Fire Department, and the California Department of Toxic Substances Control (DTSC) to ensure that any unacceptable risk to the public is eliminated.

CEQA Level of Significance

Staff's analysis of impacts associated with the storage, use, and handling of hazardous materials at the proposed RSEP has determined that impacts would be below the level of significance if staff's proposed conditions of certification are adopted.

Reduced Acreage Alternative

The Reduced Acreage Alternative would be 7.2% smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The project's nominal 150 megawatts (MW) generation output would be reduced by approximately two MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker Blythe 161 kilovolts (kV) transmission line.

The Reduced Acreage Alternative is evaluated in this PSA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

Under the Reduced Acreage Alternative, the agencies would approve a facility with a 7.2% heliostat field reduction and not the 150 MW project that is proposed.

SETTING AND EXISTING CONDITIONS

The setting for the Reduced Acreage Alternative is the same as for the proposed project except that the heliostat field would occupy 1,270 acres within the 1,370-acre footprint of the proposed project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Potential impacts associated with hazardous materials use during construction and operation of the Reduced Acreage Alternative would likely be reduced compared to those estimated for the RSEP as proposed due to the smaller quantities of hazardous materials required. However, staff's analysis has determined that no significant impacts are expected from the storage and use of hazardous materials at the RSEP as proposed. Therefore staff concludes that with respect to hazardous materials handling, the Reduced Acreage Alternative is not preferable over the project as proposed.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161 kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

The Desert Center Alternative is evaluated in this PSA/DEIS because it would reduce impacts to cultural resources; the RSEP is located on the historic Rice Army Airfield. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

SETTING AND EXISTING CONDITIONS

The topography of the North of Desert Center Alternative site is essentially flat, as are the immediately surrounding areas. Sensitive receptors are present within the North of Desert Center Alternative and a residential community is located south of the southwest corner of the North of Desert Center Alternative site.

Access to the North of Desert Center Alternative would likely be via Interstate 10 to the Rice Road (SR 177) exit. At Rice Road, transport would turn northeast for approximately two miles through primarily rural residential land.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Hazardous materials use at the North of Desert Center Alternative, including the quantities handled during transportation and disposal, would be the same as those of the proposed project. As stated in the **Hazardous Materials** section for the proposed project, hazardous materials used during the construction phase of the project would include propane, diesel fuel, mineral insulating oil, lube oil, and small quantities of solvents and paints. No acutely toxic hazardous materials would be used on site during construction, and none of these materials pose a significant potential for off-site impacts

as a result of the quantities on site, their relative toxicity, their physical states, and/or their environmental mobility.

Hazardous materials will be used and stored on site during the operation of the project. As stated in the **Hazardous Materials** section, LPG or propane would be used at the proposed RSEP during commissioning to melt and condition the salt mix that will be used as a heat transfer medium. LPG is composed mostly of propane and butane and poses a fire and explosion risk (not a risk of toxicity) because of its flammability. Up to 15,000 gallons of LPG would be stored in two 7,500-gallon steel truck trailer tanks equipped with secondary containment structures. If loss of containment occurs as a result of tank, piping, valve, or other mechanical failure or external forces, significant quantities of LPG could be released rapidly. Such a release could result in a significant fire and/or explosion hazard, which could cause loss of life and/or significant property damage in the vicinity of the leak. However, the probability of such an event is extremely low if the temporary storage facility is constructed according to present standards. The risk of an accident is further reduced because the use and storage of propane will occur only during a temporary period lasting approximately 140 days.

The applicant conducted a worst-case offsite consequence analysis (OCA) (CH2MHill 2010a). Staff believes the worst case scenario for an off-site LPG impact is a large rupture of one of the tanks caused by an uncontrolled fire nearby that overheats the tank, causing a boiling liquid expanding vapor explosion (BLEVE) of the tank. This worst case scenario would possibly result in a fire ball and explosion. Staff agrees with the applicant's modeling which conforms to CalARP Off-Site Consequence Analysis Guidance document for flammable materials. The resulting maximum distance of significant impact (thermal impact of 5 kW/m²) was less than 1935 feet, a distance which is well within the fence line. Thus significant impact from the worst case scenario would not extend beyond the facility fence line. The worst case scenario is primarily a safety hazard to on-site employees. The storage facility will be built in conformance with State and Federal regulations to lower the probability of this occurring and Staff considers the potential for such an event to be very low.

The predominant risk of storing and using large amounts of LPG at the power plant is that of fire and explosion. Accordingly, the risks are discussed in the **Worker Safety and Fire Protection** section of this SA/DEIS along with staff's proposed mitigation. This discussion would be similar for the North of Desert Center Alternative site, as the climate and fire risk are similar and the North of Desert Center Alternative is closer to a regional fire department.

Transportation of hazardous materials to the North of Desert Center Alternative site would require passing near residences located in Desert Center. The transportation would be on Interstate 10 and Rice Road, not on smaller road with residences.

Comparison to Proposed Project. The hazardous materials that would be used at the North of Desert Center Alternative site would be the same as those used at the proposed RSEP site; however, the North of Desert Center Alternative site has a greater number of sensitive subgroups or residences. As such, the potential impacts at the North of Desert Center Alternative would likely be somewhat greater than at the proposed site. With adoption of the proposed conditions of certification, the Desert Center Alternative would

comply with all applicable laws, ordinances, regulations, and standards (LORS) and result in no significant impacts to the public.

SR 62/RICE VALLEY ROAD TRANSMISSION LINE ALTERNATIVE

The SR 62/Rice Valley Road Transmission Line Alternative would interconnect to Western Area Power Administration's (Western) 161 kV/230 kV Parker-Blythe transmission line at the same location as the proposed project transmission line. This alternative transmission line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new transmission line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe transmission line. The SR 62/Rice Valley Road Transmission Line Alternative route is illustrated in **Alternatives Figure 4**.

The SR 62/Rice Valley Road Transmission Line Alternative is evaluated in this SA/DEIS because it would:

1. Avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise.
2. Avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

SETTING AND EXISTING CONDITIONS

The setting for the Reduced Acreage Alternative is the same as for the proposed project except for the rerouting of the transmission lines within the heliostat field.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Because the amounts and storage locations of hazardous materials would remain the same as for the proposed RSEP project, the impacts and mitigations would also remain the same as for the proposed RSEP project.

Staff's analysis of impacts associated with the storage, use, and handling of hazardous materials at the SR 62/Rice Valley Road Transmission Line Alternative has determined that impacts would be below the level of significance if staff's proposed conditions of certification are adopted.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no hazardous materials would be used and no impacts related to the use of hazardous material would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACTS AND MITIGATION

Staff considered the potential for impacts due to a simultaneous release of any of the hazardous chemicals from the proposed RSEP with other existing or foreseeable nearby facilities as listed in the **Cumulative Scenario** section. Because of the small amounts of the hazardous chemicals to be stored at the facility, Staff determined that there was essentially no possibility of producing an offsite impact. Because of this determination, and the additional fact that there are no nearby facilities using large amounts of hazardous chemicals, there is little (if any) possibility that vapor plumes would mingle (combine) to produce an airborne concentration that would present a significant risk.

COMPLIANCE WITH LORS

Staff concludes that construction and operation of RSEP would be in compliance with all applicable LORS for both long-term and short-term project impacts in the area of hazardous materials management.

NOTEWORTHY PUBLIC BENEFITS

Staff has not identified any noteworthy public benefits associated with the use of hazardous materials at the proposed project.

PROPOSED CONDITIONS OF CERTIFICATION/ MITIGATION MEASURES

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as staff's recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of hazardous material-related impacts to less than significant and for the project to conform to all applicable LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision.

HAZ-1 The project owner shall not use any hazardous materials not listed in **Hazardous Materials Appendix A**, below, or in greater quantities than those identified by chemical name in **Hazardous Materials Appendix A**, unless approved in advance by the Compliance Project Manager (CPM).

Verification: The project owner shall provide to the CPM in the Annual Compliance Report, a list of hazardous materials contained at the facility.

HAZ-2 The project owner shall concurrently provide a Hazardous Materials Business Plan to the Hazardous Materials Division of the Riverside County Fire Department and the CPM for review. After receiving comments from the Hazardous Materials Division of the Riverside County Fire Department and the CPM, the project owner shall reflect all received recommendations in the final documents. If no comments are received from the county within 30 days of submittal, the project owner may proceed with preparation of final documents upon receiving comments from the CPM. Copies of the final Hazardous Materials Business Plan shall then be provided to the Hazardous Materials Division of the Fire Department for information and to the CPM for approval.

Verification: At least 60 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Hazardous Materials Business Plan to the CPM for approval.

HAZ-3 The project owner shall develop and implement a Safety Management Plan for delivery of liquid hazardous materials. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan shall be applicable during construction, commissioning, and operation of the power plant.

Verification: At least sixty (60) days prior to the delivery of any liquid hazardous material to the facility, the project owner shall provide a Safety Management Plan as described above to the CPM for review and approval.

HAZ-4 At least thirty (30) days prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval. The Construction

Security Plan shall include the following:

1. Perimeter security consisting of fencing enclosing the construction area;
2. Security guards;
3. Site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
5. Protocol for contacting law enforcement, the CPM in the event of suspicious activity or emergency; and
6. Evacuation procedures.

Verification: At least thirty (30) days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-5 The project owner shall prepare a site-specific Operation Security Plan for the operational phase and shall be made available to the CPM for review and approval. The project owner shall implement site security measures addressing physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below (as per NERC 2002).

The Operation Security Plan shall include the following:

1. Permanent full perimeter fence or wall, at least eight feet high around the Power Block and Solar Field;
2. Main entrance security gate, either hand operable or motorized;
3. Evacuation procedures;
4. Protocol for contacting law enforcement, the CPM in the event of suspicious activity or emergency;
5. Written standard procedures for employees, contractors and vendors when encountering suspicious objects or packages on-site or off-site;
6.
 - a. A statement (refer to sample, attachment "A") signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to ascertain the accuracy of employee identity and employment history, and shall be conducted in accordance with state and federal law regarding security and privacy;
 - b. A statement(s) (refer to sample, attachment "B") signed by the contractor or authorized representative(s) for any permanent

contractors or other technical contractors (as determined by the CPM after consultation with the project owner) that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractor personnel that visit the project site.

7. Site access controls for employees, contractors, vendors, and visitors;
8. Closed Circuit TV (CCTV) monitoring system, recordable, and viewable in the power plant control room and security station (if separate from the control room) capable of viewing, at a minimum, the main entrance gate; and
9. Additional measures to ensure adequate perimeter security consisting of either:
 - a. Security guard present 24 hours per day, seven days per week, **OR**
 - b. Power plant personnel on-site 24 hours per day, seven days per week and **one** of the following:
 - 1) The CCTV monitoring system required in number 8 above shall include cameras that are able to pan, tilt, and zoom (PTZ), have low-light capability, are recordable, and are able to view 100% of the perimeter fence to the power block, the outside entrance to the control room, and the front gate from a monitor in the power plant control room; **OR**
 - 2) Perimeter breach detectors **or** on-site motion detectors.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to the security plans. The CPM may authorize modifications to these measures, or may require additional measures, such as protective barriers for critical power plant components (e.g., transformers, gas lines, compressors, etc.) depending on circumstances unique to the facility or in response to industry-related standards, security concerns, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Council, after consultation with appropriate law enforcement agencies and the applicant.

Verification: At least 30 days prior to the initial receipt of hazardous materials on-site, the project owner shall notify the CPM that a site-specific Operations Site Security Plan is available for review and approval. In the Annual Compliance Report, the project owner shall include a statement that all current project employee and appropriate contractor background investigations have been performed, and updated certification statements are appended to the Operations Security Plan. In the Annual Compliance Report, the project owner shall include a statement that the Operations Security Plan includes all current hazardous materials transport vendor certifications for security plans

and employee background investigations.

CONCLUSIONS

Staff's evaluation of the proposed project (with proposed mitigation measures) indicates that hazardous material use, storage, and transportation would not pose a significant impact on the public. Staff's analysis also shows that there would be no significant cumulative impact. With adoption of the proposed conditions of certification, the proposed project would comply with all applicable LORS. Other proposed conditions of certification address the issues of site security matters.

Staff recommends that the Energy Commission impose the proposed conditions of certification, presented below, to ensure that the project is designed, constructed, and operated in compliance with applicable LORS, and would protect the public from significant risk of exposure to an accidental release of hazardous materials. If all mitigation proposed by the applicant and by staff are implemented, the use, storage, and transportation of hazardous materials would not present a significant risk to the public.

Staff concludes that there is insignificant potential for hazardous materials release to have significant impact beyond the facility boundary, and therefore concludes there is also insignificant potential for significant impact to the environment. For any other potential impacts upon the environment, including vegetation, wildlife, air, soils, and water resulting from hazardous materials usage and disposal at the proposed facility, the reader is referred to the **Biology**, the **Air Quality**, the **Soil and Water**, and the **Waste Management** sections of this PSA/DEIS.

Staff proposes five conditions of certification, some of which are mentioned in the text (above), and listed below. **HAZ-1** ensures that no hazardous material would be used at the facility except as listed in the AFC, unless there is prior approval by the Energy Commission Compliance Project Manager. **HAZ-2** ensures that local emergency response services are notified of the amounts and locations of hazardous materials at the facility, **HAZ-3** requires the development of a Safety Management Plan that addresses the delivery of all liquid hazardous materials during the construction, commissioning, and operation of the project would further reduce the risk of any accidental release not specifically addressed by the proposed spill prevention mitigation measures, and further prevent the mixing of incompatible materials that could result in the generation of toxic vapors. Site security during the construction phase is addressed in **HAZ-4** and **HAZ-5** addresses site security during the operational phase.

SAMPLE CERTIFICATION (Attachment "A")

Affidavit of Compliance for Project Owners

I, _____
(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

(Company Name)

for employment at

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment "B")

Affidavit of Compliance for Contractors

I, _____
(Name of person signing affidavit)(Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

(Company Name)

for contract work at

(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

(Signature of Officer or Agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

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**Hazardous Materials
Appendix A**

**Hazardous Materials Proposed for Use
At the
RSEP Power Project**

Anticipated Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity ¹ and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
Hydrogen	Low toxicity; Hazard class – Flammable gas	None Established	In generator cooling loop and “tube trailer”; total inventory of up to 63,000 SCF (335 pounds) if hydrogen cooled STG is used	Pressure safety tank, crash posts, pressure relief valves	Generator cooling
Sodium Hydroxide, 50% solution	High toxicity; Hazard class – Corrosive	PEL: 2 mg/m ³	Carbon steel tank; 8,500 gallons	Isolated from incompatible chemicals and secondary containment	Water treatment; Condensate polishing
Sodium Hypochlorite, 12.5% solution	High toxicity; Hazard class – Poison-B, Corrosive	Workplace Environmental Exposure Limit (WEEL) - STEL: 2 mg/m ³ PEL: 0.5 ppm (TWA), STEL: 1 ppm as Chlorine TLV: 1 ppm (TWA), STEL: 3 ppm as Chlorine	Plastic tanks; 17,000 gallons total inventory (2 x 8,500 gallons)	Secondary containment	Raw water biocide; Potable water biocide; cooling water biocide
Sulfuric Acid, 29.5% solution	High toxicity; Hazard class – Corrosive, water reactive	PEL: 1 mg/m ³	Contained in batteries; 2,000 gallons total inventory	Isolated from incompatible chemicals and secondary containment	Battery electrolyte
Sulfuric Acid, 93% solution	High toxicity; Hazard class – Corrosive, water reactive	PEL: 1 mg/m ³	Lined, carbon steel tanks; 16,000 gallons total inventory (2 x 8,000 gallons)	Isolated from incompatible chemicals, and secondary containment	Cooling tower anti-scaling (pH control); wastewater neutralization
Carbon Dioxide	Low toxicity; Hazard class – Non flammable gas	TLV: 5,000 ppm (9,000 mg/m ³) TWA	Carbon steel tank, 15 tons maximum onsite inventory	Carbon steel tank with crash posts	Fire suppression

Anticipated Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity ¹ and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
Lube Oil	Low toxicity Hazard class – NA	None established	Carbon steel tanks, 10,000 gallons in equipment and piping, additional maintenance inventory of up to 550 gallons in 55gallon steel drums.	Secondary containment for tank and for maintenance inventory	Equipment lubrication
Mineral Insulating Oil	Low toxicity Hazard class – NA	None established	Carbon steel transformers; total onsite inventory of 32,000 gallons	Used only in transformers, secondary containment for each transformer	Large capacity transformers
Diesel Fuel	Low toxicity; Hazard class – Combustible liquid	PEL: none established TLV: 100 mg/m ³	Carbon steel tanks (21,000 gallons)	Stored in two 10,000 gallon tanks, secondary containment, plus two day tanks, one for each diesel fire pump.	Emergency generators and fire pumps
Nitrogen	Low toxicity; Hazard class – Non-flammable gas	None established	Carbon steel tank; 7,500 pounds total inventory	Carbon steel tank with crash posts	Blanketing and layup of steam plant
Hydraulic fluid	Low to moderate toxicity; Hazard class – Class IIIB combustible liquid	TWA (oil mist): 5 mg/m ³ STEL: 10 mg/m ³	Carbon steel tanks and sumps; 500 gallons in equipment, maintenance inventory of 110 gallons in 55-gallon steel drums	Found only in equipment, with a small maintenance inventory. Maintenance inventory stored within secondary containment.	Steam turbine controls system

Anticipated Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity ¹ and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
Water treatment chemical NALCO Tri-Act 1800, or equal Cyclohexylamine (5 – 10%) Monoethanolamine (10 – 30%) Methoxypropylamine (10 – 30%)	High toxicity; Hazard class – Corrosive, Class II Combustible liquid	Cyclohexylamine = TLV: 10 ppm (41 mg/m ³) Monoethanolamine = TLV: 3 ppm (7.5 mg/m ³) TWA: 3 ppm (7.5 mg/m ³) STEL: 6 ppm (15 mg/m ³) Methoxypropylamine = TLV: 5 ppm TWA STEL: 15 ppm	Plastic totes, 2 x 400 gallons each	Inventory management, isolated from incompatible chemicals and secondary containment	Condensate pH management
Water treatment chemical NALCO Elim-Ox Carbonyldiazide (5 - 10%), or equal	Moderate toxicity; Hazard class – Sensitizer	Carbonyldiazide = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	Condensate and feedwater O ₂ management
Water treatment chemical NALCO 3D Trasar 3DT185, or equal Phosphoric Acid (60 -100%)	High toxicity; Hazard class – Corrosive	Phosphoric acid = PEL: 1 mg/m ³ (TWA) TLV: 1 mg/m ³ (TWA), STEL: 3 mg/m ³	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	Cooling water corrosion control
Water treatment chemical NALCO 3D Trasar 3DT177, or equal Phosphoric acid (30%)	Moderate toxicity; Hazard class – Irritant	Phosphoric acid = PEL: 1 mg/m ³ (TWA) TLV: 1 mg/m ³ (TWA), STEL: 3 mg/m ³	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	Cooling water corrosion control

Anticipated Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity ¹ and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
Water treatment chemical NALCO 3D Trasar 3DT190, or equal	Low toxicity; Hazard class – Irritant	None established for mixture	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	Cooling water scale control
Water treatment chemical NALCO Acti-Brom (R) 7342, or equal Sodium bromide	Low toxicity; Hazard class – Irritant	Sodium bromide = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	Cooling water oxidizing biocide
Water treatment chemical NALCO pHreedom® 5200M, or equal Sodium salt of phosphonomethylated diamine	Low to moderate toxicity; Hazard class – Irritant	Sodium salt of phosphonomethylated diamine = PEL: none established	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	Brine concentrator preheater scale control
Water treatment chemical NALCO PCL-1346, or equal	Low toxicity; Hazard class – Irritant	None established for mixture	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	Cooling water silica scale control
Water treatment chemical NALCO Permacare (R) PC-7408, or equal Sodium bisulfite	Low toxicity; Hazard class – Irritant	Sodium bisulfite = PEL: none established: TLV: 5 mg/m ³ TWA	Plastic totes, 2 x 400 gallons	Inventory management, isolated from incompatible chemicals and secondary containment	RO system – chlorine scavenger

Anticipated Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity ¹ and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
Water treatment chemical NALCO BT-3000, or equal Sodium hydroxide Sodium tripolyphosphate	High toxicity; Hazard class – Corrosive	Sodium hydroxide = PEL: 2 mg/m ³ Sodium tripolyphosphate = PEL: none established	Plastic totes, 2 x 400 gallons each	Inventory management, isolated from incompatible chemicals and secondary containment	Boiler drum pH control
Water treatment chemical NALCO 8338, or equal Sodium nitrite Sodium tolytriazole Sodium hydroxide	Moderate toxicity; Hazard class – Toxic	Sodium nitrite = PEL: none established Sodium tolytriazole = PEL: none established Sodium hydroxide = PEL: 2 mg/m ³	Plastic totes, 2 x 400 gallons each	Inventory management, isolated from incompatible chemicals and secondary containment	Closed loop cooling system corrosion inhibitor
Welding gas Acetylene	Moderate toxicity; Hazard class – Toxic	PEL: none established	Steel cylinders; 200 cubic foot each, 800 cubic foot total on site	Inventory management, isolated from incompatible chemicals,	Welding gas
Welding gas Oxygen	Low toxicity; Hazard class – Oxidizer	PEL: none established	Steel cylinders; 200 cubic foot each, 800 cubic foot total on site	Inventory management, isolated from incompatible chemicals	Welding gas
Welding gas Argon	Low toxicity; Hazard class – Nonflammable gas	PEL: none established	Steel cylinders; 200 cubic foot each, 800 cubic foot total on site	Inventory management	Welding gas

Anticipated Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity ¹ and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
Activated Carbon	Non-toxic (when unsaturated), low to moderate toxicity when saturated, depending on the adsorbed material; Hazard class – combustible solid	TWA (total particulate): 15 mg/m ³ TWA (respirable fraction): 5 mg/m ³ TLV (graphite, all forms except graphite fibers): 2 mg/m ³ TWA	Used in two x 2,000-lb canisters, 4,000 pounds total inventory, no additional storage	No excess inventory stored onsite, prompt disposal when spent	Production of potable water
Herbicide Roundup [®] or equivalent	Low toxicity; Hazard class - Irritant	Isopropylamine salt of glyphosphate = no specific occupational exposure has been established	Brought on site by licensed contractor, used immediately. Maximum of 1 gallon stored onsite.	Inventory management, isolated from incompatible chemicals	Weed management
Soil stabilizer Active ingredient: acrylic or vinyl acetate polymer or equivalent	Non-toxic; Hazard class - NA	None established	Supplied in 55-gallon drums or 400-gallon totes, used immediately. Maximum onsite storage of 55 gal	Inventory management, isolated from incompatible chemicals	Dust control
Aluminum Sulfate (50 wt%), or Ferric Chloride (50 wt%), or Ferric Sulfate (50 wt%)	Moderate Toxicity Hazard class - Corrosive	PEL: 2 mg(Al)/m ³	Plastic tank, 6,000 gallons onsite storage.	Inventory management, isolated from incompatible chemicals	Water treatment system flocculating agent
Sodium Sulfide / Sodium Hydrosulfide	Moderate Toxicity Hazard class -Corrosive	TWA: 10ppm (14mg/m ³) STEL: 15ppm (21mg/m ³)	Brought on site by licensed contractor. No storage onsite	No excess inventory stored onsite, prompt disposal when spent	Water treatment; precipitate heavy metals

Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
Aqueous Ammonia (19% NH ₃ by weight)	High Toxicity Hazard class - Corrosive Liquid	TWA: 25ppm STEL: 35ppm PEL: 50ppm	Brought on site by licensed contractor. No storage onsite	No excess inventory stored onsite, prompt disposal when spent	Boiler drum, steam, and feedwater conditioner (pH control)
NALCO Permacare PC-33 or equal	Low Toxicity Hazard class – Corrosive Liquid	None established for product. Ingredient limits appear below. ACGIH/TLV: Sodium Hydroxide CEILING: 2 mg/m ³ OSHA/PEL: Sodium Hydroxide CEILING: 2 mg/m ³	110 gallons (55 gallon drums)	Use plastic drums, inventory management and isolate from incompatible chemicals.	RO membrane high pH cleaners
NALCO Permacare PC-77, or equal	Low Toxicity Hazard class – Irritant	None established (contains no hazardous ingredients)	110 gallons (55 gallon drums)	Use plastic drums, inventory management and isolate from incompatible chemicals.	RO membrane low pH cleaners
NALCO Permacare PC-191, or equal	Low Toxicity Hazard class - Irritant	None established (contains no hazardous ingredients)	Plastic Totes, 400 gallon	Inventory management, isolated from incompatible chemicals and secondary containment	RO Antiscalant

Anticipated Hazardous Materials Used During Plant Operation

Hazardous Material	Relative Toxicity ¹ and Hazard Class ²	Permissible Exposure Limit	Storage Description; Capacity	Storage Practices and Special Handling Precautions	Possible Uses
NALCO Permacare PC-11, or equal	High Toxicity Hazard class – Corrosive Liquid	None established for product. Ingredient limits appear below. Manufacturer's Recommendation: Dibromoacetonitrile CEILING: 0.1 ppm (Skin) 2,2-Dibromo-3-nitrilopropionamide CEILING: 2 mg/m ³ AIHA/WEEL: Polyethylene Glycol TWA: 10 mg/m ³	Plastic Totes, 400 gallon	Inventory management, isolated from incompatible chemicals and secondary containment	Membrane cleaner and preservative
Propylene Glycol (Antifreeze)	Low Toxicity Hazard class – NA	None established	Plastic totes, 25 gallons onsite storage	Inventory management, isolated from incompatible chemicals	Antifreeze; closed cooling system anti-corrosive – compatible with different types of metals
<p>¹ Low toxicity is used to describe materials with an NFPA Health rating of 0 or 1. Moderate toxicity is used describe materials with an NFPA rating of 2. High toxicity is used to describe materials with an NFPA rating of 3. Extreme toxicity is used to describe materials with an NFPA rating of 4. ² NA denotes materials that do not meet the criteria for any hazard class defined in the 1997 Uniform Fire Code. ³ Proprietary names are listed to provide indicative chemical product but is not intended to limit supplier, brand or product.</p>					

"Pages from Hazmat Rice Revised TN 57201 06-16-10 Applicants Supplementary Informational Item Extra .rtf"

**HAZARDOUS MATERIALS
Appendix B**

**Basis for Staff's Use of 75 Parts Per Million Ammonia
Exposure Criteria**

BASIS FOR STAFF'S USE OF 75 PARTS PER MILLION AMMONIA EXPOSURE CRITERIA

Staff uses a health-based airborne concentration of 75 parts per million (PPM) to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this level is not consistent with the 200-ppm level used by the U.S. Environmental Protection Agency and the California Environmental Protection Agency in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's analysis of the proposed project. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices and actions are implemented in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures for the entire population. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. California Environmental Quality Act requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through feasible changes or alternatives to the proposed project.

Staff has chosen to use the National Research Council's 30-minute Short Term Public Emergency Limit (STPEL) for ammonia to determine the potential for significant impact. This limit is designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at this level should not result in serious effects but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of the various criteria that staff considered in arriving at the decision to use the 75-ppm STPEL.

**HAZARDOUS MATERIALS Appendix B Table-1
Acute Ammonia Exposure Guidelines**

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH ²	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 minutes	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible injury, or impairment of the ability to escape.
IDLH/10 ¹	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 minutes	Protects nearly all segments of general population from irreversible effects.
STEL ²	NIOSH	Adult healthy male workers	35 ppm	15 minutes, 4 times per 8-hour day	No toxicity, including avoidance of irritation.
EEGL ³	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 minutes	Significant irritation, but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one-time exposure.
STPEL ⁴	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 minutes 30 minutes 10 minutes	Significant irritation, but protects nearly all segments of general population from irreversible acute or late effects. One-time accidental exposure.
TWA ²	NIOSH	Adult healthy male workers	25 ppm	8 hours	No toxicity or irritation on continuous exposure for repeated 8-hour work shifts.
ERPG-2 ⁵	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 minutes	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin).

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

** The (NRC 1979) describes a study involving young animals, which suggests greater sensitivity to acute exposure in young animals. The WHO (1986) warned that the young, elderly, asthmatics, those with bronchitis, and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

REFERENCES FOR HAZARDOUS MATERIALS APPENDIX B, TABLE 1

- AIHA. 1989. American Industrial Hygienists Association, Emergency Response Planning Guideline, Ammonia, (and Preface) AIHA, Akron, OH.
- EPA. 1987. U.S. Environmental Protection Agency, Technical Guidance for Hazards Analysis, EPA, Washington, D.C.
- NRC. 1985. National Research Council, Criteria and Methods for Preparing Emergency Exposure Guidance Levels (EEGL), Short-Term Public Emergency Guidance Level (SPEGL), and Continuous Exposure Guidance Level (CEGL) documents, NRC, Washington, D.C.
- NRC. 1972. Guideline for Short-Term Exposure of the Public to Air Pollutants. IV. Guide for Ammonia, NRC, Washington, D.C.
- NIOSH. 1994. National Institute of Occupational Safety and Health, Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, Washington D.C., Publication numbers 94-116.
- WHO. 1986. World Health Organization, Environmental Health Criteria 54, Ammonia, WHO, Geneva, Switzerland.

ABBREVIATIONS FOR HAZARDOUS MATERIALS APPENDIX B, TABLE 1

ACGIH, American Conference of Governmental and Industrial Hygienists
AIHA, American Industrial Hygienists Association
EEGL, Emergency Exposure Guidance Level
EPA, Environmental Protection Agency
ERPG, Emergency Response Planning Guidelines
IDLH, Immediately Dangerous to Life and Health Level
NIOSH, National Institute of Occupational Safety and Health
NRC, National Research Council
STEL, Short Term Exposure Limit
STPEL, Short Term Public Emergency Limit
TLV, Threshold Limit Value
WHO, World Health Organization

LAND USE, RECREATION, AND WILDERNESS

Testimony of Shaelyn Strattan

This section provides the California Energy Commission's staff analysis of Land Use, Recreation, and Wilderness impacts of the Rice Solar Energy Project (RSEP), prepared jointly with the Bureau of Land Management (BLM) and Western Area Power Administration (Western), and describes recommended mitigation for those impacts, in accordance with the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The staff conclusions and recommendation of feasible mitigation measures/conditions of certification conform to CEQA requirements for the Energy Commission's analysis. The identification of feasible mitigation measures is consistent with NEPA requirements, as applicable for BLM and Western. This analysis is not the final decision document for BLM, Western, or the Energy Commission.

SUMMARY OF CONCLUSIONS

The proposed Rice Solar Energy Project would be located on land within the California Desert Conservation Area (CDCA), as amended by the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan. The project footprint would include approximately 1,410 acres of privately owned property and 99 acres of "Multiple-Use Class M" (MUC-M) public (federal) lands, managed by the U.S. Bureau of Land Management (BLM), on a 2,560-acre project site. Siting of electrical generation plants on Class M lands requires compliance with federal, state, and local laws and the NEPA environmental review process.

The proposed project would also require BLM approval of an Amendment to the CDCA Plan and issuance of a Right-of-Way (ROW) grant for use of approximately 99 acres: a 10-mile long corridor, 150 feet wide, and a three acre plot for the interconnection substation. The applicant has submitted an initial ROW application with the approximate acreage and alignment, which would be modified to include only the final project footprint prior to issuance.

The proposed project would not:

- Result in the loss or conversion of Farmland or forest land to non-agricultural uses.
- Conflict with or result in a change to any agricultural zoning or existing Williamson Act contracts.
- Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.
- Directly or indirectly divide an established community.
- Induce substantial population growth in the project area.
- Impact airport operations.

The proposed project would have a less than significant impact on:

- Wilderness and recreation areas.

- Permanent loss of lands within a portion of the proposed project footprint for agriculture, natural resources, and recreation.
- Recreational use of and access to a portion of the proposed project site and surrounding BLM-managed federal lands.
- The historic significance and potential National Register eligibility of Camp Rice.
- Future land use and development.

The proposed project would have a less than significant impact, with full implementation of the applicable conditions of certification, on:

- Agricultural use (grazing) and access in an established federal rangeland area within the CDCA.
- Consistency with most applicable land use plans, policies, and regulations of an agency with jurisdiction, or that would normally have jurisdiction, over the project.

The proposed project would have the following significant/substantial, unavoidable impacts :

- Result in a loss of scenic character, both project-specific and cumulative.
- Result in the loss of a historic resource with potential National Register eligibility (Rice Army Airfield) (NEPA).
- Contribute substantially to cumulative loss of visual/scenic character.

The proposed project would not be consistent with the following laws, ordinances, regulations, and standards, even with implementation of proposed conditions of certification:

- Riverside County General Plan Land Use Element policies: LU 6.1, LU 13.1, LU 13.3, LU 20.1, LU 20.2, LU 20.4, LU 30.1. Inconsistency with these General Plan policies are primarily the result of the significant impacts to visual/scenic impacts identified above.
- Riverside County General Plan Multipurpose Open Space Element policy OS 21.1

INTRODUCTION

The California Energy Commission (hereafter referred to as “staff”), in cooperation with the Bureau of Land Management (BLM) and Western Area Power Administration (Western), have reviewed the proposed Rice Solar Energy Project (RSEP or “proposed project”), in accordance with the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The Land Use section of this document addresses project compatibility with existing or reasonably foreseeable land uses; consistency with applicable laws, ordinances, regulations, and standards (LORS); and potential project-related direct, indirect, and cumulative environmental effects. It discusses land use issues, including concerns related to agriculture, recreation, wilderness, wild horse and burro, and rangeland

resources. It also recommends mitigation/conditions of certification intended to reduce or eliminate impacts associated with any potentially significant environmental effects.

In addition to the effects associated with the land use component of this document, an energy generating system and its related facilities generally has the potential to create environmental impacts to other natural and human resources. Issues related to these resource areas are discussed in detail in separate sections of this document.

BLM manages the land that would be used for the proposed transmission and utility corridors. The BLM California Desert Conservation Area (CDCA) Plan of 1980 establishes management guidelines, procedures, and policies for the public lands impacted by the proposed project.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Given the respective power plant licensing and land jurisdictions of the California Energy Commission and U.S. Bureau of Land Management (BLM), and the transmission interconnection with Western, analysis of potential project impacts must comply with both CEQA and NEPA requirements. Because this document is intended to meet the requirements of both NEPA and CEQA, the methodology used for determining environmental impacts of the proposed project includes a consideration of guidance provided by both laws.

Both CEQA and NEPA require the Lead Agency(ies) to determine potentially significant project-related impacts. That significance is determined as part of the CEQA analysis in the Environmental Impact Report (EIR) or equivalent document. With NEPA, the potential environmental effects are analyzed in the EIS, not with regard to their significance, but rather in terms of the nature and degree of their potential impact.

CEQA requires a Lead Agency to identify the criteria used to determine the significance of potential project-related impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project”. A social or economic change related to a physical change may be considered in determining whether the physical change is significant. However, an economic or social change by itself shall not be considered a significant effect on the environment. (CCR 2009, §15382).

In comparison, NEPA defines ‘significance’ as effects or issues of sufficient context and intensity that an EIS is required. ‘Context’ refers to the effect of the project on society as a whole (human, national), the affected region, the affected interests, and the locality. ‘Intensity’ addresses the severity of identified direct, indirect, and cumulative effects. The significance of an issue or effect under NEPA is not declared within the EIW. As with CEQA, economic or social effects are not intended, by themselves, to require preparation of an environmental impact statement (40 CFR 1508.14). By electing to prepare an EIS, Western (as the NEPA lead agency) has deemed that the project has the potential to result in a significant effect on the environment.

THRESHOLDS OF SIGNIFICANCE (CEQA) ¹

The determinations of significance under CEQA, as identified by the Energy Commission in this section, are based on scientific and factual data related to issues addressed in Appendix G of the CEQA Guidelines, performance standards, thresholds identified by the Energy Commission staff, and thresholds recommended by other public agencies or subject experts, as supported by substantial evidence. (CCR 2009)² Thresholds are quantified, where feasible, and supported by specific evidence.

ISSUES

Issues considered for impacts of significance, under CEQA and/or NEPA, include the following:

Agriculture, Forest, and Rangelands

Would the project:

- Convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, or Farmland of Local Importance to non-agricultural use³? (CEQA)
- Conflict with existing agricultural zoning, agricultural use, or a Williamson Act contract? (CEQA)
- Conflict with existing zoning for, or cause rezoning of, forest land [as defined in PRC §12220(g)], timberland (as defined by PRC §4526), or timberland zoned Timberland Production [as defined by GC §51104(g)]? (CEQA)
- Result in the loss of forest land or conversion of forest land to non-forest use? (CEQA)
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses⁴ or forest land to non-forest use? (CEQA)
- Disrupt activities or substantially reduce the agricultural resource value of established federal rangelands within the California Desert Conservation Area? (NEPA)

¹ A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect. Effects exceeding that threshold would be considered significant. (CCR 2009, §15064.7)

² Pursuant to CEQA Guideline Amendments, adopted December 30, 2009; effective March 18, 2010.

³ FMMP defines "land committed to non-agricultural use" as land that is permanently committed by local elected officials to nonagricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors.

⁴ Non-agricultural uses in this context refers to land where agriculture (the production of food and fiber) does not constitute a substantial commercial use.

Wilderness and Recreation

Would the project:

- Increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated? (CEQA)
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment? (CEQA)
- Directly or indirectly disrupt activities in established federal, state, or local recreation and/or wilderness areas? (NEPA)
- Substantially reduce the scenic, biological, cultural, geologic, or other important resource value of federal, state, local, or private recreational facilities or wilderness areas? (NEPA)
- Directly, indirectly, or cumulatively affect the wilderness qualities of size, naturalness, or outstanding opportunities for solitude or primitive and unconfined recreation of a wilderness area or wilderness study area; or change the characteristics of a wilderness study area, such that it would not contain the qualities necessary for it to be considered for future designation as wilderness? (NEPA)

Land Use Compatibility and LORS Compliance

Would the project:

- Directly or indirectly divide an established community or disrupt an existing or approved land use? (CEQA & NEPA)
- Induce substantial population growth in an area, either directly or indirectly? (CEQA)
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project adopted for the purpose of avoiding or mitigating environmental effects? (CEQA & NEPA)
- Conflict with any applicable habitat conservation plan, natural community conservation plan, or biological opinion? (CEQA & NEPA)

Cumulative Land Use Effects

Would the project:

- Result in incremental impacts that, although individually limited, are cumulatively considerable when viewed in connection with other project-related effects or the effects of past projects, other current projects, and probable future projects?⁵ (CEQA & NEPA)

⁵ Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects and can result from individually minor, but collectively significant actions taking place over a period of time (CEQA Guidelines §15355; 40 CFR 1508.7).

Laws, Ordinances, Regulations and Standards (LORS)

LAND USE Table 1 provides a general description of the land use LORS applicable to the proposed project, all alternatives, and surrounding lands. LORS specific to a single alternative are addressed in the analysis for that alternative.

**LAND USE Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable LORS	Description
Federal	
<u>California Desert Conservation Area (CDCA) Plan, 1980 as Amended; 1999.</u>	The CDCA Plan is a comprehensive, long-range plan for over 12 million acres of public California Desert lands, including the Mojave, Sonoran Desert, and a small portion of the Great Basin, with goals and specific actions for management, use, development, and protection of the lands and their resources. The Plan is administered by the BLM and is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. All project sites are located within the CDCA boundaries and all but one site are on public lands, and are, therefore, subject to the CDCA Plan.
Northern and Eastern Colorado Desert Coordinated Management Plan (NECO)	NECO is an amendment to the CDCA land use plan and specific management prescriptions for species and habitats on federal lands, providing in particular for the recovery of the desert tortoise; integrating land management plans for conservation of species and habitats among the three federal land managing agencies; and providing a landscape approach to managing desert ecosystems.
State	
Public Resources Code §25529 (Public Access - Warren Alquist Act)	Requires the Energy Commission to impose a condition of certification requiring the project owner to acquire and maintain a public access/use area when a proposed facility would be located in the coastal zone or areas with recreational, scenic, or historic value. It also requires that any facility be set back from the coast or shoreline of any major body of water to permit reasonable public access and to protect scenic and aesthetic values.
Local	
<u>Riverside County General Plan (2003), as amended through December 2008</u>	The Riverside County General Plan provides policy direction for the entire unincorporated portion of the County and for 19 sectors of the County in the form of Area Plans. A large portion of the eastern desert area of the County, including the project site, is not covered by area plans and thus falls under direction of the countywide policies.
Chapter 3 – Land Use Element	This element addresses policies that direct land use and development in the County: policies that apply countywide and those that are unique to a specific region. Countywide policies are applicable to the entire unincorporated area, are contained in the General Plan and reflected on the General Plan Land Use Map. Land use designations are included in this element.
-Open Space/Rural (OS-RUR) Land Use Designation	The OS-RUR land use designation applies to remote, privately owned open space areas with limited access and a lack of public services. The designation is intended to ensure that development does not adversely impact the open space and rural character of the surrounding area.
-Eastern Riverside County Desert Areas (Non-Area Plan)	The intent of this section of Chapter 3 is to preserve the unique and spectacular open space character of the desert region of eastern Riverside County that is not a part of any Area Plan, and to maintain those existing rural and mineral resource land uses scattered throughout the area.

Applicable LORS	Description
Chapter 5 – Multipurpose Open Space Element	Addresses county policies regarding renewable and non-renewable County resources. Conservation of these natural resources applies to water, agricultural resources, forests, vegetation, mineral, and energy resources.
<p><u>Riverside County Zoning Ordinance #348, amended through Ord. #348.4647 (August 20, 2009)</u></p> <p>Article XV, §§15.1 and 15.2 Controlled Development Areas (W-2) Zoning District</p> <p>Article XVb, §§15.200 and 15.201 Natural Assets (N-A) Zoning District</p> <p>Article XVII §18.33 Temporary Use of Land</p>	<p>This title is adopted to promote and protect the public health, safety, and welfare through the orderly regulation of land uses throughout the unincorporated area of Riverside County; provide economic and social advantages resulting from an orderly planned use of land resources; and encourage and guide development consistent with the Riverside County General Plan.</p> <p>This section identifies uses permitted and development standards in the Controlled Development Areas zoning district. The project site is zoned W-2.</p> <p>This section identifies uses permitted and development standards in the Natural Assets zoning district. Some of the properties surrounding the project site are zoned N-A.</p> <p>Allows the temporary use of land in any zone classification for uses related to the construction of public utilities and other permitted activities for longer than six months.</p>
<u>Riverside County Code, Ordinance 457.102 (Building Codes & Fees)</u>	Identifies minimum building standards for all grading, buildings, and structures, or parts thereof, in the unincorporated areas of the County of Riverside, except as excluded under federal and/or state jurisdiction.
<u>Riverside County Code, Ordinance 460.151, §18.7 (Merging of Contiguous Parcels)</u>	Establishes criteria and provides a means to merge four or fewer contiguous parcels without reversion to acreage.
<u>Riverside County Ordinance 659, as amended through 659.8 (Development Impact Fees)</u>	Establishes criteria and fees required of development projects to allow the County to construct/acquire the needed public facilities to support development and preserve open space, wildlife, and their habitats.
<u>Riverside County Ordinance 859, as amended through 859.2 (Water Efficient Landscape Requirements)</u>	Incorporates the requirements of the California Water Conservation in Landscaping Act of 2006 and CCR Title 23, Division 2, Chapter 2.7 (§§490-495)

PROPOSED PROJECT (ALTERNATIVE 1)

SETTING/AFFECTED ENVIRONMENT

The proposed project is a 150-megawatt (MW) concentrating solar thermal power project with a central receiver tower, sun-tracking heliostat field, and an integral thermal storage for the liquid salt-based system. The power block and solar arrays would cover approximately 1,410 acres of a 2,560-acre project site, immediately south and adjacent to State Route (SR) 62, at milepost 109, approximately 20 miles east of the SR62/177 intersection, and 15 miles west of Vidal Junction, in unincorporated Riverside County.

The generating facility would be constructed on privately owned land and connected to the Western's Parker-Blythe transmission line by a 10.0-mile-long generation tie-line. The transmission line would be situated primarily on BLM-managed public lands, although it would cross a portion of two privately-owned parcels (see **Land Use Figure 1**).

The project's power block and solar arrays would be located on the site of the Rice Army Air Field and a portion of Camp Rice, a World War II (WWII) desert training base that was part of the infantry and artillery Desert Training Center, California-Arizona Maneuver Area (DTC/C-AMA). It was used by General George S. Patton, Jr., from 1942-1944 to prepare American soldiers for combat in the North African desert. This location, a municipal airfield prior to WWII, reverted to civilian/public airport status again about 1949, then to a private airfield around 1952. Apparently abandoned between 1955-1958, the airport continued to be used sporadically by private pilots until the runways became unsafe. (ARPT 2009a) To the east, Camp Rice (Rice Divisional Camp) housed the 5th Armored Division during its training at the DTC/C-AMA and maintained a large quartermaster depot at that location. (CSMD 2010) The area was also used for Joint Exercise Desert Strike in 1964 (SR2009a). Little remains of Camp Rice or the Rice Army Airfield, aside a few foundations, concrete pads, and defunct runways. Although the outline of both the airport and Camp Rice can still be easily discerned from the air, the sense of place is deteriorating at ground level. (See **Cultural Resources** section for additional information.)

The site is generally flat, with elevations ranging from about 720 feet (220 meters) above sea level (ASL) at the southern boundary to approximately 820 feet (250 meters) ASL in the north, along SR 62. Native plant revegetation is sparse to moderate and interrupted by the remains of the asphalt, gravel, concrete pads, foundations, runways, and taxiways. However, despite previous disturbance, the site supports a diverse plant and animal ecosystem, primarily creosote bush-bursage desert scrub and burrowbush, providing habitat for a variety of common desert species and may also support some special status species (see **Biological Resources** section). A number of small, dry desert washes traverse the project area, but no large ephemeral washes are present. There are no structures on the site, except for a few decaying foundations stemwalls, and no active use. The proposed project site can best be described as extensively disturbed land that has been unused for about 50 years and is gradually reverting to desert.

The northern portion of the proposed project footprint is bounded by SR 62, the Arizona and California Railroad short line, and the Colorado River Aqueduct. As noted above, the former Camp Rice is situated along a portion of the eastern project site boundary, with some private land directly south, and BLM-managed public lands surrounding the remainder of the site. The proposed transmission line corridor would extend southeast for approximately 10 miles, across BLM-managed public lands and two privately owned parcels, connecting with the Western Parker-Blythe transmission line within the existing Western/BLM right-of-way (ROW).

Parcels to be included in the site for the generating facility are indicated in **Land Use Table 2** below.

**LAND USE Table 2
Generating Facility Property Description**

Township	Range	Section	Assessors Parcel Number (APN)	Acreage
Power Block and Administrative Offices				
1 South	21 East	19	801-070-003	643.90
1 South	21 East	20	801-070-004	640.01
1 South	21 East	29	801-100-005	641.07
1 South	21 East	30	801-100-006	643.60

Source: SR 2009a, p.5.6-1; RC 2010b.

Land Use Table 3 identifies the private and BLM-managed public lands where the transmission lines and substation would be located. The applicant has initially applied for a right-of-way (ROW) grant from BLM (#CACA 051022) along the proposed transmission line alignment.

**LAND USE Table 3
Transmission Line Property Description**

Township	Range	Section	Assessors Parcel Number (APN)
Transmission Line/Substations (privately owned lands)			
2 South	22 East	Western half of Section 16	Portion of APN 803-090-001
2 South	22 East	Eastern half of Section 16	Portion of APN 803-090-002

Transmission Line/Substations (BLM-managed public lands)			
1 South	21 East	South half of Section 28	Portion of APN 801-100-007
1 South	21 East	South half of Section 35	Portion of APN 801-110-005
1 South	21 East	North half of Section 33	Portion of APN 801-100-010
1 South	21 East	North half and Southeast quarter of Section 34	Portion of APN 801-110-004
2 South	21 East	Northeast quarter of Section 2	Portion of APN 801-190-002
2 South	21 East	North half and Southeast quarter of Section 1	Portion of APN 801-190-003
2 South	22 East	Southwest corner of Section 6	Portion of APN 803-070-001
2 South	22 East	North half and Southeast corner of Section 7	Portion of APN 803-070-004
2 South	22 East	North half of Section 17	Portion of APN 803-090-004
2 South	22 East	Southwest corner of Section 8	Portion of APN 803-070-005
2 South	22 East	Northeast quarter of Section 21	Portion of APN 803-090-007
2 South	22 East	West half and southeast quarter of Section 22	Portion of APN 803-100-004

Source: SR 2009a, p.5.6-1; RC 2010;

Generating Facilities

The solar electric generating facility would consist of a power block; 653-foot-high concrete solar receiver tower; liquid salt circulation and storage system; 10,000-gallon diesel storage tank; and up to 17,500 solar tracking mirrors in a circular array around the receiver tower, covering approximately 1,410 acres. The power block would include the central receiver tower, storage tanks, steam turbine, air cooled condenser, transformers, heat exchangers, power block buildings, and other ancillary equipment. In addition to the main power generating facility, the site would include administrative buildings and parking lot, main warehouse with laydown area, onsite access roads, and

detention ponds, which would be located along the outside perimeter of the solar array; and the tie-in switchyard and transmission lines. The tallest facilities would be the solar receiving tower at 653 feet AGL and the cooling and transmission towers, which would be approximately 120 feet in height. Buildout coverage on the site (final footprint) would be about 55% (1,410 acres), including mirror fields, access roads, and buffer areas outside the fenceline. (See **Land Use Figures 2 and 3.**)

Facility Infrastructure

Infrastructure for the facility would require a one-mile extension of an existing 12 kV distribution line from an existing pole, located just south of SR 62 and about 175 feet east of the project boundary. The line would provide power for construction, and would serve the administration buildings during both construction and operation. Solar photovoltaic (PV) panels may also be installed on building rooftops and open ground surface areas, to power some lighting and other miscellaneous electrical loads. Lighting would be restricted to only what is necessary for security and emergency purposes, with directional shielding to avoid glare onto SR62 and surrounding properties, and to minimize nighttime backscatter illumination. The entire facility, including heliostat fields, would be surrounded by a security fence, with a controlled access gate at the SR62 entry point to the facility.

Raw water would be drawn from an existing onsite well and two new on-site wells and would be used for plant operations and as the source of potable water for construction activities (SR 2009a, p.2-5). The well pumps would deliver water to a large raw water storage tank with a capacity of up to 840,000 gallons. The plant may include a potable water treatment system to treat raw water to potable quality water for personnel health, safety, and sanitary uses by operational staff around the facility, at the applicant's discretion. However, raw water pumped directly from the existing wells meets state drinking water standards for potability, without additional filtration or treatment. If installed, the treatment system would be sized to accommodate a maximum of 47 permanent operations and maintenance personnel, consuming a maximum of 150 gallons of water per day. (See **Water Resources** section for further information.)

Sanitary wastewater treatment for day use by the construction workers would be provided by a temporary dump station, with both black and grey water holding tanks and/or portable toilets. Treatment of the wastewater generated during construction would be accomplished via an on-site septic system (appropriately sized septic tank and leach field) or by contract pumping of the holding tanks/portable toilets by a licensed service company. Once construction is completed, the holding tanks/portable toilets would be removed and septic tank/leach field, if installed, would be removed or abandoned in place. (See **Waste Management** section for further information.) Wastewater treatment for the plant during plant operations (kitchen and sanitary facilities) would include a septic tank and leach field. Solid wastes during both construction and plant operations would be trucked off-site for recycling and disposal.

Transmission Lines

The project would require construction of a generation tie-line to connect the generating facility switchyard with the existing Western Parker-Blythe 161 kV transmission line. Transmission line towers would consist of a light-duty steel or concrete monopole

structure. Each tower would stand between 85-115 feet tall, with a structural base approximately 30 inches in diameter, and a line span of 500-700 feet between towers, or nine towers per mile. The line would extend from the southeastern corner of the proposed project site, and run southeasterly for approximately 10 miles, to the new substation at the point of interconnection with the Western transmission line. The transmission line corridor would cross both public and private lands. The project applicant has applied for a 150-foot wide right-of-way (ROW) grant from BLM for that portion of the generation tie-line and associated structures that would be constructed on or cross BLM-managed public lands. The new substation footprint would cover an area of about nine acres, also within the proposed BLM ROW. The route follows an existing road (Rice Valley Road), which would be used for construction access and access to the switchyard, thus limiting additional ground disturbance. Approximately 4.6 miles of new, unpaved access road would be constructed to connect to the 5.4 miles of existing road. This road would also be constructed primarily within the proposed BLM ROW. (SR 2009a, p.2-4) From the new interconnecting substation, telecommunications along Western's lines would be established in one of the following manners via: 1) replacing one of two existing overhead ground wires on the Parker-Blythe #2 transmission line with a fiber optic core overhead ground wire to either or both of Western's existing Parker and Blythe substations; 2) microwave (radio-frequency) transmission from either RSEP or the new substation to terminate at the Western's Blythe, Headgate Rock, or Black Point substations; or to an existing telecommunications site at Cunningham Mountain; or 3) power line carrier/broadband-over-power-line. All lines would be above-ground and installed on existing Western towers, within existing Western ROWs. Any portion of the proposed roads, transmission lines, and structures that would be constructed on or cross private lands would do so within that area designated in a recorded easement with the property owner.

Construction

During construction, several areas, on either side of the plant entrance road off SR62 and within the project site boundaries, would be used as construction laydown and parking areas. Trucks transporting construction equipment and materials would also use this entrance road for all deliveries. Access and deliveries along the transmission line route would use the existing or proposed extension to Rice Valley Road. All laydown and parking for transmission line and substation construction would occur within the proposed substation footprint, recorded easements, or BLM ROW.

Construction of the generating facility is expected to begin in the first quarter of 2011 and continue for approximately 30 months, with as many as 438 workers on-site between months 8 and 20. Construction activities would generally occur from 5 a.m. until 7 p.m., six days a week, but could be extended to a 24-hour, 7-day schedule to meet scheduling demands or accommodate weather or worker availability. (SR 2009a, pp.2-37, 2-38) Construction of site access roads and utility infrastructure would be among the first construction activities occurring on the site.

Temporary Construction Facilities

Temporary construction facilities would include construction staging areas; employee parking areas; shop buildings, including an office trailer with electrical, telephone, and internet service; sanitary facilities; guard shack; portable batch plant; on-site dumpsters;

fencing; and a temporary 10,000 gallon above-ground storage tank to supply diesel during construction of the facility. The temporary batch plant would include cement storage and a batching operation where the cement, water, and aggregate would be proportioned and mixed, and would be located in the temporary laydown area or in the heliostat field on the existing concrete pad (see **Land Use Figure 2**). Construction equipment would be staged near the location of active work and several areas within the footprint of the solar field would also be used to store materials during the construction process. Temporary sanitary facilities for use by construction personnel would be located throughout the site and would be sized and located in accordance with OSHA requirements. A temporary septic system would also be installed to service the construction trailers.

The AFC includes reference to establishing a temporary construction workforce RV park on-site. However, this project component has been eliminated at the applicant's request.

Operations

RSEP plans to begin operations during the third quarter of 2013. The project is expected to employ up to 47 full-time employees and would operate year-round, seven days a week, 24 hours a day.

Project Closure and Decommissioning

According to the AFC, the solar generating facility is expected to have an operational lifespan of 30 years. If economically and technologically viable, it may continue to operate beyond that time. However, at any point during operation, temporary or permanent closure of the solar facility could occur. Temporary closure might be a result of necessary maintenance, hazardous weather conditions, or damage due to a natural or manmade disaster. Permanent closure could result from damage that is beyond repair, adverse economic conditions, or other significant reasons. Both temporary and permanent closures would require the project owner to submit a contingency plan or decommissioning plan to the BLM and Energy Commission for review and approval, prior to implementing any closure (except for emergency response). Either plan would include measures to ensure compliance with applicable LORS and protection of public health and safety requirements and the environment. These would include shutdown/restart procedures, removal/ storage of equipment and materials, site restoration, and potential decommissioning alternatives. (See **Joint Agency General Conditions**.)

Surrounding Area

The proposed project site is located in the northeastern portion of unincorporated Riverside County, approximately 15 miles west of Vidal Junction and 3 miles east of the abandoned town of Rice. The San Bernardino County line is just north of SR 62, which is immediately adjacent to the project's northern boundary. The habitat is represented by southwestern basin and range topography, characterized by numerous, generally north-south oriented mountain ranges alternating with valleys and alluvial plains. Desert pavement is common and is often well-developed and present in broad patches. Species richness and plant density are generally low to moderate (approximately 5-15%

cover) and is characterized by Sonoran creosote bush scrub and desert wash woodlands. Elevations range between 700 and 1600 feet above mean sea level. Soils range from loose-sandy to coarse-sandy loams on the bajadas and valley floors to cobbles, boulder outcrops, and talus on the mountain slopes. The rugged desert landscape within and surrounding the project area provides a range of scenic values. The BLM recognizes these visual values as a definable resource on public lands and an important recreation experience, and manages them accordingly. Rainfall amounts are minimal (approximately 3.7 inches annually) and are typically restricted to the winter months; however, amounts may vary from one to five inches per year. Areas may also receive scattered heavy rainfall during summer thunderstorms. Summer temperatures frequently exceed 100 degrees Fahrenheit and night frosts are common in winter months.

As noted in Alternative 1 Setting above, the project site boundaries adjoin and overlap the previous site of Camp Rice to the east, with some private land directly to the south, and public lands surrounding the remainder of the site. Much of the surrounding land is managed by BLM, which allows livestock grazing and a variety of recreational activities on the Class M multi-use lands. The land surrounding the project footprint, excluding Camp Rice and the former Rice AAF, is relatively undisturbed desert. There are no residences or commercial developments, other than the Iron Mountain Pumping Station (IMPS), within visual range of the project site or surrounding desert lands.

Access to the site is along SR62, a two-lane state highway (also known as Aqueduct Road and Twenty-nine Palms Highway) that bounds the project site to the north, and provides a direct route between Vidal Junction, to the east, and Twenty-nine Palms to the west. SR177 intersects SR62 approximately 17 miles west of the project site and connects to Desert Center and Interstate 10 (I-10) to the south. The Arizona and California Railroad (ARZC) shortline parallels SR62 at the project site and extends nearly 300 miles between Matthie, Arizona and Cadiz, California, with a 50-mile southern branch to Ripley.

The Colorado River Aqueduct (Aqueduct) also parallels SR62 to the north of the project site. The Aqueduct is a 242-mile (389-kilometer) water conveyance operated by the Metropolitan Water District of Southern California (MWD). It impounds water from the Colorado River at Lake Havasu on the California-Arizona border and carries it west across the Mojave and Colorado deserts to the east side of the Santa Ana Mountains, and is one of the primary sources of drinking and irrigation water for southern California. (WIKI 2010b) The closest Aqueduct pumping facility is at Iron Mountain, about 10 miles northeast and visible from the project site. Originally built around 1930, the Iron Mountain Pumping Station (IMPS) also includes the Colorado River Aqueduct airstrip, a private strip used exclusively by MWD. The Aqueduct is fenced and public access is prohibited. Despite its close proximity, water from the Aqueduct is not available to serve the proposed project.

The area surrounding the project site also played an important role during WWII as part of the infantry and artillery DTC/C-AMA. In addition to Camp Rice and the Rice AAF, the 3d Armored Division used Camp Iron Mountain and Camp Granite, at the SR 62/177 intersection, about 17 miles west of the project site, from 1942-44. Camp Iron Mountain was designated as an Area of Critical Environmental Concern (ACEC) for its cultural

significance in 1980, and is perhaps the best known and certainly the best preserved of all the training camps. Despite the ravages of time, a contour map, many rock mosaics, two alters, and numerous rock alignments along roads and walkways have survived. The area has been fenced to provide protection from vehicular traffic and both Camp Iron Mountain and Camp Granite are visible to the north and south of SR 62, respectively. (See **Cultural Resources and Native American Values** section for additional information.)

Maps indicate that Rice, approximately three miles northwest, in unincorporated San Bernardino County, is the closest community to the project site. It is actually a vacant townsite, with only the remnants of a demolished gas station and an infamous “shoe fence”⁶ to mark its location. There are no longer any residents in town, but the railroad siding at Rice is still used by the Arizona and California Railroad. (WIKI 2010c)

The closest services to the project site are at Vidal Junction, approximately 13 miles to the east, at the SR 62/95 intersection. The small community, consisting of a mobile home park, several gas stations, and a California agricultural inspection station, provides limited services for those traveling to the Colorado River resort areas of Parker and Lake Havasu, Arizona, and Laughlin, Nevada. The closest towns with full services are Earp, California and Parker, Arizona, on SR62, approximately 17 miles west of Vidal Junction. The larger towns of Blythe and Twenty-nine Palms are about 65 miles south and 75 miles to the west, respectively.

Agricultural Lands and Rangelands

Agricultural Lands

The proposed project site is located on previously disturbed, privately owned, desert lands and along a 10-mile, 150-foot-wide corridor on vacant, BLM-managed, multiple use class M public lands. Grazing of sheep in the Colorado Desert has occurred continuously since the mid-1800's. However, with the exception of limited grazing for domestic sheep on a public lands grazing allotment, there is no current or historical use of the project lands for agricultural purposes.

Most of the transmission line corridor, proposed interconnection substation location, and surrounding 74,740 acres of BLM-managed lands, is part of the Rice Valley (Keoughs) Rangeland Grazing Allotment #CA06001, held by Lava Lake Land & Livestock, LLC (see **Land Use Figure 4**). The current Rice Valley allotment allows intermittent grazing of sheep on the ephemeral rangeland within the allotment boundaries between March 1 – April 30 of each year, provided sufficient ephemeral forage is available. Sheep are allowed in bands of up to 1,000 adults, with an approximately equal number of lambs, not to exceed a total of 2,000 animals. Based on past use, there would be from 2000 to 3000 sheep using the allotment during a typical grazing season, depending on ephemeral forage availability. Sheep are required to graze in a loose or dispersed pattern and are only allowed to move through an area once during the grazing season. Ranchers generally allow the sheep to graze in any one area for only a few days at a time. Bedding and watering sites must be changed daily and new bedding or watering

⁶ Formerly the Rice Shoe Tree (which burned in 2003), visitors to the area have been hanging old shoes on the old tamarisk tree, and now, after the fire, a make-shift fence there, for many years.

sites must be at least one-quarter mile from any previous site. In 2005, ephemeral production met the 200 pounds per acre (lb/acre) BLM threshold requirement in the entire allotment. Forage analysis was over 3900 pounds/acre. The proposed project site for the primary facilities is not part of the Rice Valley grazing allotment. The current allotment is effective through January 30, 2018.

Wild Horse and Burro Herd Management

The Wild Free-Roaming Horses and Burros Act (Public Law 92-195) was adopted on December 15, 1971. It protects wild horses and burros within designated territories on both United States Forest Service (USFS) and BLM lands, while ensuring their populations are managed to maintain or restore a thriving ecological balance. California's free roaming wild horses and burros range over 7.1 million acres of public land and an additional 2.3 million acres of privately-owned property. There are 33 herd areas (HAs) and 22 herd management areas (HMAs) within the state, primarily in southern California. In Arizona, the BLM manages two wild horse herds, totaling approximately 200 head, in the Cerbat Mountains, northwest of Kingman, and between the Cibola Wildlife Refuge and the U.S. Army's Yuma Proving Ground. In addition, the BLM manages close to 1,600 head of wild burros roaming public lands in seven other herd management areas and three herd areas. Herd areas are geographic areas where wild horse or burro populations were found at the passage of the Wild Horse and Burro Act in 1971. Herd management areas are locations within the herd areas where wild horses and burros populations are actively managed, taking into consideration the natural resource balance, and other uses, such as livestock grazing and recreation.

There are seven HAs and four HMAs within 50 miles of the proposed project site (see **Land Use Figure 5**). The closest, the Chemehuevi HA and HMA, begins approximately 10 miles northeast of the eastern project boundary. This area is located in eastern San Bernardino County and encompass 79,000 acres in an area extending from seven miles south of Needles to the Parker Dam, and from U.S. 95 eastward to the Colorado River. However, there are no HAs or HMAs within or immediately adjacent to the proposed project site or transmission corridor.

Recreation and Wilderness

The proposed project site is located in the southern Colorado Desert, just west of the Arizona border. The California desert attracts millions of visitors to a wide spectrum of recreational opportunities annually. The project site and surrounding area are within a two-hour drive of Palm Springs; Lake Havasu City, Arizona (and the Lake Havasu Recreational Area); and Las Vegas, Nevada.

Recreation

The primary project site is located entirely on privately owned lands, with no recreational facilities or public access. The transmission lines and interconnecting substation are located primarily on BLM-managed public lands. Those portions of the project site that are situated on publicly-owned lands are subject to the BLM's California Desert Conservation Area Plan (CDCA) and Northern and Eastern Mojave Desert Management Plan (NECO), which encompasses over five million acres of BLM-administered public lands in San Bernardino, Riverside, and Imperial counties. Both CDCA and NECO

address land use and conservation of resources within their boundaries. The transmission corridor, substation, and surrounding lands, with the exception of two small privately-owned parcels, are classified as Multiple Use Class - Moderate (MUC-M). This land use designation allows a multitude of public uses, including livestock grazing, mining operations, railroads and landing strips, electrical generating facilities, and recreation.

However, despite the availability of land for public recreation and access, this part of California is very isolated and sparsely populated, with few developed recreational areas. Lack of water, services, and lodging; sparse vegetation; extreme summer heat; and mostly level topography present few opportunities or incentives for hunting, bird watching, hiking, or OHV use. Points of interest in the general vicinity are limited to the remains of the WWII training camps, rock initials and murals along the railroad berms, a few historic markers, and the infamous Shoe Tree at the deserted Rice townsite. The number of visitors does increase, somewhat, during wet spring seasons, when wildflowers are in abundance.

Although there are few attractions in the immediate project area, there are a variety of public and private recreation areas and resorts available within 100 miles of the project. These extend along both sides of the Colorado River, from Blythe to Lake Havasu and Parker, Arizona, about 35 miles east of the project site. Attractions include the River Island State Park; Parker Dam, the world's deepest dam; Headgate Rock Dam; and Lake Havasu, another 40 miles north, which provides the location for a wide variety of water sports and Lake Havasu City, with its British-themed tourist attractions and the famous London Bridge.

There are also eleven designated wilderness areas within 50 miles of the project site (see Wilderness section below).

Joshua Tree National Park

Sixty miles southwest of the project site (and just 20 miles east of the Desert Center Alternative location), is the Joshua Tree National Park. Established in 1994 and managed by the National Park Service, the park offers almost 200,000 acres of parkland for public recreation, not including almost 600,000 acres of wilderness lands. Straddling the San Bernardino/Riverside County border, the park includes parts of both the Mojave and Colorado Deserts, with the Little San Bernardino Mountains extending along the southwestern edge of the park. The park encompasses some of the most interesting geologic displays found in California's deserts. Rugged mountains of twisted rock and exposed granite monoliths share the landscape with arroyos, playas, alluvial fans, bajadas, pediments, desert varnish, granites, aplite, and gneiss. It is named for the Joshua tree forests native to the area.

Resident birds, such as the greater roadrunner, cactus wren Gambel's quail, red-tailed hawk, American kestrel, Cooper's hawk, and prairie falcon share the park with both winter and summer migrant and transient species, including the sage sparrow, cedar waxwing, American robin, northern oriole, western bluebird, several species of warblers, northern harrier, osprey, and Swainson's hawk. Reptiles also reside here, including desert tortoise, at least 18 species of lizards, and 25 varieties of snakes. Although the

vegetation appears limited during the hot summer months, winter rains bring abundant displays of wildflowers in early spring. In the Mojave Desert area, Joshua Trees dominate, with pinion pine, California juniper and scrub oak in the stony outcrops. Habitats of Creosote bush scrub, ocotillo, desert Saltbush, and mixed scrub, including Yucca and Cholla cactus are found in the Colorado Desert areas of the park.

There are nine established campgrounds in the park, although only two provide water and flush toilets. Backcountry camping is also permitted. The park is extremely popular with rock climbers, hikers, and photographers. There are no special regulations for off-road vehicle use on any open park road, but there is no off-road vehicle access.

Motorized Vehicle Access

In 1983, the BLM amended the CDCA's Motorized Vehicle Access element to conform to the requirements of the agency's OHV regulations (43 CFR 8342.1). The objectives of those regulations are to protect the resources of the public lands, promote the safety of all users of those lands, and minimize conflicts among the various uses of those lands. Questions regarding permitted uses of MUC lands and the designation and use of existing trails were addressed in this amendment.

For MUC-M lands, the amendment allowed OHV access on all existing trail routes to continue unless it is determined that use on specific routes needs to be further restricted. An "existing" route is defined as one with a minimum width of two feet and established before approval of the 1980 CDCA, with significant surface evidence of prior vehicle use. It also set standards for the use of OHVs in desert washes, indicating that navigable washes in "washes open zones" would be considered "existing routes" as a class, rather than individually, and available for motorized vehicle use, unless such use was specifically restricted by route designations of "limited" or "closed". For sand dunes and dry lakes, it was determined that the unique geography of these areas precluded delineation of individual trail routes. Therefore, significant sand dunes and dry lakes within the CDCA were designated either "open" or "closed" to vehicle use, regardless of the MUC designation. (BLM 2003) There are only three identified OHV routes in the vicinity of the project site, none of which cross the project site. Rice Valley Road, which would parallel the proposed transmission line connecting to the WESTERN line, is occasionally used by vehicles, including OHVs, but does not lead to any established destination. It is also a relatively straight, level road, with little to attract the more adventurous OHV user.

Rice Valley Dunes

Rice Valley Dunes, on the northern edge of the Rice Valley Wilderness, is about four miles south of the project site. This area contains approximately 3,770 acres of low sand dunes and was originally designated specifically for OHV use. However, in 2002, BLM determined the area was under-utilized by the OHV users (basically no use in 20 years) and of more important for its high-value habitat. It was closed permanently as part of the NECO amendment to the CDCA in 2002.

Wilderness

The California Desert Protection Act of 1994 designated 69 wilderness areas in

southern California and directed that they be administered by the BLM, pursuant to the Wilderness Act of 1964. Wilderness land in California and Arizona is administered by the BLM, the U.S. Forest Service (USFS), and the National Park Service (NPS). According to the federal Wilderness Act, a designated Wilderness Area is defined as an area of undeveloped federal land which is protected and managed to preserve its natural conditions and retain its primeval character and influence, without permanent improvements or human habitation. Wilderness areas have four primary characteristics:

- Generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- Contain outstanding opportunities for solitude or a primitive and unconfined type of recreation;
- Include at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and
- Have ecological, geological, or other features of scientific, educational, scenic, or historical value. (US Code 1964).

There are eleven designated wilderness areas within 50 miles of the project site. These include the Rice Valley, Riverside Mountains, Turtle Mountains, Old Woman Mountains, Cadiz Dunes, Sheephole Valley, Big Maria Mountains, Joshua Tree, Palen/McCoy, and Whipple Mountains Wildernesses in California; and the Gibraltar Mountain Wilderness in Arizona (see **Land Use Figure 5**). Allowed recreational uses generally include hiking, backpacking, rock climbing (subject to restrictions), kayaking, canoeing, rafting, horse packing and riding, rockhounding, photography, and primitive camping. Hunting, fishing, and non-commercial trapping are allowed, consistent with state and local laws. Mechanized or motorized vehicles are not permitted, including bicycles, but horses are allowed. Wilderness areas are not developed, but are available to the public and provide places for solitude and quiet contemplation. Access to the wilderness areas is readily available on existing public roads, although four-wheel drive is recommended in some areas. Vehicles are only allowed on established roads or can be parked outside the wilderness boundary, which is set back approximately 30 feet from unmaintained dirt roads and 300 feet from paved roads. Permits are generally required for commercial or organized activities. Private lands may lie within wilderness areas and may only be used with permission of the owner(s).

Land Use Table 3 describes wilderness areas, areas of critical environmental concern, and natural resource areas easily accessible from the project area.

**LAND USE Table 4
Wilderness Areas**

Wilderness Area	Jurisdiction/ Mgmt	Approximate Distance from Project Site	Acreage*	Use Restrictions
Big Maria Mountains	BLM	12 mi SE	45,384	
Cadiz Dunes	BLM	45 mi NW	21,298	
Gibraltar Mountains (Arizona)	BLM	45 mi E	18,790	No private lands within the Wilderness boundary.
Joshua Tree	NPS	30 mi W	594,502	
Old Woman Mountains	BLM	27 mi NW	183,538	Access to this wilderness requires four-wheel drive vehicles. The wilderness boundary was drawn around five non-wilderness corridors, which provide vehicle access to the interior of the wilderness area.
Palen/McCoy	BLM	8 mi SW	259,009	
Rice Valley	BLM	6 mi S	41,777	
Riverside Mountains	BLM	12 mi SE	24,004	
Sheephole Valley	BLM	35 mi W	194,861	
Turtle Mountains	BLM	3 mi N	182,641	
Whipple Mountains	BLM	30 mi NE	79,861	

Sources: WILD; BLM 2010(d)

* Approximate

Big Maria Mountains Wilderness

The Big Maria Mountains Wilderness begins approximately 12 miles southeast of the proposed project site. The terrain varies from gently sloping bajadas to numerous rough, craggy peaks and steep canyons. The northern boundary lies south of a major drainage known as Big Wash and the eastern edge parallels SR95 and the Colorado River. Foxtail cactus and California barrel cactus are the predominate vegetation in the landscape and a burro deer herd forages the habitat along the Colorado River. The mountains reach an elevation of 3,379 feet above sea level (ASL) and are home to the Eagle Nest Mine.

Cadiz Dunes Wilderness

The Cadiz Dunes Wilderness, approximately 45 miles northwest of the project site, in San Bernardino County, encompasses a major portion of the Cadiz Dune system and desert shrub lowlands just east of the dunes. These small dunes were formed by north winds pushing sands off the Cadiz Dry Lake. Due to the remote location these dunes, they had very little OHV use prior to their designation as wilderness. The pristine nature of the dunes and the beautiful spring display of unique dune plants have made the area a favorite for photographers. Borrego milkvetch occurs in the sand dunes and is listed by the California Native Plant Society as rare and endangered in California. Wildlife is

typical for the Mojave Desert; including coyote, black-tailed jackrabbits, ground squirrels, kangaroo rats, quail, roadrunners, rattlesnakes, and several species of lizards. The El Paso Natural Gas Pipeline passes the northeast side of the dunes and is adjacent to the Wilderness boundary. The Atchison Topeka and Santa Fe Railroad tracks are within 30 feet of the Wilderness boundary.

Gibraltar Mountain Wilderness

The Gibraltar Mountain Wilderness includes the western end of the Buckskin Mountains and is about 10 miles northeast of Parker, in La Paz County, Arizona. The area, from Giers Mountain in the north to Gibraltar Mountain in the south, consists of rugged volcanic rock, dissected by deep, sandy washes and rocky canyons. The vegetation includes creosote bush, cholla, barrel cactus, and paloverde, and is home to desert bighorn sheep. The eroded volcanic tuff beds contain many alcoves and caves and are a favorite with photographers, hikers, and rock-climbing enthusiasts.

Joshua Tree Wilderness

The Joshua Tree Wilderness was established in 1976 and contains approximately 594,502 acres. The area is bordered by the Sheephole Valley Wilderness and the Pinto Mountains Wilderness to the north, and is managed by the National Park Service (NPS). It makes up nearly 75% of the Joshua Tree National Park. The lower, drier Colorado Desert dominates the eastern half of the park and is home to creosote bushes, ocotillo, and the "jumping" cholla cactus. The slightly more cool and moist Mojave Desert covers the western half of the park. There is also a third ecosystem within the park: five fan-palm oases, located where surface or near-surface water is accessible. Bighorn sheep frequent the mountainous slopes, along with eagles. Lizards, tarantulas, rattlesnakes, coyotes, jackrabbits, bobcats, kangaroo rats, and burrowing owls populate the lower elevations. Twisted rock formations and granite monoliths provide a fascinating geologic display in the desert landscape.

Old Woman Mountains Wilderness

The Old Woman Mountains Wilderness, about 30 miles northwest of the project, consists of bajadas, extensive flat aprons of alluvium, and the massive, fault-lifted Old Woman Mountains with elevations that range from 800 feet in the drainage bottoms to over 5300 feet at the top Old Woman Peak. The mountains take their name from a granite monolith resembling the figure of an old woman, known as the Old Woman Statue. They are also the site of the Old Woman Meteorite, discovered in 1975, the largest meteorite found in California and the second largest in the United States. The wilderness falls within a transition zone between the Lower Colorado and Mojave deserts and encompasses many different habitat types. Creosote bush scrub dominates the lower elevations, shifting into mixed desert scrub at middle elevations, with juniper-pinyon woodland at the higher elevations. The dry washes are characterized by catclaw acacia, cheesebush, desert lavender, little-leaf ratany, and desert almond. Wildlife is typical for the Mojave Desert and includes a permanent population of bighorn sheep, mule deer, bobcat, cougar, coyote, black-tailed jackrabbit, ground squirrels, kangaroo rats, quail, chuckar, roadrunners, rattlesnakes, and several species of lizards. Numerous raptor species can also be found in the area, including prairie falcons, red-tailed hawks, golden eagles, Cooper's hawks, American kestrels, and several species of

owls. The washes and canyons, with at least 24 springs and seeps, provide good habitat for several species of songbirds. The bajadas provide excellent desert tortoise habitat; 49,683 acres of the wilderness area have been designated as critical habitat for the threatened desert tortoise.

Palen/ McCoy Wilderness

The Palen-McCoy Wilderness, just southwest of the project site, was established in 1994 and contains five distinct desert mountain ranges: the Palen, McCoy, Granite, Little Maria, and Arica, separated from each other by broad, sloping bajadas. An intricate array of washes in the valley between the Palen and McCoy Mountains are forested in ironwood and paloverde trees. The wash woodlands provide habitat for burro deer, bobcats, coyotes, gray foxes, kit foxes, mountain lions, rabbits, mice, kangaroo rats, and numerous species of birds. The area is rarely visited, but old four-wheel-drive tracks that lead into the mountains make access for hikers relatively easy.

Rice Valley Wilderness

The broad, flat plains of Rice Valley and the northwestern tip of the steep and rugged Big Maria Mountains lie within the borders of the Rice Valley Wilderness, located immediately south of the private land adjacent to the project site. A system of small dunes rise 30 to 40 feet above the surface and form a long, narrow band running through the middle of the valley floor. The valley is part of a massive sand sheet which extends from Cadiz Valley through Ward Valley, representing a part of one of the largest dune systems in the California Desert. Beyond the mountains is a wilderness of sand.

Riverside Mountains Wilderness

The Colorado River parallels the eastern edge of the Riverside Mountains Wilderness, which adjoins the Rice Valley Wilderness to the east, about 12 miles southeast of the interconnection substation and east end of the project linears. The landscape varies from gently sloping bajadas to steep, rugged interiors, with washes emerging from canyons to divide the bajadas below. Numerous peaks in the Riverside Mountains give this small range a rough, craggy appearance. Two sensitive plant species, the foxtail cactus and California barrel cactus, can be found in this wilderness area. A small herd of burro deer also live among the Riverside range.

Sheephole Valley Wilderness

The Sheephole Valley Wilderness is an ideal representation of the basin and range topography typical to the Mojave Desert. The Sheep Hole Valley, beginning about 35 miles west of the project site, sits between the granitic boulder-strewn Sheep Hole and Calumet Mountains. At the valley's lowest point, there are two small dry lake beds. Sand dune formations can be found at the southwest end of the Sheep Hole range and northeastern portion of the Calumets. The dominant vegetation is creosote bush scrub that gradually changes into a mixed desert scrub at higher elevations. Salt-tolerant plants are found around the dry lake beds and California's rare and endangered Borrego milkvetch occurs in the sand dunes. Wildlife includes bighorn sheep, the threatened desert tortoise, coyote, black-tailed jackrabbits, ground squirrels, kangaroo

rats, quail, roadrunners, rattlesnakes, and several species of lizards. The wilderness area is bordered to the south by SR 62 and the Joshua Tree Wilderness.

Turtle Mountains Wilderness

The Turtle Mountains Wilderness encompasses a diverse, scenic landscape, ranging from broad bajadas to highly eroded volcanic peaks, spires, and cliffs. The southern tip of the wilderness area begins about three miles north of the project site. Much of the Turtle Mountain range has been designated as a National Landmark in recognition of its exceptional natural values. The wilderness is located in an ecological transition zone between the Mojave and Sonoran Deserts. Dominant vegetation consists of the creosote bush-bur sage and the palo verde-cactus shrub ecosystems.

Colorado/Sonoran microphylla woodlands can be found in the washes. Wildlife species include desert tortoise, bighorn sheep, coyote, black-tailed jackrabbits, ground squirrels, kangaroo rats, quail, roadrunners, golden eagles, prairie falcons, rattlesnakes, and several species of lizards. Approximately 73,000 acres in the northwestern and northeastern portions of the wilderness are designated critical desert tortoise habitat. The area is a favorite for rock hounding hobbyists and is nationally known for chalcedony deposits, a form of quartz, known as "Mopah Roses".

Whipple Mountains Wilderness

The Whipple Mountain Wilderness, southeastern California, contains the east-west oriented Whipple Mountains, with a low angle fault separating the pale green formations of the western side from the striking brick-red, steeply carved volcanics of the eastern side. The present-day landform of the Whipple Mountains is a series of sub-parallel ridges trending northwest to southeast, cut at right angles by a large wash which bisects the entire range. These linear ridges mark the tops of tilted crustal blocks lying in the hanging wall of an extensive detachment fault, and the range as a whole comprises one of the best exposed and most studied metamorphic core complexes in the world. Landforms are diverse and vary from sloping valley floors and washes to steep-walled canyons, domed peaks, natural bridges, and eroded spires.

The Sonoran creosote bush scrub and Sonoran thorn forest are the two major vegetative associations present within the wilderness area. Dominant vegetation is creosote bush scrub, palo verde, ironwood, smoke tree, and numerous species of cacti. Wildlife species include bighorn sheep, mule deer, wild burros, coyote, black-tailed jackrabbits, ground squirrels, kangaroo rats, quail, roadrunners, owls, the threatened desert tortoise, and several species of rattlesnakes and lizards. The Whipple Mountains provide superior nesting and foraging habitat for a number of raptors, including prairie falcons, golden eagles, red-tailed hawks, and Cooper's hawks. The mountains are home to many mines, including the Independence Mine and Bessie Mine.

Activities within the wilderness area include hiking, horseback riding, hunting, camping, rock hounding, photography, and backpacking. Whipple Wash is a popular hiking location and wilderness access. Motorized access to the boundary of the wilderness is only possible from the north-east side by way of a powerline access road, accessible to high-clearance, four-wheel-drive vehicles only.

ASSESSMENT OF IMPACTS/ENVIRONMENTAL EFFECTS AND DISCUSSION OF MITIGATION

Agricultural Lands and Rangelands

Would the proposed project result in the conversion of Farmland⁷ to non-agricultural uses?

None of the lands within the proposed project site, including solar fields, generating facility, or linears, have been mapped by the California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP 2009c). Riverside County has not identified the project site as Farmland of Local Importance. Therefore, the project would not result in the conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance to non-agricultural use. No impact during any phase of the project.

Would the proposed project conflict with existing agricultural zoning, agricultural use, or a Williamson Act contract, or result in the rezoning of agricultural lands?

The privately-owned parcels of the proposed project site are zoned W-2-10 (Controlled Development Area, 10-acre minimum parcel size), which permits agricultural uses, including the grazing of livestock on parcels of one acre or more. However, this zoning district also supports a wide variety of non-agricultural permitted uses, including residential, commercial, and recreational developments; churches; schools; and public utilities. Conditional uses are even more extensive and include airports, dune buggy parks, lumber mills, race tracks, and mining operations. Agriculture is not given priority over any other kind of permitted or conditionally permitted use. All elements of the proposed project are permitted uses in the W-2 zoning district [RC 2009a, §15.1(e)(2)]. Therefore, either or both uses are consistent with the Riverside County zoning code.

As noted in the AFC, Section 5.6.1.2, none of the privately-owned project lands or surrounding properties are currently in agricultural use, classified as Farmland, or subject to a Williamson Act contract. Lands under BLM management are not eligible for inclusion under the Williamson Act.

Therefore, there is no conflict with any Williamson Act contract (no impact) or the Riverside County zoning designations or permitted uses. Surrounding parcels are also zoned W-2-10 and no element of the proposed project would require or result in the rezoning of these properties.

⁷ Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance, as defined in FMMP 2004, p.6.

Would the proposed project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses or forest land to non-forest use or cause rezoning of forest land, timberland, or timberland zoned "Timberland Production (TPZ)"? (CEQA)

As noted above, the project site, including the proposed substation and linears, does not contain and would not result in the conversion of designated Farmland to non-agricultural uses. Likewise, there is no timberland⁸ or timberland zoned TPZ within 100 miles of the project vicinity, so no impact to timberland would occur. The wash woodlands of the Palen-McCoy Wilderness, Sonoran thorn forest in the Whipple Mountains Wilderness, and Joshua trees of the Joshua Tree Wilderness qualify as forest land⁹. However, all are protected within wilderness area boundaries and are sufficient distant from the proposed project site to preclude any impact. No Impact.

Would the project disrupt activities or substantially reduce the agricultural resource value of established federal rangelands within the California Desert Conservation Are? (NEPA)

Agriculture, excluding grazing, is not a permitted use within any BLM lands designated for multiple use. However, livestock grazing has been and continues to be a significant use of renewable resources on public land in the California Desert. The Federal Land Policy and Management Act (FLPMA) and the Public Rangelands Improvement Act of 1978 recognize livestock grazing as a principal use for the production of food and fiber. However, agricultural uses, except for livestock grazing and uses grandfathered in at the time of adoption of CDCA and the NECO amendment, are not allowed on any of the MUC lands (BLM 1999, Table 1). Electric generation facilities, including transmission lines, are permitted on land with this classification after NEPA requirements are met.

The only agriculturally-related activity that currently occurs on any portion of the proposed project site is the grazing of sheep, consistent with the Rice Valley (Keoughs) Rangeland Grazing Allotment permit and BLM MUC-M designation. The substation site and all but two small sections of the proposed transmission line corridor are within this grazing allotment. Construction of the proposed transmission lines could interfere with the use of and/or access to a portion of the existing allotment area for the duration of construction (up to three grazing seasons). The project would also eliminate close to 75 acres of forage existing within the proposed transmission corridor and substation footprint for the life of the project. (Approximately 5.4 miles of the transmission line corridor would be along the existing Rice Valley Road. This portion of the grazing allotment is already disturbed.) However, the allotment encompasses approximately 74,740 acres. Condition of Certification **Land-4** requires construction within the grazing allotment boundaries to occur outside the established annual grazing window. This

⁸ "Timberland" means land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis after consultation with the district committees and others. (PRC §4526)

⁹ "Forest land" is land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. [PRC §12220(g)]

would avoid access issues for allotment holders, as roads and herd access would not be blocked. However, loss of forage area in existing locations within the transmission corridor and substation footprint cannot be avoided. Therefore, the project would not substantially disrupt agricultural activities or substantially reduce the agricultural resource value of established federal rangelands within the CDCA.

Recreation and Wilderness

Would the proposed project increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated, or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

There are no existing or planned neighborhood, county, or regional parks, or other recreational facilities, within 35 miles of the proposed project site. Recreational facilities within an hour's drive of the site are limited to seven public parks and a public municipal golf course in Blythe, along with private resorts and RV parks along the Colorado River. Although there are approximately 1,650,000 acres of publicly-accessible wilderness lands within a 100-mile radius of the project site, there are no developed recreational facilities within these areas.

Workers at the site would commute to and from their permanent place of residence daily or reside temporarily in Blythe, Needles, or other towns within 1-2 hours commute or at RV parks along the Colorado River. It is unlikely that any of these workers would visit the surrounding wilderness areas at the end of a shift. Visits during off-duty hours would be consistent with normal visitor counts and impacts. Therefore, there would be no measurable impact to recreational facilities during construction.

The project would employ a permanent operational workforce of 47 people. Assuming that all employees relocate from outside the area with an average of three people per family, approximately 141 people would be added to population of Blythe; Parker, Arizona; and one or more of the small area communities of Vidal, Vidal Junction, Big Springs, Midland, or Desert Center. If all resided in Blythe, with an estimated population of 22,178 in 2007 (WIKI 2010e), this would equate to less than a 1% increase in the population. A permanent population increase of less than 1% is not considered a substantial amount of growth and is consistent with normal projected growth for the area. Spread over the surrounding communities, the potential impact to any single recreational facility, or cumulatively to multiple facilities within the area, would be further reduced.

Therefore, the project would not substantially affect existing neighborhood and regional recreational facilities or result in the need for new or expanded facilities. Impacts would be less than significant under CEQA. (Please refer to refer to the **Socioeconomic & Environmental Justice** section for further discussion.)

Would the proposed project directly or indirectly disrupt activities in established federal, state, or local recreation and/or wilderness areas? (NEPA)

According to the Recreation Element of the CDCA Plan, "...lands managed by the Bureau are especially significant to recreationists" (BLM 1980). When establishing the CDCA, Congress stated that "the use of all California desert resources can and should be provided for in a multiple use and sustained yield management plan to conserve these resources for future generations and to provide present and future use and enjoyment, particularly outdoor recreation uses.. (underline added for emphasis)" (FLPMA, Section 601). This direction was intended to apply to all desert lands under BLM management and jurisdiction within the CDCA boundaries until such time as they pass out of federal control. For this reason, the CDCA, as a whole, must be considered an established federal recreation area, although the availability of recreational facilities or activities allowed within each land classification may vary.

The project, if approved, would result in the temporary, intermittent loss of access or delays along approximately 5.4 miles of the existing Rice Valley Road and a permanent loss of the recreational use of approximately nine acres of publicly-owned, BLM-managed lands, classified MUC-M, within the footprint of the interconnecting substation. Rice Valley Road does not provide access to any established recreational areas or public use sites that have historical usage. Given the limited interference with access along Rice Valley Road, from SR 62 to the end of the existing dirt road; and the scarcity of recreational users in the area, any disruption of recreational activities would be extremely limited and would require no mitigation. Likewise, removal of three isolated acres of undeveloped land from recreational access, in an area with over 1.6 million acres of multi-use recreational and wilderness lands, would have a negligible effect on activities in the area. The substation location does not provide and would not prevent access to, any established recreational areas and has no history of local or regional recreational use.

As noted in the Recreation Setting above, Rice Valley Dunes, on the northern edge of the Rice Valley Wilderness, is about four miles south of the project site. Although this area was originally designated for OHV use, it was permanently closed in 2002 to protect valuable habitat. Therefore, the project would have no impact on recreational activities at this site. There are currently no established OHV use areas within 35 miles of the proposed project site and no authorized open OHV areas on BLM lands within Riverside County.

There are also 11 designated wilderness areas within 50 miles of the project site. The intent of wilderness areas is to preserve these undeveloped lands in their natural condition, without the noticeable imprint of human development, and retain the primeval character, solitude, ecological, and scenic features of the area (US Code 1964). The closest areas, Turtle Mountains Wilderness (two miles to the north) and Rice Valley Wilderness (three miles to the south), are not accessed from the project site and access would not be restricted during project construction or operation.

The fact that non-wilderness activities or uses can be seen or heard from locations within a wilderness area does not, of itself, preclude these activities or uses up to the

wilderness area boundaries. Congress did not intend for the designation of wilderness areas to lead to the creation of protective perimeters or buffer zones around these areas. (USC 1994) However, this does not mean that introduction of these activities or uses have no effect on visitor activities or the wilderness experience. Two of the components defining a wilderness area require a general appearance of nature's handiwork, without the noticeable imprint of man, and outstanding opportunities for solitude or a primitive and unconfined type of recreation (see Wilderness discussion above). The visitor's wilderness experience may still be degraded by the intrusion of noise, lights, and other activities occurring in close proximity to the wilderness boundaries.

Skyglow is the illumination of the night sky. The most common cause is artificial light sources, which accumulates as a glowing dome over the lighted area, decreasing the visibility of stars and other natural sky phenomena and disturbing the natural nighttime landscape. Depending on the contrast between the lighted area and surrounding land, the glow can be seen for miles. (WIKI 2010f) Increased illumination of the valley landscape would occur as a result of the proposed project (see lighting discussion below), especially during the approximately 30-month construction period. Dark sky conditions that currently exist on the desert floor, and as viewed from the surrounding wilderness areas, would be effectively erased during construction and noticeably diminished during the operational life of the project. Recreational activities directly related to nighttime observations, such as stargazing and sky interpretation, would be affected within several miles of the project site.

Noise during both construction and operation would be audible from the areas closest to the site, especially during the evening hours. Construction of the generating facility is expected to begin in the first quarter of 2011 and continue for approximately 30 months. Construction activities would generally occur from 5 a.m. until 7 p.m., six days a week, but could be extended to a 24-hour, 7-day schedule to meet scheduling demands or accommodate weather or worker availability. (SR 2009a, pp.2-37, 2-38) As noted above, up to 300 RVs may provide housing on the site for the duration of construction, contributing to increased noise levels during all hours of the day and night. Normal ambient noise levels for remote and wilderness areas generally average approximately 25-40 dBA (USC 1998; BLM/MWD 2001, Vol. 1, Section 5). Although construction noise averages around 89 dBA L_{eq} at 50 feet from the noise source, project construction noise would attenuate to 40-45 dBA at a distance of about two miles, even without consideration of reductions due to topography (see **Noise** section for further discussion, proposed conditions of certification, and determination of residual impact). This is the distance to the closest wilderness boundary. Therefore, although there could be intermittent incidents of noise that would be heard within the surrounding wilderness areas, it is extremely unlikely that the ambient noise at even the nearest noise-sensitive land uses (i.e., Turtle Mountains Wilderness and Rice Valley Wilderness) would be increased by more than 5 dBA as a result of project activities. Sounds would be more noticeable from higher elevations, which may be used by visitors on wilderness lands. The increase in ambient noise levels, though less than substantial, may still degrade the wilderness experience for some visitors.

The remaining residual impacts to general recreational use of the federal recreational and wilderness lands within and around the proposed project site would be:

- Temporary delays or loss of access along Rice Valley Road during transmission line construction (up to 30 months in duration).
- Loss of approximately three acres of MUC-M recreational land for the operational life of the project (30± years).
- Degradation of the “dark sky” conditions in the valley by construction lighting and installation of on-site security and operational lighting.
- A limited increase in the ambient noise levels and intermittent louder noise incidents on lands surrounding the project site and in portions of at least five designated wilderness areas during the construction phase of the project.

Would the proposed project substantially reduce the scenic, biological, cultural, geologic, or other important resource value of federal, state, local, or private recreational facilities or wilderness area? (NEPA)

Scenic Impacts

Preservation of the scenic attributes of California’s deserts is a prime objective of the CDCA. Although there are no recreational facilities or wilderness areas within the proposed project footprint, part of the recreational aspects of the BLM-managed desert lands or a wilderness experience is the scenic quality of the surroundings, as well as the undeveloped nature of the views within and from the wilderness areas. The site and the facilities of the proposed project (particularly the generating facilities) would be highly visible from various locations along SR62 and at least five wilderness areas, located within 15 miles of the project site (Turtle Mountains, Rice Valley, Big Maria Mountains, Riverside Mountains, and Palen-McCoy Wildernesses). The 653-foot solar tower would be the highest point of reference within the valley, outside of the surrounding mountains, and a glowing focal point during the daytime, when the solar energy is focused on the collection area at the top of the stack. The power plant and surrounding 1,410 acres of solar troughs would present a visual, obviously manmade intrusion on the existing uninterrupted desert vista. Although similar to lake or heat shimmer when viewed from a distance, the geometric lines of the solar array and presence of the central solar tower would emphasize the manmade aspects of the facilities.

Increased illumination of the valley landscape would also occur as a result of the proposed project, including lighting from construction, vehicle movement, and security occurring 24 hours a day, 7 days a week. This would occur in an area that previously had no lighting, except for an occasional passing car on SR 62. Dark sky conditions that currently exist in the area would be substantially degraded during construction. Some visual degradation would continue even after construction is completed, as security and operational lighting would still be necessary to accommodate the facility’s 24-hour schedule. Additionally, the scenic aspects of the existing, broad sweep of an uninhabited desert floor, as viewed from the surrounding wilderness areas, would be permanently erased. NPS, a branch of the Department of the Interior, has identified unimpeded visibility of the night sky as a scenic vista that touches almost every aspect of what is essential to keeping a park whole. Light pollution can cross boundaries and degrade the natural lightscape of parks and wilderness areas. (NPS 2010)

Significant, unavoidable visual impacts, resulting from construction of the project at the

proposed site, would substantially reduce the visual quality and character of the existing federal recreation (multiple use) lands and scenic views from surrounding wilderness areas. Additionally, it is not known if the project would ultimately prove to be consistent with the applicable BLM Visual Resources Management (VRM) Class(es), as BLM has yet to complete the VRM analysis for the project area. The project would also contribute to both local and regional cumulative visual effects. (See **Visual Resources** section for further discussion, proposed conditions of certification, and determination of residual impact.)

Biological Impacts

Construction of the project could result in impacts to the biological resource value of the proposed project site and surrounding areas, significantly affecting vegetation, habitat, and special status species. However, full implementation of the recommended conditions of certification would prevent a substantial level of impact. (See **Biological Resources** section for further discussion, proposed conditions of certification, and determination of residual impact.)

Cultural Impacts

The proposed project would be constructed on the site of the former Rice AAF and a portion of the former Camp Rice. The sites retain integrity of association as important components in the DTC/CAMA. Both sites appear to be eligible for listing on the National Register of Historic Places under Criterion A and C, and the California Register of Historic Places under Criterion 1 and 3, as contributing resources to a cultural landscape district. The draft multiple property form for DTC/CAMA as a cultural landscape district has been submitted to and is under review by the BLM. (TN 55813, #84-86, p.128) Construction of the project on the proposed site would effectively eliminate the Rice AAF, but would not substantially impact the historic integrity of the Camp Rice site, except as it relates to the connectivity of the two facilities and their relationship within the cultural landscape. (See **Cultural Resources** section for further discussion, proposed conditions of certification, and determination of residual impact.)

The agricultural resources of the affected public recreation lands would not be substantially affected (see Agricultural and Forestland discussion above) and a similar level of access to recreational and wilderness lands would be maintained. No other important resource value, except as discussed above, would be substantially affected.

Would the proposed project directly, indirectly, or cumulatively affect the wilderness qualities of size, naturalness, or outstanding opportunities for solitude or primitive and unconfined recreation of a wilderness area or wilderness study area; or change the characteristics of a wilderness study area, such that it would not contain the qualities necessary for it to be considered for future designation as wilderness?

The project site does not contain or abut any wilderness area or wilderness study area. However, five wilderness areas are in close proximity to the proposed project site (within a 15-mile radius). Part of the wilderness experience is the scenic quality and undeveloped nature of the views within and from the wilderness areas. As noted above, the project would be obvious from portions of the wilderness areas facing the Rice Valley, and both noise and light from the project, especially during construction, would impinge on visitors to those areas. Also, unlike many wilderness areas that are heavily forested, these are primarily a wilderness of rock and sand, offering little except distance and terrain to deflect or insulate the visitor from light and sound. The intensity of these manmade intrusions on the individual visitor is, of course, subjective, but would affect the overall naturalness and solitude essential to the wilderness experience. Therefore, the project would indirectly and cumulatively affect the wilderness qualities of naturalness and solitude. Impacts would not be substantial as distance from the project site would significantly reduce the intensity of the impacts (see additional discussion of Wilderness conditions above).

Land Use Compatibility and LORS Compliance

As required by California Code of Regulations (20 CCR 1744), Energy Commission staff must evaluate the proposed project in its entirety, including information provided by the project applicant in the AFC (and any amendments), project design, site location, and operational components, to determine if it would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission's exclusive authority. The Energy Commission must also determine whether the project is consistent with all applicable federal, state, regional, and local laws, ordinances, regulations, and standards (LORS) [PRC §25523(d)(1)] or make specific findings that a project's approval is justified despite its nonconformity (PRC §25525).

Consistent with the requirements of CEQA and NEPA, Energy Commission staff also evaluates the project's compatibility with and impacts on existing and approved uses and surrounding communities. The land use compatibility of a project is also intrinsically tied to its effects on historic land uses and environment of the surrounding area. While mentioned in this section, these issues are addressed in detail in other sections of this document.

LAND USE COMPATIBILITY

The project's generating facility and solar field would be sited entirely on privately owned lands, with access off SR 62, subject to an encroachment permit from Caltrans. The interconnection substation and most of the transmission lines for the project would be sited on BLM-managed public lands, except for the transmission line connection at the generating site and two short segments of the transmission line that cross private

land along the transmission line corridor. The generating site would normally be subject to Riverside County jurisdictional authority, except for the Energy Commission's exclusive authority. The transmission line corridor and interconnection substation are under federal (BLM) jurisdiction and subject to the CDCA/NECO area plan. Approval and issuance of a ROW from BLM would require an amendment to CDCA/NECO Plan. Both BLM and the Energy Commission consider the Riverside County General Plan land use designations, zoning, other plan/policy restrictions, and existing uses on surrounding properties to evaluate the compatibility of the project and incorporate conditions and restrictions to ensure the project would not result in a significant adverse impact to land uses in the area. (See LORS Compliance below for further discussion.)

The property within and around the project site is a combination of public and private undeveloped desert lands in Riverside and San Bernardino counties and is currently used for recreation, limited grazing, wildlife habitat, public utilities and services, and open space. The Aqueduct, ARZC shortline, and SR62 parallel the project's northern boundary. The area is ringed by mountainous wilderness areas and the closest residence is about 15 miles from the project site. Construction of the generating facility, including the heliostat field, would affect about 1,410 acres of private lands and the transmission line corridor and substation would encompass approximately 10 linear miles (150 foot-wide corridor) or about 99 acres, primarily on BLM-managed public lands. All existing vegetation, landforms, and drainage, within the footprint of the generating facility and substation would be permanently altered.

Public access and use of the BLM-managed lands for agriculture (grazing), recreation, or other purposes would be disrupted during construction and prohibited within the substation area for the operational life of the project. Both the generating facility and the interconnection substation would be completed fenced, including exclusionary fencing to prevent access by desert tortoise and other wildlife, with controlled access to the generating facility off SR 62. Access to the transmission line and substation would also be from SR62, via Rice Valley Road, which would be extended about 4.6 miles. However, access along that route would be unrestricted once construction is complete.

Generating facility parcels, surrounding private properties, and private holdings along the transmission line corridor are currently zoned W-2-10 (Controlled Development Area, 10-acre minimum parcel size), with an OS-R (Open Space – Rural) Riverside County General Plan land use designation. These designations allow a wide variety of uses, including structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power and gas, such as hydroelectric power plants, booster or conversion plants, transmission lines, pipelines, and other related infrastructure (RC 2009a, §15.1). BLM-managed lands are designated MUC-M, which also allows a wide variety of uses, including mining, livestock grazing, recreation, and energy and utility development, balanced with requirements to conserve desert resources and mitigate damaged to those resources caused by the allowed uses (BLM 1999, p.13). These lands also have a Riverside County General Plan land use designation of OS-R, but the federal agency retains jurisdiction.

Would the proposed project directly or indirectly divide an established community or disrupt an existing or approved land use?

Divide an Established Community

The proposed project site is extremely isolated and is not part of or adjacent to any established community or residential area. It is surrounded by BLM-managed public lands, interspersed with a few, privately-owned parcels. The closest area with any services is Vidal Junction, a small community about 15 miles east of the proposed project site. Other towns in the general vicinity are Parker, about 35 miles east, on the California/Arizona border; Blythe and Needles, approximately 65 miles south and north, respectively; Desert Center, a bit over 50 miles to the southwest; and Twenty-nine Palms, off SR 62, about 75 miles to the west. Access to all existing facilities in the area (e.g., Iron Mountain Mine, the Aqueduct, utility corridors) is directly off of SR 62 and would not be dependent on or impeded by the proposed project. No impact.

Compatibility with Existing or Approved Land Uses

Agricultural Use

Implementation of this project could temporarily disrupt access to a portion of the Rice Valley (Keoughs) Rangeland Grazing Allotment and remove approximately 130 acres of forage from the same allotment. However, this is equivalent to less than 1% of the available forage on the 74,740 acres of allotment land, which would not jeopardize the continued use or viability of the allotment. Additionally, condition of certification **LAND-4** would significantly reduce access impacts by restricting construction along Rice Valley Road to periods outside the allotment grazing window. There are no other agricultural uses on parcels surrounding the proposed project site and the size of the four parcels that would make up the site contain sufficient acreage to buffer surrounding private properties from impacts that would adversely affect future livestock or agricultural production. As noted in the Agriculture and Rangeland discussion above, agricultural uses, except for grazing, are not permitted on BLM-managed MUC-M lands. Impacts to existing or permitted agricultural uses would be less than significant.

Residential Use

Privately-owned properties surrounding the project site are undeveloped and, except for the Rice AAF and Camp Rice areas, relatively undisturbed desert lands. The project would not physically intrude on, block access to, or interfere with any existing or permitted use, nor would it prevent future residential development in the area. Although the existing zoning and land use designations for the surrounding properties permit residential development, scarcity of public services and infrastructure, combined with the remoteness of the area, would probably preclude any significant increase in residential density in the foreseeable future. The project would not significantly impact the use of the adjacent lands for residential purposes.

Sensitive Receptors

A proposed siting location may be considered inappropriate if it would produce a new source of pollution, health or safety hazard, or excessive noise exposure to a sensitive receptor or sensitive land use. From a land use perspective, sensitive receptor sites are those locations where people who would be more adversely affected by pollutants,

toxins, noise, dust, or other project-related health or safety issue are likely to live or gather. Children, those who are ill or immune-compromised, or the elderly are generally considered more at risk from environmental pollutants. Therefore, schools, along with day-care facilities, hospitals, nursing homes (including long-term and mental care facilities), and residential areas, are considered to be sensitive receptor sites for the purposes of determining a potentially significant environmental impact. Depending on the applicable code, close proximity is defined as “within 1000 feet” of a school (California Health & Safety Code §§42301.6-9) or within 0.25 miles of a sensitive receptor, under CEQA. Proximity is not necessarily the deciding factor for a potentially significant impact, but is the threshold generally used to require further evaluation. However, the closest sensitive receptor site is about 15 miles away (residences at Vidal Junction). Therefore, the project would not introduce a new source of pollution or hazard within close proximity to a sensitive receptor or have a significant health- or safety-related impact at any existing sensitive receptor location.

In addition to the sensitive receptor sites identified above, there are also sensitive land use areas that may be adversely impacted by light, noise, and other pollutants. The Riverside County General Plan (RCGP) identifies certain areas and uses as particularly sensitive to noise and require them to be protected by restricting noise-producing land uses or requiring noise buffers to reduce the potential impacts. The intent, as noted in the RCGP, is to “protect noise-sensitive land uses from noise emitted by outside sources and prevent new projects from generating adverse noise levels on adjacent properties.” Noise-sensitive land uses include all facilities identified above, residences, libraries, and passive recreation uses¹⁰ (RC 2008, p.N-5). As defined, part or all of state and national parks, local and regional conservation areas, and federal wilderness areas qualify as sensitive land use areas. As indicated above, the remoteness of the proposed project site prevents impacts to sensitive receptors, including permanent residences and libraries. However, the site is surrounded by five federal wilderness areas, with some boundaries within two miles of the project site. With average construction noise around 89 dBA and noise from steam blows and pile driving at 100-130 dBA at 50 feet from the source, it is likely that construction noise would be audible in the wilderness areas closest to the project site. Normal ambient noise levels for remote and wilderness areas generally average approximately 25-40 dBA (USC 1998; BLM/MWD 2001, Vol. 1, Section 5). As noted in the **Noise** section of this document, general construction noise would attenuate below 40-45 dBA at a distance of about two miles, even without consideration of reductions due to topography. As a result, it is unlikely that the ambient noise levels at even the nearest noise-sensitive land uses (i.e., Turtle Mountains Wilderness and Rice Valley Wilderness) would be increased by more than 5 dBA as a result of project activities. For pile driving and other intermittent activities, noise levels are expected to attenuate to about 72 dBA at 15 miles from the source, so these noises may be clearly audible in nearby areas, especially if construction occurs at night.

¹⁰ A passive recreation area is generally an undeveloped space or environmentally sensitive area that requires only minimal visitor facilities and services, directly related to health and safety. Activities do not significantly impact natural, cultural, scientific, or agricultural values. The quality of the environment and “naturalness” of an area is the focus of the recreational experience in a passive recreation area.(USL 2010)

However, the temporary, intermittent nature of these noise bursts would not permanently increase the ambient noise levels in the wilderness areas and, although it may still degrade the wilderness experience for some visitors, would not represent a significant impact to these noise-sensitive locations.

Natural Resource Uses

For the proposed project (Alternative 1), there are biological project-specific resource impacts that relate directly to existing and permitted land uses. Combined with SR 62, the Aqueduct, and the ARZC shortline berm and tracks, the proposed project expands the existing northern migration barrier for wildlife and farther south toward the Rice Valley Dunes. Also, as noted above, at least 1,410 acres of existing relatively undisturbed desert habitat would be subject to continuous disruption of vegetation and complete exclusion of the majority of the wildlife in the vicinity, including the threatened desert tortoise. The project would also result in continued disruption and degradation of the areas beneath the transmission corridors for the life of the project.

However, Energy Commission staff concludes that with implementation of recommended conditions of certification **BIO-1** through **BIO-28**, the solar generator site, generator tie-line, and interconnector substation contributions to cumulative significant impacts to biological resources would not be cumulatively considerable. Staff has not determined potential cumulative significance of project impacts along the Western Parker-Blythe 161-kV OPGW Transmission Line, pending additional biological data. Therefore, the project is considered consistent with the existing and future natural resource use of these lands. (See **BIOLOGICAL RESOURCES** section for additional information.)

Cultural/Historic Uses

The land surrounding the project site is a particularly rich cultural area with respect to relatively recent military history. As noted in Setting above, the project site played an important role during WWII as part of the infantry and artillery DTC/C-AMA. Ten camps were established throughout southern Nevada, Arizona, and California to prepare troops for combat in North Africa. Well-known for its association with its first Commanding General, Major General George S. Patton Jr., the center was the largest military training ground in the history of military maneuvers. Construction of the proposed project would result in removal of the almost all of the remains of Rice AAF, along with a small portion of the adjacent Camp Rice. Removal of the Rice AAF would disrupt the historic integrity of the Camp Rice site, as it relates to the connectivity of the two facilities and their relationship within the DTC/C-AMA cultural landscape. However, full implementation of conditions of certification **CUL-1** and **CUL-11** would reduce the impacts to a less than significant level under CEQA. Therefore, the project would be considered consistent with the existing and future use of these cultural resources. (See **Cultural Resources and Native American Values** section for more information.)

Airports

The proposed project would be located on the site of the Rice Airport (formerly Rice AAF), a closed and abandoned airfield about three miles east of the Rice townsite. The site is approximately 50 miles northeast of the Desert Center Airport; 35 miles west of Avi Suquilla Airport in Parker, Arizona; 65 miles from the Blythe Airport; and about 60

miles south of the Needles Airport in San Bernardino County. The closest airstrip to the project site is at the Iron Mountain Pumping Plant, a private, unattended airstrip approximately seven miles northeast, that is owned by the Metropolitan Water District of Southern California. There are no public or private airports within two miles of the project site. The proposed project would have no impact on the operation of any airport.

Recreational Use

The proposed location for the project's generating facility is on private land with no public access or existing recreational use. Although zoned to allow a wide variety of uses, there is no indication that recreational development is being considered in the foreseeable future at this location or on nearby privately owned lands. Adjacent public multi-use recreational lands offer recreational opportunities, along with a multitude of other allowed uses, including livestock grazing, mining operations, railroads and landing strips, and electrical generating facilities. Given the scarcity of recreational users in the area, any disruption of recreational activities on public multi-use lands would be extremely limited and would require no mitigation.

There are also 11 designated wilderness areas within 50 miles of the project site. These areas are not developed, but are available to the public and provide places for solitude and quiet contemplation. It is these areas, especially those closest to the project site, (i.e., Turtle Mountains and Rice Valley Wildernesses), that may experience some disruption of the existing recreational use with construction of the proposed project. Light and noise generated by the project, especially during construction, would have the potential to degrade the wilderness experience for some visitors. Dark sky conditions that currently exist on the desert floor, and as viewed from the surrounding wilderness areas, would be degraded during construction and throughout the operational life of the project. Recreational activities such as stargazing and sky interpretation would be affected within several miles of the project site. However, given the limited recreational uses in the surrounding areas, the impact to recreational use would be considered less than significant.

Land Uses following Closure and Decommissioning

Once constructed and in operation, the proposed project has an estimated life of at least 30 years. The industrial use currently proposed would then be considered an existing use in an area that will probably continue to be bounded by public recreation and natural resource lands. Given the limited infrastructure and distance from any major urban area, significant residential or commercial development is unlikely.

Construction of the proposed project in any configuration, at the preferred or any alternative location, would result in the complete disruption of the existing ecosystem and habitat within the facility footprint, conditions that would have been maintained for the life of the project. Appropriate rehabilitation of the site would need to be revisited to determine consistency with land uses existing at the time of closure. A return to the drainages and topography that existed at the time of construction may not be appropriate and could, in fact, result in unacceptable impacts to surrounding properties. Additionally, the microbial crusts would be destroyed during construction and operational maintenance would prevent reestablishment, precluding rapid revegetation and grazing potential on the land for many years following closure. However, the

required Closure and Decommissioning Plan includes a provision for rehabilitation of the site to be consistent with land uses existing at the time of closure. This would reduce any land use consistency issues to a minimum and would not substantially disrupt land uses in the surrounding area. Less than significant impact.

Would the proposed project directly or indirectly induce substantial population growth in an area?

As noted above, most of the land surrounding the project site is publicly owned, with a few undeveloped private parcels interspersed throughout the area. The closest residences are about 15 miles east, at the outskirts of Vidal Junction. Construction workers would either commute from temporary residences in Blythe; Needles; Earp; Parker; Arizona; and a number of very small communities within an hour or so of the site; or commute from their permanent home daily. Although construction would take about 30 months, it is unlikely that any of these temporary workers would permanently relocate to the project area.

Approximately 47 permanent employees would be hired for the long-term, operational phase of the project and would need to reside as close as possible to the project site. Given the lack of local residences, this would mean that approximately 150 people could be added to the population of the five larger towns indicated above and a few small communities in the surrounding area (about 33,000 people). This would be population increase of less than 0.005%, assuming none currently reside locally, and would not result in substantial population growth for the area, significantly impact existing public facilities, or require the construction of new public facilities or additional public services. (See **Socioeconomics and Environmental Justice** section for additional discussion.)

Would the proposed project conflict with any applicable habitat conservation plan, natural community conservation plan, or biological opinion?

BLM-managed public lands in the project vicinity are subject to the California Desert Conservation Area (CDCA) Plan, as amended by the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO). The transmission line corridor and substation would be located primarily on BLM-managed lands classified as MUC-M. There are no Areas of Critical Environmental Concern (ACEC) within the proposed ROW or affected by the proposed project and the CDCA plan is not a habitat or natural community conservation plan, although it contains some elements of both. A biological opinion has not been issued for this project. Therefore, there is no applicable habitat conservation plan, natural community conservation plan, or biological opinion for this project. No impact.

LORS COMPLIANCE

Would the proposed project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project adopted for the purpose of avoiding or mitigating environmental effects?

As required by California Code of Regulations (CCR) Title 20, Section 1744, Energy

Commission staff evaluates the information provided by the project owner in the AFC (and any amendments), project design and operational components, and siting to determine if elements of the proposed project would conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or that would normally have jurisdiction over the project except for the Energy Commission's exclusive authority. This includes all applicable federal, state, and local laws, ordinances, regulations, and standards, including those adopted by Riverside County. From a CEQA perspective, the analysis places particular emphasis on any environmental effect that may be avoided or mitigated by conformity with the applicable LORS. NEPA also requires consideration of the project's consistency with applicable federal, state, and local LORS requirements and restrictions.

Federal

California Desert Conservation Area (CDCA) Plan, as amended by NECO

The CDCA Plan is a comprehensive, long-range plan for public California Desert lands, including a portion of the project site. All project sites and alternatives are located within the CDCA boundaries; however, CDCA restrictions only apply to public lands.

The NECO Plan amended CDCA as follows:

1. Established regional standards for public land health and set guidelines for grazing management.
2. Established two Desert Wildlife Management Areas (DWMAs), encompassing about 1.75 million acres, to be managed as Areas of Critical Environmental Concern (ACECs) for the recovery of the desert tortoise.
3. Established the Southern Mojave and Sonoran Wildlife Habitat Management Areas (WHMAs) for bighorn sheep, totaling over one million acres, and 13 multi-species WHMAs, total over a half million acres.
4. Combined Herd Management Areas (HMAs) for wild horses and burros and adjusted the Appropriate Management Levels.
5. Designated routes of travel for vehicle access to BLM lands within the NECO plan area.
6. Identified priorities for potential acquisition of private lands and disposal/sale of public lands.
7. Provided access to resources for economic and social needs.
8. Incorporated 23 wilderness areas established by the 1994 California Desert Protection Act into the CDCA.

From a federal (NEPA) perspective and in accordance with federal regulations relating to Public Lands (CFR 2001 & 2008), FLPMA, Public Rangelands Improvement Act; Farmland Protection Policy Act (FPPA); and National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands, all project actions on public lands

must be in conformance with applicable land use plans for public lands administered by BLM. CEQA also requires projects be consistent with all applicable federal, state, and local LORS. These include the CDCA Plan, as amended by the NECO. Any proposals or actions determined not to be in conformance with these plans would require a land use plan amendment.

Use of BLM-managed public lands for other than casual use requires approval of a right-of-way grant. Casual use is generally defined as activities that do not unduly disturb the surface or require extensive removal of vegetation, and usually occur only once or intermittently. The grant authorizes rights and privileges for a specific use of the land for a specified period of time, and includes conditions to protect resource values and other existing or compatible uses. The project would require a BLM ROW for project-related structures and activities, specifically for the proposed transmission line corridor and substation footprint. Condition of certification **LAND-3** requires the project owner to obtain an ROW grant from BLM for any project elements proposed for public lands, prior to the start of construction. In addition, although the CDCA Plan allows the construction of solar power plant projects and electric transmission facilities within MUC-M lands, after compliance with NEPA, it also requires that new projects, not currently included within the plan, be added through the Plan Amendment process. Therefore, this SA/DEIS also acts as the mechanism for analyzing the potential impacts of adding the RSEP facility to the Plan. The Plan Amendment decision would be part of the BLM Record of Decision for the issuance of a right-of-way grant, and would occur after publication of the Final EIS.

The CDCA Plan also requires that new transmission facilities be located within appropriately designated corridors, as required by Section 368 of the Energy Policy act of 2005, to ensure that additional corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on Federal land are promptly identified and designated. However, the project's proposed transmission line connection corridor does not meet requirements for Section 368 designation. (BLM 2009e) Therefore, BLM will accommodate the need for the proposed energy transport corridor through its normal land use planning and amendment process, which provides the standard procedure for designating corridors or allowing transmission lines outside designated corridors as the need arises.

The Recreation Element of the CDCA Plan specifies that "...lands managed by the Bureau are especially significant to recreationists" (BLM 1980). Congress also specified, when the CDCA was adopted, that "the use of all California desert resources can and should ... provide present and future use and enjoyment, particularly outdoor recreation uses..." (FLPMA, Section 601). As noted in the Recreation discussion above, the proposed project would have a negligible impact on the availability of and access to BLM-managed, publicly-owned recreational lands. With approval of the transmission line ROW and the proposed CDCA plan amendment, the project would be considered consistent with the recreational requirements of the CDCA, as amended by NECO.

Impacts to agricultural uses and rangeland would also be less than significant, with full implementation of condition of certification **LAND-4** (see Agriculture and Rangelands discussion above). Residual impacts of the proposed project would include an adverse impact on the Wilderness experience for visitors to several of the Wilderness areas

surrounding the project site, but would have no direct impact to resources within Wilderness boundaries (see Wilderness discussion above).

The BLM's approval of a CDCA plan amendment for the transmission line element of the project; and balance of multiple use priorities, combined with mitigation provided by the proposed conditions of certification listed above, would make the project consistent with the CDCA Plan, as amended by NECO.

State

Public Resources Code §25529

This section of the Warren Alquist Act is intended to preserve public access to areas of recreational, scenic, or historic value. For power projects proposed in such areas, a condition of certification to establish and maintain such a public access and use area is required by the Energy Commission as part of the licensing process. Direct project-related impacts to the historic significance of the Rice AAF would be significant and would be mitigated, in part, by the development of a Historic Interpretive Area adjacent to the remaining Camp Rice location. This area would be acquired and maintained by the project owner. (See condition of certification **CULT-11**.) As a result, the project would be consistent with the requirements of PRC §25529.

Local

The proposed power plant and solar field would be sited entirely on privately-owned lands in unincorporated Riverside County and are, therefore, subject to the land use LORS of Riverside County. The proximity of the San Bernardino County line (immediately north of SR62 and the northern project boundary) and the LORS applicable to adjacent lands within that county must also be considered. The transmission line corridor and substation site is under federal (BLM) jurisdiction and subject to the CDCA and NECO area plans. Riverside County jurisdictional authority would only apply to project elements situated on private lands. The proposed project is consistent with the applicable federal, state, and local LORS, except as discussed below.

Riverside County General Plan (RC 2008)

The Riverside County 2003 General Plan (GP), as amended through December 2008 (excluding the Housing Element), designates both the project site and surrounding BLM lands as Open Space/Rural (OS-RUR) (see **Land Use Figure 5**). Privately owned properties surrounding the project site in Riverside County also have an OS-RUR designation. Riverside County GP policies related to the proposed project site and adjacent lands are included in the Land Use Element (Chapter 3), Multipurpose Open Space Element (Chapter 5), and Noise Element (Chapter 7).

Land Use Element

General Land Use Policies

LU 4.1 - 4.3 require new developments be located and designed to visually enhance (not degrade) the character of the surrounding area. The proposed project must comply

with applicable design standards, building codes, and land use regulations. It must also mitigate noise, odor, lighting, and other impacts on surrounding properties; implement energy-efficient design features and water conservation measures, including drought tolerant landscaping and drought-conscious irrigation systems; include design-appropriate signage; design parking lots and structures to be functionally and visually integrated and connected; provide safe and convenient vehicular access. In addition, the project must preserve natural features, such as unique natural terrain, drainage ways, and native vegetation, wherever feasible, particularly where they provide continuity with more extensive regional systems (4.1); maintain structures and landscaping to a high standard of design, health, and safety (4.2); and create programs to ensure historic preservation (4.3). Condition of certification **LAND-5** would require compliance with all land use, building, and other applicable general plan policies and municipal code standards in the design and construction of the proposed project, to the extent feasible. Additional conditions of certification in various sections of this document address compliance for drainage, health and safety; noise, and natural and cultural resource protection.

There are other requirements within these policies that do not apply to the proposed project, due primarily to its remote location and the absence of other commercial, industrial, or residential development in the area. For example, the land surrounding the proposed project site, with the exception of the adjacent Camp Rice, is almost exclusively undeveloped desert landscape. Extensive landscaping, sidewalks, bicycle routes, public art, and other requirements designed to enhance an urban environment would be inappropriate in the project setting.

As discussed in LU 6.1/6.2 below, this is a highly visible, industrial facility that would be placed in a previously undeveloped desert area. As noted in the **Visual Resources** section of this document, even with all staff-recommended conditions of certification, the project would have significant and unavoidable adverse visual impacts. This is not consistent with the requirements of LU 4.1

Policy LU 5.1 requires that the development not exceed the ability of the county to adequately provide supporting infrastructure and services, such as libraries, recreational facilities, transportation systems, and fire, police, and medical services. Because of the project's remote location, the demands on county services would be minimal.. Highway access to the site is along SR62, with connecting state and U.S. highway access to the surrounding communities of Blythe, Desert Center (I-10), Twenty-Nine Palms, Needles, and Parker, Arizona. There is no public transit serving the proposed project site. (See **Traffic & Transportation** section for further information.) The project has incorporated safety features that are designed for onsite fire/life/safety response, but would also be subject to the Riverside County Development Impact Fees (see Ordinance 659 discussion below), which are designed to allow the County to construct/acquire the needed public facilities to support development and preserve open space, wildlife, and their habitats (see **LAND-6**). The project may have an adverse impact on emergency response times due to its distance from normal service areas. The extent of that impact and availability of sufficient mitigation to reduce the potential impact has not yet been determined. Therefore, staff cannot make a determination regarding consistency of the project with this policy at this time.

Policy LU 6.1/6.2 – Policy LU 6.1 requires the project to be designed to insure compatibility with surrounding uses and consistency with any applicable land use designations and Area Plans. As noted above, condition of certification **LAND-5** would require compliance with all land use, building, and other applicable general plan policies and municipal code standards in the design and construction of the proposed project, to the extent feasible. However, potential significant and unavoidable impacts to visual resources make the project inconsistent with this policy.

Policy LU 6.2 directs development of public, educational, religious, and utility uses established to serve the surrounding community to specific locations where these activities would normally be compatible. However, as power generated by this facility would not be used locally, this policy does not apply.

Policy LU 9.1 requires that new development contribute their fair share to fund infrastructure and public facilities, such as police and fire facilities. As noted in Policy LU 5.1 above, the project would be subject to Riverside County's Development Impact Fee (DIF). Condition of certification **LAND-6** requires payment of the county's DIF prior to occupancy of the proposed facilities and would, therefore, be consistent with the requirements of this policy.

Scenic Resource policies (LU 13.1 through 13.8; OS 21.1 and 22.1)

Riverside County places great importance on preservation of its abundant natural visual resources. The intent of these policies is to conserve significant scenic resources along designated or eligible scenic highways for future generations and to manage development along scenic highways and corridors so as not to detract from the area's scenic quality or prevent future designation of eligible highways. Policy requirements apply to both designated and eligible scenic highway corridors.

SR62, the primary access route for the proposed project, is identified by Caltrans as eligible for scenic highway status from its I-10 intersection at Whitewater, through Riverside and San Bernardino counties, to the Arizona state line (Caltrans 2010c). This includes that section of SR62 that forms the northern boundary of and provides access to the proposed project site. The cited Land Use policies require projects to:

- Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public (LU 13.1);
- Incorporate riding, hiking, and bicycle trails and other compatible public recreational facilities within scenic corridors (LU 13.2);
- Ensure that the design and appearance of new landscaping, structures, equipment, signs, and grading are compatible with the surrounding scenic setting (LU 13.3);
- Allow a minimum 50-foot setback from the edge of the highway right-of-way is required for new development (LU 13.4);
- Require new or relocated electric or communication distribution lines, which would be visible from scenic highways, to be placed underground. (LU 13.5);
- Prohibit offsite outdoor advertising displays that are visible from scenic highways (LU 13.6);

- Require that the size, height, and type of on-premise signs visible from scenic highways be the minimum necessary for identification. The design, materials, color, and location of the signs must blend with the environment, utilizing natural materials where possible (LU 13.7);
- Avoid the blocking of public views by solid walls (LU 13.8);
- Identify and conserve the skylines, view corridors, and outstanding scenic vistas within Riverside County (OS 21.1);
- Design developments within scenic highway corridors to balance the objectives of maintaining scenic resources with accommodating compatible land uses (OS 22.1).

Signs, landscaping, and most project buildings would be finished to blend with the surrounding landscape, to the extent feasible. The Historic Interpretive Area (required by condition of certification **CULT-11**) would provide the traveling public with an access area designed to divert the focus from the plant's visual impact and highlight the unobscured vistas and historic elements adjacent to the project location. Although this General Plan policy only requires a minimum 50-foot setback, condition of certification **BIO-21** would require the project maintain a minimum 100-foot setback between the road shoulder of SR62 and the project's temporary security fence, to allow east-west wildlife passage alongside the highway and to minimize road mortality during project construction. The permanent project footprint would be set back approximately 500 feet from the southern edge of the SR62 ROW. Condition of certification **LAND-7** would require the project owner to underground all permanent communication and electric distribution lines serving the project. Lines serving the temporary construction trailer may be installed above ground, but must be removed following closure of this facility once construction is complete. Project design and Energy Commission conditions of certification would ensure consistency with the majority of the scenic highway policy requirements. Condition of certification **LAND-9** would require the use of native, drought-resistant landscaping plantings along the entrance, northern boundary fencing, and visitor viewing area to maintain the character of and help to blend the facility's visible presence along SR62 with the undeveloped natural contours of the site. The project has no sound walls that would block public views and high-walled power block structures would be placed nearly one-half mile from the highway. Development of riding, hiking, bicycle trails or other public recreational facilities, other than the historic viewing area, would be inappropriate in this remote area. However, as noted in the **Visual Resources** section and LU 6.1/6.2 above, the proposed power stack is visually incompatible with the surrounding scenic setting. For this reason, the project is not consistent with the requirements of the General Plan scenic highways policies LU 13.1, 13.3, and OS 21.1.

Policy LU 14.7 requires the county to ensure that no structures or activities encroach upon or adversely affect the use of navigable airspace. As noted in the impacts discussion of aviation and military operations in the **Traffic and Transportation** section of this document, the proposed solar power tower would encroach into navigable airspace and has the potential to significantly impact military testing and operations conducted along three low-level military training routes. However, full implementation of conditions of certification **TRANS-2, TRANS-7, TRANS-8, and TRANS-9**, would ensure consistency with this land use policy.

Open Space/Rural (OS-RUR) Land Use Designation policies (LU 20.1 – 20.6)

The OS-RUR General Plan land use designation applies specifically to the private lands identified as the proposed project site. This designation is applied to remote, privately owned, open space areas with limited access and a lack of public services. (RC 2008) The project is consistent with policy requirements for adequate utility, water, septic capacity, and circulation (LU 20.3) and condition of certification **LAND-1** would require the four parcels identified as the project site to be consolidated into a single parcel (LU 20.5). However, as identified in the Land Use Compatibility discussion above, the structures proposed for this project would not maintain the character of or blend with the undeveloped natural contours of the site, as required by LU 20.1 and LU 20.2. Given the industrial nature of the proposed project, it also would not be possible to avoid an unvaried, unnatural, or manufactured appearance to the facility or adverse impact to the open space and rural character of the surrounding area (LU 20.2; LU 20.4). There are also no county programs or incentives that would allow this project to maintain or enhance the open space/rural character of the surrounding area (LU.6). Therefore, the proposed project would not be consistent with OS-RUR land use policies LU 20.1, 20.2, and 20.4.

Eastern Riverside County Desert Areas (Non-Area Plan)

Most areas in Riverside County are located within a specific Area plan boundary. However, there are some lands in the eastern portion of the County, including the project site, which are not located within an Area plan. These areas are generally characterized by expansive, primarily undeveloped desert and mountainous areas, with a variety of geographic features, including flat desert valleys, rolling sand dunes, stark hillside and mountain ranges, and lush riparian corridors along the Colorado River. Some of the more prominent natural features and land uses located here include several clustered mountain ranges surrounding the project site, including the Little Maria, Palen, Big Maria, and Riverside Mountains. The Colorado River Aqueduct is adjacent to and parallels the project's northern boundary.

Land Use policy LU-30.1 is intended to preserve the unique and spectacular open space character of this desert region and maintain those existing rural and mineral resource lands uses of these areas. While the proposed project would not preclude use of existing or future use of the mineral resources (see discussion below) or rural uses in the project vicinity, it would visually impact the open space character of the surrounding area and affect the quality of the wilderness experience in the adjacent wilderness areas. Therefore, the proposed project is not consistent with the intent of LU 30.1.

Multipurpose Open Space Element

This element identifies the conditions and actions necessary to protect and preserve the County's natural resources, agriculture, and open space areas; provide effective management of mineral resources; preserve and enhance cultural resources; and provide recreational opportunities for the citizens of Riverside County.

Water Conservation

Policy OS 2.2 requires developers to decrease stormwater runoff by reducing pavement in developed areas and to include permeable parking bays and porous parking lots, with bermed rainwater detention basins. As noted in the **Soil & Water** section of this

document, the proposed project would result in an increase in impervious area within power block areas and from on-site access roads. However, the size of these new impervious areas, compared to the total site acreage, is quite limited and is not expected to significantly increase either the volume or rate of stormwater discharge. Consistent with this policy, areas around the powerblock (**SOIL&WATER-1**) and, as required by condition of certification **LAND-8**, on-site access roads, visitor and construction worker parking, and portions of the construction laydown area would be surfaced with rock/gravel, decomposed granite, or similar material to provide a level, all-weather surface, minimize dust, and provide a permeable surface to facilitate drainage. Three lined, 5-acre evaporation ponds would also be constructed at the south end of the project site to contain all process blowdown and stormwater drainage from the central power block (SR 2009a).

Policy OS 2.3 encourages the use of native, drought-resistant landscaping plantings. In addition, as noted in the Scenic Highways discussion above, SR 62, eligible for scenic highway status, extends along the northern boundary of the project site. Although the AFC does not propose landscaping for the proposed project (SR 2009a), condition of certification **LAND-9** would require the use of native, drought-resistant landscaping plantings along the entrance, northern boundary fencing, and visitor viewing area, consistent with OS 2.3 and requirements for the project to maintain the character of and blend with the undeveloped natural contours of the site. Additionally, conditions of certification **BIO-11, BIO-12, and BIO-13** would require restoration of the desert landscape in all temporarily disturbed areas outside the final project footprint to pre-project grade and conditions, including the logistics/lay down areas, generator tie-line transmission tower sites, pull sites, areas where underground infrastructure was installed, temporary access roads, and construction worker parking areas.

With the implementation of the proposed design features and recommended conditions of certification, the project would be consistent with the requirements of General Plan Policy OS 2.2 and OS 2.3.

Groundwater Recharge

Three General Plan Open Space policies address the need to protect groundwater recharge areas: (1) Policy OS 4.3 requires that adequate aquifer water recharge areas be preserved and protected; (2) Policy OS 4.4 requires a project to incorporate natural drainage systems into the development, where appropriate and feasible; and (3) Policy OS 4.5 requires a project to retain stormwater at or near the rainfall location for percolation into the groundwater tables, to conserve it for future uses and mitigate flooding. Conditions of certification **SOIL&WATER-1** and **LAND-8** would require permeable paving surfaces. The proposed project design includes three on-site evaporation ponds (SR 2009a) and natural drainage conditions would be preserved, to the extent feasible (see **Soil & Water** section). The project would, therefore, be consistent with Open Space policies OS 4.3, 4.4, and 4.5.

Mineral Resources

Mineral extraction makes an important contribution to Riverside County's economy. The non-renewable characteristic of mineral deposits necessitates the careful and efficient development of mineral resources to prevent the unnecessary waste of these deposits

due to careless exploitation and uncontrolled urbanization. To protect the availability of these resources for future generations, Policy OS 14.2 restricts the development of incompatible land uses within the impact area of existing or potential surface mining areas. The project site is designated Mineral Resource Zone 4 (MRZ-4). These are areas where there is not enough information available to determine the presence or absence of mineral deposits. Surrounding properties have not been mined and there is no indication that there are sufficient mineral resources to justify mining them in the foreseeable future. However, several operating and closed mines and mineral prospects are within five miles of the proposed project boundaries. These have produced a number of industrial minerals, primarily manganese, borates, clay, and talc. No active mines are known to have existed within the proposed project boundaries (USGS 2008a). As noted in the **Geology, Paleontology, and Minerals** section of this document, until the existence and structural orientation of an ore body is proven, the probability of the presence of economically recoverable mineral reserves beneath the property is considered to be very low. Location of the project at the proposed site is, therefore, consistent Policy OS 14.2.

Noise Element

The Noise Element of the General Plan is closely related to the Land Use Element because of the effects that noise has on sensitive land uses. Noise-producing land uses must be compatible with adjacent land uses in order for the Land Use Plan to be successful. There would be no sensitive receptors within 15 miles of the project site once operations commence. The closest sensitive land uses would be at two wilderness areas, approximately 2-5 miles from the project boundaries. Although construction noise from the project could impact the wilderness experience at these locations, the noise would attenuate significantly at that distance and would generally be within Policy N 4.1 limitations (45 dBA/10-minute L_{eq} between 10:00 p.m. and 7:00 a.m. and 65 dBA/10-minute L_{eq} between 7:00 a.m. and 10:00 p.m). Exceedances, such as steam blows, would be temporary in nature, rarely extending beyond a few minutes. (See **Noise** section of this document for additional information.)

Riverside County Municipal Code

Ordinance 348, as amended through 348.4647 - Riverside County Land Use Ordinance

This Ordinance includes the planning and land use regulations for the unincorporated areas of Riverside County and identifies the process to initiate, implement, amend, and enforce these regulations.

Article XV, §§15.1 and 15.2 Controlled Development Areas (W-2) Zoning District

The proposed project site, two private parcels within the transmission line corridor, and surrounding privately owned parcels are currently zoned W-2-10 (10-acre minimum). Structures and the facilities necessary and incidental to the development and transmission of electrical power and gas, including power plants and transmission lines, are permitted uses within a W-2 zoning district. The proposed project site meets the minimum lot size. However, certain project elements, including the steam generating building, solar receiver tower, and transmission line towers, would exceed the maximum height of 75 feet for buildings and 105 feet for other structures. A variance is required

for structures exceeding these maximum heights [RC 2009a, §15.2(a)]. Variances may be granted when the strict application of this ordinance deprives such property of privileges enjoyed by other property in the vicinity that is under the same zoning classification, because of special circumstances applicable to a parcel of property, including size, shape, topography, location, or surroundings [RC 2009a, §18.27(a)]. In this case, the circumstances requiring structures that exceed the maximum heights are unrelated to the parcels that make up the project site. They are, instead, related to the functionality and operational requirements of the proposed project. As a result, the findings required to justify approval of a variance cannot be made. Therefore, the project would normally be inconsistent with the W-2 zoning district standards. However, approval of the project design, including elements exceeding the normal height restrictions of the W-2 zoning district, consistent with the requirements of a Riverside County Public Use Permit (normally subject to approval of the Riverside County Planning Commission, if not for the Energy Commission's exclusive authority) would provide consistency with the standards for the W-2 zoning district.

Article XV, §15.200 Natural Assets (N-A) Zoning District

Most of the transmission line corridor and the connection substation would be sited on BLM-managed public lands. These lands carry a county zoning designation of N-A. Public utility substations are a permitted use on lands zoned N-A, with plot plan approval, and public utilities are permitted in all zoning districts (see §18.29 below). However, Riverside County zoning regulations only apply to those portions of the project that would occur on private lands within county jurisdiction. The proposed project locations do not contain any private lands zoned N-A. Therefore, N-A zoning district requirements do not apply to this project.

Article XVIII, §18.12 Off-Street Vehicle Parking and Landscaping

The purpose of this section of the Riverside zoning code is to provide sufficient off-street parking and loading spaces for all land uses and to assure the provision and maintenance of safe, adequate, and well-designed off-street parking facilities.

Construction (Parking)

During construction, temporary parking areas would be developed at the project site, adjacent to the construction trailers and laydown areas. These would accommodate day workers, company vehicles, and visitors. As the site would be closed to the public, these visitors would normally include company officials, inspectors, and those making deliveries to the site. Areas will also be provided for larger trucks off-loading materials and equipment and for construction equipment used on-site. As Riverside County code does not specify the number of parking spaces required during construction, condition of certification **LAND-8** would require an area set aside to accommodate one parking space for each daily-commute employees (based on the average number of daily workers on-site during work months 8-20), one space for each company vehicle, and one commuter vanpool space for every 20 employees. In addition, three visitor spaces would be required immediately adjacent to the main construction office (trailer), including one handicapped van-accessible space, with provisions to allow accessibility to and into the main construction office. Because of the lengthy construction period (up to 30 months), this condition of certification would also require a compacted all-weather

surface of rock, decomposed granite, or similar material on all temporary parking areas and striping of the employee, visitor, and company vehicle parking spaces.

Operations (Parking)

The proposed project is a public utility use and is, therefore, required by code to provide one parking space for every two employees and one space for each vehicle kept in conjunction with the proposed use (i.e., company vehicles). Additionally, loading spaces for delivery of materials and equipment would also be required. Condition of certification **LAND-8** requires the project owner to construct the required parking and loading spaces, including at least one handicapped van-accessible parking space immediately adjacent to the site office, consistent with requirements of this code section and the Americans with Disabilities Act (ADA). A Parking Plan must be completed and approved, and construction of the parking areas completed prior to the start of plant operations.

Full implementation of the recommended conditions of certification would ensure the project is consistent with county parking requirements.

Landscaping

Condition of certification **LAND-9** would require the project owner to provide and implement an approved Landscape Plan, consistent with the requirements of this code and General Plan Policies 2.2 and 2.3 (see General Plan discussion above).

Article XVIII, §18.29 Public Use Permits

“Public utilities” is one of several uses permitted in any zone classification, provided a public use permit is granted by Riverside County. This includes transmission lines and electric generating plants, even if identified as permitted uses within the specific zoning district (CEC 2010a). An application for this use permit requires submission of much the same information included in an AFC and considered by the Energy Commission as part of the licensing process. As with §18.33 (see below), it must be determined that the project would not be detrimental to the health, safety or general welfare of the community for the permit to be approved. This would normally require approval of the Riverside County Planning Commission, if not for the Energy Commission’s exclusive authority. As identified in this SA/DEIS, Energy Commission staff has recommended numerous conditions of certification to ensure that there would be no significant health, safety, or welfare impacts during either construction or operation of this project. There is no “surrounding community” at this remote location; the closest permanent residence is approximately 15 miles away at Vidal Junction. Adjacent properties are undeveloped desert and there are no foreseeable developments proposed for these areas. The footprint of the proposed project would not envelope the entire acreage of the project site. The remaining undeveloped land would surround and provide a sufficient buffer between the facilities and adjacent privately-owned properties, significantly reducing the potential for the project to impact uses permitted by current zoning. Condition of certification **LAND-5** would require the project to follow Riverside County municipal and building code requirements. Proposed project design and conditions of certification would protect public health, safety, and welfare, and the usability of adjacent properties. The project is, therefore, consistent with the requirements for a public use permit.

Article XVIII, §18.33 Setback Adjustments and Temporary Use of Land

The section of the Riverside County code applies to the proposed project because temporary use of the land (project site) during the construction of public utilities would occur for more than six months. For the proposed project, this would include the presence and use of the construction trailers, RV camp, and construction laydown area, all located outside the proposed project's final footprint. This would also normally require approval of the Riverside County Planning Commission, if not for the Energy Commission's exclusive authority. However, it is the Energy Commission's intent to maintain consistency with local LORS to the extent feasible. For approval of an extended temporary use, it must be determined that, as in §18.29 above, the continued use would not be detrimental to the health, safety, or general welfare of the community or property in the vicinity of the project site, particularly as it relates to points of vehicle ingress and egress; the need for landscaping, fencing, or walls; restoration of the property to a natural appearance following completion of construction; and an established timeline for work completion and any required conditions [§18.33(f)].

The construction timeline for this project would be approximately 30 months. Conditions of certification **LAND-8**, **LAND-9**, and **BIO-1**, **12**, and **13** would require permeable surfacing of all temporary access roads and parking spaces; and specifically address rehabilitation of all temporary use areas with either restoration of the desert landscape or approval and implementation of an approved landscape plan. The project encroachment onto SR62 would provide both construction and operations access at an existing, though undeveloped, access point, and would be constructed to CalTrans specifications. Condition of certification **TRANS-1** would include a construction Traffic Control Plan that would protect existing roadway access and use. Condition of certification **TRANS-3** would require the project owner to repair any construction damage to public roadways to pre-project conditions. The project's interior access roads would be constructed consistent with Riverside County road requirements. Proposed project design and conditions of certification would protect public health, safety, and welfare, and the usability of adjacent properties. Therefore, the extended temporary uses of the project site would be consistent with the normal requirements for county approval.

Riverside County Ordinance 457.102 Building & Construction Code

Riverside County Building and Construction Code would apply to all construction outside federal lands and to construction on federal lands, to the extent that the standards do not conflict or override state and federal requirements. As noted in the AFC (SR 2009a), the project is designed to meet all required building and construction standards, to the extent feasible, and would meet or exceed all standard applicable building permit requirements. Federal public lands pursuant to a ROW grant under FLPMA Section 501, 43 USC 1761, are required to comply with State "siting, construction, operation, and maintenance" standards that are more stringent than equivalent Federal standards. However, the U.S. Court of Appeals for the Ninth Circuit has held that the Federal government has the right to exercise its authority to grant ROWs for facilities, consistent with FLPMA, free of any regulatory interference by local agencies. No county building permit would be required for any construction on federally managed public lands. Condition of certification **LAND-5** would require compliance with all applicable Riverside County zoning standards and building and municipal code

requirements, except as specifically noted in this section or other related sections of this document.

Riverside County Ordinance 460.151, §18.7 (Merging of Contiguous Parcels)

This ordinance allows the merger of four or fewer contiguous parcels under common ownership, without reverting to acreage, with approval of the Riverside County Planning Director and payment of the applicable processing fees. Approval of the merger application requires the following findings:

- The parcels to be merged are, at the time of merger, under common ownership and written consent has been obtained from all record owners.
- The parcel as merged would be consistent with the zoning of the property.
- The parcel as merged would not conflict with the location of any existing structures on the property.
- The parcel as merged would not be deprived access as a result of the merger.
- Access to the adjoining parcels would not be restricted by the merger.
- No new lot lines would be created through the merger.
- The existing right-of-way shall not be altered. Any alteration shall be accomplished through a separate vacation process.

The proposed project site currently consists of four contiguous parcels and would all be owned by the project owner(s) of record. All parcels are zoned W-2-10 and no zoning amendment is requested. There are no structures on any of the subject parcels and access would not be restricted to the subject or any adjoining parcels. No new lot lines would be created and existing right(s)-of-way would not be altered. Therefore, all findings for approval can be met.

Therefore, to avoid the construction of buildings across property lines and ensure compliance with the provisions of the Riverside County Zoning Ordinance, a condition of certification (**LAND-1**) would require the merger of these properties into a single parcel under common ownership, consistent with the requirements of this section of county code.

Riverside County Ordinance 659, as amended through 659.8 (Development Impact Fees)

As identified in this ordinance, it is necessary to require all new development bear its fair share of the cost to provide the public facilities and services, acquire and maintain the open space and wildlife and habitat protection, and address the impacts caused by such development. The Development Impact Fee (DIF) was created for that purpose. Fees have been established based on the service demands of various areas within the county. The AFC proposed project site is in the Desert Center-CV Center DIF area. Fees would be based on Commercial development at \$12,367 per acre, as established by the August 20, 2009 fee schedule. With renewable energy projects requiring an unusually large amount of acreage, DIF calculations would not include the acreage for the solar fields. Acreage calculations would include all power block facilities and all primary paths of travel leading to production plant area, including access roads, but not

solar field maintenance roads (CEC 2010a,b). Condition of certification **LAND-6** would require the project owner to pay the required DIF prior to the start of operations, consistent with Riverside County requirements for large-scale renewable energy projects, or enter into a development agreement, or similar agreement, with the County of Riverside in lieu of the development impact fee. The applicant has agreed to this requirement (GB 2010c).

Riverside County Ordinance 859, as amended through 859.2 (Water Efficient Landscape Requirements)

The water-efficient landscape requirements contained in this Ordinance apply to all new and rehabilitated landscapes associated with commercial or industrial uses, which require a discretionary permit and/or approval. The proposed project would require a public use permit, height variance, parcel merger, and approval of temporary extended use. Therefore, it would be subject to the requirements of this Ordinance. Condition of certification **LAND-8** would require approval and implementation of a Landscaping Plan, consistent with this ordinance. However, given the project's remote location and lack of available municipal water sources, use of recycled water would not be required.

Riverside County Airport Land Use Compatibility Plan (2004)

The Riverside County Airport Land Use Compatibility Plan (ALUCP), adopted by the Riverside County Board of Supervisors in October 2004, contains general compatibility criteria applicable to all airports within Riverside County, as well as specific requirements for individual airports. There are no operational airports addressed in the ALUCP that would be impacted by construction of the project at the proposed (Alternative 1) location, any related variations to that site (Alternatives 2 and 4), or Alternative 5, the No Project alternative. Although aerial photos of the proposed project site still show the outlines of the Rice Airport (Rice AAF), the site was abandoned as an active field at some point between 1955-58 and was no longer depicted on the Los Angeles Aeronautical Sectional Chart for the area from March 1958 forward (ARPT 2009a). The ALUCP no longer includes the Rice Airport. (See discussion in Alternative 3 – North of Desert Center for plan applicability at that project site.)

Cumulative Land Use, Recreation, and Wilderness Effects

As noted in other sections, the impacts of a project are not analyzed in a vacuum, either individually within a project or without consideration of other land use changes that have or may occur in the same vicinity. Incremental, project-specific impacts that may not be substantial on their own may, when combined with other project-related impacts or similar impacts from other projects, result in a substantial and cumulatively significant effect on current and future land use in the project vicinity.

In particular, under the CDCA and NECO land use plans, development and conservation are both priorities for public lands surrounding the project area and management for multiple use and sustained yield is emphasized. Projects proposed throughout these areas encompass a wide range of uses, including energy production and transmission, livestock grazing, mineral extraction, recreation, and conservation of

special status species and their habitats. As a result, the consequences of these uses may overlap, resulting in impacts that cumulatively exceed the effects of individual projects.

GEOGRAPHIC SCOPE OF ANALYSIS

The geographic scope of the project's land use, recreational, and wilderness cumulative impact is divided into three areas:

- A Incremental, project-specific impacts analyzed within this document that contribute to or result in a substantial change or significant impact to land use and/or recreation in the immediate project area.
- B Local area, defined as along SR62, between SR177 to the west and SR95 to the east, within a radius of approximately 25 miles of the proposed project site and the general confines of the Rice and Ward Valleys, Colorado River, and surrounding mountain ranges (Old Woman, Turtle, Whipple, and Riverside Mountains; and Rice Valley and Palen/McCoy Wilderness areas).
- C Regional area, defined as within the California Desert District (CDD), primarily in the area managed by the BLM's Palm Springs-South Coast District office and within a radius of approximately 75 miles.

There are two Wilderness Areas that could be directly affected by the proposed project and 13 Wilderness Areas, several ACECs, and Joshua Tree National Park that could be affected by the cumulative impacts of renewable energy and other foreseeable projects in the regional area.

Local Area

The project site is in the Rice Valley, in the northeastern corner of Riverside County and immediately south of SR62. It is southeast of the BLM Iron Mountain Solar Energy Study Area and within the BLM lands that are being analyzed for solar development in the U.S. Department of Energy (DOE) and BLM programmatic EIS (see **Cumulative Figure 2**). Bounded by five mountain ranges, the lands surrounding the project area are geologically isolated from other portions of the CDD and present a relatively distinct land area for the purposes of analyzing local CEQA and NEPA cumulative impacts.

There are a total of eight solar energy projects proposed or in progress on approximately 187,844 acres¹¹ of BLM-managed public lands, within a radius of approximately 25 miles from the project site. The DOE and BLM are also analyzing public lands along SR 62, SR 171, I-10, and north into San Bernardino County, including the location of the proposed project's transmission lines and interconnection substation, for compatibility with future solar development, as part of the Solar Energy Development Programmatic EIS (DOE/BLM 2010a). Portions of these lands are also included in the BLM's Riverside Solar Study Area (see **Cumulative Impacts Figure 2**). The only wind project proposed in the general vicinity was withdrawn in July 2010 [see

¹¹ Acreage reflects the total area being investigated in the current applications submitted to BLM. The final ROW should be significantly less, consistent with the final project footprint, following completion of construction.

Land Use Appendix B].

In addition, there are three Colorado River Aqueduct Rehabilitation projects that are not energy-related, but have the potential to impact current and future land uses. (See **Land Use Appendix C**)

Regional Area

From a regional perspective, the project area is located in the southeastern portion of the California Desert District (CDD), an area containing approximately 11 million acres of public lands in portions of Kern, Inyo, Los Angeles, Riverside, San Bernardino, Orange, Imperial, and San Diego counties. While the geology of the area generally isolates the Rice site, project impacts to the overall availability of conservation areas, impacts to individual species, availability of undeveloped lands and resources, wilderness access, and recreational use within the larger CDD must be considered. In addition to the projects identified within the local area, there are 35 additional solar projects proposed over more than 492,219 acres of public lands and three wind projects on 21,293 acres of public lands (as of August 2, 2010), within a radius of 75 miles from the project site (see **Land Use Appendix B** and **Cumulative Figure 2**).

Even more renewable energy projects are proposed on public lands in surrounding counties, from Indio, Twenty-Nine Palms, and Needles to the eastern California border; and into the states of Nevada and Arizona (see **Land Use Appendix B**), along with the 24 tracks of public lands in six western states, including over one million acres in southern California, that are being studied as suitable for solar development. However, while the Rice project would add to the projected acreage for renewable energy projects expected in the California desert, the proposed project location and surrounding topography would limit its potential contribution to desert-wide cumulative effects.

Cumulative conservation benefits were considered as part of the NECO amendment process, including the need to accommodate military use; agricultural use, including livestock grazing; existing and proposed highways, rail lines, and communities; recreation; wildfire protection; mining; and renewable energy projects. It was realized that these uses would need to co-exist with protection for state and federal parkland, wilderness, wild horse and burro herd areas, and critical habitat. Large areas of the CDCA, including the region around the proposed and alternative project sites, have been set aside for multiple uses, determined, primarily, by the availability of the predominant resource(s) and sensitivity of the natural and cultural surroundings. Additionally, there are privately owned parcels throughout the region with development potential that may contribute to cumulative regional impacts.

There are also at least 36 non-energy-related current and foreseeable projects affecting land use and resources in the region, including three major master planned communities and 20 smaller residential developments; and a proposed 941,000-acre, federally protected national monument area (see **Land Use Appendix C**).

AGRICULTURE LANDS AND RANGELANDS

Local Agriculture

Local privately-owned parcels in the project vicinity are generally undeveloped desert

lands, devoid of residences or other improvements. Although the zoning for much of the private land allows agricultural uses, there is no agricultural activity in the Rice Valley area, other than seasonal livestock grazing, and no irrigated farmland within the project boundaries or surrounding properties.

Agriculture, excluding grazing, is not a permitted use within any BLM lands designated for multiple use. Agricultural use of public lands in the local project area is limited to grazing within the Rice Valley (Keoughs) Rangeland Grazing Allotment. This allotment encompasses 74,740 acres of BLM-managed public lands, located south of SR62 and surrounding the private land parcels that make up the proposed generating facility site (see Agricultural Lands discussion above). The project site is located on the northern edge of the Rice Valley allotment and would only intrude into the grazing area along the transmission corridor and at the site of the interconnection substation. The impacts to the Rice Valley allotment identified in the project analysis include: (a) the potential for construction activities to interfere with access to those portions of the allotment that are currently accessed along Rice Valley Road for approximately 30 months or up to three grazing seasons; and (b) elimination of up to 75 acres of forage along the proposed transmission line corridor and footprint for the substation for the life of the project. Impacts to access would be avoided with implementation of recommended condition of certification **LAND-1**. The loss of up to 75 acres of grazing allotment land would need to be included in the projected cumulative loss of available grazing land for the region. It would not, however, fragment the existing allotment or contribute to the fragmenting of any other established grazing allotment or agricultural use in the project vicinity.

The only other agricultural activity in the local project area is the Lazy Daisy Rangeland Grazing Allotment (CA09076). The Lazy Daisy allotment allows seasonal grazing of up to 266 cattle on 451,617 acres of BLM-managed public lands and 37,567 acres of private land. This grazing allotment is not expected to be impacted by the proposed project or the numerous proposed solar and wind projects in the project vicinity. None of the currently pending or approved renewable energy projects are within the allotment boundaries. It is also located well north of the BLM Solar Energy Study Area and includes or is adjacent to several Areas of Critical Environmental Concern (ACEC) and desert tortoise critical habitat.

Therefore, the project would contribute to any cumulative loss of access to agricultural grazing lands. It would not, however, result in fragmentation or obstruction of future agricultural uses in the local area. The loss of approximately one-quarter of 1% of the public grazing land within a 25-square mile area would have a minimal impact on the availability of public grazing land and would not significantly contribute to a loss of local grazing resources.

Regional Agriculture

There are no other rangeland grazing allotments and very little agricultural activity within the regional area identified for this project, although most of the public land in Nevada is committed to seasonal grazing allotments. The Ford Dry Lake Rangeland Grazing/Pasture Allotment, along the I-10 corridor about 20 miles west of Blythe, was cancelled in 2007, due to its proximity to occupied Bighorn Sheep range in the Palen Mountains. Some irrigated agriculture, including alfalfa fields and orchards, occurs in areas along

the Colorado River, along with jojoba and palm plantations north of Desert Center. Although some of the current and foreseeable projects in the region may result in the conversion of agricultural lands to non-agricultural uses or impact available water resources currently used for irrigation, the proposed project would not result in or contribute to the loss of any of these types of agricultural uses.

Rangelands

With the exception of the rangeland grazing allotments identified in the Agricultural discussions above, the proposed project would have no impact on BLM rangeland use or management. Although there are several herd and herd management areas in the regional vicinity, the project would not interfere with established or proposed access or uses. Therefore, the proposed project's overall contribution to cumulative agricultural and rangeland impacts would be less than significant. Residual impacts include the loss of up to 130 acres of grazing resources.

RECREATION AND WILDERNESS

Recreation

The primary project site is located entirely on privately owned lands, with no recreational facilities or public access. The transmission lines and interconnecting substation, however, are located primarily on BLM-managed public lands. The project would result in the temporary, intermittent loss of access or delays along approximately 5.4 miles of the existing Rice Valley Road and a permanent loss of the recreational use of approximately nine acres of publicly-owned, BLM-managed lands, classified MUC-M, within the footprint of the interconnecting substation. As noted in **Land Use Appendices B and C**, there are at least 38 other renewable projects proposed or approved on surrounding BLM-managed public lands, with the potential to impact more than 500,000 of the 1.6 million acres of multi-use recreational and wilderness lands in the region. The nine acres of MUC-M land, of limited recreational value, that would be lost as a result of the project would have a de minimus effect on the cumulative losses that could result from construction of the existing and foreseeable renewable energy projects.

Although the proposed project would bring over 400 construction workers to the project site for up to 30 months, the remoteness of the proposed project site and intensity of the work schedule would preclude most workers from making use of the limited recreational opportunities in the project area. While some of these workers may visit the surrounding wilderness areas, their impact would be negligible. It is unknown whether the construction schedules for any of the other projects in the local vicinity would overlap with the proposed project timeline, but as with this project, the distance from any developed recreational opportunities would effectively limit cumulative worker impacts, even if many of the projects are developed on a concurrent timeline.

As noted in the Recreation analysis above, addition of the 47 permanent employees and their families to the area once the project is in operation would result in a permanent increase of less than 1% of the population in Blythe. Spread over the surrounding communities, the potential impact to any single recreational facility, or cumulatively to multiple facilities within the area, would be further reduced. Therefore,

the project would not substantially affect existing neighborhood and regional recreational facilities or result in the need for new or expanded facilities. Assuming a similar number of permanent employees at each of the known and foreseeable renewable energy projects, this would equate to a population increase of approximately 5,000-6,000 people over the next few years. Other non-energy projects, including several major residential developments and master-planned communities, could add an additional 35,000-40,000 residents to the region, especially in the areas around Blythe. Therefore, the proposed project would contribute less than 0.01% of the cumulative population growth and use of recreational facilities anticipated for the region.

Also, although recreation is a priority on public lands, use of lands in the local area, with the exception of the designated Wilderness Areas, have no developed facilities and little to no recreational use. In fact, Rice Dunes, a designated OHV area about 12 miles south of the proposed project site, was closed in 2002 for lack of use. There are no plans for recreational development in the local area.

Therefore, the proposed project's overall contribution to local and regional cumulative recreational impacts would be less than significant.

Wilderness

There are 11 designated wilderness areas in the local project vicinity and more than 25 wilderness areas, several ACECs, and the Joshua Tree National Park within a 75-mile radius of the proposed project site. Neither the project nor other existing or foreseeable projects would occur within the wilderness, ACEC, or national park boundaries. Direct impacts to access and visual/scenic resources, noise and light pollution, and increased visitation (resource use), as well as indirect impacts to natural and cultural resources, may result from one or more of the proposed projects. The proximity of wilderness and other environmental sensitive areas to the solar study areas and both public and private lands proposed for development increases the likelihood of adverse impacts. Information to make a determination of the extent of these potential impacts is not available at this time, but could be cumulatively substantial. Noise and visual/scenic impacts are not expected to physically impact the availability of resources within the boundaries of these protected areas, but could affect a visitor's wilderness experience. These impacts, however, are not measurable, as they are based on individual perceptions, sensitivities, and expectations.

The proposed project would not contribute to any cumulative access impact or contribute measurably to increased visitor resource use. (See **BIOLOGICAL** and **CULTURAL RESOURCES** sections for natural and cultural cumulative impacts.)

LAND USE COMPATIBILITY

Scenic Resources

Preservation of the scenic attributes of California's deserts is a prime objective of the CDCA and Riverside County General Plan. SR62, which runs east-west from Earp and Vidal Junction to Twenty-nine Palms, and ends at I-10, just west of Palm Springs, is eligible for listing as a scenic highway. Riverside County LORS require that a highway eligible for listing be treated "as if" it is a designated scenic highway. This includes

avoiding visual impacts to existing scenic elements and vistas and any other impacts that might prevent future scenic highway designation. Staff's analysis had determined that the proposed project would result in significant, unavoidable visual and scenic impacts to the SR62 corridor.

All solar projects are similar in general design, with one or more solar collector fields, a central generating facility, transmission lines, and one or more interconnection substations. Facility stack heights vary, depending on the solar/generating process, and range from under 100 feet to central stacks exceeding 650 feet agl. The number of stacks also varies, from a single central stack to four or more stacks arranged in series. Transmission line towers are generally 90-120 feet tall. In total, most solar facilities occupy between 1,000-5,000 acres, not including transmission line corridors, although areas three to five times the final project footprint are often initially requested in the ROW applications to allow flexibility in final project placement or to allow for future expansion or more than one facility.

In addition to the RSEP, there are seven large solar projects proposed within 25 miles of the proposed project site. Due to the topography of the area, all of these projects would be visible from SR62. Almost 130,000 acres have been identified in the BLM ROW applications for these projects, most within four miles of the highway. There is also additional acreage available within the surrounding BLM Iron Mountain Solar Energy Study Area and BLM lands being analyzed for future solar development immediately adjacent to the SR62 scenic corridor. This increases the potential for additional project impacts to the scenic resources in this area. As with the proposed project, it is reasonable to assume that the other projects proposed for this area would have similar project-related impacts to the scenic resources of the area, although the visual impact of the projects may vary by degree. The construction of each proposed project would extend the visual impact along the north side of SR62 for over 25 miles. The addition of the RSEP would further extend the visual intrusion eastward along SR62, as well as impact the scenic vista to the south of SR62 and into the previously undisturbed Rice Valley. This would contribute substantially to the significant and unavoidable cumulative impact to the scenic resources along an eligible state scenic highway.

Scenic resources and the quality of scenic vistas can also be adversely impacted by the introduction of artificial light sources. There are four large-scale solar projects proposed within 10 miles of the proposed project site, within the Ward Valley. This area is immediately north of the Palen/McCoy Wilderness and along the eastern and southern foothills of the Turtle Mountain and Old Woman Mountain Wilderness Areas. Like the proposed project site, these areas have little residential or commercial development and are generally without any significant sources of artificial light. Project-related impacts could combine with existing and foreseeable projects to substantially increase light pollution in the area, especially if construction timelines coincide. The proposed project would not only contribute to the cumulative lighting of the Ward Valley area, but extend the light pollution eastward into Rice Valley. Existing dark sky conditions would be substantially degraded by both construction and on-site security and operational lighting. Areas used for astronomical viewing and sky interpretation would be particularly impacted. Overlapping construction schedules would intensify the cumulative effect. Therefore, although glare shields and other conditions of certification

have been recommended to reduce lighting impacts (see **VISUAL RESOURCES** section of this document), the proposed project would still contribute significantly and unavoidably to the cumulative impact to existing scenic, dark sky conditions throughout the Rice and Ward Valleys.

Future Land Use and Development

Land surrounding the local area is both publicly and privately owned. BLM-managed public lands are generally designated for multiple use, with the permitted uses determined by the environmental sensitivity of the resources. Most of the land proposed for solar development in the project area is designated MUC-M, which allows a multitude of uses, including grazing, recreation, and electric generating facilities. However, development of solar facilities on these lands precludes their use for any other purpose for the life of the project (generally 30-40 years). Residual alterations to the land may continue far beyond that time frame. Therefore, it should be assumed that any changes to the land and its resources within the project footprint would be permanent.

Lands in the local project area are currently undeveloped, relatively undisturbed desert. There is no residential or commercial development in the local area, and existing industrial activities are confined to the Iron Mountain Mine, Iron Mountain Pumping Station, and California Aqueduct. Although the zoning for most of the privately owned land allows both residential and commercial development, the distance from urban areas, non-existent local customer base, and lack of access to public services, including timely emergency and police response, makes any foreseeable significant development highly unlikely. However, the presence of one or more renewable energy projects would not preclude residential or commercial development, consistent with applicable zoning requirements. Therefore, use of either public or private lands for renewable energy projects would have a less than significant impact on future land use and development, either individually or cumulatively.

CEQA LEVEL OF SIGNIFICANCE

Under the proposed project (Alternative 1):

- Impacts to agriculture would be less than significant with implementation of **LAND-4**.
- Impacts to recreation would be less than significant.
- No impacts to timberlands and impacts to wilderness areas would be less than significant.
- The proposed project would result in significant, unavoidable visual and scenic impacts to the SR62 scenic corridor.
- There are no airports or airstrips within five miles of the proposed project site and the project would have no impact on any airport operations.
- The proposed project would be consistent with existing and permitted agricultural, residential, sensitive receptors, and recreational land uses with the implementation of **LAND-2, 3, 4, and 5**. However, it would be inconsistent with existing and permitted scenic land uses due to significant, unavoidable impacts to visual/scenic resources (see **VISUAL RESOURCES** sections of this SA/DEIS).

- Consistency with federal and state LORS would be ensured with implementation of **LAND 1-4, 5; and CULT-11**.
- Implementation of **LAND-1 and 3-9; BIO-3, 11-13, and 21; CULT-11; SOIL&WATER-1; and TRANS 1-3 and 7-9** would ensure consistency with many of the local LORS, to the extent feasible. However, the proposed project would still be inconsistent with a number of Riverside County General Plan policies and zoning requirements (see **LAND USE APPENDIX A**).
- Project-specific loss of grazing land use and access would not contribute significantly to any cumulative agricultural or rangeland impact.
- The proposed project's overall contribution to local and regional cumulative recreational impacts would be less than significant.
- Use of either public or private lands for renewable energy projects would have a less than significant impact on future land use and development in the project area, either individually or cumulatively.
- The addition of the RSEP would further extend the visual intrusion along SR62, as well as impact the scenic vista to the south of SR62 and into the previously undisturbed Rice Valley. This would contribute substantially to the significant and unavoidable cumulative impacts to the scenic resources along an eligible state scenic highway.
- Although glare shields and other conditions of certification have been recommended to reduce lighting impacts (see **VISUAL RESOURCES** section of this document), the proposed project would still contribute significantly and unavoidably to the cumulative impact to existing scenic and dark sky conditions throughout the Rice and Ward Valleys.
- Significant, unavoidable project-specific visual/scenic resource impacts could potentially contribute to cumulatively significant, unavoidable temporary and/or permanent impacts, especially if most of the proposed solar and wind projects within the local or regional area are actually constructed. Simultaneous or overlapping timelines would further exacerbate the temporary construction-related impacts.

NEPA COMPLIANCE

Under Alternative 1:

- The effects on the agricultural resource value of established federal rangelands within the California Desert Conservation Area are minor, both locally and regionally and would not contribute to the substantial loss or fragmentation of existing grazing allotments or future grazing opportunities.
- The effects on recreational activities and resources would be temporary and relatively minor from both a local and regional perspective. Limited loss of access to the MUC-M lands along the existing 5.4-mile length of Rice Valley Road would occur during construction of the transmission line and interconnection substation at the connection point with the Western 161/230kV transmission corridor.
- The effects on recreational use of established Wilderness areas and public access to those resources would be limited to noise and visual intrusion on the wilderness

experience during project construction. Wilderness resources would not be impacted.

- Project activities at all phases of construction, operation, and closure would conform with BLM plans, policies, and procedures, through approval of the ROW application and implementation of the NEPA and CDCA Amendment process. Staff has also proposed condition of certification **LAND-3** that, if fully implemented, would ensure consistency with applicable federal (BLM) land use requirements.
- If all the proposed renewable energy projects currently licensed or pending on BLM lands along SR 62 and in the Rice and Ward Valleys are actually constructed, the loss of multiple use lands would equal nearly 1/3 of the 1.6 million acres of public lands in that area. Substantial cumulative impacts to biological, cultural, and visual resources would be unavoidable.

PROJECT ALTERNATIVES

The setting and existing conditions detailed above apply to the proposed project (Alternative 1) and Alternatives 2, 4, and 5. Project differences are noted in the general description of each alternative. The Setting and Existing Conditions section is not repeated for Alternatives 2, 4, and 5. Recommended conditions of certification apply to the proposed project and all other alternatives unless otherwise noted. The assessment of impacts that are identical to the proposed project (Alternative 1) will be noted, but are not repeated.

Staff's analysis of the proposed project's consistency with applicable federal, state, and local land use LORS is presented in **LAND USE Table 6**, and applies to the proposed project and all alternatives. The Land Use compatibility discussion as presented in the proposed project (Alt. 1) above also applies to Alternatives 2 and 4. As with the setting and existing conditions, project differences are noted in the general description of the alternative. Setting, existing conditions, and land use compatibility will be discussed in greater detail for Alternative 3, as this project site is more than 50 miles from the proposed project.

Land use alternatives to the proposed project (Alternative 1), as identified in the following table, are analyzed below:

**LAND USE Table 6
Project Alternatives**

	Proposed Alternative	Acres	MW	Federal Nexus
1	Proposed Project	1,410 acres + 10.0 mile long transmission line corridor	150	Yes
2	Reduced Acreage (same site location)	1,270 acres + 10.0 mile long transmission line corridor	~148	Yes
3	North of Desert Center (alternate location), includes realignment and reconductoring of existing SCE 161/230kV line.	1,410 acres + 4.6 mile long transmission line corridor	150	Yes
4	Rice Valley Road Transmission Line	1,410 acres + 13.9 mile long transmission line corridor	250	Yes
5	No Project/No Action	0	0	No

Alternative 2 (Reduced Acreage)

The RSEP Reduced Acreage Alternative would be located on the same project site as the proposed project, but would have a 7.2% smaller footprint. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The generating facility would occupy about 1,270 acres instead of the 1,410 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The plant footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, height of the solar tower and receiver, transmission interconnection to Western’s Parker-Blythe transmission line, and setback from SR62 would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduce Acreage Alternative would transmit power to the grid through the planned substation, to be located adjacent to Western’s Parker Blythe 161/230 kV transmission line.

The Reduced Acreage Alternative would eliminate about 140 acres of the proposed project footprint. Additionally, the Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State’s energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

From a land use perspective, the Reduced Acreage Alternative would have comparable impacts to the proposed project. While the footprint of the generating facilities would be reduced, it would not affect the land use and zoning designations, visual impact of the site on scenic resources or the SR62 eligible scenic highway corridor, impacts to military operations, or impacts on surrounding property uses. It also would not resolve any of the inconsistencies with the Riverside County General Plan or zoning

ordinances. The extent of impacts to agriculture, recreation, and wilderness would remain unchanged, as the footprint and use of BLM-managed public lands would remain the same as the proposed project. All conditions of certification recommended for the proposed project would also apply to this alternative.

Cumulative Land Use Effects

As with Alternative 1, the project would have a less than significant/substantial cumulative effect on agriculture or rangeland uses; recreation; and future land use and development. However, it would also contribute substantially to the cumulative significant, unavoidable impacts to scenic resources along an eligible state scenic highway; and existing scenic vistas and dark sky conditions throughout the Rice and Ward Valleys.

CEQA LEVEL OF SIGNIFICANCE

Under Alternative 2:

- Land Use, Recreation, and Wilderness impacts would be identical to those identified for the proposed project (Alternative 1).

NEPA COMPLIANCE

Under Alternative 2:

- Land Use, Recreation, and Wilderness effects, including residual effects after implementation of the proposed mitigation (conditions of certification), would be identical to those identified for the proposed project (Alternative 1).

ALTERNATIVE 3 (NORTH OF DESERT CENTER)

SETTING

The North of Desert Center Alternative would also be a 150 MW solar thermal facility located on approximately 2,643 acres of land, with a footprint consistent with the proposed project. The generating facilities and solar field would be located on the west side of SR177 (Desert Center - Rice Road), approximately 1.6 miles north of I-10. This alternative would be sited primarily on private land, intermixed with small parcels of public lands through the central and eastern portion of the site (see **Land Use Figure 6**). The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line alignment and substation would interconnect to the realigned SCE line at the eastern site boundary. The boundaries and transmission realignment for this alternative are illustrated in **Alternatives Figure 2**. The land is generally flat, with remnants of prior agricultural activity still present on the site. The elevation is between 500 and 700 feet ASL. There are no existing structures. There are also no developed roads into or through the site, although the SCE maintenance dirt, access road for the existing transmission line, in very poor condition, roughly bisects the property and connects SR177 to Kaiser Road. The site would be accessed directly off of SR 177.

Surrounding Area

The North of Desert Center Alternative site is located in the Upper Chuckwalla Valley, between the Joshua Tree National Park and Wilderness and Eagle Mountain to the north and west, Palen/McCoy Wilderness Area to the northeast, and Chuckwalla Mountains to the south. Immediately adjacent to and including portions of the BLM Riverside East Solar Study Area (**Land Use Figure 7**), the Alternative 3 site is on the northern edge of the Desert Center community. It is within the Colorado Desert of Riverside County, a subsection of the Sonoran Desert. The topography of the Chuckwalla Bench is a great dissected bajada (coalesced fans of sediment eroded from nearby mountains) that flow, almost without slope, away from the Chuckwalla Mountains to the southern horizon. Sparse creosote and bursage with Mojave yucca grew on flats and low mesas, interspersed with arid desert pavement.

Desert Center, as it currently exists, is a small unincorporated town of about 962 residents, not including the “snowbird” population of Lake Tamarisk Desert Resort. Services include a post office, public library, Caltrans and SCE maintenance yards, , gas station, market, a café, a couple of small motels and mobile home parks, and the newly established Chuckwalla Valley Raceway (WIKI 2010g). Individual residences sparsely dot the area around the proposed project site, including several within a quarter mile of the project boundaries. Once a small, but thriving waypoint between Blythe and Indio, Desert Center declined until the early 1940s, when the Army established the Desert Center Army Air Field about one mile north of town to support the DTC/C-AMA. It was a sub-base of San Bernardino Army Air Field and served several installations in the area. After the base closed in 1944, and the Kaiser Steel Eagle Mountain Mine closed in the late 1980s, the town’s population declined to its present population.

The small resort community of Lake Tamarisk is located about two miles north of the Desert Center/I-10 exit, off Kaiser Road (CR R2), and less than one mile from the proposed alternative site’s southwestern boundary. The development includes about 150 single family lots/residences, a 55-Plus member-owned RV park with 150 spaces, a nine-hole regulation golf course and lake, clubhouse and management office, small public water system, and wastewater treatment plant. The development is not built out. Many owners are seasonal residents and RV spaces are also rented to transient visitors.

The Desert Center Airport (formerly Desert Center Army Air Field), located immediately across SR177 from the North of Desert Center Alternative site, closed as a public airport in 1992, although up to 150 aircraft per year continued to land there through at least 2004. The airport recently reopened as a private airfield, in conjunction with the airport’s conversion to the Chuckwalla Valley Raceway. The 400-acre, members only racing facility will, on completion, have three auto/motorcycle tracks, a clubhouse and restaurant, garages at all track locations, viewing stands, and on-site RV overnight dry camping facilities. The Raceway opened its first track in April 2010, with plans to construct the remaining tracks and facilities over the next 5-10 years. The airfield’s original runway configuration will remain available for private use, by permission only. (ARPT 2010a; CVR 2009)

The Kaiser Steel Eagle Mountain Mine is located approximately eight miles northwest of

the project boundary. The mine closed in the late 1980s, but is currently under consideration as the Eagle Mountain Landfill Project (Riverside County Specific Plan 305;), a 4,654-acre Class III non-hazardous municipal solid waste landfill see **LAND USE APPENDIX C**). Renovation and repopulation of the Eagle Mountain Townsite, a tiny community adjoining the mine (Riverside County Specific Plan 306) and currently closed to the public, is also proposed as part of that project. Although the project has received approval from the Riverside County Board of Supervisors and BLM and most of its permitting is complete, it is on hold pending the resolution of litigation.

The Desert Lily Preserve Area of Critical Environmental Concern (ACEC) is located approximately four miles northeast of the alternative project site, on the east side of SR177. The 2,031-acre preserve was established in 1994 as part of the California Desert Protection Act. The northern portion of the Chuckwalla Desert Wildlife Management Area (DWMA) ACEC, which contains BLM Category I desert tortoise habitat, extends to within one-half mile of the Alternative site's southwestern boundary. The 7,726-acre Alligator Rock and 24,400-acre Palen Dry Lake ACECs, both of which were created to protect archaeological and paleontological resources of the area, are eight miles south and ten miles east of the project site, respectively.

The Colorado River Aqueduct (Aqueduct) extends from north to south along the Upper Chuckwalla Valley, from the Eagle Mountain Pumping station, about eight miles northwest of the project site. The Aqueduct is fenced and public access is prohibited. Despite its close proximity, water from the Aqueduct is not available to serve this Alternative.

Agriculture and Rangeland

The North of Desert Center Alternative is composed largely of private properties, but also includes undeveloped state and federal lands. Nearly 90% of the land proposed for this Alternative is disturbed by past and current agricultural operations. The remaining landscape consists of desert washes, sandy dunes, and lower alluvial fan sediments. Major water sources are limited to the Colorado River, which lies approximately 50 miles east of the alternative site, and water within the Chuckwalla Valley Basin. However, when rainwater exceeds evaporation and occasional flooding occurs, Palen Lake (approximately 12 miles east-northeast of the alternative) will fill, creating a temporary water source for the area. Agricultural uses, except for grazing, are prohibited on BLM-managed MUC lands. Agricultural uses are permitted on unclassified lands, unless specifically prohibited on a site-specific basis (CDCA, p.147). Electric generation plants may also be allowed on unclassified lands after NEPA requirements are met.

The only remaining lands within 20-40 miles of the North of Desert Center Alternative site that are designated for agriculture (AG) by the Desert Center Area Plan are either completely or mostly within the boundaries of the project site. Of the 974 acres designated for agriculture in the plan area, there are approximately 84 acres currently in production, all within or immediately adjacent to the site. The remainder of the AG lands, as well as most of the remaining parcels within the project boundaries, both public and private, appear to have been used previously for agriculture, but have been fallow for some time. Deteriorating furrows, dead vegetation, and irrigation tubing are

still present on the site. Surrounding agricultural uses include a small palm tree nursery, to the east of SR177 and northeast of the project site.

Wilderness and Recreation

Recreation

There are no recreational facilities on the North of Desert Center Alternative property. Those portions of the project site that are situated on publicly-owned lands are subject to the CDCA and NECO. BLM-managed public lands within the project boundaries and in the general vicinity, except for those within the Chuckwalla DWMA and Desert Lily Preserve ACECs, are classified as MUC-M or unclassified. The MUC-M land use designation allows a multitude of public uses, including livestock grazing, mining operations, railroads and landing strips, electrical generating facilities, and recreation. As noted with the proposed project, availability of the land for recreation is a primary mandate that applies to all desert lands under BLM management and jurisdiction within the CDCA boundaries, including unclassified lands, until such time as they pass out of federal control.

Palen/McCoy Dunes, approximately eight miles northeast of this Alternative project site, no longer allows OHV use. In fact, there are no “open” riding areas on BLM-managed public lands in Riverside County. However, the access road for the existing SCE transmission line corridor, that bisects the project site and crosses BLM land, is identified on regional public access maps as a 4-wheel drive/OHV green sticker access road.

The Chuckwalla Valley Raceway, a 400-acre, members-only racing facility, constructed on the old Desert Center airport property, is located immediately across SR177 from this Alternative project site. The raceway will, on completion, have three auto/motorcycle tracks, a 10,000 square foot clubhouse and restaurant, 120 garages at all three track locations, 1,800 gallon fuel farm, viewing stands, and on-site RV overnight dry-camping facilities, and will serve as the winter home to the Allen Berg Premier Open Wheel Racing School. The Raceway opened its first track in April 2010, with plans to construct the remaining tracks and facilities over the next 5-10 years. The airfield’s original runway configuration will remain available for private use, by permission only. The facilities will be open year-round, but the most heavily attended activities will occur on weekends and holidays. (ARPT 2010a; CVR 2009)

Joshua Tree National Park

In October 1994, Congress changed the status of the Joshua Tree National Monument to a national park. The 792,600-acre Joshua Tree National Park is managed by the National Park Service. Approximately 75% of the park is designated as a wilderness area. Straddling the San Bernardino County/Riverside County border, the park includes parts of two deserts, the higher Mojave Desert and lower Colorado Desert, each with an ecosystem whose characteristics are determined primarily by elevation. The Little San Bernardino Mountains run through the southwest edge of the park. The higher, slightly cooler, and wetter Mojave Desert is the special habitat of the Joshua tree; extensive stands occur throughout the western half of the park. Five fan palm oases also dot the park, indicating those few areas where water occurs naturally at or near the surface.

Recreational activities available at the park include backpacking, camping, mountain biking, rock climbing, geologic tours, birding, horseback riding, and stargazing (WIKI 2010i; NPS 2010b).

Wilderness

The North of Desert Center Alternative site is surrounded by wilderness areas, BLM-managed multiple use public lands, and Joshua Tree National Park.

**LAND USE Table 6
Wilderness Areas (North of Desert Center Alternative)**

Wilderness Area	Jurisdiction/ Mgmt	Approximate Distance from Project Site	Acreage*	Allowed Uses** Hiking, backpacking, climbing, kayaking, canoeing, rafting, horse packing, primitive camping
Chuckwalla Mountains	BLM	7 mi S	112,326	
Joshua Tree***	NPS	6 mi N	594,502	Part of the Joshua Tree National Park
Orocopia Mountains	BLM	20 mi SW	55,614	
Palen/ McCoy	BLM	12 mi E	259,009	

Source: WILD; BLM 2010(d)

* Approximate

** No motorized equipment or mechanical transport allowed, except wheelchairs

*** Proposed boundary; designation currently under legislative consideration

Chuckwalla Mountains Wilderness

The 84,614-acre Chuckwalla Mountains Wilderness Area was designated by Congress in 1994, and is managed by the BLM, California Desert District. The wilderness includes most of the Chuckwalla Mountains, a range that spans approximately 40 miles and runs in a generally northwest-to-southeast direction. The wilderness is bordered by I-10 and the town of Desert Center to the north, and by the Bradshaw Trail and the Chocolate Mountains Aerial Gunnery Range to the south. Bighorn sheep, deer, wild burros, birds of prey, snakes, foxes, and coyotes make the area their home, and the Chuckwalla Bench on the southern flank of the bajada region range has been designated an ACEC for the threatened desert tortoise. Recreational activities within this area include hiking, camping, and rock scrambling. Motorized travel is only allowed on established roads.

Orocopia Mountains Wilderness

The Orocopia Mountains Wilderness Area was established in 1994 and is located east of the Coachella Valley and the Mecca Hills Wilderness Area, west of the Chuckwalla Mountains, and south of I-10. The Meccacopia Jeep Trail bisects the Orocopia Mountains and Mecca Hills Wilderness Areas; however, vehicles must stay on established roads. Mechanized or motorized vehicles are not permitted in the wilderness. The Orocopia Mountain range runs in an east-west direction and is approximately 18 miles long. The Chocolate Mountains lie to the southeast. Bighorn sheep, burro deer, desert tortoise and many small upland game species live among the

mountains. The spiny-leaved Orocopia sage, Alverson's foxtail cactus, Orcutt's woody aster, and the Mecca aster grow in washes, on stony slopes, and in the plentiful gypsum soils. The terrain has been shaped by the movements of the San Andreas Fault over millennia. Historic and prehistoric resources abound, including fossilized remains of prehistoric animals and traces of Native American trade routes to the coast. The area was also used by NASA to train the Apollo astronauts for its moon landing missions.

(See Wilderness section of the proposed project analysis for information regarding the Joshua Tree and Palen/McCoy Wilderness Areas.)

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Agriculture and Rangeland

Would the proposed project result in the conversion of Farmland¹² to non-agricultural uses?

None of the lands within the proposed alternative project site, including solar fields, generating facility, or linears, have been designated as Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance by the California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP) or Riverside County. As with the proposed project (Alternative 1), FMMP soil mapping has not occurred in this portion of Riverside County. Because soil mapping and farmland designations are not available, the land evaluation and site assessment (LESA) model could not be used to assess impacts to agriculture and a Farmland Conversion Impact Rating could not be assigned for this site (FPPA 2010). However, soils at the North of Desert Center Alternative site include primarily Rositas and Carsitas series with an average 2% slope (see **SOILS & WATER** section). In other parts of Riverside County, such as the Palo Verde area, Rositas fine sand soils on 0-2% slopes and Rositas silty clay loam on 0-2% slopes are considered Prime Farmland and Rositas gravelly loamy sand on 0-2% slopes meet the requirements for Farmland of Statewide Importance (FMMP 2009d). The amount of agricultural land that would be lost would vary, based on the final placement of the project footprint.

Nevertheless, despite the potential for Farmland to exist in the project area, the project would not result in the conversion of Prime Farmland, Unique Farmland, Farmland of Statewide Importance (as shown on the maps prepared pursuant to FMMP), or Farmland of Local Importance to non-agricultural use. No impact during any phase of the project.

Would the proposed project conflict with existing agricultural zoning, agricultural use, or a Williamson Act contract?

The Alternative project site would also be located on approximately 2,643 acres, with a 1,410-acre project footprint. Over 900 acres of the site has a Riverside County General Plan designation of Agriculture (AG) and is zoned Light Agriculture, 20 acre minimum parcel size (A-1-20). The A-1 zoning district is primarily intended to designate areas as main resource production zones, classify them for general farming and ranching

¹² Prime Farmland, Unique Farmland, Farmland of Statewide Importance, or Farmland of Local Importance, as defined in FMMP 2004, p.6.

practices, and assign such uses as the primary emphasis for the areas. Residential and other uses are placed in a position of secondary importance, when compared to the production of food and fiber. However, other uses are allowed and public utility facilities are permitted with approval of the project plot plan [§13.1(b)(5)]. All but 84 acres designated A-1 within or immediately adjacent to the Alternative project site are currently fallow, with no indication of recent agricultural use.

The remaining privately-owned parcels within the project boundaries have a land use designation of Open Space Rural (OS-RUR) and are zoned Controlled Development Area, 10-acre minimum parcel size (W-2-10) or Natural Assets (N-A). Publicly-held lands are also designated as OS-RUR and zoned N-A.

W-2-10 zoning permits agricultural uses, including the grazing of livestock on parcels of one acre or more, but also permits residential, commercial, and recreational developments; churches; schools; and public utilities. Agriculture is not given priority over any other kind of permitted or conditionally permitted use. All elements of the proposed project are permitted uses in the W-2 zoning district [RC 2009a, §15.1(e)(2)]. Both the proposed project and existing agricultural uses are consistent with the Riverside County zoning code.

N-A zoning permits single-family residences, but limits agricultural use to tree and field crops, apiaries, and the grazing of no more than two head of livestock per acre. Public utility substations are a permitted use in this zoning district, with plot plan approval, but the larger, electrical generation facilities are not. Privately-held parcels with this designation in the project area are generally undeveloped, except for scattered private single-family residences. N-A zoning permits public utility substations in this zoning district, with plot plan approval, but the larger, electrical generation facilities are not permitted, even with a conditional use permit. However, “public utilities” is one of several uses permitted in any zone classification, provided a public use permit is granted by Riverside County (see Article XVIII, §18.29 below). This includes transmission lines and electric generating plants. As the Energy Commission licensing process is equivalent to the Riverside County Planning approval process for a Public Use Permit, and considering the Energy Commission’s exclusive authority, certification of the project would ensure consistency with this ordinance.

Although public lands also carry an N-A zoning designation, they are only subject to state or federal jurisdiction and are not bound by Riverside County land use and zoning LORS for these properties. Agricultural uses, except for livestock grazing and uses grandfathered in at the time of adoption of CDCA and NECO amendment, are not allowed on any of the MUC lands (CDCA, Table 1, Multiple Use Class Guidelines, p.15). Agricultural uses are permitted on unclassified lands, unless specifically prohibited on a site-specific basis (CDCA, p.147). Electric generation plants may also be allowed on land with these classifications after NEPA requirements are met. There are no grazing allotment or grandfathered grazing uses within or adjacent to the proposed Alternative project site. Therefore, there would be no impact to agricultural uses on public lands.

The county’s GIS mapping system indicates that there are three Agricultural Preserves in the immediate project vicinity, containing more than 900 acres of land zoned A-1 (Chuckwalla 1, 2, and 3; see **Land Use Figure 10**). However, there is some question as

to the validity of that mapping, as both the county Planning Department and the GIS mapping indicate there are no Williamson Act contracts currently in place on any of these lands. Use of lands within an agricultural preserve or under a Williamson Act contract for a large-scale renewable energy project would not be consistent with the Williamson Act requirements to protect and preserve current and future agricultural land and uses. Use of this project site for the proposed project would eliminate the use of most or all of the areas identified as the Chuckwalla #2 and #3 Agricultural Preserves for agricultural purposes. Condition of certification **LAND-11** would require the project owner to remove said parcels from contract through cancellation, or provide proof that no contract exists, prior to the start of construction. This would avoid any impact to lands under Williamson Act contract. Only existing zoning restrictions would then apply. Public lands are not eligible for inclusion under the Williamson Act.

Construction of the proposed project at this alternative location would also result in the elimination of part or all of the 84 acres currently in agricultural production and all future agricultural uses within the 1,410-acre project footprint for the life of the project. This would include approximately 900 acres with a land use designation of AG (Agriculture). This has the potential to eliminate almost the entire acreage designated AG (974 acres) in the 185,270 acres of the Desert Center Area Plan (RC 2008b), as well as most of the regional area. There are no other lands designated AG for 40 miles to the east and 20 miles to the north, south, and west of the project site. It should be noted, however, that only about 10% of that land is currently in agricultural production and none of the land has been designated as Farmland, as defined by the FMMP. Also, although not specifically designated AG, over 175,000 acres within the Plan area are designated as OS-RUR, which has compatible zoning districts that allow limited agricultural use, including trees and orchards. The viability of any agricultural use outside the project footprint following completion of construction is unknown at this time. Considering the level of existing agricultural use, the project's impact would be less than significant.

Would the proposed project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural uses or forest land to non-forest use? (CEQA)

As noted above, construction of the proposed project at this Alternative site would not result in the conversion of designated Farmland to non-agricultural uses. Likewise, there is no timberland¹³ or timberland zoned TPZ within 100 miles of the project vicinity, so no impact to timberland would occur. The wash woodlands of the Palen-McCoy Wilderness and Joshua trees of the Joshua Tree Wilderness qualify as forest land¹⁴. However, all are protected within wilderness area boundaries and are a sufficient distant from the proposed project site to preclude any measurable effect. No Impact.

¹³ "Timberland" means land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees. Commercial species shall be determined by the board on a district basis after consultation with the district committees and others. (PRC §4526)

¹⁴ "Forest land" is land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. [PRC §12220(g)]

Would the project disrupt activities or substantially reduce the agricultural resource value of established federal rangelands within the California Desert Conservation Area. (NEPA)

As noted above, there are no grazing allotments or grandfathered grazing uses within or adjacent to the proposed Alternative project site. Therefore, the project would not substantially disrupt agricultural activities or substantially reduce the agricultural resource value of established federal rangelands within the CDCA.

Wilderness and Recreation

Would the proposed project increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated, or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

There are no existing or planned neighborhood, county, or regional parks; or other developed recreational facilities within 40 miles of the proposed project site. Recreational facilities within an hour's drive of the site include backcountry hiking and camping in the four surrounding wilderness areas and activities within Joshua Tree National Park. There are nine established campgrounds in the park, although there are only two with water and flush toilets. The park also maintains several hiking and nature trails, including a 35-mile segment of the California Riding and Hiking Trail; and a Geology Motor Self-Guided Tour for visitors with four-wheel drive vehicles (OHVs are allowed, but only on park roads. Off-road access is not allowed).

. There are recreational facilities in both Blythe (50 miles to the east; see proposed project (Alternative 1) analysis above) and the Indio/Palm Springs area, about 50 miles to the west. However, the recreational use by workers commuting daily from Blythe or cities to the west would not be an increase in the baseline recreational use of the area.

As with the proposed project (Alternative 1), the project would employ a permanent operational workforce of 47 people. Assuming that all employees relocate from outside the area with an average of three people per family, approximately 141 people, would be added to population of Desert Center, or the larger communities of Blythe and Indio/Palm Springs. There are no recreational facilities to impact in Desert Center and none are planned in the foreseeable future. Spread over the surrounding communities, the potential impact of even 144+ new residents to any single recreational facility, or cumulatively to multiple facilities within the area, would be negligible.

Some of the workers and their families may chose to become members of the new Chuckwalla Valley Raceway. However, this is a new facility, with approved planned expansion through 2020 (based on maximum membership totals), that is actively recruiting new members. No impact.

Therefore, the project would not substantially affect existing neighborhood and regional recreational facilities or result in the need for new or expanded facilities. Less than significant impact under CEQA. (Please refer to refer to the **Socioeconomic & Environmental Justice** section for further discussion.)

Would the proposed project directly or indirectly disrupt activities in established federal, state, or local recreation and/or wilderness areas? (NEPA)

There are no state or local established recreation areas in the project area. This Alternative site would include some areas of BLM-managed MUC-M public lands that could be used for recreation, as well as a number of other uses, including the proposed renewable energy project. This Alternative would result in the elimination of the existing SCE transmission maintenance road alignment, an identified 4-wheel drive/OHV green sticker access road, from SR177 to the Kaiser Road intersection. Construction of the proposed project at this site would require realignment of the existing SCE transmission line within the project boundaries. As required by condition of certification **LAND-12**, the maintenance access road along the new transmission line alignment would be outside the fenced project area and, once completed, would take the place of the existing transmission line road and would be open to the public. There would be, however, a period of up to 30 months when public access to this route would not be available. The number of recreational users in the area or frequency of use on this road is unknown at this time, but the limited population in the area, condition of the road, and absence of any established recreational destination at either end of this route generally indicates that any disruption of recreational activities would be extremely limited. However, as this is a published public access route between two established public roads, so it is likely that at least a minimal level of inconvenience would occur for some users.

There would also be a permanent loss of the recreational use of all publicly-owned, BLM-managed MUC-M and unclassified lands within the final ROW for the life of the project. As with the access road discussed above, it is difficult to determine the amount of use these public lands receive as they are interspersed with privately-held parcels and access is limited. There are also few places to park along any of the public roads that provide access to this site and the condition of the transmission line access road limits access to vehicles with 4-wheel drive. Local websites indicate the area has seasonal value for its floral displays and dark-sky conditions. However, these uses are not specific or limited to this site, but include the entire Upper Chuckwalla Valley. Unlike the proposed project site (Alternative 1), this area is not relatively undisturbed desert land. The site is located less than two miles north of Desert Center and less than a mile from the community of Lake Tamarisk. There is also other commercial development and lands zoned for commercial development across from and immediately adjacent to the site. Therefore, while the project, if sited at this location, would contribute to an increase in skyglow and noise in the general vicinity, it would not prevent access to or substantially disrupt activities in established federal, state, or local recreation or wilderness areas.

The remaining residual impacts to general recreational use of the federal recreational and wilderness lands within and around the proposed project site would be:

- Loss of access along the SCE transmission line road from SR177 to Kaiser Road during transmission line relocation and construction (up to 30 months in duration).
- Loss of recreational use on MUC-M and unclassified land within the project footprint for the operational life of the project (30± year).
- Increased ambient lighting in the Upper Chuckwalla Valley, contributing to the degradation of the “dark sky” conditions in the valley.

- A limited increase in the ambient noise levels and intermittent louder noise incidents on lands surrounding the project site and in portions of at least four designated wilderness areas during the construction phase of the project, adversely affecting the wilderness experience for some visitors.

Would the proposed project substantially reduce the scenic, biological, cultural, geologic, or other important resource value of federal, state, local, or private recreational facilities or wilderness area? (NEPA)

As noted in the **Visual Resources** section of this document, siting the proposed project at this alternative location would result in substantial nighttime light pollution and degrade the scenic character and vistas from Joshua Tree National Park and the Chuckwalla Mountains Wilderness Area, even if conditions of certification recommended by Energy Commission staff are fully implemented. NPS has identified unimpeded visibility of the night sky as a scenic vista that touches almost every aspect of what is essential to keeping a park whole. Significant, unavoidable visual impacts, resulting from construction of the project and on-going operational lighting, especially when considered in concert with additional proposed projects, would substantially reduce the visual quality and character of the existing federal recreation (multiple use) lands and scenic views from surrounding wilderness areas, although less severe than the proposed project.

Would the proposed project directly, indirectly, or cumulatively affect the wilderness qualities of size, naturalness, or outstanding opportunities for solitude or primitive and unconfined recreation of a wilderness area or wilderness study area; or change the characteristics of a wilderness study area, such that it would not contain the qualities necessary for it to be considered for future designation as wilderness?

As with the proposed project, there are wilderness areas in close proximity to the proposed project site (within a 20-mile radius). Part of the wilderness experience is the scenic quality and undeveloped nature of the views within and from the wilderness areas. As noted above, the project would be obvious from portions of the wilderness areas facing the Upper Chuckwalla Valley, and both noise and light from the project, especially during construction, would impinge on visitors to those areas. The intensity of these manmade intrusions on the individual visitor is, of course, subjective, but would affect the overall naturalness and solitude essential to the wilderness experience. Therefore, the project would indirectly and cumulatively affect the wilderness qualities of naturalness and solitude. Impacts would not be substantial as would result from the proposed project, but would still have a primarily indirect impact. It would not, however, affect any wilderness study area as none exist in the vicinity of this site.

Land Use Compatibility and LORS Compliance

Land Use Compatibility

Would the proposed project directly or indirectly divide an established community or disrupt an existing or approved land use?

Divide an Established Community

The North of Desert Center Alternative project site is located just north of Desert Center, to the west of SR177, a two-lane state highway. There are a few businesses (market, bar, café, and the Chuckwalla Valley Raceway) on the SR177 frontage adjacent to and across from the proposed project site. However, the project would not block access to these commercial properties or intrude into the boundaries of the Desert Center Community Development Area. There is no established community north of the project site that would become isolated with its construction. No impact.

Compatibility with Existing or Approved Land Uses

Residential Use

Scattered rural residences are located within 100 feet of the boundaries of North of Desert Center Alternative site. These include a small mobile home park across SR177, single family residences on small acreage parcels to the north, and several single family residences to the south. In addition, the eastern edge of the Lake Tamarisk Resort development is approximately one-half mile southwest of the project boundaries. The project would not physically intrude on, block access to, or interfere with any existing or permitted use, nor would it prevent future residential development outside the project boundaries. Although the existing zoning and land use designations for the surrounding properties permit residential development, scarcity of public services and infrastructure probably precludes any significant increase in residential density in the foreseeable future. The project would not significantly impact the use of the adjacent lands for residential purposes and would be considered compatible with existing and permitted residential uses.

Sensitive Receptors

There are no schools, hospitals, or other sensitive receptors, except for residences, within at least 10 miles of the alternative project site. However, the closest residence is only 100 yards from the project boundary and there are at least 90 residences and an equal number of RVs with full-time or seasonal residents within a mile of the proposed project. However, the **Public Health** section of this document indicates that the project would not cause any significant adverse health effects or have a significant health or safety-related impact at any existing sensitive receptor location.

In addition to the sensitive receptor sites identified above, there are also sensitive land use areas that may be adversely impacted by light, noise, and other pollutants. The Riverside County General Plan (RCGP) identifies certain areas and uses as particularly sensitive to noise and require them to be protected by restricting noise-producing land uses or requiring noise buffers to reduce the potential impacts. Noise-sensitive land

uses include all facilities identified above, residences, libraries, and passive recreation uses¹⁵ (RC 2008, p.N-5). In addition to the residences identified above, there is a public library in Desert Center, approximately 1.6 miles north of the project site and four federal wilderness areas within five miles of the project site. With average construction noise around 89 dBA and noise from steam blows and pile driving at 100-130 dBA at 50 feet from the source, construction noise would definitely be audible in the nearby residences and library and, to a lesser degree, in the wilderness areas closest to the project site. However, as noted in the proposed project analysis above, general construction noise would attenuate to 40-45 dBA at a distance of about two miles, even without consideration of reductions due to topography. Therefore, it is unlikely that the ambient noise levels at even the nearest Wilderness Areas would be increased by more than 5 dBA as a result of project activities. It is also expected that the project would increase the ambient noise levels for residences nearest the project site, especially during construction. For pile driving and other intermittent activities, noise levels are expected to attenuate to about 72 dBA at 15 miles from the source, so these noises may be clearly audible in nearby areas, especially if construction occurs at night. However, the temporary, intermittent nature of these noise bursts would not permanently increase the ambient noise levels. (See the **Noise** section for further analysis). The project would be considered compatible with existing and permitted sensitive receptor locations in the area.

Natural Resources

As noted in the **Biological Resources** section of this document, the desert tortoise has moderate potential to occur in Sonoran creosote bush scrub habitat in the southwestern portion of the North of Desert Center Alternative site, in the desert dry wash woodland to the west, and Sonoran creosote bush scrub immediately south of the woodland. This habitat area is connected to more undisturbed habitat to the west, with no impediment to movement between the site and desert tortoise critical habitat in the Chuckwalla DWMA ACEC, approximately 0.9 miles west of this site. Since these areas would be impacted by the alternative project, there is high potential for the project to result in substantial impacts to desert tortoise, including loss or disruption of east-west connectivity due to disturbances on either side of the wash. Take during construction is also likely to occur. Definitive conclusions about the magnitude of potential adverse impacts to biological resources were not made for this site, due to the absence of site-specific survey and project design information. However, development of a solar project at the North of Desert Center Alternative site would impact fewer biological resources, compared to the proposed project site, because the site is primarily fallow agricultural land, whereas development at the proposed project site would occur primarily on land supporting native vegetation and habitat. With sufficient mitigation, the project would be compatible with existing natural resource use at this location.

¹⁵ A passive recreation area is generally an undeveloped space or environmentally sensitive area that requires only minimal visitor facilities and services, directly related to health and safety. Activities do not significantly impact natural, cultural, scientific, or agricultural values. The quality of the environment and "naturalness" of an area is the focus of the recreational experience in a passive recreation area.(USL 2010)

Cultural/Historic Uses

The area surrounding the project site has a rich archaeological and historical past. The Riverside County Paleontological Sensitivity map designates the northeastern portion of the project site as an area of high potential/sensitivity. The area directly across from the project site, now in use by the Chuckwalla Valley Raceway, was the Desert Center Army Air Field, an element of the DTC/C-AMA during its WWII training mission. The town of Desert Center was founded in 1921 and the Kaiser Steel Eagle Mountain Mine, eight miles northwest of the project site, was one of the largest open-pit iron mining operations in the world until it closed in the late 1980s. However, it is not expected that project construction on this alternative site would result in a significant impact to historic or archaeological resources or prevent their future use. The project would be compatible with existing cultural resource uses.

Airports

The proposed project would be located across SR177 from the Chuckwalla Valley Raceway (formerly Desert Center Airport). The airport was never formally closed, but operations seldom exceeded 150 per year after 2004. In 2009, the airport was purchased by the owners of the Chuckwalla Valley Raceway. The remaining runway (Rwy. 5/23), a 4,200-foot asphalt strip, has been repaired and will serve as a private landing field for Raceway members and its owners. Raceway representatives have indicated that the standard approach/departure for the airfield, designated CN64 by the FAA (formerly L64), will be on a heading of 230 degrees (Rwy 23), direct or with a left turn away from the project stack and solar heliostat field, should it be constructed. Aircraft landing or departing to the northeast (Rwy. 5) will use a direct or right turn departure. Entry into the pattern from either direction would be on the southeast side of the field to avoid overflight of the race tracks. There is no published instrument procedure for this airport. There is the potential for glare from the solar mirrors to affect pilots arriving or departing this airfield. However, as this is a private field and not a party to this project application, the Energy Commission does not have jurisdiction and cannot require the airport owner or project applicant to make any changes to field operations. Conditions of certification **TRANS-7, 8, and 9** would provide the information necessary for pilots to see and avoid potential project-related aviation hazards (see **Traffic and Transportation** section for additional discussion of aviation impacts).

Recreational Use

Although zoned to allow a wide variety of uses, there is no indication that recreational development is being considered in the foreseeable future on privately-owned lands within the project site. The Chuckwalla Valley Raceway, referenced above, does have plans to expand beyond the existing track and would increase recreational options at the facility over the next 5-10 years. Public multi-use recreational lands on the project site and in the vicinity, while allowing a variety of recreational opportunities on the MUC-M and unclassified lands, also show no indication of current or future recreational development. The project would be generally compatible with existing recreational uses in the area. It would preclude the recreational use of lands within the project footprint for the life of the project. However, given the current level of recreational use, this would apparently result in little or no disruption of recreational activities in the area and would require no mitigation.

The fact that non-wilderness activities or uses can be seen or heard from locations within a wilderness area does not, of itself, preclude these activities or uses up to the wilderness area boundaries. However, this does not mean that introduction of these activities or uses have no effect on visitor activities or the wilderness experience. Light and noise generated by the project, especially during construction, would have the potential to degrade the wilderness experience for some visitors. Dark sky conditions that currently exist on the desert floor, and as viewed from the surrounding wilderness areas, would be degraded during construction. The project would also contribute to the cumulative skyglow in the area during the operational life of the project. Recreational activities such as stargazing and sky interpretation would be affected, but the extent if this effect is unknown at this time. The project's operational lighting and noise would be consistent with Riverside County commercial standards and performance requirements and compatible with planned development in the Desert Center area.

Public Utilities

The Southern California Metropolitan Water District (MWD) has two underground water distribution pipelines that extend through or immediately adjacent to this alternative project site (see **Land Use Figure 8**). The density and placement of the solar heliostat field could preclude access to these pipelines for repair and maintenance. If the project footprint can be situated to avoid the MWD water pipelines and associated ROWs, the project would be compatible with this public utility use. However, if any facilities would encroach on these utility ROWs in such a way as to disrupt or preclude continued use, the project would not be considered compatible without an agreement with MWD that would ensure the project owner would take actions to alleviate the conflict.

Land Uses following Closure and Decommissioning

Once constructed and in operation, the proposed project has an estimated life of at least 30 years. The industrial use currently proposed would then be considered an existing use in an area. However, given the limited infrastructure and distance from any major urban area, significant residential or commercial development is unlikely. Construction of the proposed project in any configuration, at the preferred or any alternative location, would result in the complete disruption of the existing ecosystem and habitat within the facility footprint, conditions that would have been maintained for the life of the project. Appropriate rehabilitation of the site would need to be revisited to determine compatibility with land uses existing at the time of closure. The required Closure and Decommissioning Plan includes a provision for rehabilitation of the site to be compatible with land uses existing at the time of closure.

Would the proposed project directly or indirectly induce substantial population growth in an area?

As noted above, the Desert Center area is sparsely populated, with little, if any, population growth in the last 30 years. Construction workers would not be expected to permanently relocate, despite the lengthy construction period. They would either commute from temporary lodgings in the Blythe or the Indio/Palm Springs area or commute daily from their permanent residence. Of the approximately 47 permanent employees (less than 150 people, including families) that would be hired for the long-term, operational phase of the project, a few might relocate to the Desert Center area.

However, given the lack of schools, commercial areas, other work opportunities, and urban amenities; and relative ease of access to larger cities along I-10 to the east and west, substantial growth in the Desert Center area is unlikely in the foreseeable future. (See **Socioeconomics and Environmental Justice** section for additional discussion.) Less than significant impact.

Would the proposed project conflict with any applicable habitat conservation plan, natural community conservation plan, or biological opinion?

There are no ACECs within the proposed ROW and the CDCA plan is not a habitat or natural community conservation plan, although it contains some elements of both. A biological opinion has not been issued for this project. Therefore, there is no applicable habitat conservation plan, natural community conservation plan, or biological opinion for this project.

LORS COMPLIANCE

Would the proposed project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction, or that would normally have jurisdiction, over the project adopted for the purpose of avoiding or mitigating environmental effects?

Same as proposed project discussion (Alternative 1) except as noted below.

Land Use Table 7

LORS that apply only to the North of Desert Center Alternative

<p><u>Riverside County General Plan (2003), as amended through December 2008</u></p> <p>- Agriculture (AG) Land Use Designation</p>	<p>The Riverside County General Plan provides policy direction for the entire unincorporated portion of the County and for 19 sectors of the County in the form of Area Plans. A large portion of the eastern desert area of the County, including the project site, is not covered by area plans and thus falls under direction of the countywide policies.</p> <p>The Agriculture land use designation has been established to help conserve productive agricultural lands within the County. Areas designated for Agriculture generally lack an infrastructure that is supportive of urban development.</p>
<p><u>Riverside County Desert Center Area Plan</u></p>	<p>The Plan provides a Land Use Plan, statistical summaries, and local policy direction for Desert Center and the surrounding area through 2020.</p>
<p><u>Riverside County Zoning Ordinance #348, amended through Ord. #348.4647 (August 20, 2009)</u></p> <p>Article XIII, §§13.1 and 13.2 Light Agriculture (A-1) Zoning District</p>	<p>This title is adopted to promote and protect the public health, safety, and welfare through the orderly regulation of land uses throughout the unincorporated area of Riverside County; provide economic and social advantages resulting from an orderly planned use of land resources; and encourage and guide development consistent with the Riverside County General Plan.</p> <p>The A-1 zoning district is primarily intended to designate areas as main resource production zones, classify them for general farming and ranching practices, and assign such uses as the primary emphasis for the areas. Residential and other uses are placed in a position of secondary importance, when compared to the production of food and fiber.</p>
<p><u>Riverside County Code, Ordinance 460.151, §§18.1-18.6 (Reversion to Acreage)</u></p>	<p>Establishes criteria and provides a means to merge more than four contiguous parcels.</p>
<p><u>Riverside County Code, Ordinance 448 (as amended through 448.A) Airport Operations (2000)</u></p>	<p>This ordinance establishes airport operating areas and regulates height standards and limits within those areas.</p>
<p><u>Riverside County Code, Ordinance 509 (as amended through 509.2) – Agricultural Preserves</u></p>	<p>Designates suitable areas of the County of Riverside as agricultural preserves, pursuant to the California Land Conservation Act of 1965 (GC § 51200, et seq.), to be devoted to agricultural and compatible uses.</p>
<p><u>Riverside County Airport Land Use Compatibility Plan (ALUCP); 2004</u></p>	<p>The intent of the ALUCP to promote compatibility between airports in Riverside County and the land uses that surround them. It sets compatibility criteria applicable to local agencies, in their preparation or amendment of land use plans and ordinances, and landowners (including special districts, other local government entities, and private parties) in their design of new development.</p>

State

Public Resources Code §25529

This does not apply to the North of Desert Center Alternative.

Local

Riverside County General Plan (RC 2008)

The Riverside County 2003 General Plan (GP), as amended through December 2008 (excluding the Housing Element), designates both the project site and surrounding lands as Open Space/Rural (OS-RUR) and Agriculture (AG) (see **Land Use Figure 9**). OS-RUR land use designation is discussed in the proposed project (Alternative 1) above.

Land Use Element

General Land Use Policies

Condition of certification **LAND-5** would also apply to this Alternative, as would conditions of certification in various sections of this document that address compliance for drainage, health and safety; noise, and natural and cultural resource protection.

As with the proposed project, there are requirements within these policies that are not applicable, due primarily to its rural location and the absence of significant commercial, industrial, or residential development in the area. For example, the land within and surrounding the proposed project site is almost exclusively disturbed, fallow, agricultural land. The site is also some distance from any community or urban area. Sidewalks, bicycle routes, and public art are non-existent. Extensive landscaping and other requirements designed to enhance an urban environment would be inappropriate in the project setting.

As discussed in LU 6.1/6.2 below, this is a highly visible, industrial facility that would be placed in a generally undeveloped desert area. As noted in the **Visual Resources** section of this document, even with all staff-recommended conditions of certification, the project would have significant and unavoidable adverse visual impacts. This is not consistent with the requirements of LU 4.1. Although visual impacts would be less at this location than at the proposed project site, they would still be significant. Therefore, the project would not be consistent with LU 4.3 at this location.

Policy LU 5.1 requires that the development not exceed the ability of the county to adequately provide supporting infrastructure and services, such as libraries, recreational facilities, transportation systems, and fire, police, and medical services. As with the proposed project site, the demands on county services in this area would be minimal. An onsite worker camp would provide basic utility, water, and wastewater treatment facilities. Construction workers would either commute to the project site on a daily basis or live onsite during the work week and return home on their days off. Although the surrounding area offers the opportunity for wilderness recreation, these are not developed areas or under county jurisdiction (see Recreation discussion above). Highway access is along SR 177, with close proximity to the I-10 interchange, connecting the site to the surrounding communities of Blythe and the Indio/Palm Springs area. There is no public transit serving the proposed project site. (See **Traffic & Transportation** section for further information.) The project has also incorporated safety features that are designed for onsite fire/life/safety response, but would also be subject to the Riverside County Development Impact Fees (see Ordinance 659 discussion below), which are designed to allow the County to construct/acquire the

needed public facilities to support development and preserve open space, wildlife, and their habitats (see **LAND-6**). Therefore, the project would be consistent with LU 5.1. Development of the project at this alternative site would have less of an adverse impact on emergency response times than the proposed project site due to its proximity to I-10

Policy LU 6.1– Policy LU 6.1 requires the project to be designed to insure compatibility with surrounding uses and consistency with any applicable land use designations and Area Plans. As noted above, condition of certification **LAND-5** would require compliance with all land use, building, and other applicable general plan policies and municipal code standards in the design and construction of the proposed project, to the extent feasible. However, potential significant and unavoidable impacts to visual resources make the project inconsistent with this policy, although to a lesser degree than the proposed project site.

Policy LU 8.2 must protect environmental resources, as specified in the General Plan Multipurpose Open Space Element (Chapter 5) and all applicable federal and state LORS, including CEQA, NEPA, and the Clean Water and Clean Air Acts. Although the project would be consistent with applicable Multipurpose Open Space Element policies, there is the potential for significant and unavoidable impacts to biological resources and substantial residual impacts under NEPA. Therefore, the project may not consistent with this policy.

Policy LU 9.1 requires that new development contribute their fair share to fund infrastructure and public facilities, such as police and fire facilities. As noted in Policy LU 5.1 above, the project would be subject to Riverside County's Development Impact Fee (DIF). Condition of certification **LAND-6** requires payment of the county's DIF prior to occupancy of the proposed facilities and would, therefore, be consistent with the requirements of this policy.

Scenic Resource policies (LU 13.1 through 13.8; OS 21.1 and 22.1)

These policies do not apply to the North of Desert Center Alternative location. There are no eligible or designated scenic highways in the vicinity of this site.

Policy LU 14.7 requires the county to ensure that no structures or activities encroach upon or adversely affect the use of navigable airspace. As noted in the impacts and mitigation discussion of aviation and military operations of the **Traffic and Transportation** section of this document, the proposed solar power tower would encroach into navigable airspace and has the potential to adversely affect arrivals/departures at the Desert Center Airport and significantly impact military testing and operations conducted along two low-level military training routes above this project site. However, full implementation of conditions of certification **TRANS-2, TRANS-7, TRANS-8, and TRANS-9** would ensure consistency with this land use policy.

Agriculture (AG) Land Use Designation and policies (LU 16.2 and 16.4)

The Agriculture (AG) land use designation is intended to protect agricultural uses by allowing only those uses and intensities that are compatible with agriculture (LU 16.2) within the County. These include row crops, nurseries, citrus groves and vineyards, dairies, ranches, poultry and hog farms, and other agricultural-related activities. Areas

designated AG generally lack an infrastructure that is supportive of urban development. This designation applies to more than 900 acres within the 2643-acre North of Desert Center Alternative site boundaries. While the proposed project would preclude agricultural use of the lands within the project footprint, including lands with an AG designation, it would not disrupt existing or prevent future agricultural uses outside the project boundaries. Parcels within the project boundaries with an AG designation also have a zoning designation of A-1. The A-1 zoning designation is considered consistent with the AG General Plan land use designation and permits public utility facilities on parcels with an A-1 zoning. Therefore, the project would be consistent with LU 16.2.

LU 16.4 encourages conservation of productive agricultural lands and seeks to preserve prime agricultural lands for high-value crop production. Most of the agricultural lands within this project site have been fallow for some time, with only 84 acres currently in limited agricultural production. The location also is not designated as Farmland by the FMMP. The project is consistent with the intent of this policy.

Riverside County Desert Center Area Plan

The Desert Center Area Plan (DCAP) is part of the Riverside County General Plan and is intended to address issues specific to the development of Desert Center and the surrounding area (see **Land Use Figure 8**). DCAP policies that apply to the proposed project at this Alternative site include land use designations, which are the same for this location as the General Plan land use designations discussed above; and policies governing agricultural preservation; light pollution; vehicular circulation; open space; and hazards, such as fire. The proposed Alternative project site is not subject to policies for the Desert Center, Lake Tamarisk, and Desert Center Airport Influence Areas, or the Specific Plan No. 306 for the Eagle Mountain Townsite.

DCAP Policy 4.1 requires development to protect farmland and agricultural resources by adhering to the General Plan Agricultural Resources section of the Multipurpose Open Space and Land Use Elements, and provisions of the AG land use designation. As noted in the General Plan discussion above, this Alternative would be consistent with all applicable General Plan agricultural policy requirements.

DCAP Policy 5.1 requires projects to use outdoor lighting fixtures that minimize the effect of the lighting on the nighttime sky and wildlife habitat areas, except as necessary for security reasons. Condition of certification **VIS-2** requires all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; b) lighting does not cause excessive reflected glare; c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; d) illumination of the project and its immediate vicinity is minimized as to times of use and extent, and e) the plan complies with local policies and ordinances. With implementation of this condition of certification, the project would be consistent with this policy.

DCAP Policy 6.2 requires county roadways to be maintained consistent with the Level of Service (LOS) standards described in the General Plan Circulation Element. As discussed in the **Traffic and Transportation** section of this document, traffic associated with this Alternative would not increase the conditions along SR177 in the

project area above LOS 'C', consistent with General Plan Circulation policy C 2.1. It was also noted that traffic from either construction or operations would not impact the performance standards of I-10, with the freeway continuing to operate at LOS A before and during peak hours of operation or construction. Therefore, this Alternative would be consistent with this policy requirement.

DCAP Policy 10.2 encourages efforts to limit off-road vehicle (OHV) use within the Desert Center Area Plan boundaries. While the project would not proactively address OHV use in the area, the project site would be fenced and would preclude any OHV activities currently occurring on the site. This project Alternative is, therefore, consistent with this policy requirement. However, as required by condition of certification **LAND-12**, public vehicular access and continued connectivity would be maintained along the SCE transmission line corridor.

DCAP Policy 11.1 requires developers to protect life and property from wildfire hazards through adherence to the Fire Hazards section of the General Plan Safety Element. As noted in the **Worker Safety and Fire Protection** section of this SA/DEIS, the agencies have determined that project design; compliance with all LORS, including the Riverside County Fire Protection Ordinance, if applicable; and the recommended conditions of certification **WORKER SAFETY 1, 2, and 6** (and **LAND-5**), would be adequate to ensure compliance with all applicable LORS, consistency with General Plan Safety Element policy S 5.1; and to assure protection from all fire hazards. Condition of certification **TRANS-1** would ensure adequate emergency access would be maintained. This Alternative would, therefore, be consistent with this policy.

DCAP Policy 12.1 requires developers to protect public health and safety from seismic-related incidents through adherence to the Seismic Hazards section of the General Plan Safety Element. As noted in the **Geology, Paleontology, and Minerals** section of this document, similar seismic design criteria would be required for the North of Desert Center Alternative site as the proposed project, in accordance with a design-level geotechnical report and 2007 California Building Code (CBC) standards. Adequate Impacts due to seismic hazards and soil conditions, such as subsidence, would be addressed by compliance with the requirements and design standards of the CBC, consistent with appropriate design parameters determined through a site-specific evaluation by a Certified Engineering Geologist or Geotechnical Engineer. As discussed in the **Hazardous Materials Management** section of the SA/DEIS, this Alternative site is located in a seismically active region of California. Energy Commission staff have determined that tank failures during seismic events are not likely and do not represent a significant risk to the public. CBC seismic requirements for the construction and design of buildings and vessels storing hazardous materials would be required to meet the appropriate seismic requirements. Therefore, this project Alternative would be consistent with this policy.

The North of Desert Center Alternative would, therefore, be consistent with all applicable DCAP policies.

Multipurpose Open Space Element

This element identifies the conditions and actions necessary to protect and preserve the

County's natural resources, agriculture and open space areas; provide effective management of mineral resources; preserve and enhance cultural resources; and provide recreational opportunities for the citizens of Riverside County.

Water Conservation

Policy OS 2.2 requires developers to decrease stormwater runoff by reducing pavement in developed areas and to include permeable parking bays and porous parking lots, with bermed rainwater detention basins. Consistent with this policy, areas around the powerblock (**SOIL&WATER-1**) and, as required by conditions of certification **LAND-8**, on-site access roads and parking pads for the visitor parking, construction worker parking, and portions of the construction laydown area would be surfaced with rock/gravel, decomposed granite, or similar material to provide a level, all-weather surface, minimize dust, and provide a permeable surface to facilitate drainage. Three lined, 5-acre evaporation ponds would also be constructed at the south end of the project site to contain all process blowdown and stormwater drainage from the central power block (SR 2009a).

Policy OS 2.3 encourages the use of native, drought-resistant landscaping plantings. Condition of certification **LAND-10** would require the use of native, drought-resistant landscaping plantings along the entrance and boundary fencing along SR177, consistent with General Plan policy OS 2.3 and requirements for the project to maintain the character of and blend with the undeveloped natural contours of the site. Additionally, conditions of certification **BIO 11-13** would require restoration of all temporarily disturbed areas outside the final project footprint to pre-project grade and conditions, including the logistics/lay down areas, generator tie-line transmission tower sites, pull sites, areas where underground infrastructure was installed, temporary access roads, and construction worker parking area(s).

With the implementation of the proposed design features and conditions of certification **SOIL&WATER-1**, **LAND-8**, **LAND-10**, and **BIO 11-13**, the project would be consistent with the requirements of General Plan Policy OS 2.2 and OS 2.3.

Groundwater Recharge

Three General Plan Open Space policies address the need to protect groundwater recharge areas: (1) Policy OS 4.3 requires that adequate aquifer water recharge areas be preserved and protected; (2) Policy OS 4.4 requires a project to incorporate natural drainage systems into the development, where appropriate and feasible; and (3) Policy OS 4.5 requires a project to retain stormwater at or near the rainfall location for percolation into the groundwater tables, to conserve it for future uses and mitigate flooding. Conditions of certification **SOIL&WATER-1**, and **LAND-8** would require permeable paving surfaces. The proposed project design includes three on-site evaporation ponds (SR 2009a) and natural drainage conditions would be preserved, to the extent feasible (see **Soil & Water** section). The project would, therefore, be consistent with Open Space policies OS 4.3, 4.4, and 4.5.

Mineral Resources

To protect the availability of these resources for future generations, Policy OS 14.2 restricts the development of incompatible land uses within the impact area of existing or potential surface mining areas. As with the proposed project site, this alternative site is designated Mineral Resource Zone 4 (MRZ-4). These are areas where there is not enough information available to determine the presence or absence of mineral deposits. Although the closed Kaiser Steel Eagle Mountain Mine is within eight miles of the proposed site boundaries, no active mines are known to have existed within or adjacent to the proposed project boundaries (USGS 2008a). As noted in the **Geology, Paleontology, and Minerals** section of this document, until the existence and structural orientation of an ore body is proven, the probability of the presence of economically recoverable mineral reserves beneath the property is considered to be very low. Location of the project at the proposed site is, therefore, consistent Policy OS 14.2.

Noise Element

The Noise Element of the General Plan is closely related to the Land Use Element because of the effects that noise has on sensitive land uses. Noise-producing land uses must be compatible with adjacent land uses in order for the Land Use Plan to be successful. There would be sensitive receptors (residences) within 100 yard of the project boundary. The closest sensitive land uses would also be the residences, along with at least four wilderness areas within five miles of the project boundaries. Although construction noise from the project could impact the wilderness experience at these locations, the noise would attenuate significantly at that distance and would generally be within Policy N 4.1 limitations Exceedances, such as steam blows, would be temporary in nature, rarely extending beyond a few minutes. Because exposure of the limited number and dispersed location of the sensitive receptors (residences) in the area, intermittent nature, and temporary, abet extended construction period, impacts would be considered less than significant. (See **Noise** section of this document for additional information.)

Riverside County Municipal Code

Ordinance 348, as amended through 348.4647 - Riverside County Land Use Ordinance

This Ordinance includes the planning and land use regulations for the unincorporated areas of Riverside County and identifies the process to initiate, implement, amend, and enforce these regulations.

Article XIII, §§13.1 and 13.2 Light Agriculture (A-1) Zoning District

There are three blocks of privately-owned parcels within the North of Desert Center Alternative site that are zoned A-1. The A-1 zoning district is primarily intended to designate areas as main resource production zones, classify them for general farming and ranching practices, and assign such uses as the primary emphasis for the areas. Residential and other uses are placed in a position of secondary importance, when compared to the production of food and fiber. However, other uses are allowed and public utility facilities are permitted with approval of the project plot plan [§13.1(b)(5)]. Plot plans would normally be approved by the Riverside County Planning Director, except for the Energy Commission's exclusive authority. The licensing process requires

information consistent with Riverside County's plot plan requirements and its certification process stand in lieu of county approval. If certified by the Energy Commission, the project would be consistent with the A-1 zoning requirements.

Article XV, §§15.1 and 15.2 Controlled Development Areas (W-2) Zoning District

A number of the privately-owned parcels within the North of Desert Center Alternative site are zoned W-2-10 (10-acre minimum). Structures and the facilities necessary and incidental to the development and transmission of electrical power and gas, including power plants and transmission lines, are permitted uses within a W-2 zoning district. The proposed project site meets the minimum lot size. However, certain project elements, including the steam generating building, solar receiver tower, and transmission line towers, would exceed the maximum height of 75 feet for buildings and 105 feet for other structures. A variance is required for structures exceeding these maximum heights [RC 2009a, §15.2(a)]. As with the proposed project, the circumstances requiring structures that exceed the maximum heights are unrelated to the parcels that make up the project site. They are, instead, related to the functionality and operational requirements of the proposed project. As a result, the findings required to justify approval of a variance cannot be made. Therefore, the project would be inconsistent with the W-2 zoning district standards.

Article XV, §15.200 Natural Assets (N-A) Zoning District

N-A zoning permits public utility substations in this zoning district, with plot plan approval, but the larger, electrical generation facilities are not permitted, even with a conditional use permit. However, "public utilities" is one of several uses permitted in any zone classification, provided a public use permit is granted by Riverside County (see Article XVIII, §18.29 below). This includes transmission lines and electric generating plants. As the Energy Commission licensing process is equivalent to the Riverside County Planning approval process for a Public Use Permit, and considering the Energy Commission's exclusive authority, certification of the project would ensure consistency with this ordinance. Although public lands also carry an N-A zoning designation, they are only subject to state or federal jurisdiction and are not bound by Riverside County land use and zoning LORS for these properties.

Article XVIII, §18.12 Off-Street Vehicle Parking and Landscaping

Off-street parking and landscaping requirements would be the same for this Alternative site. Full implementation of conditions of certification **LAND-8**, **LAND-9**, **LAND-10**, and **BIO 11-13** would ensure the project is consistent with county parking and landscaping requirements.

Article XVIII, §18.29 Public Use Permits

"Public utilities" is one of several uses permitted in any zone classification, provided a public use permit is granted by Riverside County. This includes transmission lines and electric generating plants, even if identified as permitted uses within the specific zoning district (CEC 2010a). As with the proposed project, the recommended conditions of certification would ensure that there would be no significant health, safety, or welfare impacts during either construction or operation of this project at this location. Condition of certification **LAND-5** would require the project to follow Riverside County municipal

and building code requirements. Proposed project design and conditions of certification would protect public health, safety, and welfare, and the usability of adjacent properties. The project is, therefore, consistent with the requirements for a public use permit.

Article XVIII, §18.33 Setback Adjustments and Temporary Use of Land

The section of the Riverside County code applies to this Alternative because temporary use of the land (project site) during the construction of public utilities would occur for more than six months. As with the proposed project site, conditions of certification **LAND-8**, **LAND-10**, and **BIO 11-13** would require permeable surfacing of all temporary access roads, and parking spaces; and specifically address rehabilitation of all temporary use areas with either restoration of the desert landscape or approval and implementation of an approved landscape plan. The project encroachment onto SR 177 would provide both construction and operations access at an existing, though undeveloped, access point, and would be constructed to CalTrans specifications. Condition of certification **TRANS-1** would include a construction Traffic Control Plan that would protect existing roadway access and use. Condition of certification **TRANS-3** would require the project owner to repair any construction damage to public roadways to pre-project conditions. The project's interior access roads would be constructed consistent with Riverside County road requirements. Proposed project design and conditions of certification would protect public health, safety, and welfare, and the usability of adjacent properties. Therefore, the extended temporary uses of the project site would be consistent with the normal requirements for county approval.

Riverside County Ordinance 457.102 Building & Construction Code

Riverside County Building and Construction Code would apply to all construction outside federal lands and to construction on federal lands, to the extent that the standards do not conflict or override state and federal requirements. Condition of certification **LAND-5** would require compliance with all applicable Riverside County zoning standards and building and municipal code requirements, except as specifically noted in this section or other related sections of this document.

Section 1(C) indicates that no building permit shall be issued for any structure if construction would violate the provisions of any state law or county ordinance. Condition of certification **GEN-1** (see **FACILITY DESIGN** section of this document) would require the project owner to design, construct, and inspect the project in accordance with the 2007 California Building Standards Code (CBSC), or the latest edition in effect when initial project engineering designs are submitted for review. However, there are a number of publicly-owned parcels interspersed among those held privately. Merger of the publicly and privately owned parcels is not an option. The conceptual layout plan for the project shows the potential for structures and equipment to be constructed across private parcel lines and federal and state/county jurisdictional boundaries. Construction across property lines is inconsistent with existing zoning and building requirements. Therefore, unless the project could be designed and sited in such a way as to avoid construction of project structures or elements across property lines or in violation of zoning setback requirements, this Alternative would be inconsistent with this ordinance.

Riverside County Ordinance 460.151, §§18.1-18.6 (Reversion to Acreage)

As with the proposed project, the Alternative 3 project site currently consists of multiple privately owned, contiguous parcels, under a number of different owners. The Energy Commission requires all parcels within a project footprint (other than publicly owned lands) be merged into a single parcel, owned or leased by the project owner(s) of record. As there are more than four contiguous parcels, this would require approval of a subdivision tract map to revert all parcels to acreage, then merge them into a single parcel. Dedications or offers of dedication which have not been accepted by Riverside County are unnecessary for the present or prospective public uses and would be vacated or abandoned by the reversion to acreage. At the time of the request, all parcels would be owned by the project owners; there would be no conflict of interest. There are no structures on any of the subject parcels and access would not be restricted to the subject property or any adjoining parcels. Dedications necessary for a logical street pattern for access to any lands not proposed for reversion or as may be necessary for drainage or utilities would be retained. Therefore, all findings for approval can be met and the project would be consistent with this ordinance.

Section 18.7 (Merging of Contiguous Parcels) would not apply to this Alternative site as the proposed project footprint would encompass well in excess of four contiguous parcels.

Riverside County Code, Ordinance 509 (as amended through 509.2) – Agricultural Preserves

Ordinance 509 allows the County of Riverside to establish suitable areas as agricultural preserves, pursuant to the California Land Conservation Act of 1965 (Government Code Section 51200, et seq.; the Williamson Act), to be devoted to agricultural and compatible uses. The county's GIS mapping system indicates that there are three Agricultural Preserves within or immediately adjacent to the boundaries of this Alternative site (Chuckwalla 1, 2, and 3; see **Land Use Figure 10**). This project would eliminate most or all of the area identified as the Chuckwalla #2 and #3 Agricultural Preserves. Elimination of the agricultural uses on this land for the life of the project would not be consistent with the Williamson Act requirements to protect and preserve current and future agricultural land and uses. However, there is some question as to the validity of that mapping, as both the county Planning Department and the GIS mapping indicate there are no Williamson Act contracts currently in place on any of these lands. If the Agricultural Preserve designation is correct, the project would be inconsistent with this Ordinance, as electric utility facilities are only permitted if operated by a public agency or mutual water company, not a private entity. Condition of certification **LAND-11** would require the project owner to remove said parcels from contract through cancellation, or provide proof said contract does not exist, prior to the start of construction. This would ensure consistency with this county ordinance.

Riverside County Ordinance 659, as amended through 659.8 (Development Impact Fees)

As with the proposed project, this Alternative site is in the Desert Center-CV Center DIF area. Fees would be based on Commercial development at \$12,367 per acre, as established by the August 20, 2009 fee schedule. Acreage calculations would include all power block facilities and all primary paths of travel leading to production plant area, including access roads, but not solar fields or solar field maintenance roads (CEC 2010a,b). Condition of certification **LAND-6** would require the project owner to pay the required DIF prior to the start of operations, consistent with Riverside County requirements for large-scale renewable energy projects, or enter into a development agreement, or similar agreement, with the County of Riverside in lieu of the development impact fee. The applicant has agreed to this requirement (GB 2010c).

Riverside County Ordinance 859, as amended through 859.2 (Water Efficient Landscape Requirements)

The water-efficient landscape requirements contained in this Ordinance apply to all new and rehabilitated landscapes associated with commercial or industrial uses, which require a discretionary permit and/or approval. The proposed project would require a public use permit, height variance, parcel merger, and approval of temporary extended use. Therefore, this Alternative would also be subject to the requirements of this Ordinance. Condition of certification **LAND-10** would require approval and implementation of a Landscaping Plan, consistent with this ordinance. However, given the project's remote location and lack of available municipal water sources, use of recycled water would not be required.

Riverside County Airport Land Use Compatibility Plan (2004)

The Riverside County Airport Land Use Compatibility Plan (ALUCP), adopted by the Riverside County Board of Supervisors in October 2004, contains general compatibility criteria applicable to all airports within Riverside County, as well as specific requirements for individual airports. The Desert Center Airport, known during WWII as the Desert Center Army Airfield, is located directly across SR 177 from the proposed Alternative 3 project site. The airport is privately owned by the developers of the Chuckwalla Valley Raceway and only available for use by members and guests. Activity levels should remain consistent with flight operations prior to 2004 (i.e., no more than 2,300 operations annually). There is no tower or published instrument approach/departure routes. The airspace above the Desert Center Airport is uncontrolled and air traffic control has no authority or responsibility for flights below 1,200 feet AGL within this airspace. There is no master plan for the Desert Center Airport. Standard direct departures from the single remaining runway are to the southwest (heading of 230 degrees), into prevailing winds, and would remain outside the proposed project site. The airport is not lighted and is only available during daylight hours. The entire project site, including the central tower, would be outside all airport compatibility zones and the airport area of influence boundary (see **Land Use Figure 11**). **TRANS-7** would require the solar tower to be lighted, consistent with the FAA requirements for Obstruction Marking and Lighting (FAA 2007), requirements in response to FAA 7460 Finding of No Significant Hazard (FAA 2009c), Air Force Aviation Safety-Flight Safety Flash 09-01 (USAF 2009), and FAA Safety Alert for Operators

(SAFO) 09007 (FAA 2009a). **TRANS-8** would require pilots to be advised of the location of the proposed solar tower through issuance of a temporary Notice to Airmen (NOTAM) that would be superseded by a permanent notation of the tower's location on the applicable aviation charts for the Desert Center Airport and surrounding airspace. (RC 2004, p.3-16) Therefore, this project alternative would be consistent with requirements of the Riverside County ALUCP and the existing airport use.

Cumulative Land Use, Recreation, and Wilderness Effects

GEOGRAPHIC SCOPE OF ANALYSIS

The geographic scope of the project's land use, recreational, and wilderness cumulative impact for this Alternative is divided into three areas:

- A Incremental, project-specific impacts analyzed within this document that contribute to or result in a substantial change or significant impact to land use and/or recreation in the immediate project area.
- B Local area, defined as from I-10, south of Desert Center, within a radius of approximately 15 miles of the proposed project site and the general confines of the Upper Chuckwalla Valley, surrounding mountain ranges (Palen/McCoy, Chuckwalla, and Orocopia Mountains/Wilderness Areas); and Joshua Tree National Park and Wilderness Area.
- C Regional area, defined as within the California Desert District (CDD), primarily in the area managed by the BLM's Palm Springs-South Coast District office, the Riverside East Solar Study Area, and along the I-10 corridor from Chiriaco Summit to Blythe.

There are four Wilderness Areas that could be indirectly affected by the proposed project and six Wilderness Areas, several ACECs, and Joshua Tree National Park/Wilderness that could be affected by the cumulative impacts of renewable energy and other foreseeable projects in the regional area.

Local Area

The project site is approximately 1.6 miles north of Desert Center and I-10, in the Upper Chuckwalla Valley of Riverside County. It is immediately adjacent to and includes a portion of the BLM Riverside East Solar Energy Study Area and BLM lands that are being analyzed for solar development in the U.S. Department of Energy (DOE) and BLM programmatic EIS (see **Cumulative Impacts Figure 2**). Bounded by four mountain ranges, the lands surrounding the project area are geologically isolated from other portions of the CDD and present a relatively distinct land area for the purposes of analyzing local CEQA and NEPA cumulative impacts.

There are a total of ten solar energy projects proposed or in progress on approximately 57,247 acres¹⁶ of BLM-managed public lands, within a radius of approximately 15 miles from the project site. One wind project is also proposed on 3,500 acres, within eight

¹⁶ Acreage reflects the total area being investigated in the current applications submitted to BLM. The final ROW should be significantly less, consistent with the final project footprint, following completion of construction.

miles of this site (see **Land Use Appendix B**).

In addition, six projects that are not energy-related, but have the potential to impact current and future land uses, are located within 10 miles of the project site. (See **Land Use Appendix C**)

Regional Area

In addition to the projects identified within the local area, there are 17 additional solar projects proposed over more than 425,000 acres of public lands and two wind projects on almost 18,000 acres of public lands (as of August 2, 2010), within a radius of 50 miles from the project site. The DOE and BLM are also analyzing public lands along SR 62, I-10, SR177, and north into San Bernardino County for compatibility with future solar development, as part of the Solar Energy Development Programmatic EIS (DOE/BLM 2010a). Portions of these lands are also included in the BLM's Riverside East Solar Study Area. (See **Land Use Appendix B** and **Cumulative Impacts Figure 2**)

Even more renewable energy projects are proposed on public lands in surrounding counties, from Indio, Twenty-Nine Palms, and Needles to the eastern California border; and into the states of Nevada and Arizona (see **Land Use Appendix B**), along with the 24 tracks of public lands in six western states, including over one million acres in southern California, that are being studied as suitable for solar development.

There are also at least 36 non-energy-related current and foreseeable projects affecting land use and resources in the region, including three major master planned communities and 20 smaller residential developments in and around the City of Blythe (see **Land Use Appendix C**).

AGRICULTURE LANDS AND RANGELANDS

Local Agriculture

Local privately-owned parcels in the project vicinity are generally moderate to large acreage parcels (20 acres or larger) that are either undeveloped desert lands, devoid of residences and other structures, or single family ranchettes. Although the zoning for much of the private land allows agricultural uses, there is little agricultural activity in the Upper Chuckwalla Valley area, other than a palm nursery and a small jojoba farm. Construction of the project at this site would eliminate most or all of the remaining 974 acres of AG-designated lands in the Upper Chuckwalla Valley, or within 20-40 miles of the project site. There are no grazing allotments on public land in this area. The project would not add to any local cumulative loss of grazing land, Prime Farmland, or Farmland of State or Local Importance in the Upper Chuckwalla Valley.

Regional Agriculture

There are no rangeland grazing allotments and very little agricultural activity within the regional area identified for this Alternative. As mentioned in the proposed project (Alternative 1), the Ford Dry Lake Rangeland Grazing/ Pasture Allotment, along the I-10 corridor about 20 miles west of Blythe, was cancelled in 2007, due to its proximity to occupied Bighorn Sheep range in the Palen Mountains. Some irrigated agriculture,

including alfalfa fields and orchards, occurs in areas along the Colorado River. Although some of the current and foreseeable non-energy-related projects in the region (see **Land Use Appendix C**) may result in the conversion of agricultural lands to non-agricultural uses or impact available water resources currently used for irrigation, this Alternative would not result in or contribute to the loss of any of these types of agricultural uses.

Rangelands

Although there are several herd and herd management areas in the regional vicinity, the project would not interfere with established or proposed access or uses. Therefore, this Alternative would have no impact on cumulative agricultural and rangeland impacts.

RECREATION AND WILDERNESS

Recreation

As noted in the Recreation discussion above, there are no established recreational areas within 20-40 miles of the project site. The closest recreation areas are in the Joshua Tree National Park, the City of Blythe, and the Indio/Palm Springs area. Construction workers from this project or the limited number of permanent employees are not expected to contribute substantially to the demand on local or regional recreational facilities. However, as noted in **Land Use Appendices B and C**, there are at least 20 other renewable projects proposed or approved on surrounding BLM-managed public lands, with the potential to affect more than 500,000 of the 1.6 million acres of multi-use recreational and wilderness lands in the region, either through direct impacts to the recreational resources or by increasing the number of visitors using the recreational facilities and wilderness areas. There are also at least 36 non-energy-related current and foreseeable projects with the potential to impact recreational resources, including impacts from increased population growth in and around the City of Blythe. This project would add proportionally, but not substantially, to the cumulative recreational impacts of those local and regional projects. Therefore, the proposed project's overall contribution to local and regional cumulative recreational impacts would be less than significant.

Wilderness

There are four designated wilderness areas in the local project vicinity and more than 13 wilderness areas, several ACECs, and the Joshua Tree National Park/Wilderness within a 75-mile radius of the Alternative project site. Neither the project nor other existing or foreseeable projects would occur within the wilderness, ACEC, or national park boundaries. Direct impacts to access and visual/scenic resources, noise and light pollution, and increased visitation (resource use), as well as indirect impacts to natural and cultural resources, may result from one or more of the proposed projects. The proximity of the wilderness and other environmental sensitive areas to the solar study areas and both public and private lands proposed for development increases the likelihood of adverse impacts. Information to make a determination of the extent of these potential impacts is not available at this time, but could be cumulatively substantial. Noise and visual/scenic impacts are not expected to physically impact the availability of resources within the boundaries of these protected areas, but could affect

a visitor's wilderness experience. These impacts, however, are not measurable, as they are based on individual perceptions, sensitivities, and expectations. The proposed project would not contribute to any cumulative access impacts or contribute substantially to increased visitor resource use.

LAND USE COMPATIBILITY

Scenic Resources

All solar projects are similar in general design, with one or more solar collector fields, a central generating facility, transmission lines, and one or more interconnection substations. Facility stack heights vary, depending on the solar/generating process, and range from under 100 feet to central stacks exceeding 650 feet agl. The number of stacks also varies, from a single central stack to four or more stacks arranged in series. Transmission line towers are generally 90-120 feet tall. In total, most solar facilities occupy between 1,000-5,000 acres, not including transmission line corridors, although areas three to five times the final project footprint are often initially requested in the ROW applications to allow flexibility in final project placement or to allow for future expansion or more than one facility.

In addition to the RSEP, there are thirty large renewable energy projects proposed within 40 miles of this Alternative project site. Due to the topography of the area, most of these projects would be visible from I-10 and at least 10 would be visible from SR177. Over 500,000 acres have been identified in the BLM ROW applications for these projects, most in undeveloped desert areas, bounded by more than 13 mountainous wilderness areas, and within five miles of a state highway. There is also additional acreage available within the surrounding BLM Riverside East Solar Energy Study Area and BLM lands being analyzed for future solar development. This increases the potential for additional project impacts to the scenic resources in this area. As with the proposed project, it is reasonable to assume that the other projects proposed for this area would have similar project-related impacts to the scenic resources of the area as the proposed project, although the visual impact of the projects may vary by degree. The construction of each project would extend the visual impact along the north side of I-10 for over 50 miles, from Blythe to the Chiriaco Summit. Projects proposed for the Upper Chuckwalla Valley would be visible for up to 10 miles along SR177, north of I-10. Projects are also proposed along both sides of I-10 within 10 miles of Blythe. This Alternative would contribute substantially to the significant and unavoidable cumulative impacts to the scenic resources along the I-10 corridor, and especially in the Upper Chuckwalla Valley.

The cumulative impact to existing dark sky conditions, especially in the Upper Chuckwalla Valley by artificial light sources from the proposed projects would be substantial. There are ten large-scale solar projects proposed within 10 miles of the North of Desert Center project site. Like the proposed project site, these areas have little residential or commercial development and are generally without any significant sources of artificial light. Project-related impacts could combine with existing and foreseeable projects to substantially increase light pollution in the area, especially if construction timelines coincide. The proposed project would not only contribute to the cumulative lighting of the Upper Chuckwalla Valley area, but extend the light pollution

eastward into the Palen/McCoy Wilderness and west toward the Joshua Tree National Park/Wilderness. Existing dark sky conditions would be substantially degraded by both construction and on-site security and operational lighting. Areas used for astronomical viewing and sky interpretation would be particularly impacted. Overlapping construction schedules would intensify the cumulative effect. Therefore, although glare shields and other conditions of certification have been recommended to reduce lighting impacts (see **VISUAL RESOURCES** section of this document), this Alternative would still contribute significantly and unavoidably to the cumulative impact to existing scenic, dark sky conditions throughout the Upper Chuckwalla Valley and along the I-10 corridor.

Future Land Use and Development

It is difficult to determine if the influx of renewable energy projects in and around the Desert Center area would encourage or discourage local growth, but would probably result in a measurable, if not substantial, increase in both residential and commercial development. Commercial developments, such as the Chuckwalla Valley Raceway and the Eagle Mountain Landfill Project would also bring additional development to the area. The existing Lake Tamarisk residential development still has buildable lots, a number of homes for sale, and sufficient infrastructure to accommodate a reasonable level of growth. The Eagle Mountain Townsite project intends to restore and repopulate the historic Eagle Mountain Townsite. There are also a great many moderate to large-acre residential parcels available in and around Desert Center. While the project would occupy a large number of acres, it is not expected to contribute measurably to the need for rezoning or land division. It could, combined with the other proposed projects in the area, have a cumulatively considerable impact on the type of commercial and industrial development that is attracted to the area.

Land surrounding the local area is both publicly and privately owned. BLM-managed public lands are generally unclassified or designated for multiple use, with the permitted uses determined by the environmental sensitivity of the resources. Most of the public land proposed for solar development in the project area is managed by BLM and designated MUC-M, which allows a multitude of uses, including grazing, recreation, and electric generating facilities. However, development of solar facilities on these lands precludes their use for any other purpose for the life of the project (generally 30-40 years). Residual alterations to the land may continue far beyond that time frame. This project, combined with the other proposed projects in the area, could have a cumulatively considerable impact on the availability of and access to existing public multiple-use lands.

Therefore, use of either public or private lands for renewable energy projects, in the Desert Center area, could have a substantial cumulative impact on future land use and development.

CEQA LEVEL OF SIGNIFICANCE

Under the proposed project (Alternative 3):

- Impacts to agriculture, recreation, and wilderness would be less than significant, both individually and cumulatively.
- No impacts to timberlands.

- The project would have a less than significant impact on airport operations at the Desert Center Airport, with implementation of **TRANS 2 and 7-9**.
- The proposed project would be compatible with existing and permitted agricultural, residential, sensitive receptors, noise, aviation and military use, and recreational land uses with the implementation of **LAND 2, 3, 5, and 12; and TRANS 7-9**. However, it would be incompatible with existing and permitted natural and scenic land uses due to significant, unavoidable impacts to biological, and visual/scenic resources (see **BIOLOGICAL AND VISUAL RESOURCES** sections of this SA/DEIS).
- Consistency with federal and state LORS would be ensured with implementation of **LAND 1-3, 5; and CULT-11**.
- Implementation of **LAND 1-3, 5-8, and 10-12; BIO-3, 11-13, and 21; CULT-11; SOIL&WATER-1; and TRANS 1-3 and 7-9** would ensure consistency with many of the local LORS, to the extent feasible. However, the proposed project would still be inconsistent with a number of Riverside County General Plan policies and county ordinances (see **LAND USE APPENDIX A**).
- Use of either public or private lands for renewable energy projects would have a less than significant impact on future land use and development in the project area, either individually or cumulatively.
- The addition of the RSEP (Alternative 3) would further extend the visual intrusion along I-10 and SR177, as well as impact the scenic vista along I-10 and in the Upper Chuckwalla Valley. This would contribute substantially to the significant and unavoidable cumulative impacts to the scenic resources.
- Although glare shields and other conditions of certification have been recommended to reduce lighting impacts (see **VISUAL RESOURCES** section of this document), the proposed project would still contribute significantly and unavoidably to the cumulative impact to existing scenic and dark sky conditions throughout the Upper Chuckwalla Valley.
- Significant, unavoidable project-specific biological and visual/scenic resource impacts could potentially contribute to cumulatively significant, unavoidable temporary and/or permanent impacts, especially if most of the proposed solar and wind projects within the local or regional area are actually constructed. Simultaneous or overlapping timelines would further exacerbate the temporary construction-related impacts.

NEPA COMPLIANCE

Under Alternative 3:

- The effects on the agricultural resource value of established federal rangelands within the California Desert Conservation Area are minor, both locally and regionally and would not contribute to the substantial loss or fragmentation of existing grazing allotments or future grazing opportunities.
- The effects on recreational activities and resources would be temporary and relatively minor from both a local and regional perspective. Limited loss of access to

the MUC-M lands along SCE transmission line access road would occur during the realignment .

- The effects on recreational use of established Wilderness areas would be limited to noise and visual intrusion on the wilderness experience during project construction. Wilderness resources would not be impacted.
- Project activities at all phases of construction, operation, and closure would conform with BLM plans, policies, and procedures, through approval of the ROW application and implementation of the NEPA and CDCA Amendment process. Staff has also proposed condition of certification **LAND- 3** that, if fully implemented, would ensure consistency with applicable federal (BLM) land use requirements.
- If all the proposed renewable energy projects currently licensed or pending on BLM lands along SR 177, I-10, and in the Upper Chuckwalla Valley are actually constructed, the loss of multiple use lands would equal nearly 1/3 of the 1.6 million acres of public lands in that area. Substantial impacts to biological, cultural, and visual resources would be unavoidable.

ALTERNATIVE 4 (RICE VALLEY ROAD TRANSMISSION LINE)

The SR62/Rice Valley Road Transmission Line Alternative would interconnect to Western's 161/230-kV Parker-Blythe transmission line at the same location as the proposed project transmission line, but would use a different transmission line route to make that connection. With this alternative, the transmission line would exit the proposed plant site just east of the main plan entrance and follow the south side of State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then follow the existing Rice Valley Road for approximately 10 miles to the proposed substation location and the interconnection point with Western's Parker-Blythe transmission line. The SR 62/Rice Valley Road Transmission Line Alternative route is illustrated in **Alternatives Figure 4**.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

From a land use perspective, the solar generating facility, whether set on the proposed or reduced acreage footprint, would be identical to the proposed project, with comparable impacts. All recommended conditions of certification would still apply. The alternative transmission line route, however, would result in the following changes to land use impacts of the proposed project.

Agriculture and Rangeland

Approximately 60 fewer acres of the Rice Valley grazing allotment would be impacted by Alternative 4. However, this Alternative would also require construction along the entire length of Rice Valley Road, increasing the potential for access along this road to be delayed or blocked. This is an important access route for the Rice Valley grazing allotment. Therefore, condition of certification **LAND-4** would still apply to ensure adequate access to this allotment during the seasonal grazing period. Less than significant impact with implementation of **LAND-4**.

Land Use Compatibility

Impacts to the SR62 scenic corridor would be increased as a result of this Alternative. With Alternatives 1 and 2, the project's significant visual impacts to the scenic corridor were limited to the plant footprint. Alternative 4 would extend those visual impacts (transmission line towers and lines) along the southern side of SR62 for an additional 3.8 miles, disrupting views of the Rice Valley scenic vista and historic Camp Rice. This would add to the already significant, unavoidable project-related scenic and visual impacts identified in Alternatives 1 and 2. It would also increase impacts to historic Camp Rice, resulting in a determination of significant and unavoidable cultural resource impacts.

Cumulative Land Use Effects

As with Alternatives 1 and 2, the project would have a less than significant/substantial cumulative effect on agriculture or rangeland uses; recreation; and future land use and development. However, it would contribute substantially to the cumulative significant, unavoidable impacts to scenic resources along an eligible state scenic highway and existing scenic vistas and dark sky conditions throughout the Rice and Ward Valleys.

CEQA LEVEL OF SIGNIFICANCE

Under Alternative 4:

- Recreation and Wilderness impacts would be identical to those identified for the proposed project (Alternative 1).
- Impacts to Agriculture and Rangelands would still be less than significant, but there would be less of a loss of forage acreage with this Alternative.
- All other impacts would be the same as for the proposed project, except that impacts to historic Camp Rice would also be considered significant and unavoidable.

NEPA COMPLIANCE

Under Alternative 4:

- Land Use, Recreation, and Wilderness effects, including residual effects with implementation of the proposed mitigation (conditions of certification), would be identical to those identified for the proposed project (Alternative 1).

ALTERNATIVE 5

The No Action alternative is the only alternative that must be analyzed in an EIS that does not respond to the purpose and need for the action. With Alternative 5, the No Project/No Action Alternative, the proposed action would not be undertaken; the project would not be built on the proposed or any identified alternative site. Unless BLM implements an amendment to the CDCA Plan, the public lands on which the project transmission lines and substation is proposed would continue to be managed within BLM's framework of a program of multiple use and sustained yield, and the maintenance of environmental quality in conformance with applicable statutes, regulations, policies, and land use plans. The site of the proposed generating facilities would remain in private ownership, subject to applicable Riverside County LORS.

The No Project Alternative under CEQA and the No Action Alternative under NEPA define the scenario that would exist if the proposed Rice Solar Energy Project were not constructed. The CEQA Guidelines state that “the purpose of describing and analyzing a ‘no project’ alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project” (Cal. Code Regs., tit. 14 § 15126.6(i)). The No Project analysis in this SA/Draft EIS considers existing conditions and “what would be reasonably expected to occur in the foreseeable future if the project were not approved...” [Cal. Code Regs, tit. 14 § 15126.6(e)(2)]. Under NEPA, the No Action Alternative is used as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the proposed action and the alternatives.

If the No Project/No Action Alternative were selected, the construction and operational impacts of the proposed Rice Solar Energy Project would not occur. There would be no project-related site alterations, no loss of resources or disturbance of approximately 1,500 acres of desert habitat, no loss of historically significant locations or other impacts to cultural resources, no visual impacts along SR62 or to the Rice Valley, no need for alterations to military training activities, and no installation of power generation and transmission equipment as a result of this project. There also would be no contribution to the cumulative adverse visual, biological, cultural, recreational, transportation, and scenic impacts that may accompany the development of other proposed and foreseeable projects in the local and regional area. However, the projected plant output of 100-150 megawatts of power also would not be added to the regional electrical grid or available to meet the state’s renewable energy requirements.

Both county and BLM land use designations and requirements would be expected to remain generally consistent with existing LORS and, although the RSEP project would not be constructed, the lands on which it is proposed would still be available for future development, including uses similar to the proposed project.

SETTING AND EXISTING CONDITIONS

The land use setting for the No Project/No Action Alternative is the same as that identified for the proposed project site and associated linear facilities.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

With the No Project /No Action Alternative, no project-related impacts would occur and, therefore, no mitigation is justified.

CEQA LEVEL OF SIGNIFICANCE

Under the No Project/No Action alternative, future land use impacts to the proposed project site and area are likely to be similar as those currently occurring under the existing conditions in the area. Existing issues of development, growth, recreational impact, loss of agricultural land, and climate change would not be altered or disrupted by any project-related impacts. No impact.

NEPA COMPLIANCE

As with the CEQA Level of Significance discussed above, existing issues and concerns

would continue without the influence of any project-related impacts. As no physical project-related changes have occurred to the environment to date, there would be no recommended mitigation or need for remediation and no residual effects.

PROPOSED CONDITIONS OF CERTIFICATION

Should the Energy Commission approve the project and the BLM approve the ROW, the following measures are recommended as conditions of certification and approval. Staff recognizes that BLM's parallel process for resolving adverse effects is somewhat different from the CEQA process. Staff therefore recommends that BLM incorporate the following conditions of certification or their equivalent into the RSEP ROW and associated plan documents to ensure that the project's impacts to land use, recreation, and wilderness are mitigated in a way that meets both federal and state requirements.

LAND-1: The project owner shall adjust the boundaries of all parcels or portions of parcels that constitute the Rice Solar Energy Project site, identified in the project Application for Certification (AFC) as Riverside County Assessor's Parcel Numbers 801-070-003, 801-070-004, 801-100-005, and 801-100-006, excepting all project elements within the Bureau of Land Management (BLM)-approved, project-related Rights-of-Way (ROWs) and linear easements, or other independent ROWs or privately held easements, as necessary to merge all properties into a single parcel, under single control and ownership, in accordance with provisions and procedures set forth in the County of Riverside's Ordinance #460.151; Ordinance #348, §§15.1 and 15.2; and the Comprehensive General Plan of Riverside County.

Verification: At least 30 days prior to the start of site preparation and construction, the project owner shall submit evidence to the Energy Commission Compliance Project Manager (CPM), indicating approval of the parcel merger by Riverside County. The submittal to the CPM shall include evidence of compliance with all conditions and requirements associated with the approval of the Certificate of Parcel Merger by the county, including a copy of the recorded deed or Record of Survey and the "Notice of Lot Line Adjustment". All parcels must be under common ownership at the time of merger.

LAND-2 The project owner shall obtain a recorded easement from all affected private property owners, authorizing the use of those portions of privately-owned lands that would be impacted by construction and operation of any project-related utility lines or pipelines, transmission line alignments, corridors, access roads, and/or the proposed interconnection substation. Temporary access for surveys may occur before the permanent easement(s) is recorded, provided permission to access the property is obtained from the owner or owner's designated representative prior to entering the property.

Verification: At least 30 days prior to the start of construction activities on any private lands, including delivery of materials, the project owner shall provide a copy of a recorded easement to the CPM on any affected properties. The project owner shall also provide copies of any access agreements with the property owner(s) and advise the CPM and property owner(s), in writing, of any intended entry onto private lands for

surveys or other site evaluations at least three days prior to entry. Copies of all correspondence regarding rights of entry shall also be provided to the CPM within 10 days of receipt.

LAND-3 The project owner shall obtain a Right-of-Way Grant (ROW Grant) from the Bureau of Land Management (BLM), authorizing use of those portions of BLM-managed public lands that would be impacted by utility lines or pipelines, transmission line alignments, corridors, access roads, and/or the proposed interconnection substation footprint. An approved Plan of Development shall be made a part of the right-of-way grant. Any relocation, additional construction, or use that is not in accordance with the approved Plan(s) of Development and Energy Commission licensing and certification requirements shall not be initiated without the prior written approval of BLM's Authorized Officer and the CPM.

Verification: At least 30 days prior to the start of construction and prior to any Notice to Proceed with construction issued by BLM's Authorized Officer and the CPM, the project owner shall provide BLM's Authorized Officer (AO) and the CPM with documentation of the following:

1. BLM's ROW Grant and final approved Plan of Development.
2. The bond satisfactory to BLM's AO.
3. Certification that the project owner acknowledges the project's development and all applicable construction, operation, maintenance, and closure activities shall be conducted in conformance with the approved Plan of Development and Energy Commission licensing requirements (and any subsequent amendments), and within the approved ROW boundaries, for the life of the project.

LAND-4 Activities blocking or limiting access to Rice Valley Road, or construction within the boundaries of the Rice Valley (Keoughs) Rangeland Grazing Allotment (#CA06001), shall not occur during the established seasonal grazing period, currently March 1 – April 30 of each year. No open trenches or construction materials that could endanger livestock shall be accessible within the allotment boundaries. Activities, such as surveys, that would not interfere with or endanger grazing livestock are exempt from this condition.

Verification: At least 30 days prior to the start of each allotted grazing season, the project owner shall provide BLM's AO and the CPM with a copy of the construction workplan, confirming cessation of construction activities and implementation of any site protection needed for the duration of the grazing season. Site visits for verification are at the discretion of BLM and the CPM.

LAND-5: The project owner shall ensure that all project-related facilities on private lands, including temporary construction parking and laydown area(s), are constructed and operated in compliance with all applicable Riverside County land use laws, ordinances, regulations, and standards, including zoning and building code requirements, except as noted in this document.

The project owner shall submit a development plan to the Riverside County Planning

Department in sufficient time to review for substantial conformance and comment, and to the Energy Commission's CPM for review and approval prior to the proposed start of construction. The development plan shall include all elements normally required for review and permitting of a similar project, including site plan, structural dimensions, design and exterior elevation(s), and proof of any required permits. The project owner shall pay applicable Planning Department fees, if any, for review of the plan.

Verification: At least 90 calendar days prior to the start of construction, including any grading or site remediation on the power plant project site or its associated easements, the project owner shall submit the proposed development plan to the Riverside County Planning Department to review for substantial conformance with county regulations and comment, and to the CPM for review and approval. The project owner shall also provide the CPM with copies of the transmittal letter to Riverside County and any associated correspondence.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from the local jurisdiction, along with any changes to the proposed development plan, to the CPM for review and approval.

LAND-6: Prior to the start of commercial operation, upon final inspection, or with issuance of a certificate of occupancy, as required by the County of Riverside, the project owner shall pay the required development impact fee (DIF) for the project area to the County of Riverside, in accordance with Riverside County Ordinance 659 (as amended through 659.8), as it applies to large scale renewable energy projects. Alternately, the applicant may enter into a development or similar agreement with the County of Riverside that, in the county's opinion, meets the DIF requirements of this ordinance. Fees shall be based on the Desert Center-CV Center Commercial development rate of \$12,367 per acre, as established by the August 20, 2009 fee schedule. DIF acreage calculations shall include all power block facilities and all primary paths of travel, on the project site, leading to production plant area(s), including access roads, but not solar fields or solar field maintenance roads.

The project owner shall submit a copy of the receipt or comparable document demonstrating payment of the DIF or a copy of the approved development or similar agreement with the County of Riverside and a letter from the County stating that said agreement meets the county's DIF requirements to the CPM prior to the start of commercial operation.

Verification: At least 30 days prior to the start of commercial operation, the applicant shall submit to the CPM a copy of the receipt or comparable document demonstrating payment of the DIF or a copy of the approved development or similar agreement with the County of Riverside and a letter from the County stating that said agreement meets the county's DIF requirements.

LAND-7: The project owner shall ensure that all permanent telephone and electric transmission lines serving the project site, located within or immediately adjacent to the SR62 highway corridor, shall be installed underground for the entire length from the existing service connection to the on-site facilities. Temporary service lines installed in rights-of-way that preclude underground utility installation shall be exempt from this requirement.

Verification: The project owner shall provide the CPM of proof of underground utility installation, either as a copy of the final inspection or photos, prior to the start of commercial operations.

LAND-8: The project owner shall submit a Parking Plan for construction parking to the CPM for review and approval prior to the start of construction. The Construction Parking Plan shall be consistent with Riverside County parking requirements for space size and circulation, and shall meet the following requirements:

- One parking space for each daily-commute employee, based on an average of the number of workers expected to be on-site between months 8-20.
- One space for each company vehicle
- One commuter vanpool space for every 20 employees
- Three visitor spaces immediately adjacent to the main construction office (trailer), including one handicapped van-accessible space, with provisions to allow accessibility to and into the main construction office.
- A compacted all-weather surface of rock, decomposed granite, or similar material shall be installed on all temporary parking areas.
- Striping of the employee, visitor, and company vehicle parking spaces. If surface materials preclude use of striping, the project owner shall ensure vehicles are parked in a manner that maintains adequate circulation patterns and provides adequate square footage to accommodate the required number of parking spaces, consistent with Riverside County parking requirements.

The project owner shall also submit a Parking Plan to the CPM for review and approval for the operational phase of the project, prior to the start of commercial plant operation. The Operations Parking Plan shall be consistent with Riverside County parking requirements for space size and circulation, and shall meet the following requirements:

- One parking space for every two employees
- One space for each vehicle kept in conjunction with project operations (i.e., company vehicles).
- One commuter vanpool space
- Loading spaces for delivery of materials and equipment, consistent with county requirements
- At least one handicapped van-accessible parking space immediately adjacent to the site office, consistent with requirements of the Riverside County code and the Americans with Disabilities Act (ADA), with adequate ADA access to and into the operations office.

Verification: At least 90 days prior to the start of construction, the project owner shall submit a Construction Parking Plan to the CPM for review and approval. The plan shall include all specified elements identified in condition of certification **LAND-8** and be consistent with Riverside County parking requirements for space size and circulation.

At least 30 days prior to the start of construction, the project owner shall advise the

CPM of the completion of the construction elements of the Construction Parking Plan. Either a site visit or area photography shall be used to verify compliance, at the CPM's discretion.

At least 90 days prior to the start of commercial operation, the project owner shall submit an Operations Parking Plan to the CPM for review and approval. The plan shall include all specified elements and be consistent with Riverside County parking requirements for space size and circulation.

At least 30 days prior to the start of commercial operations, the project owner shall advise the CPM of the installation and completion of the Operations parking requirements. Either a site visit or area photography shall be used to verify compliance, at the CPM's discretion.

LAND-9^{*}: The project owner shall submit a Landscaping Plan for the entrance, northern and Historic Interpretive Area (see condition of certification **CULT-11**) of the plant site to the CPM for review and approval prior to the start of commercial operations. The Plan shall also incorporate avoidance and minimization measures consistent with the Revegetation, Weed Management, and Special-Status Plant Remedial Action Plans (see conditions of certification **BIO-10-12**); and the restoration and revegetation plan for the staging and buffer areas (see condition of certification **VIS-3**).

The project owner shall use proper design fundamentals to reduce the visual contrast to the characteristic landscape, including the following:

- Use native, drought-resistant landscape plantings.
- Retain existing rock formations, vegetation, and drainage, unless significantly altered by construction activities.
- Avoid soil types that generate strong color contrasts.
- Retain as much of the existing vegetation as possible.
- Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast.
- Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Place native or compatible soil, brush, rocks, and natural debris over disturbed areas and irrigation piping.

Verification: At least 90 days prior to the start of commercial operation, the project owner shall submit a Landscaping Plan for the entrance and Historic Interpretive Area of the plant site to the CPM for review and approval. The plan shall include a timeline for installation and continued maintenance and shall be consistent with all requirements listed in condition of certification **LAND-9**; the Revegetation, Weed Management, and Special-Status Plant Remedial Action Plans of conditions of certification **BIO-10-12**; and the **VIS-3** restoration and revegetation plan for the staging and buffer areas.

Implementation of the Landscaping Plan shall commence to later than 30 days following CPM approval. The project owner shall provide quarterly progress reports to the CPM, including photographic documentation, until landscaping installation is complete.

Landscaping shall be maintained and annual reports of landscaping condition and maintenance shall be provided to the CPM for the life of the project.

‡ This condition of certification would only apply to the proposed project (Alternative 1), Alternate 2, and Alternate 4.

LAND-10*: The project owner shall submit a Landscaping Plan for the entrance, boundary fencing along SR177, administrative office, and visitor parking area of the plant site to the CPM for review and approval prior to the start of commercial operations. The Plan shall also incorporate avoidance and minimization measures consistent with the Revegetation, Weed Management, and Special-Status Plant Remedial Action Plans (see conditions of certification **BIO-10-12**); and the restoration and revegetation plan for the staging and buffer areas (see condition of certification **VIS-3**).

The project owner shall use proper design fundamentals to reduce the visual contrast to the characteristic landscape, including the following:

- Use native, drought-resistant landscape plantings.
- Retain existing rock formations, vegetation, and drainage, unless significantly altered by construction activities.
- Avoid soil types that generate strong color contrasts.
- Retain as much of the existing vegetation as possible.
- Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast.
- Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Place native or compatible soil, brush, rocks, and natural debris over disturbed areas and irrigation piping.

Verification: At least 90 days prior to the start of commercial operation, the project owner shall submit a Landscaping Plan for the entrance, northern boundary fencing, and visitor viewing area of the plant site to the CPM for review and approval. The plan shall include a timeline for installation and continued maintenance and shall be consistent with all requirements listed in condition of certification **LAND-9**; the Revegetation, Weed Management, and Special-Status Plant Remedial Action Plans of conditions of certification **BIO-10-12**; and the **VIS-3** restoration and revegetation plan for the staging and buffer areas.

Implementation of the Landscaping Plan shall commence to later than 30 days following CPM approval. The project owner shall provide quarterly progress reports to the CPM, including photographic documentation, until landscaping installation is complete. Landscaping shall be maintained and annual reports of landscaping condition and maintenance shall be provided to the CPM for the life of the project.

* This condition of certification would only apply to the North of Desert Center Alternative site.

LAND-11*: The project owner shall cancel any existing County of Riverside Agricultural Preserve designations and/or Williamson Act contracts on any parcels

within the proposed project footprint prior to the start of construction or provide proof that such land use designations or contracts have previously been removed or do not exist. This applies to all affected parcels identified in **Land Use Appendix D** or in County of Riverside records as Chuckwalla Agricultural Preserves 1, 2, and 3.

Verification: At least 10 days prior to the start of construction, the project owner shall provide the CPM with proof of cancellation of any existing Agricultural Preserve designations and/or Williamson Act contracts on any parcels within the proposed project footprint or written verification from the County of Riverside and/or California Department of Conservation that there are no existing contracts on the project lands.

* This condition of certification would only apply to the North of Desert Center Alternative site.

LAND-12*: The project owner shall realign the existing Southern California Edison (SCE) transmission line and access road, consistent with the proposed SCE transmission line reroute, as depicted in **Alternatives Figure 2**. The new access road segment shall be constructed consistent with existing route conditions, along with any signage necessary for public safety, as determined by BLM and SCE. The project owner shall post signs at the intersections of the existing SCE transmission maintenance road with SR177 and Kaiser Road, advising the public that the road will be closed to public access during the transmission line realignment process. Following completion of the realignment and construction of a new transmission line maintenance road within the ROW for the new transmission line corridor, signs at the intersections of the road with SR177 and Kaiser Road shall be removed. The new route segment shall remain open to public use, consistent with existing access conditions. The project owner shall refrain from restricting public access along the transmission line maintenance access road, except as specifically directed by SCE.

Verification: At least 15 days prior to the closure of the existing SCE transmission line maintenance road, the project owner shall post signs at the intersections of the maintenance road with SR177 and Kaiser Rd., indicating the date that the road will be close to public use and estimated length of closure. Barriers shall be placed across the primary access points at the start of construction. The project owner shall submit photos of the signage to the CPM within 3 days of installation and photos of the barriers in the monthly compliance report.

Within 10 days from the completion of the transmission line realignment and maintenance road construction, the project owner shall remove all signs and any barriers preventing public access to the completed maintenance road. Should SCE direct the project owner to block or otherwise prevent public use of this green sticker access road, the project owner shall inform the CPM and BLM within 3 days of their receipt of SCE direction and provide copies of any related correspondence.

At least 30 days prior to the start of commercial operations, the project owner shall advise the CPM, SCE, and BLM of the completion of the SCE transmission line realignment, including required access. Either a site visit or area photography shall be used to verify compliance, at the CPM's discretion.

* This condition of certification would only apply to the North of Desert Center Alternative site.

CONCLUSIONS

Energy Commission staff has determined the following concerning the proposed project, based on analyses cited in other sections of this document and consideration of the uses, land use designations for the project site and surrounding locations, applicable land use laws, regulations, ordinances, and standards; and implementation of proposed conditions of certification:

1. Construction and operation of the proposed overhead transmission line route and substation require the BLM's approval of an Amendment to the California Desert Conservation Area Plan and issuance of a Right of Way grant. With the BLM's approval, the project would be consistent with the CDCA Plan.
2. Impacts to agriculture would be less than significant with implementation of **LAND-4**. The proposed project would not result in the conversion of Farmland or forest land to non-agricultural uses. It also would not conflict with any agricultural zoning or existing Williamson Act contracts.
3. There is no habitat conservation plan approved by the U.S. Fish and Wildlife Service, or a natural community conservation plan approved by the California Department of Fish and Game that would be impacted by the proposed project.
4. The proposed project would have no measurable impact on existing neighborhood and regional parks or other recreational facilities.
5. The proposed project would not directly and indirectly disrupt activities in an established federal, state, or local recreation area.
6. The project is not located in or adjacent to a designated federal wilderness area or wilderness study area, nor would it impact wilderness area resources or qualities.
7. The proposed project would result in both project-specific and cumulative significant, unavoidable visual and scenic impacts to the SR62 scenic corridor.
8. The proposed project does not divide the physical arrangement of an established community.
9. There are no airports or airstrips within five miles of the proposed project site and the project would have no impact on any airport operations.
10. The proposed project would be consistent with existing and permitted agricultural, residential, sensitive receptors, noise, and recreational land uses with the implementation of **LAND-2, 3, 4, and 5**. However, it would be inconsistent with existing and permitted scenic land uses due to significant, unavoidable impacts to visual/scenic resources (see **VISUAL RESOURCES** sections of this SA/DEIS).
11. Consistency with federal and state LORS would be ensured with implementation of **LAND 1-4, 5; and CULT-11**.
12. Implementation of **LAND-1 and 3-9; BIO-3, 11-13, and 21; CULT-11; SOIL&WATER-1; and TRANS 1-3 and 6-8** would ensure consistency with many of

the local LORS, to the extent feasible. However, the proposed project would still be inconsistent with a number of Riverside County General Plan policies (see **LAND USE APPENDIX A**).

13. Project-specific loss of grazing land use and access would not contribute significantly to any cumulative agricultural or rangeland impact.
14. The proposed project's overall contribution to local and regional cumulative recreational impacts would be less than significant.
15. Use of either public or private lands for renewable energy projects would have a less than significant impact on future land use and development in the project area, either individually or cumulatively.
16. The addition of the RSEP would further extend the visual intrusion along SR62, as well as impact the scenic vista to the south of SR62 and into the previously undisturbed Rice Valley. This would contribute substantially to the significant and unavoidable cumulative impacts to the scenic resources along an eligible state scenic highway.
17. Although glare shields and other conditions of certification have been recommended to reduce lighting impacts (see **VISUAL RESOURCES** section of this document), the proposed project would still contribute significantly and unavoidably to the cumulative impact to existing scenic and dark sky conditions throughout the Rice and Ward Valleys.
18. Significant, unavoidable project-specific visual/scenic resource impacts could potentially contribute to cumulatively significant, unavoidable temporary and/or permanent impacts, especially if most of the proposed solar and wind projects within the local or regional area are actually constructed. Simultaneous or overlapping timelines would further exacerbate the temporary construction-related impacts.
19. Staff has determined there would be a significant, immitigable impact to scenic values of both public and private lands surrounding the project site, including BLM-managed public lands designated for multiple use (see **Visual Resources**). There would also be a significant, but mitigable impact to historic resources potentially eligible for the National Register of Historic Places (Camp Rice and Rice Army Airfield), although portions of these resources are located on private lands (see **Cultural Resources and Native American Values**).
20. The potential CEQA impacts associated with "Land Use and Planning," "Agriculture and Forest Resources" and "Wilderness and Recreation" with the implementation of Alternatives 2 or 4 are anticipated to be similar to the proposed project. Alternative 3 would have similar impacts, but to a lesser degree in the areas of rangeland grazing and visual impact.

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APPENDIX A
Project Compliance with Applicable Land Use LORS

Applicable LORS	Basis for Consistency	Consistent with LORS?				
		Alt. 1 Preferred Project	Alt. 2	Alt. 3	Alt. 4	Alt. 5 No Project
Federal						
<u>California Desert Conservation Area (CDCA) Plan, 1980 as Amended by NECO; 1999.</u>	Applicable only to public lands. Full implementation of recommended conditions of certification LAND-3 (impacts to rangeland grazing) and LAND-4 (BLM ROW for transmission line corridor and substation) would ensure consistency with the CDCA multiple use mandates; and conservation and protection requirements for agriculture, rangeland, and recreation.	Yes	Yes	Yes	Yes	N/A
<u>Code of Federal Regulations, Title 14 Aeronautics and Space, Part 77 Objects Affecting Navigable Airspace (14 CFR 77/FAR Part 77)</u>	FAA Form 7460 has been filed, as required for objects over 200 feet in height, and a "Determination of No Hazard to Navigation" has been received. Conditions of certification TRANS-2 and TRANS-7 would ensure the filing of additional required documentation, noticing to pilots, and installation of appropriate stack lighting.	Yes	Yes	Yes	Yes	N/A
State						
<u>Government Code §§65940 and 65944</u>	Consultation has occurred among applicant, military liaison, and staff. Conditions of certification TRANS-2, TRANS-7, TRANS-8 and TRANS-9 have been recommended to mitigate impacts to military operations in special use airspace.	Yes	Yes	Yes	Yes	N/A
<u>Public Resources Code §25000 (Warren-Alquist Act)</u>	Condition of certification CUL-11 would require the project owner to establish and maintain a public use/viewing area related to the historic Rice AAF/Camp Rice, present within and immediately adjacent to the proposed project site.	Yes	Yes	N/A	N/A	N/A

Applicable LORS	Basis for Consistency	Consistent with LORS?				
		Alt. 1 Preferred Project	Alt. 2	Alt. 3	Alt. 4	Alt. 5 No Project
Local						
Riverside County General Plan (2003), as amended through December 2008	Applicable only to non-federal lands. Lead agency actions would be consistent with applicable county policies and procedures throughout the project's licensing process.					
<i>GP: Chapter 3 – Land Use Element (LU3)</i>	<i>Policies in the Land Use Element are intended to concentrate future growth and reduce sprawl; protect the County's diverse environmental resources and open space systems; provide multi-modal transportation systems that are integrated into the community; make efficient use of infrastructure, services, and resources; and ensure "consistently high" development standards. See below for project consistency with individual policies and land use designations.</i>					
LU3 – Policies LU 4.1, 4.2, and 4.3	<p>Condition of certification LAND-5 would require compliance with all land use, building, and other applicable general plan policies and municipal code standards in the design and construction of the proposed project, to the extent feasible. Additional conditions of certification in various sections of this document address compliance for drainage, noise, and natural and cultural resource protection. Extensive landscaping, sidewalks, bicycle routes, public art, and other requirements designed to enhance an urban environment would be inappropriate in the project setting. However, the project would have significant and unavoidable adverse visual impacts.</p> <p>Proposed project design; LAND-5, along with conditions of certification in the Public Health, Worker Safety, and Soil & Water sections of this document, would ensure public health and safety.</p> <p>Construction of the proposed facility at this location would result in the elimination of the historic Rice AAF and a small portion of the adjacent Camp Rice. However implementation of conditions of certification CUL-1 and CUL-11 would reduce the impacts to a less than significant level.</p>	No	No	No	No	N/A
		Yes	Yes	Yes	Yes	N/A
		Yes	Yes	N/A	Yes	N/A

LU3 – Policy 5.1	The project has incorporated safety features for onsite fire/life/safety response. Condition of certification LAND-6 would also require the project owner to pay the Riverside County Development Impact Fees, which are designed to allow the County to construct/acquire the needed public facilities to support development and preserve open space, wildlife, and their habitats. Although the project may have an adverse impact on emergency response times, due to its distance from normal service areas, an agreement between the applicant and County of Riverside establishes compensation that would reduce any potential impacts to fire/safety to a less than significant impact (see Worker Safety and Fire Protection section).	TBD	TBD	TBD	TBD	N/A
LU3 – Policies 6.1/6.2	Condition of certification LAND-5 would require compliance with all land use, building, and other applicable general plan policies and municipal code standards in the design and construction of the proposed project, to the extent feasible. However, potential significant and unavoidable impacts to visual resources have been identified.	No	No	No	No	N/A
	Power generated by this facility would not be used locally; therefore, LU 6.2 does not apply to this project.	N/A	N/A	N/A	N/A	N/A
LU3 – Policy LU 8.2	The project would be consistent with applicable Multipurpose Open Space Element policies (see below). However, there is the potential for significant and unavoidable biological impacts at the Desert Center Alternative site.	Yes	Yes	Unk	Yes	N/A
LU3 – Policy LU 9.1	Condition of certification LAND-6 requires payment of the county's DIF prior to occupancy of the proposed facilities.	Yes	Yes	Yes	Yes	N/A
LU3 - Scenic Resource policies (LU 13.1 through 13.8; OS 21.1 and 22.1)	Project design and conditions of certification BIO-21, LAND-5, 9, and LAND-10 would address all structural, landscaping, and setback requirements. Condition of certification CULT-11 would provide a Historic Interpretive Area. The project has no solid walls that would block public views and development of riding, hiking, bicycle trails or other public recreational facilities, other than the historic viewing area, would be inappropriate in this remote area. However, the proposed power stack is visually incompatible with the surrounding scenic setting.	No	No	Yes (not a scenic hwy)	No	N/A

LU3 – Policy LU 14.7	Although the proposed solar power tower would encroach into navigable airspace, conditions of certification TRANS-2 and 7-9 would prevent significant adverse impacts to navigable airspace.	Yes	Yes	Yes	Yes	N/A
Open Space/Rural (OS-RUR) Land Use Designation policies (LU 20.1 – 20.6)	Public utilities, including both generating plants and transmission lines, are a permitted use on lands designated OS-RUR. Project design and conditions of certification in other sections of this document would ensure adequate utility, water, septic capacity, and circulation (LU 20.3). Condition of certification LAND-1 would require parcel merger (LU 20.5). However, the structures would not maintain the character of or blend with the undeveloped natural contours of the site (LU 20.1 and LU 20.2); avoid an unvaried, unnatural, or manufactured appearance or adverse impact to the open space and rural character of the surrounding area (LU 20.2; LU 20.4). There are also no county programs or incentives that would allow this project to maintain or enhance the open space/rural character of the surrounding area (LU.6).	No	No	No	No	N/A
LU3 - Agriculture (AG) Land Use Designation	Previous and existing agricultural uses on property; compatible zoning designation	N/A	N/A	Yes	N/A	N/A
LU3 - Eastern Riverside County Desert Areas (Non-Area Plan) – Policy 30.1	The project would not preclude use of existing or future use of the mineral resources or rural uses in the project vicinity. However, it would visually impact the open space character of the surrounding area and affect the quality of the wilderness experience in the adjacent wilderness areas.	No	No	N/A	No	N/A
<i>GP: Chapter 5 – Multipurpose Open Space Element</i>	<i>This element identifies the conditions and actions necessary to protect and preserve the County's natural resources, agriculture and open space areas; provide effective management of mineral resources; preserve and enhance cultural resources; and provide recreational opportunities for the citizens of Riverside County.</i>					
LU5 – Water Conservation (OS 2.2 and OS 2.2)	Project design and conditions of certification SOIL&WATER-1 and LAND-8 would address permeable surfaces and bermed rainwater detention basins (OS 2.2). Conditions of certification LAND-8 , LAND-9 , LAND-10 , and BIO 11-13 would require the use of native, drought-resistant landscaping and site remediation.	Yes	Yes	Yes	Yes	N/A
LU5 – Groundwater Recharge (OS 4.3, OS 4.4, and OS 4.5)	Conditions of certification SOIL&WATER-1 and LAND-8 would require permeable paving surfaces. Project design includes three on-site evaporation ponds and retention of natural drainage conditions, to the extent feasible.	Yes	Yes	Yes	Yes	N/A

LU5 – Mineral Resources (OS 14.2)	The project area is designated MRZ-4. As the existence of an ore body has not been proven, the probability of the presence of economically recoverable mineral reserves beneath the property is considered to be very low. Therefore, no mineral-related development restrictions apply.	Yes	Yes	Yes	Yes	N/A
<i>GP: Chapter 7 – Noise Element</i>	<i>The Noise Element of the General Plan is closely related to the Land Use Element because of the effects that noise has on sensitive land uses. Noise-producing land uses must be compatible with adjacent land uses in order for the Land Use Plan.</i>					
<u>Desert Center Area Plan</u>		N/A	N/A	Yes	N/A	N/A
<u>Riverside County Zoning Ordinance #348, amended through Ord. #348.4647 (August 20, 2009)</u>	This Ordinance includes the planning and land use regulations for the unincorporated areas of Riverside County and identifies the process to initiate, implement, amend, and enforce these regulations.					
Zoning - Article XV, §§15.1 and 15.2 Controlled Development Areas (W-2) Zoning District	Structures and the facilities necessary and incidental to the development and transmission of electrical power and gas, including power plants and transmission lines, are permitted uses within a W-2 zoning district and the site meets minimum lot size. However, certain project elements, including the steam generating building, solar receiver tower, and transmission line towers, would exceed the maximum height of 75 feet for buildings and 105 feet for other structures. The circumstances requiring the taller structures are related to the functionality and operational requirements of the proposed project. Therefore, findings required to justify approval of a variance cannot be made. However, Energy Commission approval of a project design plan, consistent with the requirements for approval of a Riverside County Public Use Permit, would provide consistency with the W-2 zoning district requirements.	Yes	Yes	Yes	Yes	N/A
Zoning - Article XV(b), §§15.200 and 15.201 Natural Assets (N-A) Zoning District	Although the BLM-managed public lands have been designated N-A by Riverside County, the county does not have jurisdiction over state or federal public lands. For Alt. 3, N-A zoning allows public utilities with Public Use Permit (Energy Commission siting process is equivalent to county approval process).	N/A	N/A	Yes	N/A	N/A

Zoning – Article XVIII, §18.12 Off-Street Vehicle Parking and Landscaping	Conditions of certification LAND-8 would ensure adequate temporary construction parking and consistency with county parking requirements. A Parking Plan must be completed and approved, and construction of the parking areas completed prior to the start of plant operations. Conditions of certification LAND-9 and LAND-10 would require implementation of an approved Landscape Plan, consistent with the requirements of this code and General Plan Policies 2.2 and 2.3..	Yes	Yes	Yes	Yes	N/A
Zoning – Article XVIII, §18.29 Public Use Permits	Condition of certification LAND-5 would require the project to follow Riverside County municipal and building code requirements, to the extent feasible. Proposed project design and conditions of certification would protect public health, safety, and welfare, and the usability of adjacent properties and Energy Commission licensing process would ensure consistency with this section of the zoning code.	Yes	Yes	Yes	Yes	N/A
Zoning - Article XVIII §18.33 Setback Adjustments and Temporary Use of Land	Conditions of certification LAND-8 , LAND-9 , LAND-10 , and BIO-10 would meet all requirements for access roads, parking, and site rehabilitation. Condition of certification TRANS-1 would protect existing roadway access and use. Condition of certification TRANS-3 would ensure repair of any construction damage to public roadways.	Yes	Yes	Yes	Yes	N/A

<u>Riverside County Code, Ordinance 457.102 (Building Codes & Fees)</u>	The project design would meet all required building and construction standards, to the extent feasible, and would meet or exceed all standard applicable building permit requirements. Condition of certification LAND-5 would require compliance with all applicable Riverside County zoning standards and building and municipal code requirements, except as specifically noted in this or other related sections of this document.	Yes	Yes	Yes	Yes	N/A
<u>Riverside County Code, Ordinance 460.151, §18.7 (Merging of Contiguous Parcels)</u>	Condition of certification LAND-1 would require the merger of privately-owned parcels into a single parcel under common ownership.	Yes	Yes	Yes	Yes	N/A
<u>Riverside County Code, Ordinance 509 (as amended through 509.2) – Agricultural Preserves</u>	There is some question whether there are any Agricultural Preserves within or adjacent to the Alt. 3 project site. Condition of certification LAND-11 would require proof that no Agricultural Preserve or Williamson Act contract exists for any land within the project site boundaries.	N/A	N/A	Yes	N/A	N/A
<u>Riverside County Ordinance 659, as amended through 659.8 (Development Impact Fees)</u>	Condition of certification LAND-6 requires payment of the County DIF prior to the start of operations or enter into a development agreement, or similar agreement, with the County of Riverside in lieu of the DIF. The applicant has agreed to this requirement.	Yes	Yes	Yes	Yes	N/A
<u>Riverside County Ordinance 859, as amended through 859.2 (Water Efficient Landscape Requirements)</u>	Conditions of certification LAND-9 and LAND-10 would require approval and implementation of a Landscaping Plan, consistent with this ordinance. However, given the project's remote location and lack of available municipal water sources, use of recycled water would not be required.	Yes	Yes	Yes	Yes	N/A
<u>Riverside County Airport Land Use Compatibility Plan (ALUCP); 2004</u>	Desert Center Airport is no longer a public airport. Conditions of certification TRANS-2 and TRANS-9 would ensure consistency with the ALUCP and existing airport use.	N/A	N/A	Yes	N/A	N/A

APPENDIX B(1)
Current and Foreseeable Solar Energy Projects – Public Lands
Local Area (Proposed Project / Alternative 1)

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Status of Application*
Solar	CACA49002	Leopold Company, LLC	35,200 (8,000 actual)	100-250 at each of 5 plants (500-2,500)	Ward Valley, N of Hwy 62, about 30 miles west of the California/Arizona border; within the Iron Mtn Solar Study Area; approx. 5 mi NW of the proposed project site	Project Name: Ward Valley Actual project size: 5 plants @ 1,600 acres each
Solar	CACA49006	Boulevard Associates, LLC	12,160	250	Killbeck; 15 miles N of Hwy 62, about 70 miles W of the California/ Arizona border; approx. 25 mi NW of the proposed project site	
Solar	CACA49007	Boulevard Associates, LLC	52,480	Unknown	Ward Valley, along Hwy 62, about 35 miles west of the California/Arizona border; within the Iron Mtn Solar Study Area; approx. 20 mi W of the project site.	
Solar Parabolic Trough	CACA49008	Boulevard Associates, LLC	35,200	500	Cadiz Lake; N of Hwy 62, about 65 miles W of the California/Arizona border; approx. 25 mi W of the proposed project site	CSP Trough
Solar	CACA49702	Bull Frog Green Energy, LLC	23,004	500	Big Maria Vista, about 15 miles S of Hwy 62 and the proposed project site and 15 miles W of the California/Arizona border; Riverside East Solar Study Area	Revised POD rcvd 5/18/09

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Status of Application*
Solar	CACA50504	Ausra CA III, LLC	27,000	Unknown	Ward Valley, along Hwy 62, about 30 miles west of the California/Nevada border; approx. 7 mi WNW of the proposed project site, in the Iron Mtn Solar Study Area	
Solar	CACA50505	Ausra CA III, LLC	14,000	Unknown	Iron Mtn, along Hwy 62, about 45 miles west of the California/Arizona border and 12 mi NW of the proposed project site; partially within the Iron Mtn Solar Study Area	
Solar	CACA50506	Ausra CA III, LLC	16,000	Unknown	Danby Lake, about 10 miles N of Hwy 62; about 20 mi NW of the proposed project site and 60 miles west of the California/Arizona border	
		TOTAL ACREAGE AND MEGAWATTS	187,844**	1,750-3,750**		

Source: BLM 2010(b)

* All applications are pending unless otherwise noted.

** Totals are estimates, based on ROW applications with BLM and available data. Data for projected MW production is particularly limited. Actual acreage used where available. This is only the acreage on BLM-managed public lands. Initial land totals in ROW applications are generally 2-10 times greater than final ROWs, to allow for alternative facilities placement. Private lands are not included in these totals.

APPENDIX B(2)
Current and Foreseeable Solar Energy Projects – Public Lands
Local Area (North of Desert Center Alternative / Alternative 3)*

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Project Information*
Solar PV	CACA048649	Desert Sunlight Holdings LLC	19,516	500		Project Name: Desert Sunlight
Solar PV	CACA48808	Chuckwalla Solar 1 LLC	4,082	200	Immediately N of I-10 and about 60 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Chuckwalla; Revised POD 9/15/09
Solar Parabolic Trough	CACA48810	Chevron Energy Solutions Co.	5,176	484	Immediately N of I-10, 10 mi E of Desert Center, and about 45 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Palen; POD 12/18/08; 3 yr Temp. Use Permit 48810-A
Solar	CACA049486	Solar Millennium LLC	3,152	Unk	Immediately N of I-10, approx. 8 mi SE of Desert Center. Riverside East Solar Study Area	Environmental Review
Solar PV	CACA049488	ENXCO Inc.	1,320	200	Ford Dry Lake; 1.5 mi NW of the DC site and SR177, approx. 5 mi N of I-10	Project Name: Mule Mountain
Solar PV	CACA049491	ENXCO Inc.	1,051	100	2 mi NW of the DC site and SR177; approx. 4 mi N of I-10	Project Name: Eagle Mountain
Solar PV	CACA051952	Ridgeline Energy LLC	1,920	50-100	10 mi N of the DC site, on both sides of SR177; approx. 12 mi N of I-10.	

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Project Information*
Solar PV	CACA051954	Nextlight Renewable Power LLC	4,120	250	6 mi NE of the DC site; immediately E of SR177; approx. 7 mi N of I-10.	Project Name: Golden State Solar
Solar CSP Trough	CACA051960	Power Partners Southwest LLC ENXCO Development Inc. (Agent)	4,480	300	2 mi S of the DC/SR177 site; immediately N of I-10	
Solar CSP Trough	CACA051963	Power Partners Southwest LLC ENXCO Development Inc. (Agent)	7,680	300	2 mi NW of the DC site and SR177; 6 mi N of I-10	
Solar	CACA051974	Brightsource Energy	4,750	400	8 mi ESE of the DC site and SR177; immediately N of I-10	DPT Tower Project Name: Palen
		TOTAL ACREAGE AND MEGAWATTS	57,247**	2,484-2,534**		

Source: BLM 2010(b)

‡ All Alternative 3 local projects are also considered regional projects for the proposed project site (Alt. 1)

* All applications are pending unless otherwise noted.

** Totals are estimates, based on ROW applications with BLM and available data. Data for projected MW production is particularly limited. Actual acreage used where available. This is only the acreage on BLM-managed public lands. Initial land totals in ROW applications are generally 2-10 times greater than final ROWs, to allow for alternative facilities placement. Private lands are not included in these totals.

APPENDIX B(3)
Current and Foreseeable Solar Energy Projects on Public Lands – Regional Area*

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Status of Application*
Solar Thermal	CACA48728	FPL Energy	20,480	250	About 8 miles N of I-10 and 15 miles west of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Genesis McCoy
Solar	CACA48732	Boulevard Associates, LLC	Unknown	Unknown	About 10 miles N of I-10 and 11 miles W of the California/ Arizona border; Riverside East Solar Study Area	
Solar Parabolic Trough	CACA48811	Chevron Energy Solutions Co.	9,569	968	Immediately N of I-10 and about 12 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Blythe; Temp. Use Permit CACA48811-A
Solar Thermal	CACA48880	Boulevard Associates, LLC	4,640	250	Ford Dry Lake; Immediately N of I-10 and about 30 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Genesis; GenTie & Pipeline serialized as CACA51198 & CACA51203; Revised POD 6/5/09
Solar PV	CACA49097	Bull Frog Green Energy LLC	6,629	500	Mule Mountain; Immediately S of I-10 and about 15 miles W of the California/ Arizona border; partly within Riverside East Solar Study Area	POD 5/18/09
Solar PV	CACA49397	First Solar Development Inc.	7,640	600	Immediately S of I-10 and about 10 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Desert Quartzite; POD 10/18/09

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Status of Application*
Solar Parabolic Trough	CACA49493	Solel Inc.	8,780	500	About 8 miles N of I-10 and about 45 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Palen/McCoy
Solar Parabolic Trough	CACA49494	Solel Inc.	7,459	500	About 5 miles N of I-10 and about 57 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: Desert Lily
Solar PV	CACA49490	ENXCO Inc.	20,480	Unknown	About 8 miles N of I-10 and 15 miles W of the California/ Arizona border; Riverside East Solar Study Area	Project Name: McCoy
Solar Parabolic Trough	CACA49813	Iberdrola Renewables Inc.	12,720	300-1000	Cadiz East; 25 miles N of Hwy 62, about 70 miles W of the California/ Arizona border; approx. 40 mi NW of the proposed project site	Regional for proposed project site (Alt. 1) only
Solar	CACA49950	Palo Verde Solar 1 LLC	6,158	Unknown	Immediately N of I-10 and about 12 miles W of the California/ Arizona border; Riverside East Solar Study Area	
Solar	CACA50437	FPL Energy	Unknown	Unknown	Ford Dry Lake; Immediately N of I-10 and about 30 miles W of the California/ Arizona border; Riverside East Solar Study Area	
Solar	CACA51017	Brightsource Energy	19,581	Unknown	Immediately N of I-10 and about 45 miles W of the California/ Arizona border	

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Status of Application*
Solar Parabolic Trough	AZA34335	Boulevard Associates, LLC Zachary H. Likins (Agent)	24,220.88	Unknown	About 13 miles N of I-10 and 23 miles E of the Arizona/ California border	POD 12/24/08
Solar Parabolic Trough	AZA34427	Pacific Solar Investment, Inc.	38,211.96	2000	Immediately S of AZA34554, about 23 miles E of the Arizona/ California border	Project Name: La Posa Solar Thermal; POD 8/15/08
Solar Parabolic Trough	AZA34554	Nightlight Renewable Power, LLC	20,699.33	500	Immediately S of I-10 and 18 miles E of the Arizona/ California border	Project Name: Quartzsite; POD 8/15/08
Solar Tower	AZA34666	Quartzsite Solar Energy LLC SolarReserve LLC	26,273.31	600	Quartzsite; about 7.5 miles N of I-10 and 16 miles E of the Arizona/ California border	Project Name: Quartzsite
Solar PV	AZA35137	E-ON Climate & Renewables EC&R Development, LLC	590	100	Quartzsite; about 5 miles N of I-10 and 20 miles E of the Arizona/ California border	Project Name: Castle Dome; POD 11/17/09
		TOTAL ACREAGE AND MEGAWATTS	434,131.48**	7,068-7,768**		

Source: BLM 2010(b)

‡ Applies to all Alternatives unless otherwise noted.

* All applications are pending unless otherwise noted.

** Totals are estimates, based on ROW applications with BLM and available data. Data for projected MW production is particularly limited. Actual acreage used where available. This is only the acreage on BLM-managed public lands. Initial land totals in ROW applications are generally 2-10 times greater than final ROWs, to allow for alternative facilities placement. Private lands are not included in these totals.

APPENDIX B(4)
Current and Foreseeable Wind Energy Projects on Public Lands – Local and Regional Areas[‡]

Type of Project	BLM Serial Number	Applicant/Holder	Acres	MW	Geographic Area	Status of Application*
Wind	048663	L H Renewable LLC	2,080.000	Unk	Approx. 14 mi N of SR62; 25 mi W of proposed project site	Wind project testing – 1 met tower Withdrawal Rcvd. 7/26/10
Wind	051060	Riverside Wind Energy LLC	11,536.930	Unk	Approx. 13 mi S of I-10; 40 mi S of the proposed project site	Name: Black Hills Wind Wind project testing - Up to 10 met towers
Wind	051062	John Deere Renewables LLC	6,256.000	Unk	Approx. 13 mi S of I-10; 40 mi S of the proposed project site	Name: Milpitas Wind Testing
Wind	051664	L H Renewable LLC	3,500.000	Unk	Approx. 6 mi N of I-10; 8 mi NW of SR177 and the North of Desert Center Alt.	
		TOTAL ACREAGE	23,373**	Unk		

Source: BLM 2010(b)

[‡] Applies to all Alternatives unless otherwise noted.

* All applications are pending unless otherwise noted.

** Totals are estimates, based on ROW applications with BLM and available data. These are wind project testing areas. The final ROW for generating plants would be significantly less than the acreage listed for the testing sites. Private lands are not included in these totals.

APPENDIX B(5)
Current and Foreseeable Energy Projects on Private Lands – Local and Regional Areas*

Type of Project	Applicant/Owner	Acres	MW	Geographic Area	Status of Project
Solar PV	First Solar/NRG Energy	200	7.5	City of Blythe, 35 miles SSE of proposed project site.	Project name: Blythe PV project Under construction
Solar PV	U.S. Solar	640	100	Adjacent to Blythe Airport, 31 miles south of proposed project site.	Project name: Blythe Airport Solar I project Application approved by City of Blythe in November 2009
Gas Combined-Cycle	Blythe Energy LLC	30	520	Adjacent to Blythe Airport, 31 miles south of proposed project site.	Project name: Blythe Energy Project II Generating facility and T-line interconnection w/Buck substation Approved December 2005
Transmission Line	Blythe Energy LLC	Unk	N/A	Blythe Airport to Devers Substation, along north side of I-10	67.4 mi of 230 kV T-line between Buck substation & Julian Hinds substation; upgrades to Buck and Julian Hinds substations; 6.7 miles of new 230 kV T-line between Buck substation & SCE's DPV 500 kV T-line. Under Construction
Transmission Line*	Green Energy Express LLC	Unk	N/A	Eagle Mountain Substation (eastern Riverside County) to Southern California	70-mile 500 kV t-line and new 500/230 kV substation. Petition for Declaratory Order requesting FERC approve rate incentives for the project. Decision pending.
Substation*	Southern California Edison	Unk	N/A	Generally SW of Desert Center and I-10; 8 mi SW of the N of DC/Alt 3 site.	Project name: Red Bluff Substation 230/500 kV interconnection substation to Devers-Palo Verde T-line for renewable projects

Type of Project	Applicant/Owner	Acres	MW	Geographic Area	Status of Project
Water/Energy Project*	Eagle Crest Energy Company	1,524	1,300	Eagle Mountain mine; approx. 7 mi NNW of Desert Center; 8 mi NW of the N of DC/Alt 3 site.	Project Name: Eagle Mountain Pumped Storage Project Pump water to an upper reservoir during off-peak hours for use to generate energy for the Southwestern grid during peak demand. Application for license filed with FERC in June 2009. Pending.

Source: RSEP SA/DEIS Cumulative Impacts Tables 2, 3 and Figure 2

‡ Applies to all Alternatives unless otherwise noted.

* Local Area projects for North of Desert Center Alternative (Alt. 3)

APPENDIX C
Other Current and Foreseeable Projects – Local and Regional Area

Type of Project	Project Name	Applicant/ Agency	Project Description	Location	Status of Project
Public Utility Maintenance & Repair*	(3) Colorado River Aqueduct Rehabilitation Projects	Metropolitan Water District of Southern California	Repair delivery line expansion joints (applies to proposed project site/Alt. 1 only)	Iron Mountain Pumping Plant; approx. 18 miles NW of the proposed project site	Work in progress; scheduled for completion in February 2011
Public Utility Expansion	North Baja Pipeline Expansion Project	California State Lands Commission	Construction of: (a) up to 80 miles of buried natural gas pipeline and associated facilities; (b) 46 miles of lateral natural gas pipeline w/assoc. facilities from main gas pipeline to IID El Centro Generating Station; and (c) Blythe Energy Interconnect Lateral Facilities	El Centro to Blythe to Ehrenberg, AZ	Both Phase I & II completed, except for ongoing revegetation and monitoring
Public Utility Communication	Wiley Well Communication Tower (part of the Public Safety Enterprise Communication System)	Riverside County	Expansion of communication site to provide voice and data transmission capabilities to field personnel	East of Wileys Well Road, just S of I-10; approx. 8 mi W of Blythe	Final EIR published in August 2008
Commercial Recreation**	Chuckwalla Valley Raceway	Matt Johnson (Private Developer)	Commercial Racetrack (auto & motorcycle); three tracks, clubhouse, garages, private airstrip (previously Desert Center Airport).	On-site w/Desert Center Airport; directly across SR177 from N of DC/ Alt.3 site; approx. 7 mi N of I-10.	First track opened in April 2010; construction of remaining facilities to be phased through 2020.
Solid Waste Facility**	Eagle Mountain Landfill Project (Riverside County Specific Plan 305)	Mine Reclamation Corp. Kaiser Eagle Mountain Inc.	4,654-acre Class III non-hazardous municipal solid waste landfill; up to 20,000 tons of waste per day for 50 years Renovation and repopulation of the Eagle Mountain Townsite (Riverside County Specific Plan 306)	Approximately 10 mi N of I-10 and Desert Center; 8 mi NW of SR177 and the N of DC/Alt 3 site.	Approved by Riverside County BOS In litigation; project on hold

Type of Project	Project Name	Applicant/ Agency	Project Description	Location	Status of Project
Commercial Utility	Intake Shell	Shell Oil	Reconstruction of a Shell facility	Intake & Hobson Way – City of Blythe	Demolition occurred in 2008; reconstruction in process; completion expected in 2010
2 Commercial Projects	Agate Road Boat & RV Storage; Subway Restaurant & Motel	Various	Construction and operation of a boat & RV storage facility; public restaurant and transient lodging (motel)	City of Blythe	Approved by BOS
17 Residential Development Projects	<ul style="list-style-type: none"> • Vista Palo Verde • Van Weelden • Sonora South • Ranchette Estates • Irvine Assets • Agate Senior Housing • Chanslor Village • St. Joseph's Investments • Edgewater Lane • Chanslor Place (Phases II-IV) • Cottonwood Meadows • Mesa Bluffs Villas (Phase IV) • Palo Verde Oasis (Phase IV) 	Various	Construction of at least 1,000 single and multi-family residential units	City of Blythe	Approved Construction dates vary by phase and project
3 Residential Development Projects	<ul style="list-style-type: none"> • River Estates at Hidden Beaches • The Chanslor Place (Phase I) • Mesa Bluffs Villas (Phases I-III) 	Various	Construction of at least 262 single family residential units	City of Blythe	Under Construction

Type of Project	Project Name	Applicant/ Agency	Project Description	Location	Status of Project
Land Use Plan	Crescent Shores Specific Plan	Allegra Properties	746+ acre Master Plan Resort Community w/5,414 residential units, 539,534 sq ft of commercial/mixed use, and 18-hole golf course. Possible on-site wastewater treatment plant.	City of Blythe, along the Colorado River	Application pending; EIR in progress
Land Use Plan	Riverway Ranch Specific Plan			City of Blythe	Approved, but development on hold; property in foreclosure
Land Use Plan**	Specific Plan 306 – Eagle Mountain Townsite	Mine Reclamation Corp. Kaiser Eagle Mountain Inc.	Master-planned reconstruction and repopulation of 12 Townsite Planning Areas (428.5 acres) w/432 residential units, 54 acres of commercial and manufacturing, and 181 acres of recreation and open space.	Approx. 8 mi NNW of Desert Center	Approved by Riverside County BOS In litigation
Land Use Plan	Mojave Trails National Monument	BLM (Multiple public and private lands)	Establish a 941,000-acre, federally protected national monument area.	An area extending from I-15, east of Barstow, along SR 66 to just west of Needles, between the Mojave National Preserve and Twenty-Nine Palms Marine Corps Base	Senate Bill 2921 introduced in December 2009 In hearings w/Committee on Energy & Natural Resources as of May 20, 2010

Type of Project	Project Name	Applicant/ Agency	Project Description	Location	Status of Project
Land Use Plan**	BLM Renewable Energy Study Areas	BLM	Solar energy zone designation; 24 tracks of public lands that are being studied as suitable for solar development	NW of proposed project site in San Bernardino County; along the I-10 corridor between Desert Center and Blythe; and along SR 177, N of Desert Center	Preliminary DOE/BLM EIS in progress.
Water Storage	Chuckwalla Groundwater Storage Program (Aquifer Storage and Recovery)	Southern California Metropolitan Water District (SCMWD)	Feasibility investigation of the Upper Chuckwalla Groundwater Basin for a groundwater storage program in the two valleys located in the Mojave Desert, near the Julian Hinds and Eagle Mountain Pumping Plants. Spreading facilities and extraction wells would also be constructed during implementation of the full-scale project.	Beneath and immediately NW of the proposed North of Desert Center Alternative site.	In progress at the Julian Hinds location. Funded for Eagle Mountain.
Land Use Plan**	Paradise Valley Specific Plan	Glorious Land Company	Master Planned community; 4 villages of 5,262 acres, with 11,558 residential units; 1,435,263 sq ft of commercial space; 1,595,193 sq ft of business park; 1,263,844 sq ft of institutional space; resort (1,164,728 sq ft); recreation/golf course (658 acres); and 2020 acres of open space.	Site is situated on both sides of I-10, immediately S of Joshua Tree National Park; approx. 30 mi west of Desert Center	Environmental Review in progress (EIR)z

Source: SA/DEIS Cumulative Impacts Tables 2 and 3, and Figure 2; Caltrans 2010a and 2010b; GovTrk 2010a; DOE/BLM 2010a; RC 2010c

‡ Applies to all Alternatives unless otherwise noted.

* Local for the proposed project site (Alt.1)

** Local for North of Desert Center Alternative (Alt. 3)

APPENDIX D
AGRICULTURAL PRESERVES
Alternative 3 (North of Desert Center)

MAP #	PARCEL #	ACRES
Chuckwalla #1		
588	808-023-018	70
	808-023-019	112
TOTAL	2 parcels	182
Chuckwalla #2		
622	808-240-001	20.02
	808-240-005	20.05
	808-240-006	20.06
	808-240-007	20.07
	808-240-008	20.07
	808-240-009	20.05
	808-240-010	20.04
	808-240-011	20.04
	808-240-012	20.03
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	808-250-002	19.82
	808-250-003	19.85
	808-250-004	19.89
	808-250-005	19.92
	808-250-006	19.95
	808-250-007	19.98
	808-250-008	20.02
	808-250-009	19.99
	808-250-010	19.96
	808-250-011	19.93
	808-250-012	19.90
	808-250-013	19.86
	808-250-014	19.83
	808-250-015	19.80
	808-250-016	19.77
TOTAL	29 parcels	578.73
Chuckwalla #3		
629	811-270-001	20.08
	811-270-002	20.07
	811-270-003	20.07
	811-270-004	20.06
	811-270-005	20.06
	811-270-007	32.08
	811-270-008	20.04
	811-270-009	20.04
	811-270-010	20.05
	811-270-011	20.05
	811-270-012	20.06
TOTAL	12 parcels	232.66

LAND USE APPENDIX E

Comparison of Proposed Project and Alternatives*

Impact Would the project:	Alternative 1 Proposed Project (150MW)	Alternative 2 Reduced Acreage (~100 MW)	Alternative 3 North of Desert Center (150 MW)	Alternative 4 Rice Valley Rd T-line (150MW)	Alternative 5 No Action/No Project**
Convert Farmland to non-agricultural uses	No impact	No impact	No impact	No impact	No impact.
Conflict with existing agricultural zoning or a Williamson Act contract	No impact	No impact	No impact	No impact	No impact
Other changes that would convert Farmland or forest land to other uses	No impact	No impact	No impact	No impact	No impact
Disrupt agricultural activities with reduce agricultural resource value on established federal rangelands in the CDCA	Transitory impacts to seasonal grazing on the BLM Rice Valley allotment along T-line alignment Lose of up to 190 acres of seasonal forage Impacts to grazing land access avoided with LAND-4	Transitory impacts to seasonal grazing on the BLM Rice Valley allotment along T-line alignment Lose of up to 190 acres of seasonal forage Impacts to grazing land access avoided with LAND-4	No impact	Transitory impacts to seasonal grazing on the BLM Rice Valley allotment along T-line alignment Lose of up to 190 acres of seasonal forage Impacts to grazing land access avoided with LAND-4	No impact
Increase use or require expansion of existing recreational facilities	Less than significant impact	Less than significant impact	Less than significant impact	Less than significant impact	No impact

Impact Would the project:	Alternative 1 Proposed Project (150MW)	Alternative 2 Reduced Acreage (~100 MW)	Alternative 3 North of Desert Center (150 MW)	Alternative 4 Rice Valley Rd T-line (150MW)	Alternative 5 No Action/No Project**
Disrupt activities in established recreation or wilderness areas	Degrade dark sky conditions in Rice Valley, as viewed from 5 adjacent wilderness areas. Substantial impact to astronomical observations and sky interpretation programs. Noise and lighting impacts to the visitor wilderness experience	Degrade dark sky conditions in Rice Valley, as viewed from 5 adjacent wilderness areas. Substantial impact to astronomical observations and sky interpretation programs. Noise and lighting impacts to the visitor wilderness experience	Degrade dark sky conditions in Upper Chuckwalla Valley, as viewed from 4 adjacent wilderness areas and Joshua Tree Nat'l Park and Wilderness. Substantial cumulative impact to astronomical observations and sky interpretation programs. Noise and lighting impacts to the visitor wilderness experience	Degrade dark sky conditions in Rice Valley, as viewed from 5 adjacent wilderness areas. Substantial impact to astronomical observations and sky interpretation programs. Noise and lighting impacts to the visitor wilderness experience	No impact
Reduce important resource values of recreational facilities or wilderness areas	Substantially reduce the visual quality and character of views from the wilderness areas. No substantial impacts to other resource values within wilderness area boundaries.	Substantially reduce the visual quality and character of views from the wilderness areas. No substantial impacts to other resource values within wilderness area boundaries.	No substantial impacts to recreational or wilderness facilities or physical resources values.	Substantially reduce the visual quality and character of views from the wilderness areas. No substantial impacts to other resource values within wilderness area boundaries.	No impact
Affect qualities or change the characteristics of a wilderness area or study area	No impact	No impact	No impact	No impact	No impact
Divide an established community	No impact.	No impact	No impact	No impact	No impact

Impact Would the project:	Alternative 1 Proposed Project (150MW)	Alternative 2 Reduced Acreage (~100 MW)	Alternative 3 North of Desert Center (150 MW)	Alternative 4 Rice Valley Rd T-line (150MW)	Alternative 5 No Action/No Project**
Disrupt an existing or approved land use	Significant impact to natural resource uses (desert tortoise habitat; see Biological Resources) Permanent loss of project T-line and substation footprint for future recreational and natural resource uses. Significant, unavoidable impacts to scenic highway and vistas	Significant impact to natural resource uses (desert tortoise habitat; see Biological Resources) Permanent loss of project T-line and substation footprint for future recreational and natural resource uses. Significant, unavoidable impacts to scenic highway and vistas	Permanent loss of project footprint for future agricultural and natural resource uses Less than significant impact	Significant impact to natural resource uses (desert tortoise habitat; see Biological Resources) Permanent loss of project T-line and substation footprint for future recreational and natural resource uses. Significant, unavoidable impacts to scenic highway and vistas	No impact
Induce population growth in the area	No impact	No impact	Less than significant Impact	No impact	No impact
Comply with all applicable local, state, and federal LORS	No Inconsistent with General Plan policies: LU 4.3, LU 6.1, LU 8.2, LU 13.1, LU 13.3, LU 20.1, LU 20.2, LU 20.4, LU 30.1, OS-21.1, W-2 zoning (height) (Most inconsistencies due to visual/scenic and natural/cultural impacts) Cannot determine consistency with LU 5.1	No Inconsistent with General Plan policies: LU 4.3, LU 6.1, LU 8.2, LU 13.1, LU 13.3, LU 20.1, LU 20.2, LU 20.4, LU 30.1, OS-21.1, W-2 zoning (height) (Most inconsistencies due to visual/scenic and natural/cultural impacts) Cannot determine consistency with LU 5.1	No Inconsistent with General Plan policies: LU 4.1, 4.3, 6.1, W-2 zoning (height), Ord. 457.102 Most inconsistencies due to visual and natural resource impacts. Cannot determine consistency with LU 5.1, LU 8.2	No Inconsistent with General Plan policies: LU 4.3, LU 6.1, LU 8.2, LU 13.1, LU 13.3, LU 20.1, LU 20.2, LU 20.4, LU 30.1, OS-21.1, W-2 zoning (height) (Most inconsistencies due to visual/scenic and natural/cultural impacts) Cannot determine consistency with LU 5.1	No impact

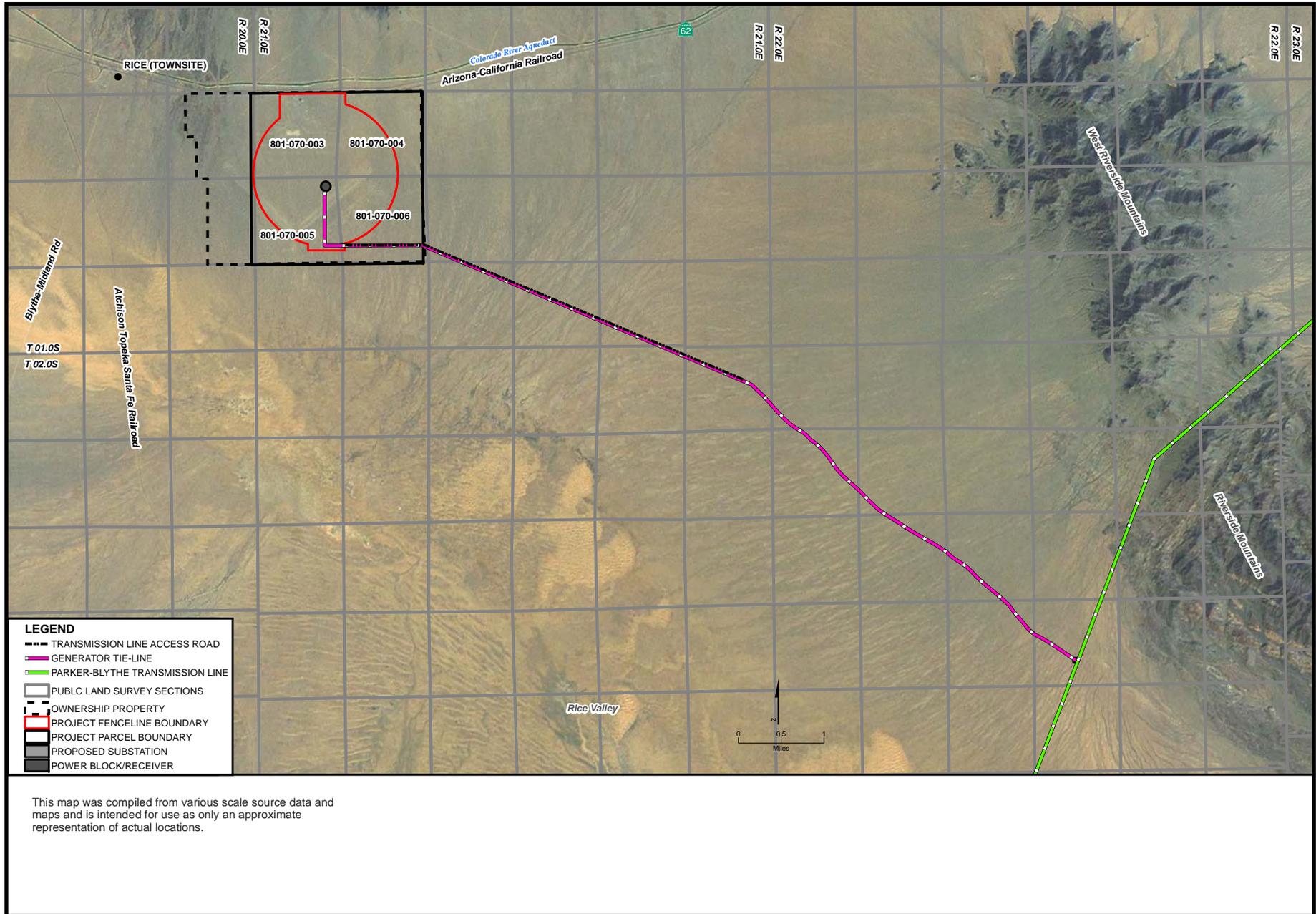
Impact Would the project:	Alternative 1 Proposed Project (150MW)	Alternative 2 Reduced Acreage (~100 MW)	Alternative 3 North of Desert Center (150 MW)	Alternative 4 Rice Valley Rd T-line (150MW)	Alternative 5 No Action/No Project**
Contribute to cumulatively considerable impacts, when considered with past, present, and foreseeable future projects	Less than significant , except for visual/scenic, biological, and cultural impacts	Less than significant , except for visual/scenic, biological, and cultural impacts	Less than significant , except for visual/scenic, biological, and cultural impacts	Less than significant , except for visual/scenic, biological, and cultural impacts	No impact
Ranking of Alternatives***	(4)	(3)	(2)	(5)	(1)

* Residual impacts after full implementation of Conditions of Certification **LAND 1** through **LAND-15** and other recommended conditions of certification.

**All No Project/No Action alternatives assume that the RSEP project would not be built on the proposed or alternative sites.

LAND USE - FIGURE 1

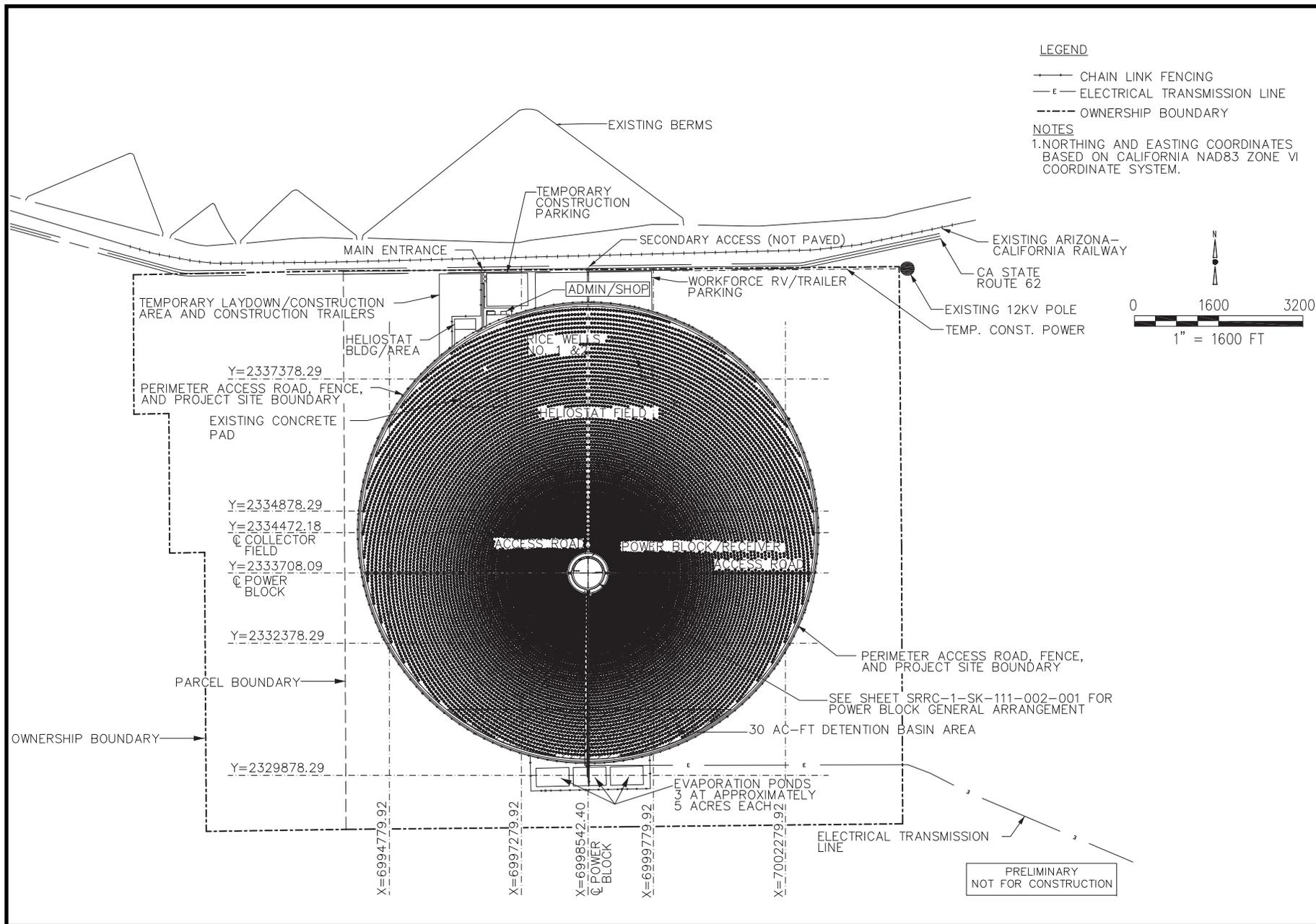
Rice Solar Energy Project - Project Site Map (Including Linear)



This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

LAND USE

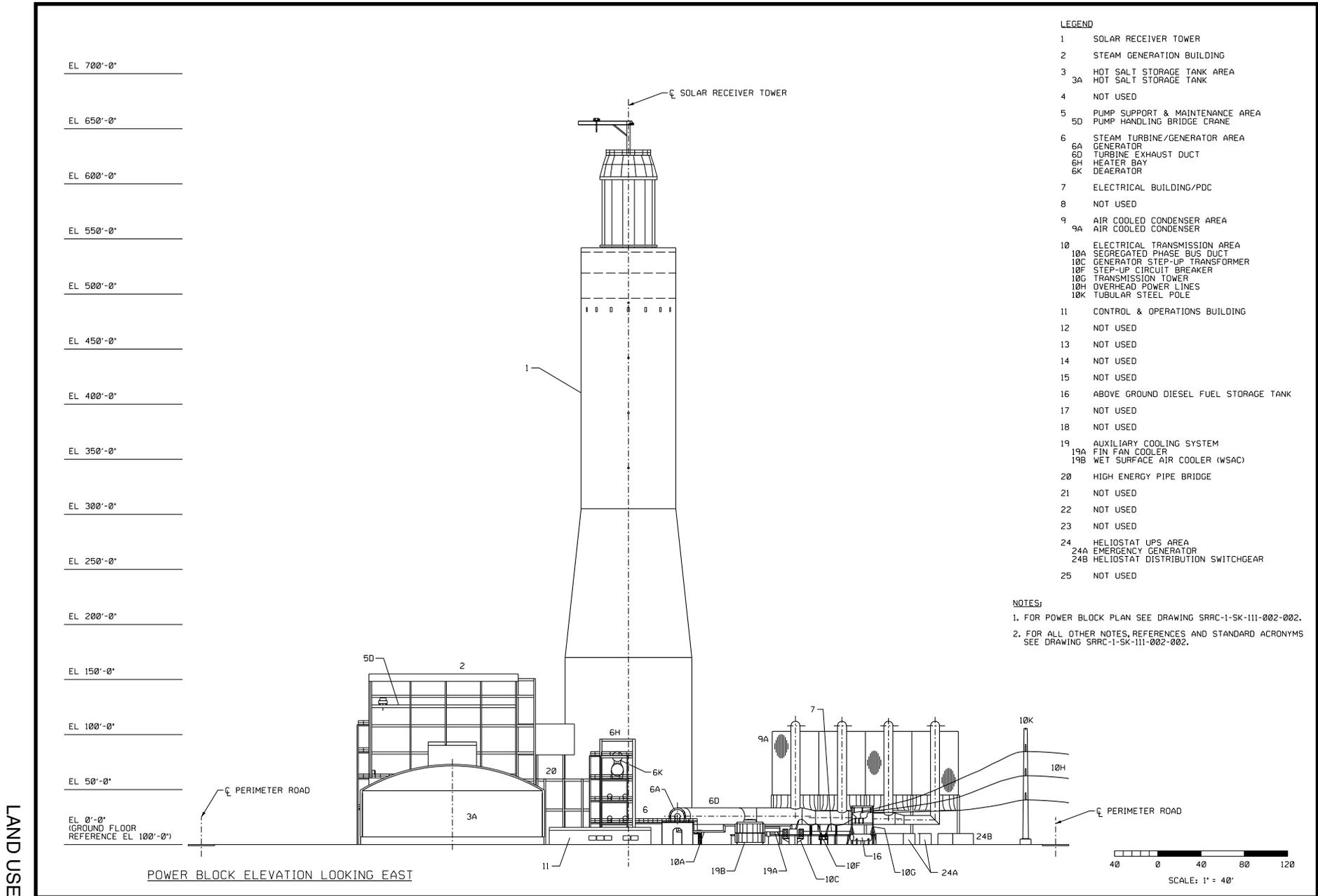
LAND USE - FIGURE 2
Rice Solar Energy Project - Project Site Map (Without Linear)



LAND USE

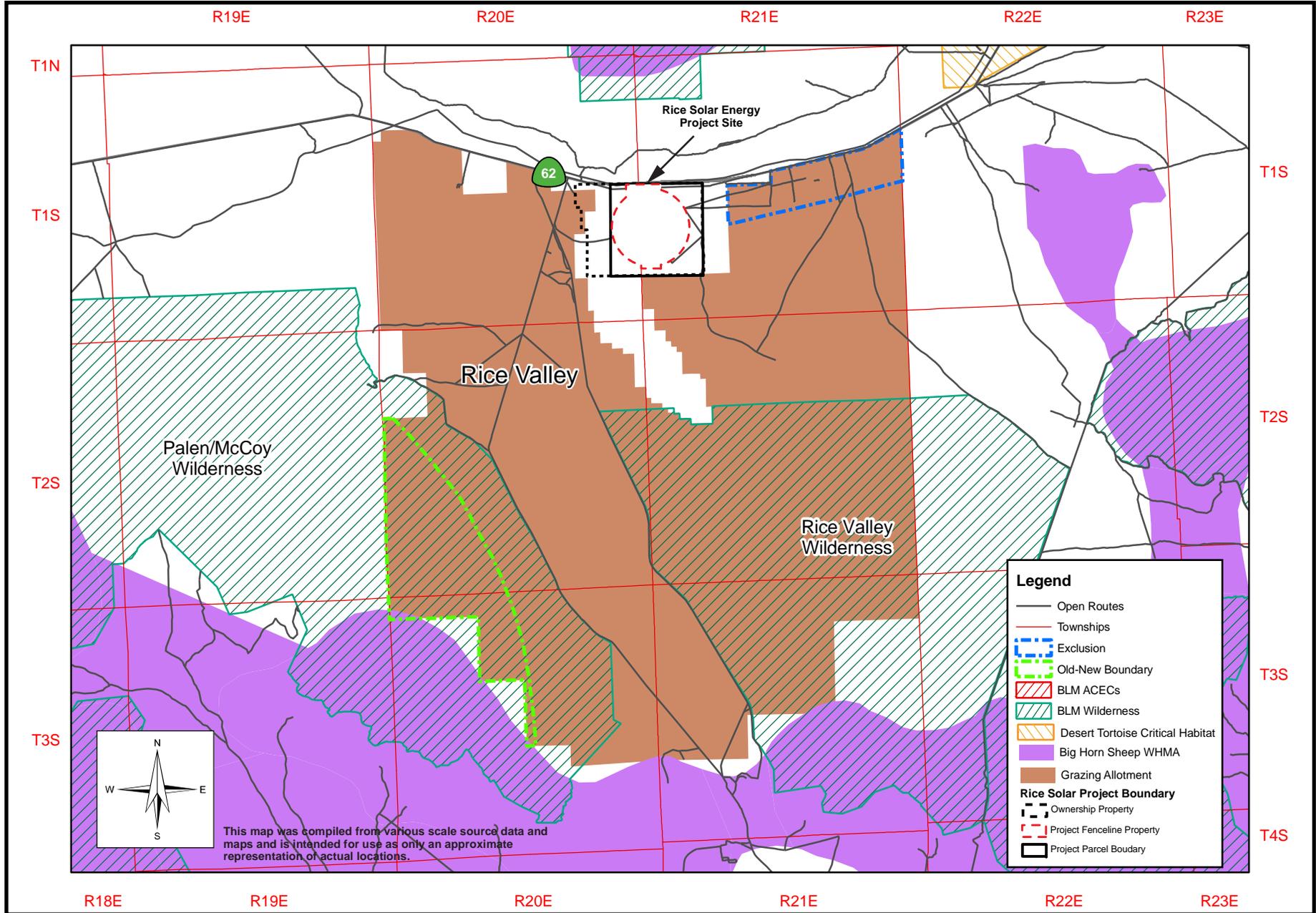
LAND USE - FIGURE 3

Rice Solar Energy Project - Elevation

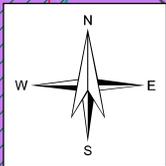


LAND USE - FIGURE 4

Rice Solar Energy Project - Rice Valley (Keoughs) Rangeland Grazing Allotment - Map



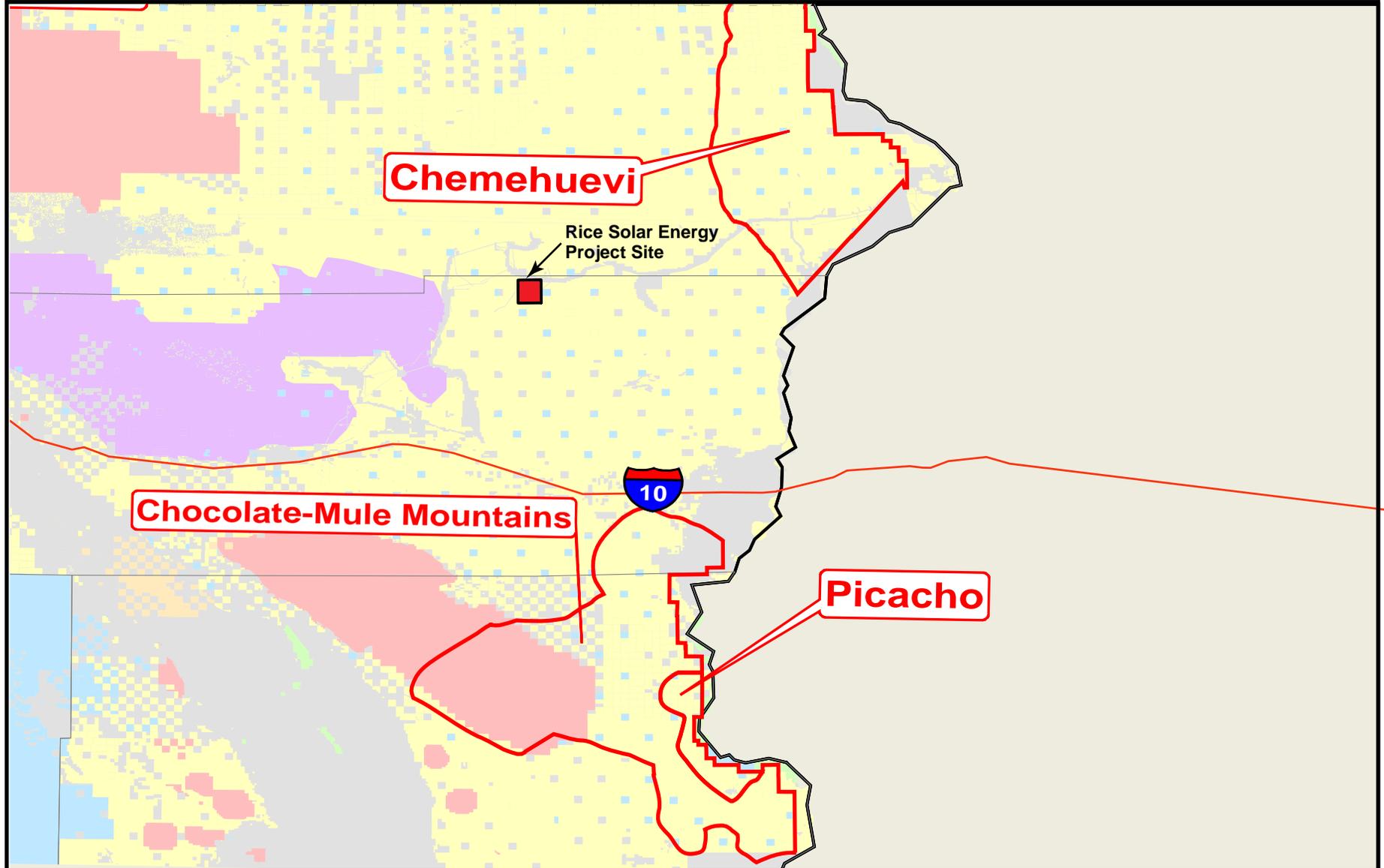
LAND USE



This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

LAND USE - FIGURE 5

Rice Solar Energy Project - Wild Horse and Burro Herd Management Areas (Within 50 miles of the proposed project site)



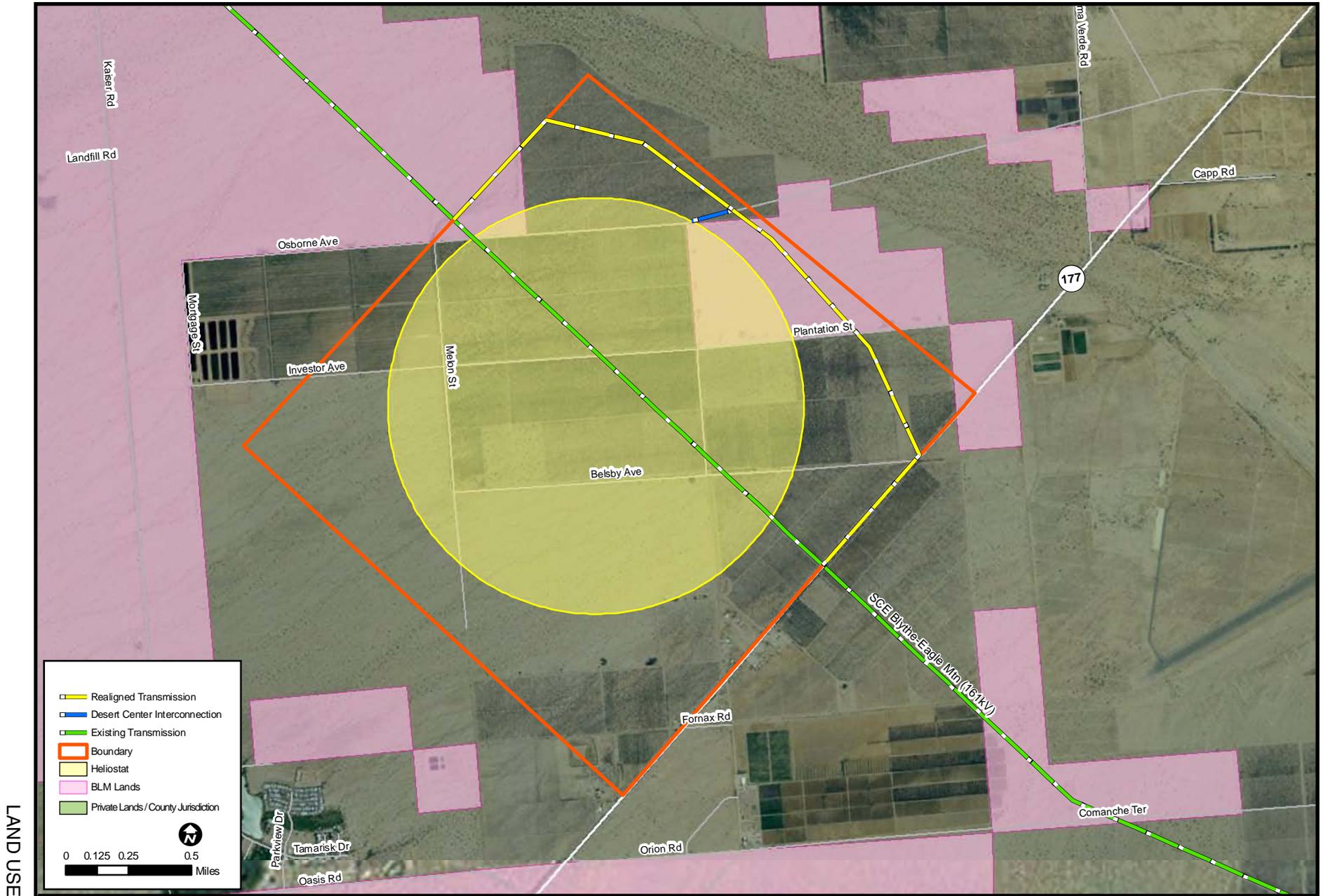
LAND USE

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.
Not to Scale



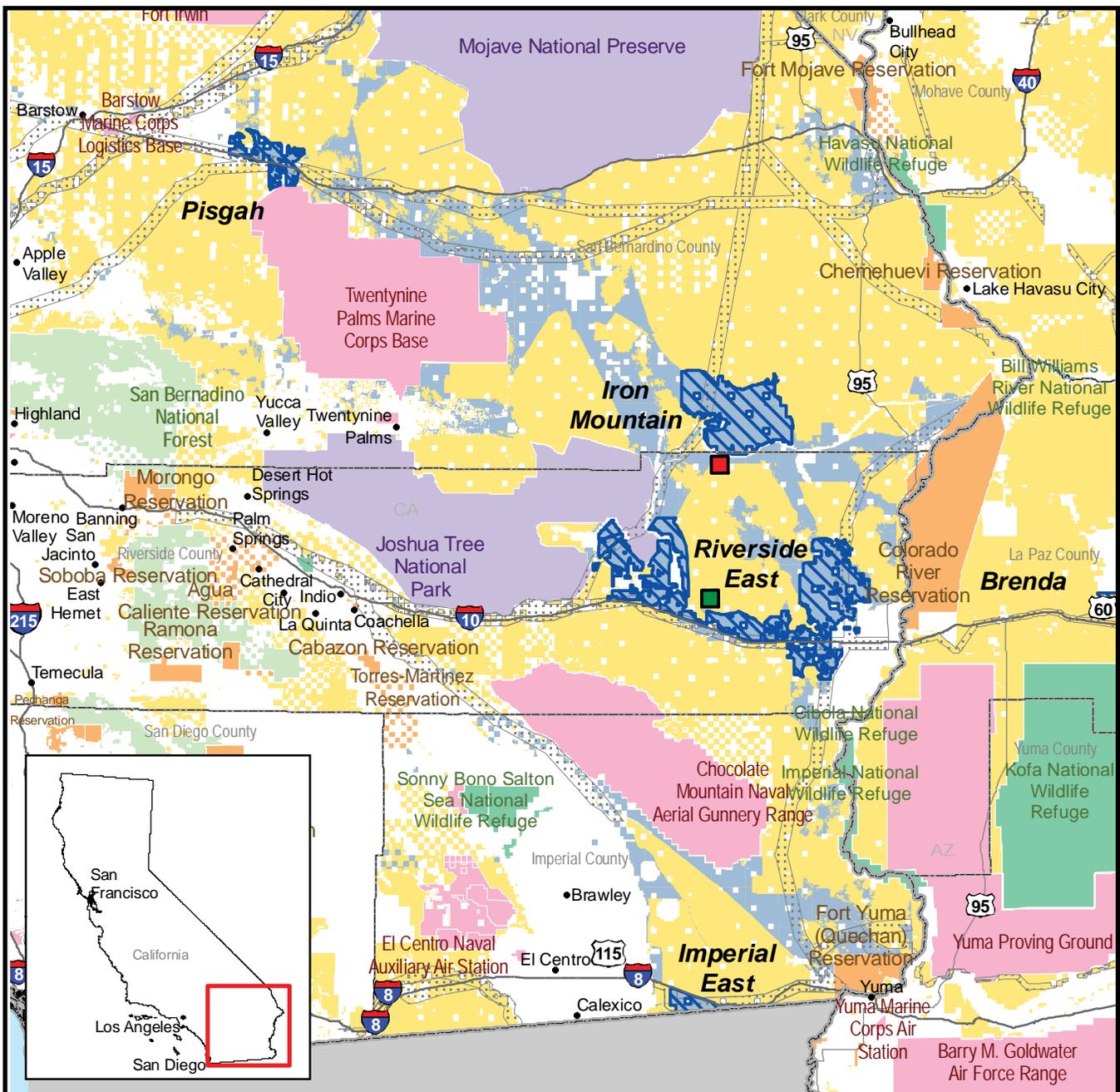
BLM Herd Management Areas

LAND USE - FIGURE 6
 Rice Solar Energy Project - North of Desert Center jurisdictional map



LAND USE - FIGURE 7

Rice Solar Energy Project - BLM Solar Study Areas in California - Map



Surface Management Agency
As of 3/26/2009

Tribal Lands	DOD	NPS
BLM	DOE	OTHER
BOR	FWS	USFS

- State Line
- County Boundary
- Solar Energy Study Area (As of 6/5/2009)
- Existing Designated Corridor (See Note 2) (As of 7/21/2009)
- BLM Lands Being Analyzed for Solar Development in PEIS (As of 6/5/2009)

- Project Site
- North of Desert Center Alternative Site

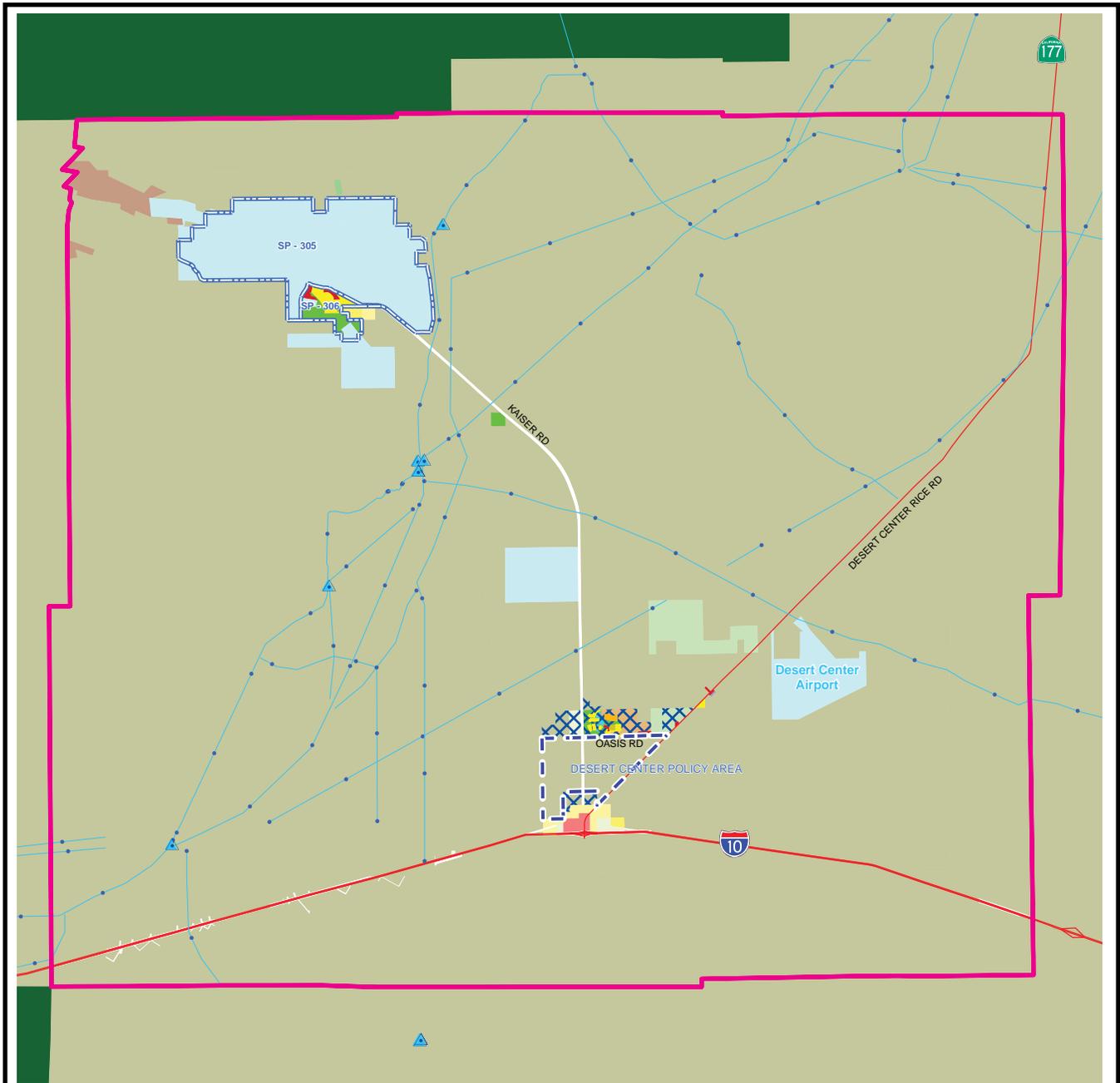


NOTE 1: Revisions to the National Landscape Conservation System included in Public Law 111-11 are not yet reflected in this map.
 NOTE 2: Designated Corridors are developed for federal land use planning purposes only and are not applicable to state-owned or privately-owned land.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.
 Not to Scale

LAND USE - FIGURE 8

Rice Solar Energy Project - Desert Center Area Plan Map



GENERAL PLAN FOUNDATION COMPONENTS AND LAND USE DESIGNATIONS

COMMUNITY DEVELOPMENT

- Estate Residential (2 ac min)
- Very Low Density Residential (1 ac min)
- Low Density Residential (0.5 ac min)
- Medium Density Residential (2-5 du/acre)
- Medium High Density Residential (5-8 du/acre)
- High Density Residential (8-14 du/acre)
- Very High Density Residential (14-20 du/acre)
- Highest Density Residential (20+ du/acre)
- Commercial Retail
- Commercial Tourist
- Commercial Office
- Community Center

COMMUNITY DEVELOPMENT (CONT)

- Light Industrial
- High Industrial
- Business Park
- Public Facilities
- Mixed Use Planning Area

RURAL COMMUNITY

- Estate Residential (2 ac min)
- Very Low Density Residential (1 ac min)
- Low Density Residential (0.5 ac min)

RURAL

- Rural Residential (5 ac min)
- Rural Mountainous (10 ac min)
- Rural Desert (10 ac min)

AGRICULTURE

- Agriculture

OPEN SPACE

- Conservation
- Conservation - Habitat
- Open Space - Recreation
- Open Space - Rural
- Open Space - Water
- Open Space - Mineral Resources

OVERLAYS

- Business Park
- Community Center
- Community Development
- Commercial Retail
- Rural Village and Rural Village Study Area
- Watercourse
- Supervisorial District Boundary
- Specific Plans
- Cities
- Areas Subject to Indian Jurisdiction
- Area Plan Boundaries
- MWD Facilities

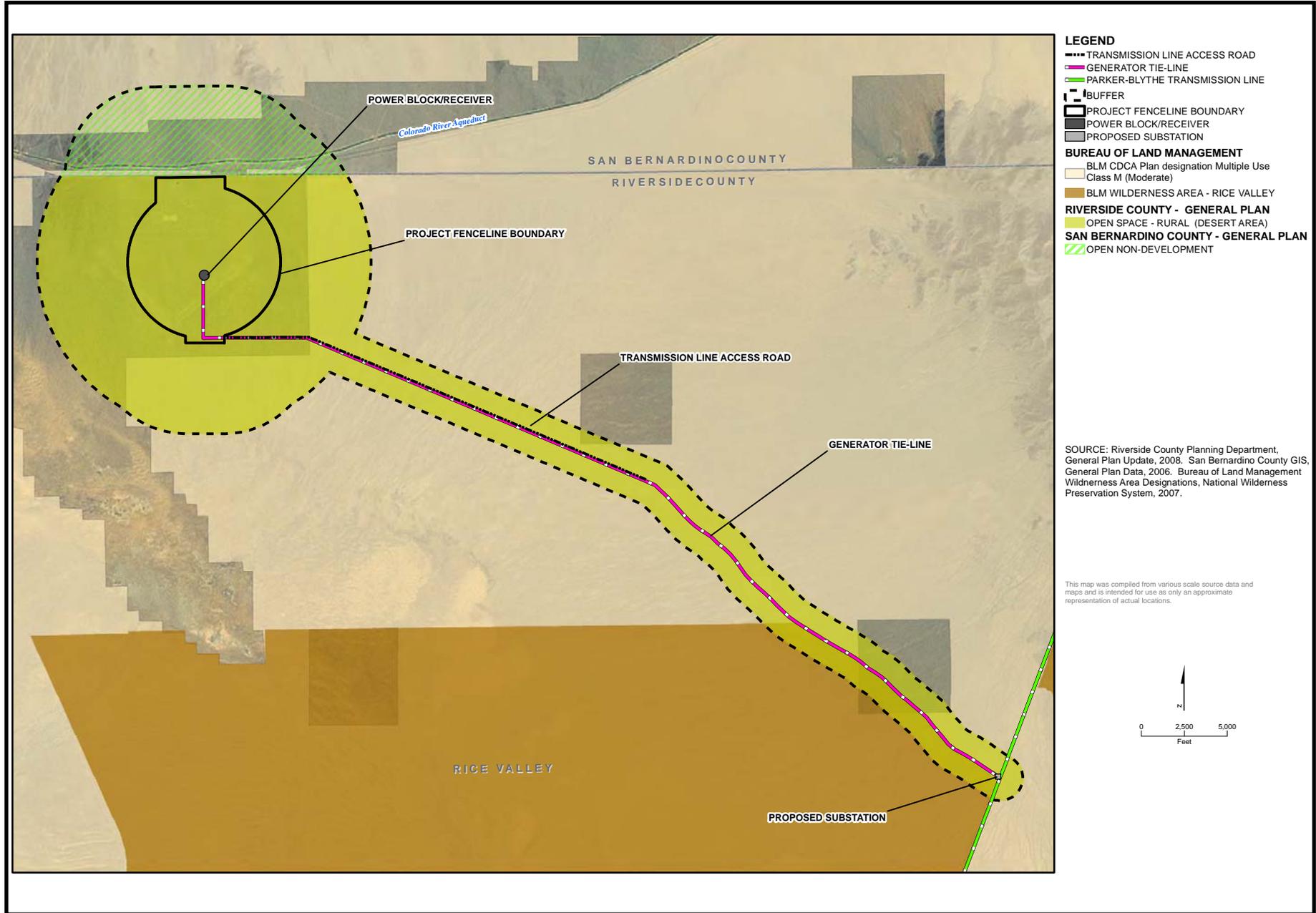
Source Information: General Plan land uses depicted on this map were developed by The County of Riverside Planning Department. The oldest data shown on this map was created in 1990.

Note: This Map may show designations on lands that have been annexed to cities after 1999.

This map may not represent the most current information available and may be revised without prior notice. The geographic information system and other sources should be queried for the most current information. This map or any information represented on it, shall not be reproduced or transmitted in any form or by any means, electronic or mechanical, including photo copying and recording.

LAND USE - FIGURE 9

Rice Solar Energy Project - General Plan Land Use Designations Map (North of Desert Center Alternative)



LAND USE

NOISE AND VIBRATION

Testimony of Geoff Lesh and Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

With respect to CEQA, staff concludes that the RSEP can be built and operated in compliance with all applicable noise and vibration laws, ordinances, regulations, and standards and, if built in accordance with the mitigation measures/conditions of certification proposed below, would produce no significant adverse noise impacts on people within the affected area, either direct, indirect, or cumulative.

The mitigation measures/conditions of certification serve as recommendations by staff for the Energy Commission to consider in its decision to lessen impacts below a level of significance and to assure the project conforms to LORS in accordance with the CEQA requirements for the Energy Commission's analysis. The identification of relevant and reasonable mitigation measures also conforms to NEPA requirements for BLM's and Western's analysis that can be considered in its Record of Decision.

INTRODUCTION

The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night that it is produced, and the proximity of the facility to sensitive receptors combine to determine whether the facility would meet applicable noise control laws and ordinances and whether it would cause significant adverse environmental impacts under CEQA. In some cases, vibration may be produced as a result of power plant construction practices, such as blasting or pile driving. The groundborne energy of vibration has the potential to cause structural damage and annoyance.

The purpose of this analysis is to identify and examine the likely noise and vibration impacts from the construction and operation of the RSEP and to recommend procedures to ensure that the resulting noise and vibration impacts would be adequately mitigated to comply with applicable laws, ordinances, regulations, and standards (LORS) and to avoid creation of significant adverse noise or vibration impacts. For an explanation of technical terms and acronyms employed in this section, please refer to **Noise Appendix A** immediately following.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act (CEQA) requires that significant environmental impacts be identified and that such impacts be eliminated or mitigated to the extent feasible. Section XI of Appendix G of CEQA Guidelines (See Cal. Code Regs., tit. 14, Section 15063) sets forth some characteristics that may signify a potentially significant impact. Specifically, a significant effect from noise may exist if a project would result in:

1. exposure of persons to, or generation of, noise levels in excess of standards established in the local General Plan or noise ordinance or applicable standards of other agencies;
2. exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;
3. substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
4. substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Energy Commission staff, in applying item 3 above to the analysis of this and other projects, has concluded that a potential for a significant noise impact exists where the noise of the project plus the background exceeds the background by 5 dBA or more at the nearest sensitive receptor. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.

Staff considers it reasonable to assume that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA is considered significant. An increase between 5 and 10 dBA should be considered adverse, but may be either significant or insignificant, depending on the particular circumstances of the case.

Factors to be considered in determining the significance of an adverse impact (as defined above) include:

1. the resulting combined noise level;¹
2. the duration and frequency of the noise;
3. the number of people affected;

¹ For example, a noise level of 40 dBA would be considered quiet in many locations. A noise limit of 40 dBA would be consistent with the recommendations of the California Model Community Noise Control Ordinance for rural environments and with industrial noise regulations adopted by European jurisdictions. If the project would create an increase in ambient noise no greater than 10 dBA at nearby sensitive receptors, and the resulting noise level would be 40 dBA or less, the project noise level would likely be insignificant.

4. the land use designation of the affected receptor sites; and
5. public concern or controversy expressed at workshops or hearings or in correspondence.

Noise impacts due to construction activities are usually considered to be insignificant if:

- the construction activity is temporary;
- use of heavy equipment and noisy activities are limited to daytime hours; and
- all industry-standard noise abatement measures are implemented for noise-producing equipment.

Staff uses the above method and threshold to protect the most sensitive populations, including the minority population.

National Environmental Policy Act

National Environmental Policy Act provides no specific standards or thresholds for noise and vibration, but instead, it defers to state/local requirements. This analysis ensures project compliance with those requirements.

Laws, Ordinances, Regulations, and Standards

**Noise Table 1
Laws, Ordinances, Regulations, and Standards**

Applicable Law	Description
Federal (OSHA): 29 U.S.C. § 651 et seq.	Protects workers from the effects of occupational noise exposure.
State (Cal/OSHA): Cal. Code Regs., tit. 8, §§ 5095–5099	Protects workers from the effects of occupational noise exposure.
Local Riverside County General Plan - Noise Element Riverside County Noise Ordinance	Establishes acceptable noise levels. Limits hours of noisy construction.

FEDERAL

Under the Occupational Safety and Health Act of 1970 (29 USC § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations designed to protect workers against the effects of occupational noise exposure (29 CFR § 1910.95). These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed (see **NOISE Appendix A, Table A4** immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation. There are no federal laws governing off-site (community) noise.

The only guidance available for evaluation of power plant vibration is guidelines published by the Federal Transit Administration (FTA) for assessing the impacts of groundborne vibration associated with construction of rail projects. These guidelines have been applied by other jurisdictions to assess groundborne vibration of other types of projects. The FTA-recommended vibration standards are expressed in terms of the “vibration level,” which is calculated from the peak particle velocity measured from groundborne vibration. The FTA measure of the threshold of perception is 65 VdB,² which correlates to a peak particle velocity of about 0.002 inches per second (in/sec). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 100 VdB, which correlates to a peak particle velocity of about 0.2 in/sec.

STATE

California Government Code section 65302(f) encourages each local governmental entity to perform noise studies and implement a noise element as part of its General Plan. In addition, the California Office of Planning and Research has published guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure. The State land use compatibility guidelines are listed in **Noise: Table 2**.

Noise Table 2
Land Use Compatibility for Community Noise Environment

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE - Ldn or CNEL (db)							
	50	55	60	65	70	75	80	
Residential - Low Density Single Family, Duplex, Mobile Home								
Residential - Multi-Family								
Transient Lodging – Motel, Hotel								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditorium, Concert Hall, Amphitheaters								
Sports Arena, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business Commercial and Professional								

² VdB is the common measure of vibration energy.

As noted above, CEQA identifies criteria that may be used to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (Cal. Code Reg., tit. 14 (hereinafter State CEQA Guidelines) Section 15382).

In comparison, NEPA states that “‘Significantly’ as used in NEPA requires considerations of both context and intensity...” (40 CFR 1508.27). Therefore, thresholds serve as a benchmark for determining if a project action will result in a significant adverse environmental impact when evaluated against the baseline. NEPA requires that an Environmental Impact Statement (EIS) is prepared when the proposed federal action (project) as a whole has the potential to “significantly affect the quality of the human environment.”

Criteria for determining significance in this section are based on Appendix G of the CEQA Guidelines (CCR 2006) and performance standards or thresholds identified by the Energy Commission staff. In addition, staff’s evaluation of the environmental effects of the proposed project on land uses (i.e., those listed below) includes an assessment of the context and intensity of the impacts, as defined in the NEPA implementing regulations 40 CFR Part 1508.27. NEPA provides no specific standards or thresholds for noise and vibration, but instead, it defers to state/local requirements. This analysis ensures project compliance with those requirements. No further NEPA required analysis is warranted.

Effects of the proposed project on noise and vibration (and in compliance with both CEQA and NEPA) have been determined using the thresholds listed below in **Direct Impacts and Mitigation**.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The proposed RSEP would be constructed on a 2,560 acre project parcel site located in Riverside County near the junction of SR 62 and Blythe-Midland Road, and near the remains of the abandoned town of Rice, California. The nearest occupied residence is approximately 15 miles northeast at the rural crossroads community of Vidal Junction, California. The nearest town is Parker, Arizona (population 3,181) approximately 32 miles east. A residential settlement is located at the Metropolitan Water District of Southern California’s Iron Mountain Pumping Plant, approximately 17 miles west.

The site is primarily on previously disturbed private land (RSEP 2009a, AFC pg. ES-4). Existing use adjacent to the proposed project site consists of undeveloped open space uses to the east, south, and west. Along the northern boundary of the site, State Route 62, the California Aqueduct, and the Arizona-California Railroad run parallel to the site (RSEP 2009a, AFC § 5.72.1)

The ambient noise regime in the project vicinity consists of aircraft traffic, highway traffic, wind and wildlife.

Ambient Noise Monitoring

There are no noise-sensitive receptors³ within 15 miles of the project site (RSEP 2009a, AFC § 5.7.2.2). The Energy Commission's siting regulations only require ambient noise measurements when it is likely that operational or construction noise from a project will increase the ambient noise levels at nearby noise sensitive receptors. Given that there are no noise-sensitive receptors located within fifteen miles of the project site, and that the ambient noise regime in the surrounding area includes highway traffic and aircraft traffic, it is extremely unlikely that the ambient noise at the nearest noise sensitive receptor (more than fifteen miles away from the project site) would be low enough that attenuated project noise would cause a 5 dBA increase in the ambient noise level. Thus, staff agrees with the applicant that ambient noise monitoring is not required.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION

Noise impacts associated with the project can be created by short-term construction activities and by normal long-term operation of the power plant.

Construction Impacts and Mitigation

Construction of RSEP is expected to occur over a period of approximately 30 months (RSEP 2009a, AFC pg. ES-6).

Compliance with LORS

Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances.

The Applicant has predicted that there will be no noise impacts due to project construction on the nearest sensitive receptors (RSEP 2009a, AFC § 5.7.3.2, Table 5.7-4). Assuming an average construction noise of 89 dBA L_{eq} at 50 feet from the noise center (the upper range of noise levels for construction equipment), project construction noise would attenuate to 25 dBA at the nearest noise receptors, 15 miles away.

There are no LORS that limit construction noise levels for the project. The Riverside County Code restricts noisy construction work to daytime hours when a project is within one-quarter mile of a noise-sensitive receptor. Given the distance between the proposed project site and the nearest noise sensitive receptor, this limitation does not apply. No limit on construction hours needs to be enforced for the RSEP project to mitigate for noise impacts.

³ A noise-sensitive receptor, also referred to as a sensitive noise receptor, is a receptor at which there is a reasonable degree of sensitivity to noise (such as residences, schools, hospitals, elder care facilities, libraries, cemeteries, and places of worship).

CEQA Impacts

Power Plant Site

To evaluate construction noise impacts, staff compares the projected noise levels to the ambient levels. Since construction noise typically varies continually with time, it is most appropriately measured by, and compared to, the L_{eq} (energy average) metric.

Ambient noise levels were not measured because there are no noise-sensitive receptors within 15 miles of the project site. Aggregate construction noise would attenuate to less than 25 dBA at a distance of 15 miles from the project site, which is generally considered to be very quiet. Given the lack of receptors in the vicinity of the project site, staff considers the noise impacts due to construction activity to be insignificant.

In the event that actual construction noise should annoy nearby residents, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification process to notify nearby residents of the project construction and operation, and a Noise Complaint Process that would require the applicant to resolve any complaints regarding project noise.

The nearest wilderness area, Turtle Mountains Wilderness Area, is located north of the project site. The nearest boundary of the wilderness area is approximately 2.3 miles from the proposed project's most-northern fenceline. The applicant predicts an average construction noise level of 89 dBA L_{eq} at 50 feet. This would result in roughly 41 dBA L_{eq} at the nearest edge of the wilderness area. A level of 41 dBA does not typically cause annoyance. Given that construction will be temporary and human activities in the preserve are for limited, short-term durations, staff believes the construction impact would be less than significant.

Linear Facilities

Linear facilities include new electrical transmission lines interconnecting to the transmission system to the southeast of the project site. The transmission lines would extend past the project site boundaries and would not pass close to noise-sensitive receptors (RSEP 2009a, AFC Figure 3.1-1).

Steam Blows

Typically, the loudest noise encountered during construction, inherent in building any project incorporating a steam turbine, is created by the steam blows. After erection and assembly of the feed water and steam systems, the piping and tubing that comprises the steam path has accumulated dirt, rust, scale and construction debris such as weld spatter, dropped welding rods and the like. If the plant were started up without thoroughly cleaning out these systems, all this debris would find its way into the steam turbine, quickly destroying the machine.

In order to prevent this, before the steam system is connected to the turbine, the steam line is temporarily routed to the atmosphere. High pressure steam is then raised in a heat recovery steam generator (HRSG) or a boiler and allowed to escape to the atmosphere through the steam piping. This flushing action, referred to as a steam blow, is quite effective at cleaning out the steam system. A series of short steam blows,

lasting two or three minutes each, is performed several times daily over a period of two or three weeks. At the end of this procedure, the steam line is connected to the steam turbine, which is then ready for operation.

These steam blows can produce noise as loud as 129 dBA at a distance of 50 feet. This would attenuate to approximately 65 dBA at the receptors fifteen miles from the project site, only based on attenuation due to distance. This predicted level does not account for additional attenuation due to air and ground absorption, and topography; attenuation due to these factors can be considerable over the long distance of fifteen miles.

Because any impact at the receptors located fifteen miles away would be temporary (two to three weeks), would not be a part of the project's normal operation, and would last only two to three minutes at a time, staff concludes that steam blows would likely not cause a significant impact. In the event that actual steam blow noise should annoy nearby residents, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification process to notify nearby residents of the project construction and operation, and a Noise Complaint Process that would require the applicant to resolve any complaints regarding project noise.

Pile Driving

The applicant does not explicitly state that pile driving would be necessary for construction of RSEP. However, staff has analyzed the potential noise impacts of pile driving in case it is found necessary during the construction process. If pile driving is required for construction of the project, the noise from this operation could be expected to reach 100 dBA at a distance of 50 feet (RSEP 2009a, AFC Table 5.7.2). Pile driving noise would thus be projected to reach a level of 36 dBA at the sensitive receptors fifteen miles from the project site. Additionally, this activity would be temporary. Thus, impacts due to pile driving, if it should occur, would not be significant. In the event that actual pile driving noise should annoy nearby residents, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification process to notify nearby residents of the project construction and operation, and a Noise Complaint Process that would require the applicant to resolve any complaints regarding project noise.

Vibration

The only construction operation likely to produce vibration that could be perceived off site would be pile driving, should it be employed. Vibration attenuates rapidly; it is likely that no vibration would be perceptible at any appreciable distance from the project site. Staff therefore believes there would be no significant impacts from construction vibration.

Worker Effects

The applicant has acknowledged the need to protect construction workers from noise hazards and has recognized those applicable LORS that would protect construction workers (RSEP 2009a, AFC § 5.7.3.2.3). To ensure that construction workers are, in fact, adequately protected, staff has proposed Condition of Certification **NOISE-3**, below.

Operation Impacts and Mitigation

The primary noise sources of RSEP include the steam turbine generator, air-cooled condenser, and various pumps and fans (RSEP 2009a, AFC § 5.7.3.3.3; Table 5.7-7). Staff compares the projected noise with applicable LORS. In addition, staff evaluates any increase in noise levels at sensitive receptors due to the project in order to identify any significant adverse impacts.

Common noise mitigating factors included in solar thermal generating facilities include:

- metal acoustical steam turbine enclosure; and
- 15-foot high solar mirror heliostats surrounding the power block.

Compliance with LORS

The applicant performed full noise modeling of project operation. The modeling results indicate that the maximum noise level attributable to RSEP operation at Vidal Junction, the nearest sensitive receptor (15 miles from the project site) is estimated to be 4 dBA. The facility noise level at Vidal Junction may be higher than 4 dBA under certain atmospheric conditions, but would still be low enough to be insignificant. The operational noise from RSEP would therefore be unnoticeable to residents of Vidal Junction. The maximum facility fenceline noise level is estimated to be 49 dBA and will occur at the south fenceline of the RSEP facility (RSEP 2009a, AFC § 5.7.3.3.3; Table 5.7-8).

The nearest boundary of the wilderness area is approximately 2.3 miles from the proposed project's most-northern fenceline. The applicant predicts an operational noise level of no more than 49 dBA L_{eq} at the project fenceline. This would result in roughly 28 dBA L_{eq} at the nearest edge of the wilderness area. A noise level of 28 dBA does not cause annoyance and is well within the acceptable LORS limit.

Project operating noise would thus comply with the standard set by the Riverside County General Plan (60 dBA CNEL at the nearest receptor).

CEQA Impacts

Power plant noise is unique. Essentially, a power plant operates as a steady, continuous, broadband noise source, unlike the intermittent sounds that comprise the majority of the noise environment. As such, power plant noise contributes to, and becomes part of, the background noise level, or the sound heard when most intermittent noises cease. Where power plant noise is audible, it will tend to define the background noise level. For this reason, staff compares the projected power plant noise to the existing ambient background (L_{90}) noise levels at the affected sensitive receptors. If this comparison identifies a significant adverse impact, then feasible mitigation must be incorporated in the project to reduce or remove the impact.

In many cases, a power plant will be intended to operate around the clock for much of the year. As a solar thermal generating facility, RSEP would operate only during the daytime hours, typically up to 16 hours per day during the summer (with fewer hours during the fall, winter, and spring), when sufficient solar insolation is available (RSEP 2009a pg. ES-10). Typically, daytime ambient noise consists of both intermittent and

constant noises. The noise that stands out during this time is best represented by the average noise level, or L_{eq} . Thus, staff normally compares a project's daytime noise levels to the daytime ambient L_{eq} levels at the project's noise-sensitive receptors.

As noted above, there are no sensitive receptors within 15 miles of the project site. The applicant has predicted that project operational noise levels would attenuate to less than an unnoticeable 4 dBA at a distance of fifteen miles from the project site, which would attenuate further at greater distances.

In the event that actual operational noise should annoy nearby residents, staff proposes Conditions of Certification **NOISE-1** and **NOISE-2**, which would establish a public notification process to notify nearby residents of the project construction and operation, and a Noise Complaint Process that would require the applicant to resolve any complaints regarding project noise.

Tonal Noises

One possible source of disturbance would be strong tonal noises. Tonal noises are individual sounds (such as pure tones) that, while not louder than permissible levels, stand out in sound quality. The applicant plans to avoid the creation of annoying tonal (pure-tone) noises by balancing the noise emissions of various power plant features during plant design. Given the lack of noise-sensitive receptors within the vicinity of the project, tonal noises would not be expected to cause annoyance.

Linear Facilities

The electrical interconnection line would not pass by any noise-sensitive receptors and would thus not be expected to have any effects. Additionally, noise effects from electrical interconnection lines typically do not extend beyond the right-of-way easement of the line and thus are generally inaudible to any nearby receptors.

Vibration

Vibration from an operating power plant could be transmitted by two chief means; through the ground (groundborne vibration) and through the air (airborne vibration).

The operating components of the RSEP project consist of a high-speed steam turbine generator and various pumps and fans. All of these pieces of equipment must be carefully balanced in order to operate; permanent vibration sensors are attached to the turbine and generator. Based on experience with numerous previous projects employing similar equipment, Energy Commission staff believes that groundborne vibration from RSEP would be undetectable at distances greater than a few hundred feet from the power block. Given that there are no receptors within fifteen miles of the project, vibration would not have an impact on any receptors.

Airborne vibration (low frequency noise) can rattle windows and objects on shelves and can rattle the walls of lightweight structures. None of the project equipment is likely to produce low frequency noise; this makes it highly unlikely that RSEP would cause perceptible airborne vibration effects.

Worker Effects

The applicant has acknowledged the need to protect plant operating and maintenance workers from noise hazards and has committed to comply with applicable LORS (RSEP 2009a, AFC § 5.7.6.1.2). To ensure that plant operation and maintenance workers are, in fact, adequately protected, Energy Commission staff has proposed Condition of Certification **NOISE-4**, below.

FACILITY CLOSURE

In the future, upon closure of RSEP, all operational noise from the project would cease, and no further adverse noise impacts from operation of RSEP would be possible. The remaining potential temporary noise source is the dismantling of the structures and equipment and any site restoration work that may be performed. Since the noise would be similar to that caused by the original construction, it would likely cause no noise impacts given the remote location of the project. Any noise LORS that are in existence at that time would apply. Applicable conditions of certification included in the Energy Commission decision would also apply unless modified by the Energy Commission.

CEQA LEVEL OF SIGNIFICANCE

For the purposes of CEQA compliance, the significance of construction and operating noise impacts of the proposed project at the nearest sensitive receptors has been determined.

Construction Impacts

As discussed in detail in section C.10.4.2 above (under the subsection entitled “Construction Impacts and Mitigation”), there are no noise-sensitive receptors within fifteen miles of the project that would be impacted by construction noise; the impacts due to construction noise are considered insignificant.

Operation Impacts

As discussed in detail in section C.10.4.2 above (under the subsection entitled “Operation Impacts and Mitigation”), power plant noise levels are predicted to be less than 4 dBA L_{eq} at a distance of fifteen miles from the project site during daytime operation, which would not result in an increase over ambient noise. No change in ambient noise at any sensitive receptor at night would result from plant operation. Thus, operation noise impacts of the project would be insignificant.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of

the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Setting and Existing Conditions

Based on the alternative description above, the setting for the Reduced Acreage Alternative would be the same as for the proposed project. As the reduced project footprint would not result in a change to the overall site location as analyzed for the RSEP, this alternative would have the same noise environment and noise-sensitive receptors as those described above associated with the proposed RSEP.

Assessment of Impacts and Discussion of Mitigation

Staff's methods of analysis and conclusions as related to **Noise and Vibration** would remain unchanged. This alternative would be built and would operate in a manner consistent with industry norms for noise and vibration emissions, and there would be no change in potential environmental impacts.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. An existing SCE 161-kV transmission line traverses the alternative site. The boundaries of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

The North of Desert Center Alternative would require an approximately 4.6-mile transmission interconnection. The transmission interconnection would exit the site and proceed southeast for approximately 2.5 miles. The transmission line would then turn directly south for approximately 2.1 miles and enter the proposed Red Bluff Substation from the north.

The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

Setting and Existing Conditions

The plant configuration at the North of Desert Center Alternative site would be similar to the proposed project, resulting in similar noise and vibration impacts.

Assessment of Impacts and Discussion of Mitigation

Staff's methods of analysis and conclusions as related to **Noise and Vibration** would remain unchanged.

The nearest residential receptor would be approximately 1/4-mile from the property line of this alternative site. Assuming an average construction noise of 89 dBA L_{eq} at 50 feet from the noise center (the upper range of noise levels for construction equipment), construction noise would attenuate to roughly 30-50 dBA (depending on where at the site the activities occur). A construction noise level of 30 dBA is extremely low and would not cause annoyance. A construction noise of 50 dBA, in a rural environment similar to this site, may cause annoyance depending on the duration of construction activities. However, due to the temporary nature of construction, especially at a location close enough to cause this level of noise, and because construction would likely be limited to occur during the daytime hours, the impact would not likely be significant.

The operational noise levels would likely be similar to the original project because the same technology would be employed. Assuming an operational noise level of 60 dBA at 400 feet (RSEP 2009a, AFC Figure 5.7-1), the project noise level at the nearest residential receptor would be roughly 25 dBA L_{eq} . This level of noise is not considered loud, even in a quiet rural environment, and is well below the county's limit of 60 dBA CNEL, or 53 dBA L_{eq} . This alternative would likely be built and operated in a manner consistent with industry norms for noise and vibration.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe transmission line at the same location as the proposed project transmission line. This alternative generation tie line would exit the proposed solar facility at the northeast corner and follow State Route 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.0 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

The SR 62/Rice Valley Road Transmission Line Alternative is evaluated in this SA/DEIS because it would:

1. Avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise.
2. Avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

Setting and Existing Conditions

The noise and vibration impacts of this transmission line alternative would be similar to the proposed project, resulting in similar noise and vibration impacts.

Assessment of Impacts and Discussion of Mitigation

Staff's methods of analysis and conclusions as related to **Noise and Vibration** would remain unchanged. This alternative would be built and would operate in a manner consistent with industry norms for noise and vibration, and would have similar impacts as the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on RSEP transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no impacts would result from this alternative related to **Noise and Vibration**. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects might or might not have impacts in other locations.

CUMULATIVE IMPACT ANALYSIS

Geographic Extent

The geographic scope for considering cumulative noise impacts on sensitive receptors for this project consists of the region immediately surrounding any identified receptors. There are no noise-sensitive receptors within fifteen miles of the project site, the fact of which inherently precludes the possibility for cumulative noise impacts from the project.

COMPLIANCE WITH LORS

RSEP construction and operations would conform to all applicable noise and vibration LORS.

NOTEWORTHY PUBLIC BENEFITS

The proposed project would not result in any noteworthy public benefits with respect to noise and vibration.

CONCLUSIONS

Staff concludes that RSEP, if built and operated in conformance with the proposed conditions of certification below, would comply with all applicable noise and vibration LORS and would produce no significant adverse noise impacts on people within the project area, directly, indirectly, or cumulatively with respect to CEQA.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

The following mitigation measures/conditions of certification serve as recommendations by staff for the Energy Commission to consider in its decision to lessen impacts below a level of significance and to assure the project conforms to LORS in accordance with CEQA requirements for the Energy Commission's analysis. The identification of relevant and reasonable mitigation measures also conforms to NEPA requirements for BLM's and Western's analysis that can be considered in its Record of Decision.

NOISE-1 At least 15 days prior to the start of ground disturbance, the project owner shall notify all residences and businesses, if any, within three miles of the project site boundaries and one-half mile of linears, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: Prior to ground disturbance, the project owner shall transmit to the Compliance Project Manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed and describing the method of that notification, verifying that the telephone number has been established and posted at the site, and giving that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2 Throughout the construction and operation of RSEP, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

- Use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- Attempt to contact the person(s) making the noise complaint within 24 hours;

- Conduct an investigation to determine the source of noise related to the complaint;
- Take all feasible measures to reduce the noise at its source if the noise is project related; and
- Submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts, and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a three-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program shall be used to reduce employee exposure to high noise levels during construction to comply with applicable OSHA and Cal/OSHA standards.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM the noise control program and the project owner's project manager's signed statement. The project owner shall make the program available to Cal/OSHA upon request.

NOISE-4 Following the project's first achieving a sustained output of 90% or greater of rated capacity, the project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations sections 5095–5099 and Title 29, Code of Federal Regulations section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

Verification: Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal/OSHA upon request.

REFERENCES

Riverside 2008. - Imperial County General Plan, Noise Element.

Riverside 2007 - Riverside County Code of Ordinance, Ordinance 847 Regulating Noise. Effective July 19, 2007.

RSEP 2009a – Rice Solar Energy Project Application for Certification for the Rice Solar Energy Project. 10/13/2009.

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Rice Solar Energy Project (09-AFC-10)		
NOISE COMPLAINT LOG NUMBER _____		
Complainant's name and address: 		
Phone number: _____		
Date complaint received: _____ Time complaint received: _____		
Nature of noise complaint: 		
Definition of problem after investigation by plant personnel: 		
Date complainant first contacted: _____		
Initial noise levels at 3 feet from noise source _____	dBA	Date: _____
Initial noise levels at complainant's property: _____	dBA	Date: _____
Final noise levels at 3 feet from noise source: _____	dBA	Date: _____
Final noise levels at complainant's property: _____	dBA	Date: _____
Description of corrective measures taken: 		
Complainant's signature: _____		Date: _____
Approximate installed cost of corrective measures: \$ _____		
Date installation completed: _____		
Date first letter sent to complainant: _____		(copy attached)
Date final letter sent to complainant: _____		(copy attached)
This information is certified to be correct: 		
Plant Manager's Signature: _____		

(Attach additional pages and supporting documentation, as required).

NOISE APPENDIX A FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that “A-weighting” of sound intensities best reflects the human ear’s reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. **NOISE Table A1** provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (L_{eq}), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (L_{dn}). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical L_{dn} values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, those higher levels nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (U.S. Environmental Protection Agency, Effects of Noise on People, December 31, 1971).

To help the reader understand the concept of noise in decibels (dBA), **NOISE Table A2** illustrates common noises and their associated sound levels, in dBA.

NOISE Table A1
Definition of Some Technical Terms Related to Noise

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L ₁₀ , L ₅₀ , & L ₉₀	The A-weighted noise levels that are exceeded 10%, 50%, and 90% of the time, respectively, during the measurement period. L ₉₀ is generally taken as the background noise level.
Equivalent Noise Level, L _{eq}	The energy average A-weighted noise level during the noise level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, L _{dn} or DNL	The Average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, Model Community Noise Control Ordinance, California Department of Health Services 1976, 1977.

NOISE Table A2 Typical Environmental and Industry Sound Levels			
Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing

Source: Handbook of Noise Measurement, Arnold P.G. Peterson, 1980

Subjective Response to Noise

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed, with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of 1 dB cannot be perceived.
2. Outside of the laboratory, a 3-dB change is considered a barely noticeable difference.
3. A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
4. A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response (Kryter, Karl D., The Effects of Noise on Man, 1970).

Combination of Sound Levels

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a 3-dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus 3 dB). **NOISE Table A3** indicates the rules for decibel addition used in community noise prediction.

NOISE Table A3 Addition of Decibel Values	
When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to ± 1 dB.	

Source: Architectural Acoustics, M. David Egan, 1988.

Sound and Distance

Doubling the distance from a noise source reduces the sound pressure level by 6 dB.

Increasing the distance from a noise source 10 times reduces the sound pressure level by 20 dB.

Worker Protection

OSHA noise regulations are designed to protect workers against the effects of noise exposure and list permissible noise level exposure as a function of the amount of time to which the worker is exposed, as shown in **NOISE Table A4**.

NOISE Table A4
OSHA Worker Noise Exposure Standards

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: 29 CFR § 1910.95.

PUBLIC HEALTH AND SAFETY

Testimony of Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

Bureau of Land Management (BLM), Western Area Power Administration (Western), and Energy Commission staff (staff) (hereafter jointly referred to as agencies) have analyzed the potential public health and safety risks from the construction and operation of the proposed Rice Solar Energy Project (RSEP). With respect to the California Environmental Quality Act (CEQA), staff concludes that the proposed project would not cause any significant adverse cancer or short- or long-term noncancer health effects from the project's toxic air contaminants (TACs). The agencies' analysis of potential health impacts uses a conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population, including newborns and infants. According to the results of the agencies' health risk assessment, these TACs of concern would be emitted from the proposed facility at levels that would not contribute significantly to morbidity or mortality of residents in the area.

INTRODUCTION

The agencies have evaluated potential public health and safety risks associated with the proposed RSEP's construction, operating and decommissioning activities. This Staff Assessment/Draft Environmental Impact Statement (SA-DEIS) meets the Energy Commission's responsibility to comply with the California Environmental Quality Act (CEQA) and BLM's and Western's responsibility to comply with the National Environmental Policy Act (NEPA). The purpose of this staff Assessment is to determine if emissions of toxic air contaminants (TACs) from the proposed Rice Solar Energy Project (RSEP) would have the potential to cause significant adverse public health and safety impacts or to violate standards for public health protection. If potentially significant health and safety impacts are identified, staff would evaluate mitigation measures to maintain such impacts below levels of insignificance.

In addition to the analysis in this Public Health and Safety Section that focuses on potential health effects of the toxic air contaminants, other potentially significant impacts of RSEP's construction and operation are considered elsewhere in this document as listed and briefly described below:

- Air Quality - evaluates the expected air quality impacts from the emissions of criteria air pollutants from both the construction and operation of the proposed facility. Criteria air pollutants are defined as air contaminants for which the state and/or federal governments have established ambient air quality standards to protect public health;
- Hazardous Materials Management - evaluates the potential impacts on public and worker health from accidental releases of hazardous materials;
- Socioeconomics and Environmental Justice - evaluates project-induced changes on community services including law enforcement and hospitals;

- Soil and Water Resources – evaluates the potential for the Rice Solar Energy Project to cause contamination of soil and water resources, to exacerbate flooding, and to cause adverse effects to water supply in consideration of other existing users and projected needs;
- Traffic and Transportation – evaluates potential effects on roads used during project construction and operation, effects on traffic, and the potential for project-related glare to cause a health or safety hazard;
- Transmission Line Safety and Nuisance – evaluates potential effects associated with proposed transmission lines accounting for both the physical presence of the lines and the physical interactions of their electric and magnetic fields. The potential effects include aviation safety, interference with radio-frequency communication, audible noise, fire hazards, hazardous shocks, nuisance shocks, and electric and magnetic field (EMF) exposure.
- Worker Safety and Fire Protection - assess the worker safety and fire protection measures proposed by the applicant including determining whether the project would have any adverse impacts on fire protection and emergency medical services that are also relied upon by the public; and
- Waste Management - evaluates issues associated with wastes generated from the proposed project construction and operation including ensuring that wastes would be managed in an environmentally safe manner.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

This analysis of proposed project's effects is intended to assess with respect to CEQA and NEPA the potential for significant environmental impacts and identify the measures to maintain such impacts below the applicable health and safety criteria. Under NEPA, impacts are evaluated considering context, duration and intensity. A significant impact is defined under CEQA as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area potentially affected by the project" (State CEQA Guidelines Section 15382). Thus under CEQA, thresholds serve as benchmarks for determining if a proposed action would result in a significant adverse environmental impact when evaluated against the baseline. Thresholds for determining significance in this section are based on Appendix G of the CEQA Guidelines (CCR 2006) and performance standards or thresholds identified by the agencies.

This **Public Health** section of the agencies' assessment focuses on the toxic emissions to which the public could be exposed during project construction and routine operation. Following the release of these toxic contaminants into the air or water, people may come into contact with them through inhalation, dermal contact, or ingestion via contaminated food or water. The air pollutants for which no ambient air quality standards have been established are called noncriteria pollutants. Unlike criteria pollutants such as ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide, noncriteria pollutants have no ambient (outdoor) air quality standards that specify levels considered safe for everyone.

Since noncriteria pollutants do not have specific air quality standards, a health risk assessment is normally used to determine if individuals might be exposed to those types of pollutants at unhealthy levels. The risk assessment process consists of the following steps:

- Identification of the types and amounts of hazardous substances that the Rice Solar Energy Project could emit to the environment;
- Estimation of the worst-case concentrations of project emissions in the environment using dispersion modeling;
- Estimation of the amounts of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact; and
- Characterization of potential health risks by comparing worst-case exposures to safe standards based on known health effects.
- The agencies rely on the expertise of the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) to identify contaminants that are known to the state to cause cancer or other noncancer toxicological endpoints and to calculate the toxicity and cancer potency factors of these contaminants. The agencies also rely upon the expertise of the California Air Resources Board and the local air pollution control districts to conduct ambient air monitoring of toxic air contaminants and on the state Department of Public Health to conduct epidemiological investigations of the impacts of pollutants on communities. It is not within the purview or the expertise of the agencies to duplicate the expertise and statutory responsibilities of these agencies.

In the initial assessment stage, a screening-level risk assessment is performed using simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis is designed that would likely overestimate public health impacts from exposure to project emissions. In reality, it is likely that the actual risks from the power plant in question would be much lower than the risks as estimated using the screening-level assessment. The numerical risks from this assessment are obtained from a process that assumes conditions that would lead to the highest or worst-case pollutant exposures. The related conservative steps include:

- using the highest levels of pollutants that could be emitted from the plant;
- assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- using the type of air quality computer model which predicts the greatest plausible impacts;
- calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- assuming that an individual's exposure to cancer-causing agents occurs continuously for 70 years; and
- using health-based standards designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

A screening-level risk assessment would at a minimum include the potential health effects from inhaling hazardous substances from direct exposure. Some facilities may also emit certain substances that could present a health hazard from indirect exposure through noninhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these substances are present in facility emissions, the screening-level analysis would include the following additional exposure pathways: soil ingestion, dermal exposure, and mother's milk (OEHHA 2003, p. 5-3).

The risk assessment process addresses three categories of health impacts: acute (short-term) health effects, chronic (long-term) noncancer effects, and cancer risk (also long-term). Acute health effects result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Acute effects are temporary in nature and include symptoms such as irritation of the eyes, skin, and respiratory tract. Chronic health effects are those that arise as a result of long-term exposure to lower concentrations of pollutants. The exposure period is considered to be approximately from 12% to 100% of a lifetime, or from 8 to 70 years (OEHHA 2003, p. 6-5). Chronic health effects include diseases such as reduced lung function and heart disease.

The analysis for noncancer health effects compares the maximum project contaminant levels to safe levels called *Reference Exposure Levels*, or RELs. These are amounts of toxic substances to which even sensitive individuals can be exposed without suffering any adverse health effects (OEHHA 2003, p. 6-2). These exposure levels are designed to protect the most sensitive individuals in the population, such as infants, the aged, and people suffering from illnesses or diseases which make them more sensitive to the effects of toxic substance exposure. The Reference Exposure Levels are based on the most sensitive adverse health effects reported in the medical and toxicological literature and include margins of safety that address the uncertainties associated with inconclusive scientific and technical information and is meant to provide a reasonable degree of protection against hazards that research had not yet identified at the time of the review. Each margin of safety is designed to prevent pollution levels that have been demonstrated to be harmful, and also prevent exposure to lower pollutant levels that may pose an unacceptable risk of harm, even if the risk has not precisely been identified as to nature or degree. Health protection is assumed if the estimated worst-case exposure is below the relevant reference exposure level. In such a case, an adequate margin of safety would be assumed to exist between the predicted exposure and the estimated dose for toxicity.

Exposure to multiple toxic substances may result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with the California Air Pollution Control Officers Association (CAPCOA) guidelines, the health risk assessment assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pp. 1-5, 8-12). Other mechanisms may operate in cases of multiple exposures where the actions may be synergistic or antagonistic (that is where the effects would be greater or less than the sum, respectively). For these types of substances, the health risk assessment could underestimate or overestimate the risks.

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the cancer-causing substance would occur over a 70-year lifetime. The risk that is calculated is therefore, not meant to project the actual expected incidence of cancer, but rather as a theoretical upper-bound number based on worst-case assumptions. Cancer risk is expressed in terms of chances of cancer per million and is a function of the maximum expected pollutant concentration, the probability that a particular pollutant will cause cancer (called *potency factors* and established by OEHHA), and the length of the exposure period. Cancer risks for each of the identified carcinogens are added together to yield the total cancer risk. The conservative nature of these screening-level assumptions means that actual cancer risks from project emissions would be considerably lower than those estimated.

The screening-level analysis is performed to assess worst-case public health risks associated with the proposed project. If this analysis predicts a risk that would be less than significant, further analysis would not be necessary. However, if risks were to be identified as above the significance level, then further analysis, using more realistic site-specific assumptions, would be performed to obtain a more accurate assessment of potential public health risks in question.

Significance Criteria

The agencies assess the health effects of exposure to toxic emissions based on the impacts on the maximally exposed individual. This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using worst-case assumptions, as described above. As described earlier, noncriteria pollutants are evaluated for short-term (acute) and long-term (chronic) noncancer health effects, as well as cancer (long-term) health effects. The significance of project health impacts is determined separately for each of the three categories.

Acute and Chronic Noncancer Health Effects

Staff assesses the significance of noncancer health effects by calculating a *hazard index*, which is a ratio obtained by comparing exposure from facility emissions to the reference (safe) exposure level. A ratio of less than 1.0 signifies that the worst-case exposure is below the safe level. The hazard indices for all the toxic substances with the same type of health effect are added together to yield a Total Hazard Index. The Total Hazard Index is calculated separately for acute and chronic effects. A Total Hazard Index of less than 1.0 indicates that cumulative worst-case exposures would be less than the reference exposure levels. Under these conditions, health protection from the project would be assumed likely, even for sensitive members of the population. In such a case, staff would presume that there would be no significant noncancer project-related public health impacts.

Cancer Risk

The agencies rely upon regulations implementing the provisions of Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, (Health & Safety Code, §§25249.5 et seq.) for guidance in establishing a significance level for cancer risks. Title 22, California Code of Regulations section 12703(b) states that “The risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure.” This

level of risk is equivalent to a cancer risk of 10 in one million, which is also written as 10×10^{-6} . An important point to be noted for perspective is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all cancer-causing chemicals. Thus, the manner in which the significance level is applied by staff is more conservative (health-protective) than that applied by Proposition 65. The significant risk level of 10 in one million is consistent with the level of significance adopted by many California air pollution districts. In general, these air districts would not approve a project with a potential cancer risk exceeding 10 in one million.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection can be ensured. The agencies' analysis also addresses potential impacts on all members of the population including the young, the elderly, and individuals with existing medical conditions that may make them more sensitive to the adverse effects of toxic air contaminants, and any minority or low-income populations that are likely to be disproportionately affected by impacts mainly because of their location relative to the source. To accomplish this goal, the agencies use the most current acceptable public health exposure levels set to protect the public from the effects of airborne toxics. When a screening analysis shows cancer risks to be above the significance level, refined assumptions would likely result in a lower, more realistic risk estimate. If after refined assumptions, the potential risk from the facility were to be found to exceed the significance level of 10 in one million, the agencies would recommend appropriate measures to reduce the risk to less than significant. If, after all risk reduction measures have been considered, a refined analysis still identifies a cancer risk of greater than 10 in one million, staff would deem such a risk to be significant and would not recommend project approval, and BLM and Western would consider this risk in their decision.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

PUBLIC HEALTH AND SAFETY Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

<u>Applicable Law</u>	<u>Description</u>
Federal	
Clean Air Act section 112 (Title 42, U.S. Code section 7412)	This act requires new sources that emit more than 10 tons per year of any specified Hazardous Air Pollutant (HAP) or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.
State	
California Health and Safety Code section 25249.5 et seq. (Proposition 65)	These sections establish thresholds of exposure to carcinogenic substances above which Prop 65 exposure warnings are required.

California Health and Safety Code section 41700	This section states that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”
California Public Resource Code section 25523(a); Title 20 California Code of Regulations (CCR) section 1752.5, 2300–2309 and Division 2 Chapter 5, Article 1, Appendix B, Part (1); California Clean Air Act, Health and Safety Code section 39650, et seq.	These regulations require a quantitative health risk assessment for new or modified sources, including power plants that emit one or more toxic air contaminants (TACs).
Local	
Mojave Desert Air Quality Management District (MDAQMD) Rule 1320	Requires a review of new or modified sources of toxic air contaminants and preparation of related risk assessment. A permit would not be issued if the risk were greater than 10 in one million or the hazard index were greater than 1.0. It also requires the use of the best available controls for air toxics (T-BACT).

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

This section describes the environment in the vicinity of the proposed project site from the public health perspective. Characteristics of the natural environment, such as meteorology and terrain, affect the project’s potential for causing impacts on public health. An emissions plume from a facility may affect elevated areas before lower terrain areas due to a reduced opportunity for atmospheric mixing. Consequently, areas of elevated terrain can often be subjected to increased pollutant impacts. Also, the types of land use near a site influence the surrounding population distribution and density, which, in turn, affect public exposure to project emissions. Additional factors affecting potential public health impacts include existing air quality, existing health concerns, and environmental site contamination.

SITE AND VICINITY DESCRIPTION

The proposed project would be located on a 2,560-acre lot within a 3,324-acre privately-owned parcel which is the site of the former Rice Army Airfield in an undeveloped part of eastern Riverside County immediately south of State Route (SR) 62. There are no nearby residences as the nearest ones are at Vidal Junction, approximately 15 miles to the northeast. Blythe is approximately 40 miles to the south. Lands in this part of the

Mojave Desert are managed predominantly by the Bureau of Land Management (BLM) but the proposed site is private land as noted and thus not under the jurisdiction of BLM. However most of the lands in its vicinity are managed by BLM and are used as transportation corridors, are open spaces, or are used for resource conservation (RS 2009a, pp. 5.1-1, 5.6-1 and 5.9-1). There are no sensitive receptors in the vicinity of the project site given the general absence of areas of habitation (RS 2009a, Section 5.9-1 and Figure 5.6-1).

The site is relatively flat and is at an elevation of 850 feet above sea level. Topography of the surrounding area varies in elevation with a collection of mountain ranges dissected by long broad valleys many with dry lake beds. Many of these mountain ranges rise from 1,000 feet to 4000 feet above the valley floor (SR 2009a, p. 5.1-1).

METEOROLOGY

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into ambient air as well as the direction of pollutant transport. This, in turn, affects the level of public exposure to emitted pollutants and associated health risks. When wind speeds are low and the atmosphere is stable, for example, dispersion is reduced, and localized exposure may be increased.

Riverside County is characterized by a high desert climate where summers are hot and dry, winters are moderate with low precipitation, and temperature inversions are strong. Winds generally blow from the west and southwest resulting in a general west-to-east flow across the landscape (SR 2009a, pp. 5.1-1 and 5.1-2).

Atmospheric stability is a measure related to turbulence, or the ability of the atmosphere to disperse pollutants due to convective air movement. Mixing heights (the height above ground level through which the air is well mixed and in which pollutants can be dispersed) are lower during mornings due to temperature inversions and increase during the warmer afternoons. Staff's **Air Quality** section presents more detailed meteorological data.

EXISTING AIR QUALITY

The proposed site is within the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). By examining average toxic air contaminants' concentrations from representative air monitoring sites with cancer risk factors specific to each contaminant, lifetime cancer risk can be calculated to provide a background risk level for inhalation of air toxics in the ambient air. The resulting risk estimate is assessed for perspective by comparing it with the noted overall lifetime cancer risk for the average individual in the United States which is about 1 in 3, or 333,000 in one million.

The nearest California Air Resources Board (CARB) air toxics monitoring station that actively reports values is located on Mission Boulevard in Riverside, approximately 65 miles southwest of the project site. Using the 2008 air toxics data, the CARB calculated an upper-bound background cancer risk of 104 in one million for the project area (CARB 2009). The pollutants, 1, 3-butadiene and benzene, emitted primarily from mobile

sources, were reported to accounted together for about half of the total risk. The risk from 1, 3-butadiene was about 22 in one million at Riverside, while the risk from benzene was about 30 in one million. Formaldehyde accounts for about 20% of the 2008 average calculated cancer risk based on air toxics monitoring results, with a risk of about 21 in one million. Formaldehyde is emitted directly from vehicles and other combustion sources. The risk from hexavalent chromium was about 23 in one million, or ~22% of the total risk. Fifty-one percent of hexavalent chromium in California is emitted from stationary sources with activities such as chrome plating, welding, spray painting, and leather tanning, while mobile sources such as jet aircrafts and ships contribute about 38%.

The use of reformulated gasoline, beginning in the second quarter of 1996, as well as other toxics reduction measures, have led to a decrease of ambient levels of toxics and associated cancer risk during the past few years in all areas of the state and the nation. For example, in the San Francisco Bay Area, cancer risk was 342 in one million based on 1992 data, 315 in one million based on 1994 data, and 303 in one million based on 1995 data. In 2002, the most recent year for which data is available, the average inhalation cancer risk decreased to 162 in one million (BAAQMD 2004b, p. 12).

EXISTING PUBLIC HEALTH CONCERNS

When evaluating a new project, the agencies often conduct a detailed study and analysis of existing public health issues in the project vicinity. This analysis is prepared in order to identify the current incidence of respiratory diseases (including asthma), cancer, and childhood mortality rates within the population located near the proposed project. Assessing existing health concerns in the project area would provide staff with a basis for evaluating the significance of any additional health impacts from the proposed RSEP while allowing evaluation of the adequacy of any proposed mitigation. Because of the very low population density of the project area, and the absence of unusual health issues within a 6-mile radius of the site as noted by the applicant (RS 2009a, Section 5.9-1), the agencies did not find it necessary to conduct further analysis regarding existing health status.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Proposed Project - Construction Impacts and Mitigation

Potential risks to public health during construction may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as diesel exhaust from heavy equipment operation. Criteria pollutant impacts from the operation of heavy equipment and particulate matter from earth moving are examined in staff's **Air Quality** analysis.

For the proposed and similar projects, site disturbances would occur during construction from excavation, grading, and earth moving activities. Such activities have the potential to adversely affect public health through various mechanisms, such as the generation of airborne dust, from material being carried off site through soil erosion, and from uncovering and dispersal of buried hazardous substances. The Phase I Environmental Site Assessment conducted for the project's 3,324-acre site in 2008 identified several "Recognized Environmental Conditions" (RECs) per the American Society for Testing

and Materials Standards (ASTM) definition (SR 2009a, pp. 5.14-1 through 5.14-3, and Appendix 5.14A). These locations of potentially significant toxic contamination were reported to be from past military activities at the site when it was used during World War II as an Army training camp and airfield. The Phase II assessment and evaluation of available records showed that most of the mitigation measures applied during post-war construction activities had been adequate to minimize the toxic contaminations suggested by the presence of the RECs (SR 2009a, p. 5.14-3) meaning that there would be minimal likelihood of uncovering contamination at significant levels. The agencies have identified and staff has recommended two Waste Management Conditions of Certification (**Waste-1** and **Waste-2**) requiring a registered professional engineer or geologist to be available during soil excavation and grading. This requirement should be adequate to ensure the proper handling and disposal of any contaminated soil. The reader could refer to staff's **Waste Management** section for a more detailed analysis.

Operation of construction equipment results in air emissions from diesel-fueled engines. Such diesel emissions are generated from sources such as trucks, graders, cranes, welding machines, electric generators, air compressors, and water pumps. Diesel exhaust includes criteria pollutants such as nitrogen oxides, carbon monoxide, sulfur oxides, and a complex mixture of thousands of gases and fine particles. These particles are primarily made up of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust contains over 40 substances that are listed by the U.S. Environmental Protection Agency (U.S. EPA) as hazardous air pollutants and by the California Air Resources Board (ARB) as toxic air contaminants.

Exposure to diesel exhaust may cause both short- and long-term adverse health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Long-term effects can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies also strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer.

Based on a number of health effects studies, the Scientific Review Panel on Toxic Air Contaminants recommended a chronic reference exposure level (see discussion of reference exposure levels in Method of Analysis section above) for diesel exhaust particulate matter of 5 micrograms of diesel particulate matter per cubic meter of air ($\mu\text{g}/\text{m}^3$) and a cancer unit risk factor of $3 \times 10^{-4} (\mu\text{g}/\text{m}^3)^{-1}$ (SRP 1998, p. 6).¹ The Scientific Review Panel did not recommend a value for an acute Reference Exposure Level since available data in support of a value was deemed insufficient. On August 27, 1998, ARB listed particulate emissions from diesel-fueled engines as a toxic air contaminant and approved the panel's recommendations regarding health effect levels.

Construction of RSEP is expected to take place over a period of 30 months. The applicant (SR 2009a, p. 5.1-10 through 5.1-12, 5.1-23, and Appendices 5.1A, 5.1C, and 5.1E) has presented the daily and annual maximum emissions of criteria pollutants including fugitive dust and diesel exhaust emissions from construction equipment and

worker vehicles. The applicant did not estimate the health risks resulting from construction activities due to the short duration of this phase (SR 2009a, p. 5.9-8). Staff agrees with the applicant's reasoning and did not conduct a quantitative assessment of construction impacts on public health given the absence of residences within the six-mile radius of potentially significant impacts. Furthermore, staff has found numerous times that impacts from construction vehicle diesel emissions are invariably less than significant even when there are close-in receptors. Also, as noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period (typically of from 8 to 70 years) and would be of limited usefulness for the relatively short (30-month) construction period expected for this project. Please refer to the **Worker Safety and Fire Protection** section of the SA-DEIS for an assessment of potential health and safety effects to RSEP workers.

Additionally, mitigation measures are proposed by both the applicant and Energy Commission staff to reduce the maximum calculated PM10 and PM2.5 emissions and thus reduce the potential impacts even further. These mitigation measures can be found in the **Air Quality** section of this document and include the use of extensive fugitive dust and diesel exhaust control measures. The fugitive dust control measures are assumed to result in 90% reductions of particulate matter emissions. To further mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, the Energy Commission staff recommends the use of ultra-low sulfur diesel fuel and Tier 2 or Tier 1 California Emission Standards for Off-Road Compression-Ignition Engines or the installation of an oxidation catalyst and soot filters on diesel equipment. The catalyzed diesel particulate filters are passive, self-regenerating filters that reduce particulate matter, carbon monoxide, and hydrocarbon emissions through catalytic oxidation and filtration. The degree of particulate matter reduction is comparable for both mitigation measures in the range of approximately 85–92%. Such filters will reduce diesel emissions during construction and reduce any potential for significant health below levels of significance.

Proposed Project - Operational Impacts and Mitigation

Emissions Sources

The stationary emissions source of potential concern at the RSEP would be two diesel-powered emergency generators and two diesel-powered emergency fire water pumps each of which would be operated for only 30 minutes or less per week for testing and maintenance (SR 2009a p. 5.9-3). **PUBLIC HEALTH Table 2** lists the main toxic emissions potentially emitted from operating these diesel engines and the facility's wet surface air cooler (WSAC). Each TAC has a toxicity value together with a Reference Exposure Level established by OEHHA, which is used to calculate short-term and long-term noncancer health effects, and cancer unit risk as published in the OEHHA Guidelines (OEHHA 2003).

**Public Health Table 2 Types of Health Impacts and Exposure Routes
Attributed to Toxic Emissions***

Substance	Oral Cancer	Oral Noncancer	Inhalation Cancer	Noncancer (Chronic)	Noncancer (Acute)
Benzene			✓	✓	✓
Biphenyl**					
Chloroform			✓	✓	✓
Dichlorobenzene			✓	✓	
Diesel Exhaust			✓	✓	
Formaldehyde			✓	✓	✓
Hexane				✓	
Naphthalene		✓	✓	✓	
Polycyclic Aromatic Hydrocarbons (PAHs)	✓	✓	✓	✓	
Toluene				✓	✓
Xylene				✓	✓

*Source: OEHHA 2003 Appendix L and SM 2009a, Table 5.10-4.

**Biphenyl has no established risk factors or RELs.

Emissions Levels

Once potential emissions are identified, the next step would be to quantify them by conducting a “worst case” analysis. Maximum annual emissions are required to calculate cancer and chronic (long-term) noncancer health effects. Diesel particulate matter (DPM) emissions for the diesel emergency engine were calculated based on emission factors obtained from the vendor. DPM emissions from diesel-fueled delivery trucks were estimated using ARB’s EMFAC2007 model. The next step in the health risk assessment process is to estimate the ambient concentrations of toxic substances. This is accomplished by using a screening air dispersion model and assuming conditions that result in maximum impacts. The applicant’s screening analysis was performed using the AERMOD model. Ambient concentrations were used in conjunction with Reference Exposure Levels and cancer unit risk factors to estimate health effects that might occur from exposure to facility emissions. Exposure pathways, or ways in which people might come into contact with toxic substances, include inhalation, dermal (through the skin) absorption, soil ingestion, consumption of locally grown plant foods, and mother’s milk.

The above method of assessing health effects is consistent with OEHHA’s Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, 2003) referred to earlier and results in the following health risk estimates.

Impacts

The applicant’s screening health risk assessment for the project resulted in an acute Hazard Index (HI) of 0.125 and a chronic HI of 0.013 at the point of maximum impact

(PMI). The worst-case individual cancer risk was calculated to be 0.089 in one million at the PMI. All three PMIs were located on the boundaries of the project site (SR 2009a, p.5.9-8). As **PUBLIC HEALTH Table 3** shows, both the acute and chronic hazard indices and the maximum cancer risk are below the level of significance, indicating that no long-term or short-term cancer or non-cancer health effects are expected.

PUBLIC HEALTH Table 3
Operation Hazard/Risk at Point of Maximum Impact: Applicant Assessment

Type of Hazard/Risk	Hazard Index/Risk	Staff's Significance Level	Significant?
ACUTE NONCANCER	0.125	1.0	No
CHRONIC NONCANCER	0.013	1.0	No
INDIVIDUAL CANCER	0.089 in one million	10.0 in one million	No

Source: SR 2009a p.5.9-8, Table 5.9-3

Staff is in agreement with the applicant's modeling approach and has validated the applicant's findings regarding the numerical public health risk estimate expressed in terms of the hazard index for each non-carcinogenic pollutant or a cancer risk for estimated levels of the carcinogenic pollutants.

Since there are no residential areas within the area potentially impacted by the proposed project's toxic emissions, there would be no environmental justice concerns related to minority or poverty status. Furthermore, staff's evaluation has established that no significant health and safety impacts would result anywhere in the immediate project area meaning that the issue of environmental injustice from significant impacts would not arise during operations.

FACILITY CLOSURE AND DECOMMISSIONING

Closure of the proposed RSEP (whether temporary or permanent) would follow a closure plan prepared by the applicant and designed to minimize public health and environmental impacts. Permanent closure would presumably occur 40 years after the start of operation unless the project remains economically viable. Decommissioning procedures would be similar to construction activities and safeguards, would have to be consistent with all applicable LORS, and would be subject to Energy Commission approval before implementation. Staff expects that impacts on public health from the closure and decommissioning process would represent a fraction of the impacts associated with the construction or operation of the proposed RSEP and would therefore be below levels of significance.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be a project with a site 7.2% smaller than the site for the proposed facility and located in the same 2,560-acre square-shaped parcel

within the larger 3,324-acre private property proposed for the project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administrative building areas) would occupy about 1,270 acres instead of the 1,370 acres required for the project. The receiver location would remain the same with the edges of the contracting towards the center. The heliostat footprint for the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, the 653-foot total height of the solar tower and receiver and transmission interconnection to the Parker-Blythe transmission line would remain the same as for the proposed project. The generating capacity would be reduced by approximately 2 MW.

As with the proposed project, the power from the Reduced Acreage Alternative would be transmitted to the Western power grid through the planned Western Parker-Blythe 161-kV transmission line. This Reduced Acreage Alternative is evaluated because its use would eliminate about 100 acres of the site proposed for the proposed RSEP, thus reducing potential impacts on ephemeral washes, the habitat for the desert tortoise, and the historic Rice Airfield.

SETTING AND EXISTING CONDITIONS

The general setting and existing conditions would remain as described in the **Setting and Existing Conditions** subsection, although the land requirements would be proportionately reduced to reflect the smaller project size. Locations of laydown areas may also vary.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Potential risks to public health during construction may be associated with exposure to toxic substances in contaminated soil disturbed during site preparation, as well as diesel exhaust from heavy equipment operation. Best management practices as applied for the proposed project would apply for the Reduced Acreage Alternative, and would avoid significant adverse effects. During operation, the Reduced Acreage Alternative is likely to result in reduced emissions which would slightly decrease the cancer risk and chronic and acute hazard indices predicted for the proposed 150-MW project. Considering the public health analysis for the proposed project has identified that the cancer risk and chronic and acute hazard indices are already far below their respective levels of significance at the points of maximum impact, there would be no substantive difference between the public health impacts from the proposed project and the Reduced Acreage Alternative.

CEQA LEVEL OF SIGNIFICANCE

As with the proposed project, staff considers compliance with applicable LORS to be sufficient to ensure that no significant public health impacts would result from the construction, operation, and decommissioning of the Reduced Acreage Alternative.

NORTH OF DESERT CENTER ALTERNATIVE

The North Desert Center Alternative would be a 150-MW solar facility located on approximately 2,643 acres. It would be located along Desert Center Rice Road (State

Route 177) east of Kaiser Road, north of Oasis Road, approximately 1.6 miles north of I-10. The North Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. An existing Southern California Edison (SCE) 161-kV transmission line that traverses this alternate site would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line (along Osborne Avenue) and a substation would interconnect the realigned SCE line at the northeastern boundary of the site. The boundaries of the North Desert Center Alternative are shown in **Alternatives Figure 3** along with the realigned SCE line. This alternative is evaluated because its use would reduce impacts on the cultural resources in the areas around the historic Rice Army Airfield.

Since the North Desert Alternative would have the same generating capacity as the proposed project, there would be no substantive difference between the emissions and health risks from operating either the proposed project or this alternative.

Setting and Existing Conditions

The general setting and existing conditions for the North of Desert Center site would generally be similar to the proposed project in terms of meteorology and terrain, being a gently sloping site and within the same general region for temperature, precipitation and wind elements. The primary distinction for the North of Desert Center site is that it would be closer to an existing population, in which the nearest existing housing subdivision would be approximately one mile away, and there would be an existing racetrack across the road from the North of Desert Center site.

Assessment of Impacts and Discussion of Mitigation

Since the North of Desert Center Alternative would have the same generating capacity as the proposed project, it would result in similar types of public health and safety issues from construction, operation and decommissioning as for the proposed project. Since the assessment for the proposed project considered a PMI at three locations along the project boundary and concluded that the project would not cause long-term or short-term cancer or non-cancer health effects, the North of Desert Center site would result in similar effects at its project boundary, and would not pose a health risk for nearby populations beyond the project boundary.

CEQA Level of Significance

As with the proposed project, staff considers compliance with applicable LORS to be sufficient to ensure that no significant public health impacts would result from construction, operation and decommissioning of the North of Desert Center Alternative.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR/62 Rice Valley Road Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe #1 transmission line at the same location as proposed for the project's transmission line. This alternative line route would exit the proposed solar facility at the northeast corner and follow State Route 62 for approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend southwards to follow the unpaved Rice Road Valley Road for over 9.5 miles to the connection point at the Western's Parker-

Blythe transmission line. The route of the SR 62/Rice Valley Road Generation Tie Line Alternative is shown in **Alternatives Figure 4**.

Since the use of this line alternative would not affect the emissions from facility operations, there would be no difference in the emissions of the pollutants considered in this analysis. The only possible difference would be in the emissions from construction of the longer transmission line. Since such construction is usually temporary and with usually mitigated emissions, there would be no substantive difference in the public health impacts from building and operating the proposed line on the SR 62/Rice Valley Road Alternative route. Since either line would be designed and operated according to the Western guidelines which comply with existing LORS, the resulting field and nonfield impacts would be below levels of significance.

NO PROJECT/NO ACTION ALTERNATIVE

No Project / No Action on the Application for the Rice Solar Energy Project and no amendment of the CDCA land use plan

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the CEC, BLM and Western, and BLM would not amend the CDCA Plan for the area. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the area to be traversed by the proposed project generation tie line in ways consistent with the existing land use designations in the CDCA Land Use Plan of 1980, as amended.

The results of the No Project/No Action Alternative would be the following:

- The impacts of the proposed project would not occur. However, the land the proposed project transmission line would pass would become available to other uses that are consistent with BLM's land use plan, including another renewable energy projects.
- The benefits of the proposed project in displacing fossil fuel-fired generation and reducing the associated greenhouse gas emissions from gas-fired generation would not occur. Both State and Federal law support the increased use of renewable power generation.

If the proposed project is not approved, renewable projects would likely be developed on other sites in San Bernardino County, the Mojave Desert, or in adjacent states as developers strive to provide renewable power that complies with utility requirements and State/Federal mandates. For example, there are dozens of other wind and solar projects that have applications pending with BLM in the California Desert District. Under the No Project/No Action alternative, public health impacts at the proposed project site and area would be similar to those currently occurring under the existing conditions in the area. Given that there would be no significant change over the existing conditions, the public health impacts of the No Project/No Action alternative would be less than significant.

CUMULATIVE IMPACTS AND MITIGATION

In reference to the past, existing and future foreseeable projects identified in the Cumulative Scenario section, no potential operators have requested permission for development that would produce significant amounts of the toxic pollutants of concern in close enough proximity to the proposed project that the impacts could overlap and be cumulatively significant. Staff has identified the Ward Valley Project (at a site of approximately 5 miles to the northwest) as potentially adding to total area background levels as would existing area sources. Such area-wide additions could be seen as contributing to the existing background levels, thereby adding to the normal background cancer and noncancer impacts of concern in this analysis. The present approach to regulating these TACs is to ensure that further additions to background from identifiable sources are maintained within levels regarded as less than significant.

As previously noted, the maximum impact locations for RSEP and similar sources would be the spots where pollutant concentrations would theoretically be highest. Even at these three locations on the proposed project boundary, staff does not expect any significant RSEP-related changes in lifetime cancer risk to any individual given the calculated maximum incremental cancer risk of 0.089 in one million which staff regards as not contributing significantly to the previously noted average lifetime risk of 330,000 in one million. The worst-case long-term non-cancer health impacts (reflected by the chronic index of 0.13) is well below staff's significance level of 1.0 at the maximum impact location suggesting an insignificant contribution to the incidence of the area's noncancer health symptoms from cumulative toxic exposures, meaning that RSEP's impacts would be cumulatively insignificant regarding health effects. Staff does not recommend mitigation for RSEP other than the applicant's proposals whose efficiency is reflected in the insignificant risks from the projected emission levels. The cumulative impacts from emissions of the project's criteria pollutants are addressed in the **Air Quality** section.

COMPLIANCE WITH LORS

The toxic pollutant-related cancer and noncancer risks from RSEP's construction, operation and decommissioning reflect the effectiveness of the control measures proposed by the applicant for the emission sources of concern to staff. Since these risk estimates are far below the significance levels in the applicable LORS, staff concludes that the related operational plan would comply with these LORS.

NOTEWORTHY PUBLIC BENEFITS

It is noteworthy that a solar electric generating facility such as the proposed RSEP would emit significantly less TACs to the environment per unit of generated power than other energy sources available in California such as natural gas or biomass, thereby reducing the health risks that would otherwise occur with these non-renewable energy sources. At the same time, the proposed RSEP would provide much needed electrical power to California residences and businesses, and would contribute to electric reliability. Electrical power is not only necessary to maintain a functioning society, but also benefits many individuals who rely on powered equipment for their health (such as

dialysis equipment and temperature control equipment). For example, it is documented that during heat waves in which elevated air-conditioning use causes an electrical blackout, hospitalizations and deaths attributable to heat stroke are increased.

PROPOSED MITIGATION MEASURES/CONDITIONS OF CERTIFICATION

Staff's proposed Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and to assure conformance with LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for U.S. Bureau of Reclamation's (BLM's) and Western Area Power Administration's (Western's) analysis that can be considered in its Record of Decision. In the area of Public health and Safety, no conditions of certification or mitigation measures have been identified as being necessary or are proposed.

CONCLUSIONS

Staff has analyzed the potential public health risks associated with construction and operation of the proposed Rice Solar Energy Project and does not expect any significant adverse cancer or long-term health effects on any members of the public from project's toxic emissions with respect to CEQA. The agencies' analysis of potential health impacts uses a conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population, including newborns and infants. The results therefore provide assurance that the projected emissions would not contribute significantly or cumulatively to morbidity or mortality in the area.

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SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Testimony of Kristin Ford

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that construction and operation of the Rice Solar Energy Project (RSEP) would not cause significant direct or cumulative adverse socioeconomic impacts on the study area's housing, schools and parks. Staff also concludes that the project would not induce substantial growth or concentration of population, substantial increases in demand for housing or public services, or displace a large number of people.

INTRODUCTION

The agencies' socioeconomic impact analysis evaluates the project's induced changes on existing population and employment patterns, and community services. Staff discusses the estimated impacts of the construction and operation of the Rice Solar Application for Certification (AFC) on local communities, community resources, and public services, and provides a discussion of the estimated beneficial economic impacts of the construction and operation of the proposed project. Laws, Ordinances, Regulations, and Standards

Socioeconomics Table 1 contains socioeconomic laws, ordinances, regulations, and standards (LORS) applicable to the proposed project.

**Socioeconomics Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

California Education Code, Section 17620	The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.
California Government Code, Sections 65996-65997	Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.
California Revenue and Taxation Code Section 70-74.7	Property taxes are not assessed on solar facilities. Assembly Bill 1451 extended the current property tax exclusion for new construction of solar energy systems to January 1, 2017.

PROPOSED ACTION ALTERNATIVE/PROPOSED PROJECT

SETTING

The project would be located in an unincorporated area of eastern Riverside County, adjacent to State Route (SR) 62, near the junction of SR 62 and Blythe-Midland Road, near the abandoned town of Rice, California. The project site is primarily comprised of creosote bush-sage desert scrub with few areas of disturbance where foundations or concrete from airfield runways and hardstands remain (SR2009a, 5.6-1).

The project site would be located on a 1,410-acre fenced area, within a larger 2,560-acre parcel. The proposed project site is surrounded by private land to the southwest, with public lands managed by the Bureau of Land Management to the east, west, and north. The nearest town is Parker, Arizona (population 3,181) approximately 32 miles east (SR2009a, ES-4). Needles, in San Bernardino County, is approximately 65 miles northeast; Blythe, in Riverside County is 40 miles south; and Twentynine Palms in Riverside County, is 75 miles west of the project site (SR2009a ,1-7).

DEMOGRAPHIC SCREENING

The agencies' demographic screening is designed to determine the existence of a minority or below-poverty-level population or both within a six-mile area of the proposed project site. The demographic screening process is based on information contained in two documents: *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality, 1997) and *Final Guidance for Incorporating Environmental Justice Concerns in EPA's Compliance Analyses* (Council on Environmental Quality, 1998). The screening process relies on Year 2000 U.S. Census data to determine levels of minority and below-poverty-level populations.

MINORITY POPULATIONS

According to *Environmental Justice: Guidance Under the National Environmental Policy Act*, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority population is identified when the minority population of the potentially affected area is greater than 50 people.

For the RSEP, the total population within the six-mile radius of the proposed site is five persons and the total minority population is one person or about 20% of the total population (see **Socioeconomics Figure 1**).

BELOW-POVERTY-LEVEL POPULATIONS

The agencies normally identify below-poverty-level population within the six-mile radius using Year 2000 U.S. Census block group data. However, for this project the poverty data would be inaccurate for the six-mile radius because the census block groups are so large that they include persons well beyond the six-mile radius and therefore, would misrepresent the poverty data within the six-mile radius.

ASSESSMENT OF IMPACTS

METHOD AND THRESHOLD FOR DETERMINING SIGNIFICANCE

The socioeconomic resource areas evaluated by staff are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines and shown in **Socioeconomics Table 2**. Staff's assessment of impacts on population, housing, emergency medical services, police protection, schools, and parks and recreation, are based on professional judgments, input from local and state agencies, and the industry-accepted two-hour commute range for construction workers. Typically, substantial long-term relocation due to employment of people from regions outside the study area would have the potential to result in significant adverse socioeconomic impacts. Criteria for subject areas such as utilities, fire protection, water supply, and wastewater disposal are analyzed in the **Reliability, Worker Safety and Fire Protection**, and **Water Resources** sections of this document.

**Socioeconomics Table 2
CEQA Environmental Checklist Form**

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
POPULATION AND HOUSING —Would the project:				
A. Induce substantial population growth in a new area, either directly or indirectly.				X
B. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
C. Displace substantial numbers of people, necessitating construction of replacement housing elsewhere?				X
PUBLIC SERVICES —Would the project:				
D. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: Emergency medical services Police protection Schools Parks Other public facilities				X X X X X
RECREATION—Would the project:				
Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X

DIRECT/INDIRECT IMPACTS AND MITIGATION

Induce Substantial Population Growth

For the purpose of this analysis, the agencies define “induce substantial population growth” as workers permanently moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension

of roads or other infrastructure. To determine whether the project would induce population growth, the agencies analyze the availability of the local workforce and the population within the region. The agencies define “local workforce” as the Riverside and San Bernardino Metropolitan Statistical Areas (MSAs). MSAs are made up of one or more counties and have at least one urbanized area of 50,000 or more in population. The County of La Paz, Arizona is located approximately 20 miles east of the project site. According to the Arizona Department of Commerce, Research Administration, La Paz County is not part of a metropolitan statistical area.

Socioeconomics Table 3 shows the historical and projected populations of the study area.

**Socioeconomics Table 3
Historical and Projected Populations**

Area	2000 Population	2010 Population	2020 Population
Riverside County	1,545,387	2,239,053	2,904,848
San Bernardino County	1,710,139	2,177,596	2,581,371
Parker, Arizona	3,140	3,417	3,688
La Paz County	19,715	22,632	25,487
Source: Dept. of Finance; 2009a, 2009c, 2009d, US Census Bureau (2009a) and Arizona Department of Commerce (2009a, 2009b and 2009c)			

Socioeconomics Table 4 shows that the total labor by skill in the Riverside and San Bernardino County MSAs is more than adequate to provide construction labor for the RSEP.

Socioeconomics Table 4
Total Labor by Skill in Riverside and San Bernardino County MSAs
Annual Average for 2016

Trade	Riverside County/ San Bernardino County MSA	Peak # of Workers for Project Construction by Craft
Boilermaker	1,040	11
Carpenter	32,390	50
Electricians	7,600	56
Insulators	290	26
Ironworkers	1,040	32
Laborers	32,080	54
Cement Masons	4,690	6
Millwrights	190	16
Operators	5,460	40
Painters	9,210	8
Pipefitter	5,330	80
Teamsters	N/A	28
Heliostat assembly craft	N/A	45
Source: Employment Development Department, Labor Market Information (http://www.labormarketinfo.edd.ca.gov), AFC for Rice Solar Energy Project, October 2009		
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Teamsters	N/A	28
Heliostat assembly craft	N/A	45
Source: Employment Development Department, Labor Market Information (http://www.labormarketinfo.edd.ca.gov), AFC for Rice Solar Energy Project, October 2009		

In 2006, The Arizona Workforce Informer (<http://www.workforce.az.gov>) indicated the number of construction laborers employed in the “Utility System Construction” industry was 2,376 persons (6.2% of total employment for occupation in Arizona); “Nonresidential Construction” industry was 1,419 persons (3.7% of total employment for

occupation in Arizona), which indicates that labor by skill in La Paz county is more than adequate to provide construction labor for the RSEP.

The applicant estimates construction would begin in the first quarter of 2011 and last through the third quarter 2013 (30 months total). As shown in Table 5.10-11 in the AFC, the number of construction workers would range from a minimum of 29 in the first month to a maximum of 438 in the twelfth month of construction. The peak construction site workforce level is expected to occur between months 8 and 20 (SR2009a, 2-37). The average amount of peak construction staff between the peak months would be 349 persons.

The project would require 47 full-time operation employees; most workers are expected to commute to the project site from communities in Riverside/San Bernardino Counties, California and La Paz County, Arizona.

Staff concludes that the construction and operation workforce would not induce substantial growth or concentration of population and the RSEP would not encourage people to permanently move into the area. The RSEP would have no direct or indirect impact on substantial population growth in a new area.

Housing Supply

When considering potential socioeconomic impacts of workers required for RSEP construction, staff considered information provided in the AFC and current California Department of Finance data for the Riverside/San Bernardino/Ontario MSA as presented in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 4**. During preparation of this analysis, staff reviewed Energy Commission staff's Socioeconomic analysis for the Blythe Solar Power Project (BSPP). The analysis includes information from the Building and Trades Council of San Bernardino and Riverside Counties that construction workers within San Bernardino and Riverside counties regularly commute 2-hours each direction daily for work (BTC 2010). Based on these data sources, staff concludes the majority of construction workers will come from within this regional study area.

Staff assumes that because data indicates the workforce would likely come from within the regional study area, it is speculative to quantify if and in what numbers construction workers may permanently relocate from the regional study area to the RSEP local area for a limited duration construction job. As discussed in the AFC, the applicant anticipates that very few, if any, of the workers employed during the construction phase of the RSEP would be expected to permanently relocate to the area as a result of this project and would only temporarily relocate during the workweek (SR2009a, 5.10-18). To evaluate the potential for impacts, staff assumes that up to 15% of construction workers could seek local lodging in the RSEP local area during the workweek. It should be noted that this is an average weekly assumption and would be a temporary and fluctuating demand on local lodging. Based on this assumption, it is possible that during the peak construction month, up to 66 workers could seek local lodging.

As reported by the U.S. Census Bureau Census 2000 and stated in the AFC, housing stock for Riverside County in 2009 was 755,338 housing units with 6,952 housing units

in the city of Twentynine Palms. The Department of Finance data for population and housing showed that there were 99,037 housing units in the city of Riverside in 2009. Housing units include; single-family, multi-family, and mobile home residences.

Hotel/Motel. There are approximately 242 hotels/motels with 22,664 rooms in Riverside County to accommodate workers who may choose to commute to the project site on a work week basis (SR2009a, 5.10-19).

Data compiled by Smith Travel Research for hotels, motels, and bed and breakfast inns (B&Bs) with 15 or more rooms identified 19 hotels with a total of 878 rooms (GSEP2009a, p. 5.8-5), located with approximately 40 miles of the RSEP.

Fifty-seven hotels with a total of 8,285 rooms were identified in Indio, Palm Desert, Indian Wells, and Rancho Mirage. A total of 129 hotels with 7,541 rooms were identified in the communities (GSEP2009a, p. 5.8-6) of Desert Hot Springs, Palm Springs, and Needles.

Housing Vacancy. As stated in the AFC, in Table 5.10-5 vacancy rates for Blythe in 2008 was 16.11%, Riverside County in 2008 was 13.18%, San Bernardino County in 2008 was 11.63%, Parker, Arizona in 2000 was 8.0%, and La Paz County from 2005 to 2007 was 42.7% (SR2009a, 5.10-4). Based on the housing vacancy data above, there are approximately 101,930 available housing units in Riverside County and about 880 housing units in Blythe (SR2009a, 5.10-23). In addition, there are about 6,600 housing units available in La Paz County.

Campground/RV Parks. Lake Tamarisk Desert Resort, a privately owned RV park located in the town of Lake Tamarisk, would provide nightly, weekly, monthly and dry docking for RVs.

Conclusion. Based on the availability of short-term housing in the vicinity of RSEP, when compared to the maximum temporary peak demand of up to 66 workers potentially seeking local housing during the workweek, staff concludes that construction of the proposed project would not temporarily induce substantial growth or concentration of population and construction of the RSEP would not encourage people to permanently relocate to the area due to the temporary construction employment.

Displace Existing Housing and Substantial Numbers of People

The Rice Solar Energy Project would be located within a larger, private holding of 3,324 acres. There are six assessor's parcel numbers (APNs) that make up the ownership property. Within this ownership property, the RSEP would be located within a new square-shaped parcel (project parcel) that would be created by merging four current different assessor's parcels, each of them a discrete section (square mile) of land, resulting in a single 2,560-acre parcel (SR2009a, 1-7). The project and facility site would be a 1,410-acre fenced area within the project parcel (SR2009a, 5.6-1,). The proposed project site consists of private land within unincorporated Riverside County. The RSEP site is surrounded by private land to the southwest and public lands managed by the BLM to the east, west, and north (SR2009a, 5.6-2).

Within one mile of the RSEP site there are no schools, churches, childcare facilities, parks, recreation centers, historic areas, mines or quarries. There are no occupied or inhabited structures within a mile of the project site. The nearest residences are at Vidal Junction, approximately 15 miles northeast (SR2009a, 5.6-1).

The project and facility site within the project parcel, interconnection substation site, and generator tie-line are designated by the Riverside County General Plan as Open Space-Rural. Land uses within one mile of the proposed project parcel are designated by the Riverside County General Plan as Open Space-Rural. The proposed RSEP project parcel is zoned Controlled Development Zone-minimum 10 acre (W-2-10). The generator tie-line route and interconnection substation location are zoned Natural Assets (N-A) (SR2009a, 5.6-6). In addition, the proposed project is located in the Desert Center Area Plan, which rural desert designation allows for renewable energy uses including solar, geothermal and wind energy uses, as well as associated uses required to develop and operate these renewable energy sources (SR2009a, 5.10-28).

The proposed power plant would be located on private land. No inhabited structures or residences are located within a mile of the site. There would be no displacement of existing housing or a need to construct replacement housing.

Result in Substantial Physical Impacts to Government Facilities

As discussed under the subject headings below, the RSEP would not cause significant impacts to recreation facilities or schools. Fire protection impacts, including; service ratios, response times, or other performance objectives relating to emergency medical services is further analyzed in the **Worker Safety and Fire Protection** section.

Emergency Medical Services

The project site is within the Riverside County Fire Department's jurisdiction (<http://www.rvcfire.org>). The closest fire stations are located in La Paz County, Arizona and San Bernardino County, California. There is a mutual aid agreement with these counties upon request and availability. The mutual aid agreement does not include first response; therefore, response from neighboring counties is not guaranteed (SR2009a, 5.10-13). The first responding fire station is Lake Tamarisk Fire Station (#49) located on 43880 Lake Tamarisk, Desert Center, California 92239. The response time for the first responder is 30 minutes with one engine and three paramedic-trained personnel. Based on the nature of the emergency situation, Blythe Fire Station (#43) and Blythe Air Base Fire Station (#45) can be mobilized, with response times ranging from 45 to 60 minutes. Air ambulance services from Mercy Air Ambulance based in Banning, California can be mobilized with a response time of 45 minutes. Depending on availability, the PHI Air Medical based in Lake Havasu City, Arizona can be mobilized in 30 minutes (SR2009a, 5.10-13).

Jason Neuman, Captain of the Strategic Planning Division, Riverside County Fire Department, in a May 4, 2010 letter, (Riverside 2010b) states the response time for Lake Tamarisk Fire Station (#49) would be one hour after dispatch, and Blythe Fire Station (#43) would be approximately one hour, 15 minutes. Captain Jason Neuman further states the proposed project would have a cumulative adverse impact on the Fire Department's ability to provide an acceptable level of service. These impacts would

include an increased number of emergencies and public service calls due to the proposed presence of structures, traffic and hazardous materials storage. The cumulative adverse impact on response time is further analyzed in the **Worker Safety and Fire Protection** section of this document. Condition of Certification **WORKER SAFETY-7** would require funding for Riverside County Fire Department shared with funding from other solar energy developers to build and staff a new fire station and ensure that the Rice Solar Power Project would create a less than significant impact to Emergency Medical Services.

The applicant has proposed there would be onsite fire protection systems which are designed to protect personnel and limit property loss and plant downtime from fire or explosion (SR2009a, 2-46). The proposed project would use the following emergency systems; steam turbine oil areas water spray system, fire hydrants/hose stations, and fire extinguishers (SR2009a, 2-46).

In addition, the applicant states in the **Worker Health and Safety** section of the AFC (SR2009a, 5.16-17) if hazardous materials were involved in the incident, Lake Tamarisk Fire Station 49 would be the first onsite, requesting additional resources from the Riverside County Fire Department and the Riverside County Hazardous Materials Emergency Response (HazMat) Team. The program is a joint agency team staffed by the Riverside County Department of Environmental Health (RCDEH) Hazardous Materials Management Division (HMMD) and Riverside County Fire/California Department of Forestry. This team would respond to incidents involving hazardous materials, 24 hours per day and seven days a week.

For emergency services, trauma patients would be transported to Desert Regional Medical Center, which is located in Palm Springs, California, approximately 127 miles from the project location. For burn injuries, patients would be transported to Arrowhead Regional Medical Center in Colton, California, which is 180 miles from the project location. The two hospitals are designated as Level II trauma centers and patients can be transported by air ambulance. La Paz Regional Hospital is located approximately 23 miles from the project site in Parker, Arizona. The La Paz Regional Hospital has an emergency room, but no trauma center (SR2009a, 5.10-14).

As discussed in AFC Section 2.0 - Project Description, Section 5.16 - Worker Health and Safety, and Section 5.5 - Hazardous Materials Handling, the RSEP would be designed to meet all applicable standards to reduce the risk of an accidental hazardous materials release and operate in a manner that complies with safety standards and practices to provide a safe workplace for plant personnel. In addition, a hazardous materials risk management plan would include all information necessary to allow fire-fighting and other emergency response agencies to plan and implement safe responses to fires, spills, and other emergencies.

The applicant's proposed safety procedures and employee training would minimize potential unsafe work conditions and the need for outside emergency medical response. Along with any necessary conditions of certification which is further analyzed in the **Worker Safety and Fire Protection** section of this document, staff concludes that with the Condition of Certification, **WORKER SAFETY-7**, the emergency medical services

provided the by the above mentioned agencies would be adequate during construction and operation.

Law Enforcement

As stated in the AFC and verified by staff (www.riversidesheriff.org), the proposed project is located with the Riverside County Sheriff's Department's (RCSD) jurisdiction. The RCSD serves several small cities and unincorporated areas within Riverside County. The Colorado River Station, nearest to the project location, provides service to the unincorporated area from Red Cloud Road on the west, to the Arizona state line on the east, and county line to county line on the north and south. The Colorado River Station is located approximately 41 miles from the project site with two deputies routinely onsite. The response time from the Colorado River Station to an emergency located at the project site would be approximately forty-five minutes if the deputies were not located at the station (SR2009a, 5.10-13).

The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. Services include law enforcement, traffic control, accident investigation and the management of hazardous material spill incidents. The nearest CHP office is located approximately 42 miles from the project site in Blythe, California.

In comparison to residential or commercial developments, power plants do not attract large numbers of people and thus require little in the way of law enforcement. Because of this factor and the proposed onsite safety and security measures, staff concludes that the existing law enforcement resources would be adequate to provide services to the RSEP during construction and operation.

Project operation would not result in significant demands being made on public services or facilities. The RCSD has not expressed any concerns about a need for increased services during plant operations (SR2009a, 5.10-25).

Education

The project site is located within the boundaries of the Desert Center Unified School District (SR2009a, 5.10-11). The district includes one school in the district, Eagle Mountain School, which has classes from kindergarten to eighth grade. Eagle Mountain School is located in Desert Center, which is located 62 miles from the proposed RSEP site. The current enrollment is fourteen students, and has the capacity for 140 students (SR2009a, 5.10-12). Students from ninth to twelfth grade attend Palo Verde High School (in the Palo Verde Unified School District) in Blythe, California, approximately 40 miles from the project site.

Due to the commuting habits of construction workers, staff does not expect any construction workers to relocate their families to the area. Staff does not expect a significant adverse impact to the schools from construction of the proposed project.

A total of 47 operation workers are needed to operate the RSEP. As previously stated, the applicant expects to hire the operation workforce from within the area. If all 47 operation workers relocate within the Desert Center Unified School District, an average

family size of 3.059 persons per household in Riverside County (SR2009a, 5.10-24) would result in the addition of approximately 50 children to the local schools. This would constitute approximately 5% increase in school enrollment for the two schools closest to the project. Given the capacity for students in the two above mentioned schools, staff does not expect a significant adverse impact from the possible addition of 50 school children.

As previously noted in **Socioeconomics Table 1**, other than the requirement authorized under Section 17620 of the Education Code, the Energy Commission cannot impose developer fees to mitigate the cost of school facilities. Because the project is proposed on BLM-administered lands, school impacts fees would not be applicable.

Given the small number of students who potentially could relocate to schools within the DCUSD, staff does not expect the construction or operation of the project to have a significant adverse impact on schools.

Increase the Use of Existing Recreation Facilities

The Riverside County Regional Park and Open-Space District (<http://www.riversidecountyparks.org>) maintains a variety of regional parks, nature and historic centers and recreation centers. Regional recreational facilities include thirteen parks, which are used for a variety of activities, such as picnicking, fishing, hiking/equestrian trails, barbecues, softball, soccer, overnight camping, and passive recreation. Additional amenities include; historic centers, museums, wildlife areas, and nature centers/reserves.

The Chuckwalla Valley Raceway is currently under construction on 400 acres of the Desert Center Airport property. The Chuckwalla Valley Raceway is a motor raceway operation. The multiphase project includes three road courses, a large garage enclosed field area, recreational vehicles hook-ups and a private airstrip. Private memberships and “track day” rentals are to be available. The raceway opened for business in early April 2010.

Given the labor force and two hour commuting time within Riverside and San Bernardino counties, staff does not expect employees to relocate permanently to the project area. The construction and operation workforce would not have a significant adverse impact on parks and recreation.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would have a 10% smaller heliostat field. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,410 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout (e.g. administration/shop building and

evaporation ponds), the height of the solar tower and receiver, and the transmission interconnection to Western's Parker-Blythe #2 transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

SETTING AND EXISTING CONDITIONS

Like the proposed project, the Reduced Acreage Alternative would be located in Riverside County; therefore the historical/projected population would be the same as described above in **Socioeconomics Table 3**.

Assessment of Impacts and Discussion of Mitigation

The environmental justice/demographic screening for the Reduced Acreage Alternative would be the same as the proposed project. Construction workers would commute from surrounding areas. Population growth and housing supply would be the same as the proposed project. Construction workers would have approximately 242 hotels/motels with 22,664 rooms in Riverside County for accommodations on a work-week basis (SR2009a, 5.10-19).

The applicant has proposed that there would be onsite fire protection systems designed to protect personnel and limit property loss and plant downtime from fire or explosion (SR2009a, 2-46). The proposed project would use the following emergency systems; steam turbine oil areas water spray system, fire hydrants/hose stations, and fire extinguishers (SR2009a, 2-46). Fire protection, including the applicant's proposed onsite Fire Protection and Prevention Plan, is analyzed in the **Worker Safety and Fire Protection** section of this document. There would no significant adverse impacts to the housing, schools, and parks. Condition of Certification **WORKER SAFETY-7** would require funding for Riverside County Fire Department and ensure that the Reduced Acreage Alternative would create a less than significant impact to Emergency Medical Services.

Gross public benefits including capital costs, construction and operation payroll, sales taxes, would be less than the benefits from the proposed project. Section 73 of the California Revenue and Taxation Code allows a property tax exclusion for certain types of solar energy systems installed between January 1, 1999 and December 31, 2016. As such, the property tax income for the Reduced Acreage Alternative would not be expected to increase significantly from the proposed project.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land, located along Desert Center Rice Road (State Route 177), east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing Southern California Edison (SCE) 161-kV transmission

line that traverses the alternative site would be realigned. A new 0.125-mile transmission line and substation would interconnect to SCE's line at the northeast boundary of the site. The boundaries of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

The proposed RSEP would be located on the historic Rice Army Airfield, which also serves as habitat for desert tortoise. The proposed RSEP would narrow an existing corridor for wildlife movement, alter ephemeral streams, and could alter sand movement through the site.

SETTING AND EXISTING CONDITIONS

The North of Desert Center Alternative would be located in Riverside County, approximately 47 miles driving distance (west on Highway 62 and then south on Highway 177) from the proposed project. The historical and projected population of Riverside County would be the same as described above in **Socioeconomics Table 3**.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

For the North of Desert Center Alternative, the total population within the six-mile radius of the proposed site is 171 persons and the total minority population is 20 persons or about 12% of the total population (see **Socioeconomics Figure 2**). As with the proposed project, the census geography for this alternative would not give an accurate count of the below-poverty population.

Construction workers would commute from the surrounding counties of San Bernardino, Imperial, San Diego, Orange (California) and La Paz (Arizona). Population growth and housing supply would be the same as the proposed project. Construction workers would have approximately 242 hotels/motels with 22,664 rooms in Riverside County for accommodations on a work-week basis (SR2009a, 5.10-19). The North of Desert Center Alternative would be similar to the proposed project because the location is similar in distance to accommodations.

The North of Desert Center Alternative would be located along Desert Center Rice Road, approximately 1.6 miles north of I-10. Surrounding land uses include commercial, agriculture land uses, and the small community of Lake Tamarisk, an unincorporated town of 150 people, with one school, two churches and a fire station. Chuckwalla Valley Raceway, a member-only road course racing facility is located adjacent to the North of Desert Center Alternative. The Chuckwalla Valley Raceway is currently in the first of seven construction periods. The Chuckwalla Valley Raceway would provide the following amenities to members at full build-out: a private airport that members could fly-in and race; an 18,000 gallon fueling station; and overnight dry camping. Lake Tamarisk Desert Resort, a privately owned RV park located in the town of Lake Tamarisk, five miles of the alternative would provide nightly, weekly, monthly and dry docking for RVs.

The applicant states in the Project Description section of the AFC (SR2009a, 2-46) there would be onsite fire protection systems which are designed to protect personnel and limit property loss and plant downtime from fire or explosion. The proposed project would use the following emergency systems; steam turbine oil areas water spray system, fire hydrants/hose stations, and fire extinguishers (SR2009a, 2-46). Fire

protection, including the applicant's proposed onsite Fire Protection and Prevention Plan, is analyzed in the **Worker Safety and Fire Protection** section of this document.

The North of Desert Center Alternative would be located closer to schools and hospitals than the proposed project. The closest school and fire station would be located within the town of Lake Tamarisk, approximately 5 miles from the North of Desert Center Alternative. Hospitals that offer trauma services to patients would be closer than the proposed project, with approximately 72 miles in Palm Springs, and 121 miles in Colton. Law enforcement and emergency response would be located about 50 miles from the site, in the town of Blythe, and about 54 miles from the site in Indio/Palm Desert, respectively. Similar to the proposed project, the North of Desert Center Alternative would not create significant adverse impacts to housing, schools, and parks. Condition of Certification **WORKER SAFETY-7** would require funding for Riverside County Fire Department and ensure that the Reduced Acreage Alternative would create a less than significant impact to Emergency Medical Services.

Gross public benefits including capital costs, construction and operation payroll, sales taxes, would be similar to the benefits of the proposed project. Section 73 of the California Revenue and Taxation Code allows a property tax exclusion for certain types of solar energy systems installed between January 1, 1999 and December 31, 2016. The North of the Desert Center Alternative would be located on approximately 2,643 acres of land in comparison to the proposed project's approximate 1,410 acres of land. The additional acreage could allow for additional property taxes for Riverside County. Although the North of the Desert Center Alternative would be primarily located on non-federal land, there are smaller sections of BLM land in the eastern portion of the site. The BLM-managed lands would be exempt from property tax.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe #2 transmission line at the same location as the proposed project transmission line. This alternative generation tie line would exit the proposed solar facility at the northeast corner and follow State Route 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 3**.

The SR 62/Rice Valley Road Generation Tie Line Alternative is evaluated in this SA/DEIS because it would:

1. Avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise.
2. Avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-

road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

SETTING AND EXISTING CONDITIONS

The SR 62/Rice Valley Road Generation Tie Line Alternative would be located at the same location as the proposed project generation tie line in Riverside County. The alternative generator tie-line would use existing roadways that would increase the use of public lands because it would require a longer route that would cross federal land managed by the BLM and state land managed by the State Lands Commission. The increase in length of the generator tie line, to 15.4 miles from 11.0 miles would increase the capital cost of the alternative \$4.5 million, not including additional costs for easements, land purchase options, BLM land leasing fees, additional environmental permitting studies, etc. Generation revenue would slightly diminish as attributed to power line losses over the increased length of the conductor (CH2MHill 2010d).

The SR 62/Rice Valley Road Generation Tie Line Alternative demographic characteristics would be similar to the proposed project, because the project parcel would remain the same. The SR 62/Rice Valley Road Generation Tie Line Alternative would take the most direct path to the interconnection point with the Parker-Blythe #2 transmission line.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The environmental justice/demographic screening for the SR 62/Rice Valley Road Transmission Line Alternative would be the same as the proposed project. Construction workers would commute from surrounding areas. Population growth and housing supply would be the same as the proposed project. Construction workers would have approximately 242 hotels/motels with 22,664 rooms in Riverside County for accommodations on a work-week basis (SR2009a, 5.10-19). The SR 62/Rice Valley Road Transmission Line Alternative would be the same as the proposed the project and the there would be no displacement of housing or substantial numbers of people. In addition, there would no significant adverse impacts to housing, schools, and parks. Condition of Certification **WORKER SAFETY-7** would require funding for Riverside County Fire Department and ensure that the Reduced Acreage Alternative would create a less than significant impact to Emergency Medical Services.

Gross public benefits including capital costs, construction and operation payroll, sales taxes, would increase from the benefits of the proposed project. Section 73 of the California Revenue and Taxation Code allows a property tax exclusion for certain types of solar energy systems installed between January 1, 1999 and December 31, 2016. As such, the property tax income of the SR 62/Rice Valley Road Transmission Line Alternative would not be expected to increase significantly from the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no socioeconomic impacts from the proposed project would occur and the benefits of capital costs, construction and operation payroll, sales taxes and property taxes of the proposed project would not occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACTS

A project may result in significant adverse cumulative impacts when its effects are “cumulatively considerable.” Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, or the effects of probable future projects (Title 14, California Code of Regulations, section 15130). Cumulative socioeconomic impacts could occur when more than one project has an overlapping construction schedule that creates a demand for workers that cannot be met by the local labor force, resulting in an influx of non-local workers and their dependents. Operational cumulative socioeconomic impacts could occur when the development of multiple projects significantly impacts the population of an area thus resulting in a housing shortage, change in local employment conditions, and an increased demand on public services.

The **Cumulative Scenario** section provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these projects comprise the cumulative scenario, which form the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on **Cumulative Figure 1** and in **Cumulative Tables 1A, 1B, and 2**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.

- Future foreseeable projects in the Rice Valley area as well as future foreseeable projects in the eastern Riverside County area as shown on **Cumulative Impacts Figure 2** and as listed in **Table 3**.

These projects are defined within a geographic area that has been identified by the CEC and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects described in the Cumulative Scenario Section have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this document.

Geographic Extent of Cumulative Impact Analysis

The area of cumulative effect for socioeconomic resources is Riverside and San Bernardino Counties, CA. The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of cumulative impact analysis is based on the workforce boundaries of the cumulative development projects. While it is possible that the geographic scope of cumulative effects will extend beyond these two counties, with some workers potentially coming from adjacent counties beyond a two-hour commute radius of the proposed RSEP site, due to the similar nature of skill set required by the workforce during construction activities, as well as the number of proposed cumulative renewable energy projects, it is not anticipated that the geographic scope for cumulative impact analysis extends beyond the scope of the direct and indirect effects of the proposed action.

Effects of Past and Present Projects

A wide variety of past and present development projects contribute to the cumulative conditions for socioeconomics. As noted above in the “Setting and Existing Conditions” subsection, past development has further urbanized the area and increased population, housing, and employment conditions. As shown in the AFC, from 2000 to 2008 the population of Riverside County increased by 3.8% and San Bernardino County by 2.3% (SR2009a, 5.10-2). This is an example of the steady growth rate that has occurred throughout the regional study area. As a result, past and present residential, commercial, and industrial development has contributed to the overall socioeconomic growth within the study area.

Effects of Foreseeable Projects

Reasonably foreseeable projects that could contribute to the cumulative effects scenario depend on the extent of resource effects, but could include projects in the immediate Rice Valley area as well as other large renewable projects in the California, Nevada, and Arizona desert regions. The projects in California are illustrated in **Cumulative Figures 1, and 2**. As shown in the map and table, there are a number of projects in the immediate area around Rice Solar Energy Project whose impacts could combine with those of the proposed project. As shown on **Cumulative Figure 1** and in **Table 1A**, solar and wind development applications for use of BLM land have been submitted for

approximately 1 million acres of the California Desert Conservation Area, Table 1B, solar and wind development applications that have been submitted for State and private lands in the California Desert that has requested ARRA funding, and **Table 2**, existing projects in the Rice Valley area as well as existing projects in the eastern Riverside County area.

As shown in **Cumulative Scenario Table 3**, Future Foreseeable Projects in the Rice Valley area and Eastern Riverside County, ID# B, SolarReserve has submitted a Plan of Development (POD) to BLM proposing the Ward Valley project; a solar thermal power plant located approximately 5 miles northwest of RSEP. The Ward Valley project proposes a total of three concentration solar power facilities with a potential for two additional facilities. Each of the five potential power plants in the project would be capable of producing approximately 500 gigawatt-hours (GWh) of renewable energy annually for each facility, each with a nominal net generation capacity of 100-250 megawatts (MW). RSEP would produce approximately 450,000 megawatt hours (MWh) of renewable energy annually, with a nominal net generating capacity of 150 MW. As shown in Table 5.10-11 in the RSEP AFC, the number of construction workers would range from a minimum of 29 in the first month to a maximum of 438 in the twelfth month of construction. In addition, the project would require 47 full-time operation employees. Assuming a 150 MW solar power project would require 438 construction workers and approximately 47 operation workers, in a worst case scenario, if all five proposed Ward Valley power plants project produced 150 MW, the Ward Valley power plant would require 2,190 construction workers and 235 operation workers. However, the SolarReserve does not plan to file an AFC for the Ward Valley project in the near term. The Ward Valley project would not result in significant adverse cumulative socioeconomic impacts because staff does not consider this project in conjunction with the effects of other probable future projects. SolarReserve has stated it does not plan to file an AFC for the Ward Valley project in the near term and the construction schedule for the Ward Valley project is undetermined at this time.

In addition, as seen in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5**, if construction of the Ward Valley project was determined to be needed in the probable future, there would be a sufficient number of construction workers for cumulative construction needs.

In addition, all cumulative projects identified in **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5** would be expected to draw on the large regional construction workforce in and Riverside/San Bernardino/Ontario MSA, and as shown the MSA offers sufficient regional labor by skill set to staff all projects from within the regional study area. As indicated by **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5**, cumulative development of these projects in a worst-case scenario of overlapping peak period months could result in the influx of 1,777 construction workers seeking local lodging within the area as a result of the large renewable energy projects being constructed. Staff finds this scenario unlikely due to construction scheduling and time requirements, and notes that this assumption does not account for workers doubling up in local lodging situations. The 1,777 construction workers seeking local lodging could impact Blythe, Twentynine Palms (California and Parker (Arizona) motel accommodations. There are approximately 242 hotels/motels with 22,664 rooms in Riverside County (SR2009a, 5-10-19) to accommodate workers who may choose to

commute to the project site on a workweek basis. While staff acknowledges that cumulatively workers seeking short-term temporary housing during the workweek to avoid commuting from their homes in the regional study area could increase housing demand and population in the local area, the extent of these impacts is unknown and speculative.

Based on the availability of local housing it is assumed that ample temporary short-term housing is available for these workers from a cumulative perspective. Therefore, staff concludes that cumulative project construction within the RSEP local study area would not significantly impact the population projections or require the need for new or expanded housing within the local study area. Furthermore, as staff concludes that all workers would come from within the regional study area, with up to 15% of these workers potentially seeking short-term temporary housing during the workweek locally, cumulative construction activities would not require the need for new or expanded public services (police, schools, recreation, hospitals) serving the local study area, as no permanent population increase would occur. Staff concludes construction of the RSEP would not contribute to adverse cumulative socioeconomic impacts.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5
Cumulative Project Construction Employment Needs

Trade	BSP Total # of Workers for Project Construction by Craft – Peak Month (Month 16)	PSP Total # of Workers for Project Construction by Craft – Peak Month (Month 17)	GSEP Total # of Workers for Project Construction by Craft – Peak Month (Month 16)	RSEP Total # of Workers for Project Construction by Craft – Peak Month(Month 12)	DSPV Total # of Workers for Project Construction by Craft – Peak Month (Month 6-8)	CSP Total # of Workers for Project Construction by Craft – Peak Month	TOTAL	Riverside/ San Bernardino/ Ontario MSA 2006	Riverside/ San Bernardino/ Ontario MSA 2016
Surveyor	16	12	0	0	N/A	0	28	1,420	1,670
Operator	94	90	0	0	N/A	97 ¹⁰	281	4,790	5,460
Laborer	229	185	96	52	N/A	152 ¹⁰	1472	27,930 ¹	32,080 ¹
Truck Driver	28	35	0	0	N/A	0	63	27,930 ¹	32,080 ¹
Oiler	4	4	0	0	N/A	0	8	27,930 ¹	32,080 ¹
Carpenter	77	100	44	50	N/A	41	341	28,850	32,390
Boilermaker	9	11	0	0	N/A	0	20	4,630 ²	5,330 ²
Paving Crew	0	0	0	0	N/A	0	0	630	720
Pipe Fitter	290	326	200	80	N/A	0	968	4,630	5,330
Electrician	81	150	105	56	N/A	83 ¹⁰	532	6,740	7,600
Cement Finisher	80	100	4	6	N/A	49	246	4,110	4,690
Ironworker	42	59	70	32	N/A	69 ¹⁰	315	19,460	20,800
Millwright	18	25	22	16	N/A	0	153	2,630 ⁵	2,960 ⁵
Tradesman	8	10	382 ⁶	105 ⁷	N/A	0	544	27,930 ¹	32,080 ¹
Project Manager	2	3	0	0	N/A	0	5	10,990 ⁴	12,380 ⁴
Construction Manager	2	3	0	5	N/A	0	10	4,380	5,110
PM Assistant	2	4	0	0	N/A	0	6	10,990 ⁴	12,380 ⁴
Support	2	4	0	0	N/A	0	6	120 ⁵	130 ⁵
Support Assistant	2	4	0	0	N/A	0	6	120 ⁵	130 ⁵
Engineer	7	10	60	36	N/A	0	127	1,370	1,600
Timekeeper	2	3	0	0	N/A	0	5	10,990 ⁴	12,380 ⁴
Administrator	5	6	0	0	N/A	0	11	10,990 ⁴	12,380 ⁴
Welder	1	1	0	0	N/A	0	2	3,960	4,640
Total Peak Month	1,001	1,145	983	438	622	419	4,608	--	--
Local Housing Need⁸	501	573	492	55⁹	93	63	1,777	--	--

Notes: ¹ The “Construction Laborers” category was used; ² The “Plumbers, Pipefitters, and Steamfitters” category was used; ³ The “Machinists” category was used; ⁴ The “Supervisors, Construction and Extraction Workers” category was used; ⁵ The “Helpers- Construction Trades” category was used; ⁶ Includes: insulators, painters, teamsters, and ‘Solar Field Craft’. The solar field craft workers include an estimated five solar field installation crews, with each crew including a Foreman, Equipment Operators, Laborers, Electricians, Ironworkers, Carpenters, Masons, and Pipefitter/Welders; ⁷ Includes Teamsters, Heliostat Assembly Craft, Construction Staff, Subcontractors, and Technical Advisors; ⁸ Assumes 50% of workers will chose to stay locally; ⁹ On-site worker camp is provided for RSEP, providing housing for up to 300 trailers. It is assumed that 75% of the 219 workers seeking local lodging will chose to stay within the local work camp. ¹⁰ The Calico Solar Project AFC, Table 5.10-10 has the following disciplines as Electricians, Ironworkers, Laborers and Operators and Sun Catcher Electricians, Sun Catcher Ironworkers, Sun Catcher Laborers and Sun Catcher Operators For purpose of the above table, the two disciplines have been added together. Source: Solar Millennium 2009a, b, c, d, and e.

In addition, short-term construction-related spending activities of the RSEP project are expected to have cumulative economic benefits for the study area (refer below to **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5**). The cumulative benefits would increase when revenues accrued as a result of the proposed RSEP are combined with spending, and any local revenues accrued as a result of current and future reasonably foreseeable cumulative development projects.

Operation. SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 6 presents the most recently published data (Year 2006-2016 projections) on labor force characteristics for the cumulative regional study area pertaining to electrical energy project operational labor skill sets and compares those to major cumulative projects located near the RSEP along the I-10 corridor, including the PSPP, GSEP, and the CSP. As shown in **Table 6**, these cumulative projects are expected to result in a total of 232 workers permanently relocating to the local study area.

Based on the most recently published vacancy rates for the local study area (refer to **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 5**), adequate permanent housing units are available to these operational employees who may choose to relocate locally to proposed cumulative development projects. Therefore, the RSEP is not expected to contribute cumulatively to a required need for new housing in the area. The BSPP, PSPP and CSP would not pay a school impact fee; however, the GSEP would pay a school impact fee. Staff concludes that any new cumulative demand on schools by permanent relocations to the local study area would be met through the payment of property taxes, which contribute to local public safety, school, and recreational facility funding. As hospitals are private supply and demand based facilities, it is assumed that the cumulative increase in local population can be adequately served by local study area emergency medical facilities. Based on these conclusions, staff finds that operation of the proposed RSEP would not contribute cumulatively to an increase in the local population or require the need for new or expanded law enforcement, school, recreational, or emergency medical facilities or staff levels within the RSEP regional or local study areas.

Please refer to the **Worker Safety and Fire Protection** section of this report for a detailed discussion of cumulative impacts to fire protection services. Please refer to the **Land Use, Recreation, and Wilderness** section of this document for further analysis of cumulative recreation impacts.

In addition, the long-term operation-related spending activities of the RSEP project are expected to have cumulative economic benefits for the study area (refer below to **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 6**). The cumulative benefits would increase when revenues accrued as a result of the proposed RSEP are combined with spending, and any local revenues accrued as a result of current and future reasonably foreseeable cumulative development projects.

**SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 6
Cumulative Project Operational Employment Needs**

Trade	BSPP Total # of Workers for Project Operation	PSPP Total # of Workers for Project Operation	GSEP Total # of Workers for Project Operation	RSEP Total # of Workers for Project Operation	DSPV Total # of Workers for Project Operation	CSP Total # of Workers for Project Operation	TOTAL	Riverside/ San Bernardino/ Ontario MSA 2006	Riverside/ San Bernardino/ Ontario MSA 2016
Plant and System Operators	--	--	--	--	--		--	2,030	2,380
Power Plant Operators	--	--	--	--	--		--	310	370
<i>Total</i>	221	134	50	47	15	180	647	2,340	2,750
<i>Local Housing Need¹</i>	111	67	25	24	4	90	321	--	--
¹ Assumes 50% of operational employees will permanently relocate to the cumulative project area. Source: Solar Millennium 2009a, b, c, d, and e.									

COMPLIANCE WITH LORS

Staff has considered the state laws, ordinances, regulations and standards as identified in **Socioeconomics Table 1** and has found no significant adverse socioeconomic impacts.

NOTEWORTHY PUBLIC BENEFITS

Noteworthy public benefits include the direct, indirect, and induced impacts of a proposed power plant. For example, the dollars spent on or resulting from the construction and operation of the RSEP would have a ripple effect on the local economy. This ripple effect is measured by an input-output economic model. The model relies on a series of multipliers to provide estimates of the number of times each dollar of input or direct spending cycles through the economy in terms of indirect and induced output, or additional spending, personal income, and employment. The typical input-output model used by economists and the one used for this analysis by the applicant is the IMPLAN model. IMPLAN multipliers indicate the ratio of direct impacts to indirect and induced impacts.

Staff reviewed the results of the IMPLAN model and found them to be reasonable considering data provided by the applicant as well as data obtained by staff from governmental agencies, trade associations, and public interest research groups. RSEP owners would employ workers and purchase supplies and services for the life of the project. Employees would use salaries and wages to purchase goods and services from other businesses. Those businesses make their own purchases and hire employees, who also spend their salaries and wages throughout the local and regional economy. This effect of indirect (jobs, sales, and income generated) and induced (employees' spending for local goods and services) spending continues with subsequent rounds of additional spending, which is gradually diminished through savings, taxes, and expenditures made outside the area.

For purposes of this analysis, direct impacts were said to exist if the project resulted in permanent jobs and wages; indirect impacts if jobs, wages, and sales resulted from project construction; induced impacts from the spending of wages and salaries on food, housing, and other consumer goods, which in turn create jobs. Indirect and induced economic impacts from construction would take place over 30 months, from the first quarter of 2011 to the fourth quarter 2013. Indirect and induced economic impacts from operation would begin in the first quarter of 2011. All indirect and induced operation impacts would result from annual operations and maintenance expenditures. All construction and operation impacts would take place within Riverside, San Bernardino and La Paz counties. The economic benefits of the proposed project, as required by the Energy Commission regulations and resulting from the IMPLAN model are shown below in **Socioeconomics Table 6**.

Table 6, RSEP Economic Benefits (2009 dollars)	
Fiscal Benefits	
Estimated annual property taxes	Riverside County Assessor's Office would assess the non-solar project components once construction is completed.
State and local sale taxes: Construction	\$20,092,800 (\$16,905,000/Riverside County, \$3,187,800/La Paz County)
State and local sale taxes: Operation	Approximately \$35,000
School Impact Fee	N/A
Non-Fiscal Benefits	
Total capital costs	\$750 to 850 million
Construction Payroll	\$102 million
Annual Operations and Maintenance	
Construction materials and supplies	\$241.5 million (\$193.2 million/Riverside County, \$48.3 million/La Paz County)
Operations and maintenance supplies	\$400,000
Direct, Indirect, and Induced	
Estimated Direct	
Construction	280 jobs (average for 30 months); 438 peak
Operation	47 full-time positions
Estimated Indirect	
Construction Jobs	954
Construction Income	\$38.04 million
Operation Jobs	1
Operation Income	\$66,310
Estimated Induced	
Construction Jobs	352
Construction Income	\$14.15 million
Operation Jobs	16
Operation Income	\$616,200
Source: 5.10 Socioeconomics, RSEP, AFC	

PROPERTY TAX

California Revenue and Taxation Code Section 73 excludes the new construction of active solar energy systems from the definition of "new construction" for property tax reassessment purposes. California Assembly Bill (AB) 1451 extends the current property tax exclusion for new construction of solar energy systems to January 1, 2017.

Upon expiration of AB 1451, Riverside County will be responsible for assessing the RSEP's property value. As stated in the AFC, Riverside County is developing a methodology to assess property values on renewable energy projects. (SR 2009a).

For Fiscal Year 2010, the property tax rate for the project site is 1.04507%. At this time, staff cannot determine the exact amount of property taxes RSEP will generate. However, the additional property tax revenues would have a beneficial impact on the county.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

Staff proposes no conditions of certification.

CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that construction and operation of the Rice Solar Energy Project (RSEP) would not cause significant direct or cumulative adverse socioeconomic impacts on the study area's housing, schools and parks. Staff also concludes that the project would not induce substantial growth or concentration of population, substantial increases in demand for housing or public services, or displace a large number of people.

REFERENCES

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<http://www.clerkoftheboard.co.riverside.ca.us/ords/600/659.pdf>

Riverside County, Clerk of the Board of Supervisors, Ordinance 682,
<http://www.clerkoftheboard.co.riverside.ca.us/ords/600/682.3.pdf>

Riverside County Sheriff's Department, www.riversidesheriff.org

Riverside County Regional Park and Open-Space District,
<http://www.riversidecountyparks.org>

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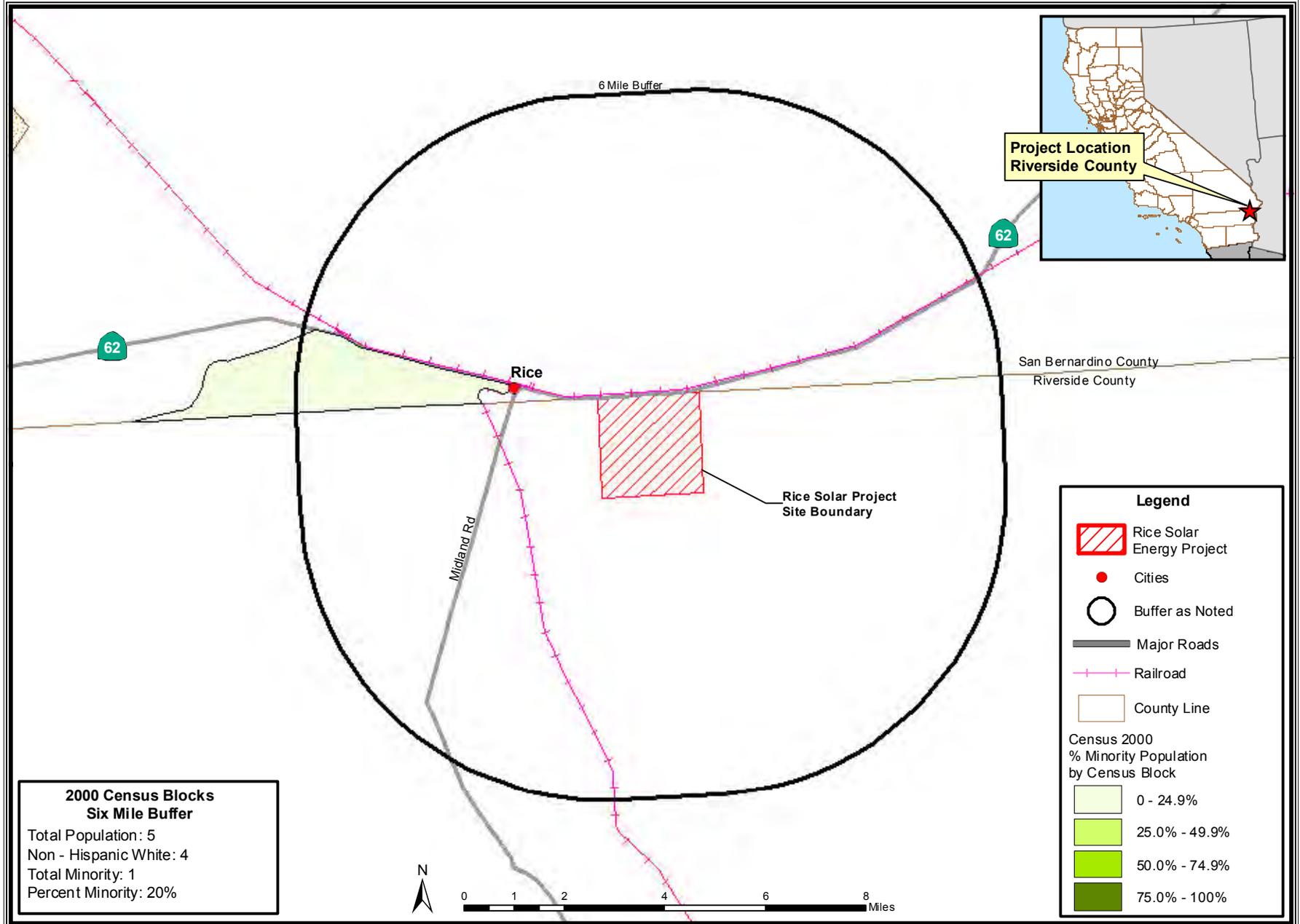
State of California, Department of Finance Demographic Research Unit, Table 2: E-5 City/County Population and Housing Estimates, 1/1/2009,
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SOCIOECONOMICS - FIGURE 1

Rice Solar Energy Project - Census 2000 Minority Population by Census Block - Six Mile Radius

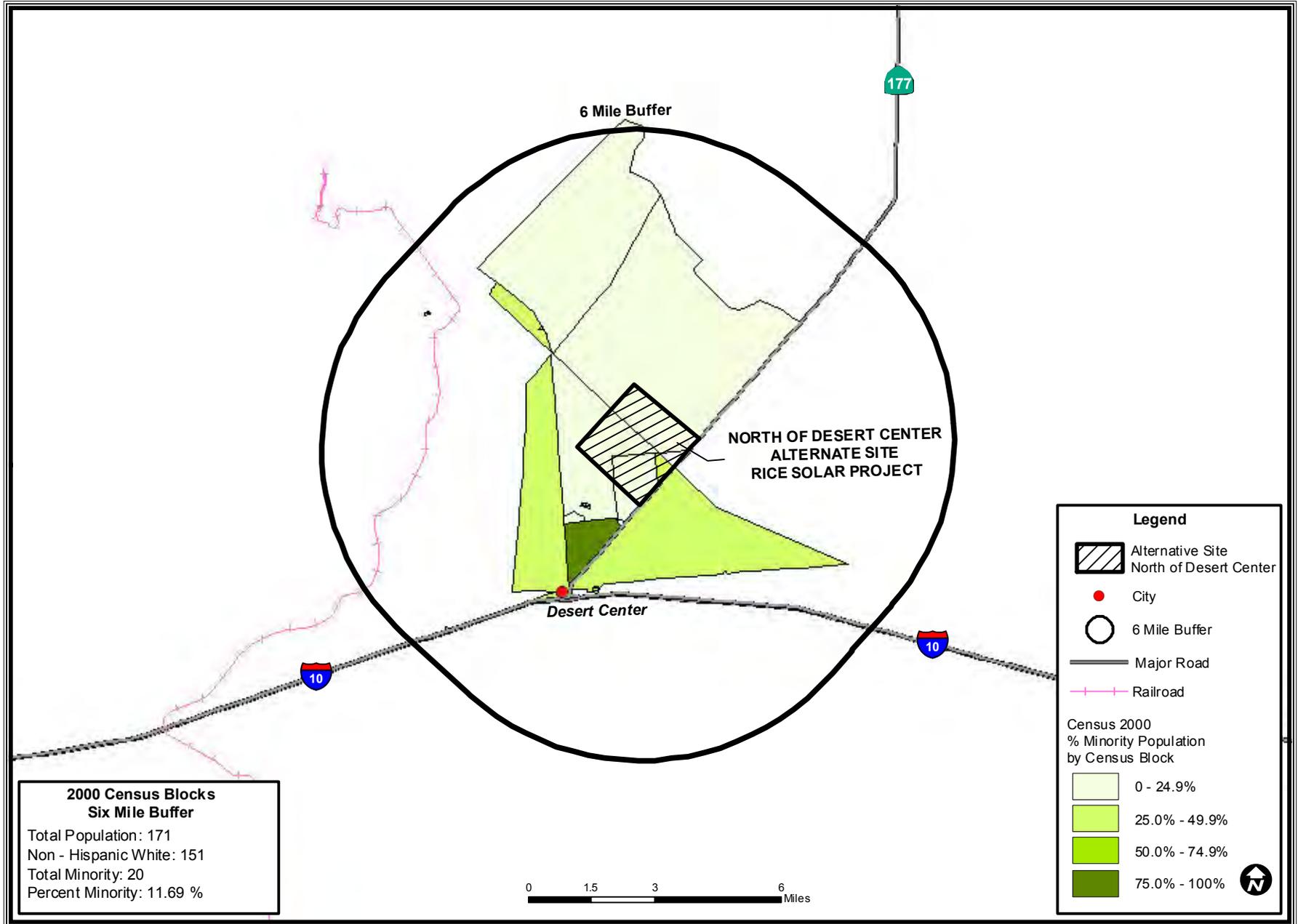


CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: ESRI and Tele Atlas Data - California Energy Commission Statewide Power Plant Maps 2010 - Census 2000 PL 94-171 Data

SOCIOECONOMICS - FIGURE 2

Rice Solar Energy Project - Census 2000 Minority Population by Census Block for North of Desert Center Alternative Site - Six Mile Radius



SOIL AND WATER RESOURCES

Testimony of Mike Conway and Abdel-Karim Abulaban, Ph.D., P.E.

SUMMARY OF CONCLUSIONS

U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), and hereafter jointly referred to as agencies, evaluated the proposed Rice Solar Energy Project (RSEP) and have identified potential impacts to soil and water resources associated with RSEP construction, operation, and decommissioning. Where potential impacts have been identified, mitigation measures/conditions of certification have been identified that could lessen the impacts and would assure the project conforms with laws, ordinances, regulations and standards (LORS). The mitigation measures/conditions of certification serve as recommendations by staff to lessen impacts below a level of significance and to assure the project conforms to LORS in accordance with the California Environmental Quality Act (CEQA) requirements for the Energy Commission's analysis. The identification of relevant and reasonable mitigation measures also conforms with National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis.

Staff's conclusions with respect to CEQA are as follows:

- The limited data available for analysis of the Rice Valley Groundwater Basin indicate the proposed use of groundwater would not significantly impact groundwater levels in the basin, the basin balance, or quality of groundwater in the basin. Given the limited data staff has proposed Condition of Certification **SOIL&WATER-6** to establish pre-construction and project related groundwater quality and groundwater elevation levels that can be quantitatively compared against observed and simulated levels from project pumping to ensure there are no impacts to the groundwater basin as a result of project pumping.
- The proposed method of sanitary wastewater disposal by a septic system and leach field would have no significant impacts provided the requirements of Condition of Certification **SOIL&WATER-8** are met.
- The proposed project will not significantly increase or decrease erosion rates within its watershed, if Condition of Certification **SOIL&WATER-1** and **-3** are implemented as proposed during construction and operation. Staff sought input and guidance from the State Water Resources Control Board (SWRCB) to develop these Conditions.
- The SWRCB developed waste discharge requirements for the disposal of industrial wastewater in evaporation ponds. Staff proposes that the Applicant comply with these requirements as proposed in Condition of Certification **SOIL&WATER-2**.
- The proposed on-site drainage management design would perform adequately to protect against significant soil loss and any potential impacts would be mitigated if Condition of Certification **SOIL&WATER-1** is implemented as proposed.
- Based on the elements of the proposed project submitted by the applicant to date, staff believes the project would comply with all applicable federal, state, and local

laws, ordinances, rules, and standards (LORS) with the adoption of the recommended conditions of certification.

- Based on the elements of the proposed project submitted by the applicant to date, staff believes that construction and operation of the project would not result in immitigable project-specific direct or indirect or cumulative significant impacts to soil or water resources with the adoption of the recommended conditions of certification.
- According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Map #06065C0575G, 2008), the site of the proposed facility is not within the 100-year floodplain; therefore, Department of Energy (DOE) will not include a floodplain assessment in the Environmental Impact Statement (EIS) as described in the DOE Regulations for Compliance with Floodplain and Wetland Environmental Review Requirements (10 CFR Part 1022).

The state has expressed a strong interest in developing its solar energy resources. However, the construction and operation of solar energy facilities requires the use of water, which state policy also protects. The Energy Commission must balance the state's interest in promoting solar energy development with its interest in conserving and protecting the state's water resources.

INTRODUCTION

This section of the Preliminary Staff Assessment (PSA) analyzes potential impacts to soil and water resources from the construction, operation and decommissioning of the Rice Solar Energy Project (RSEP). The agencies have evaluated soil and water resources impacts associated with the proposed RSEP's construction, operating and decommissioning activities. This Staff Assessment/Draft Environmental Impact Statement (SA-DEIS) meets the Energy Commission's responsibility to comply with the California Environmental Quality Act and BLM's and Western's responsibility to comply with the National Environmental Policy Act.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The following federal, state, and local environmental LORS were established for the Rice project and similar facilities to ensure the best and appropriate use and management of both soil and water resources. Additionally, the requirements of these LORS are specifically intended to protect human health and the environment. The potential for project compliance with these LORS is a major component of staff's determination regarding the significance and acceptability of the RSEP with respect to the use and management of soil and water resources.

SOIL & WATER Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Federal LORS	
<p>Title 33, United States Code (U.S.C.), Section 1251 et seq. — Federal Water Pollution Control Act (commonly called the Clean Water Act)</p>	<p>The Clean Water Act (CWA) established a broad national program for protecting water quality and regulating discharges of waste and pollutants into waters of the United States. It provides authority for establishment of water quality standards and waste discharge limits for point source discharges (such as those from industrial facilities, sewage treatment plants, and storm water). The act also prohibits discharges of pollutants without a permit or other authorization and allows authorized states to implement provisions of the act in lieu of the United States Environmental Protection Agency (U.S. EPA). Key CWA provisions include:</p> <ul style="list-style-type: none"> • Section 401 - Water Quality Certification requirement for federally permitted activities (such as construction) that may result in discharges to surface waters and wetlands. • Section 402 - National Pollutant Discharge Elimination System (NPDES) permit program for point source discharges (including storm water). • Section 404 – Permit program addressing discharges of dredge or fill materials into surface waters and wetlands. This section is implemented by the United States Army Corps of Engineers (U.S. ACE).
<p>Title 42, U.S.C., Section 6901, et seq. — Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al)</p>	<p>The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA), established requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The law seeks to protect human health and the environment (including surface and groundwater) from improper management and disposal of waste and associated contaminants.</p>
<p>United States Department of the Interior, Bureau of Land Management, Northern and Eastern Colorado Desert Coordinated Management Plan (approved December 2002)</p>	<p>The Northern and Eastern Colorado Desert Coordinated Management Plan establishes standards, guidelines, and special area designations to address and help resolve issues of resource demands, use conflicts, and environmental quality on public lands in the area. BLM's multiple use mandate requires the plan to address a very broad spectrum of</p>

	resources and uses. The plan also incorporates provisions and designations established by the 1994 California Desert Protection Act.
State LORS	
California Constitution, Article 10, Section 2, and California Water Code (CWC), Section 100	These laws require that the water resources of the state be put to beneficial use to the fullest extent possible and that the waste, unreasonable use or unreasonable method of use of water be prevented. The laws also require that conservation of such water be exercised with a view to the reasonable and beneficial use of the water in the interest of the people and for the public welfare.
CWC, Sections 4999 - 5009	Requires groundwater users in Counties of Riverside, San Bernardino, Los Angeles, and Ventura to report groundwater extractions of 25 acre-feet per year or more to the State Water Resources Control Board (SWRCB).
CWC, Division 7, Section 13000 et seq. — Porter-Cologne Water Quality Control Act	The Porter-Cologne Water Quality Control Act (Porter-Cologne) was established to protect the water quality and beneficial uses of waters of the state. The law gives broad authority to the SWRCB and nine Regional Water Quality Control Boards (RWQCBs) to establish water quality standards and discharge prohibitions, issue waste discharge requirements, and implement provisions of the federal Clean Water Act. Under Porter-Cologne, “waters of the state” include both surface and groundwaters.
CWC, Sections 13240, 13241, 13242, 13243, & Water Quality Control Plan for the Colorado River Basin – Region 7 (Basin Plan)	The Basin Plan establishes the beneficial use designations and water quality objectives for surface water and groundwater in the Colorado River Basin Region. It also describes implementation plans and measures necessary to achieve standards and ensure compliance with both regional and statewide water quality plans and policies; and acts as the comprehensive water quality planning document for the Colorado River Basin Region.
CWC, Section 13260	Requires persons proposing to discharge waste that could impact the quality of waters of the state to file a report of waste discharge with the appropriate RWQCB.
CWC, Section 13550	This section of Porter-Cologne establishes that the use of potable domestic water for non-potable uses (including industrial use) is a waste or an unreasonable use of the water if recycled water is available and meets the following conditions: the quality and quantity of the reclaimed water are suitable for the use; the cost is reasonable; the use is not detrimental to

	public health; and the use will not impact downstream users or biological resources.
CWC, Sections 231 and 13700 et seq.	Section 231 and Division 7, Chapter 10 of the Water Code establish the authority for development and implementation of minimum water well standards for the state. Minimum standards for the construction and destruction of water wells are established in Bulletins 74-81 and 74-90, California Well Standards, by the California Department of Water Resources (DWR). A well completion report must be filed with DWR for each well that is constructed, reworked, or destroyed.
Title 17, California Code of Regulations (CCR), Division 1, Chapter 5	This chapter of the CCR addresses the requirements for backflow prevention and cross connections of potable and non-potable water lines.
Title 22 , CCR, Division 4 — Environmental Health	Title 22, Division 4 is implemented by the California Department of Public Health (CDPH) (formerly known as the California Department of Health Services). The regulations address requirements for drinking water standards, water treatment and operator certification, and water recycling criteria. Section 64431 establishes the public drinking water maximum contaminant levels (MCLs), including an MCL for nitrate of 45 mg/L (equivalent to 10 mg/L for nitrate as nitrogen). Section 64449 establishes secondary drinking water standards, including a recommended total dissolved solids (TDS) level of 500 mg/l, with an upper limit of 1,000 mg/l, and a short term level of 1,500 mg/l. Article 3 also requires monitoring of potable water wells defined as non-transient, non-community water systems (serving 25 people or more for more than six months).
Title 23, CCR, Division 3 — SWRCB and RWQCBs	These regulations implement provisions of the CWC and the Porter-Cologne Water Quality Control Act. Among other things, the regulations address water rights, implementation of the federal Clean Water Act, discharges to land, underground tanks, and waste discharge requirements/NPDES permits.
Title 27, CCR, Division 2, Solid Waste, Subdivision 1, Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid Waste.	These regulations address both the California Integrated Waste Management Board (CIWMB) and SWRCB requirements for solid waste/wastewater management units.
SWRCB Water Quality Order No. 2009-0009-DWQ	The SWRCB regulates storm water discharges associated with construction projects to protect water quality throughout the state. Effective July 1, 2010, Order No. 2009-0009-DWQ will supersede Order 99-08-DWQ and implement

	NPDES General Permit No. CAS000002 for storm water discharges associated with construction activity affecting areas greater than or equal to one acre. Those subject to the order can qualify for the permit if they meet the criteria, prepare and implement an acceptable Storm Water Pollution Prevention Plan (SWPPP) and other assessments as necessary, and file with the SWRCB all necessary Permit Registration Documents [including a Notice of Intent (NOI)] prior to beginning construction.
Warren-Alquist Act, Public Resources Code, Section 25500 et seq.	This law gives the California Energy Commission authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, section 25500). The Energy Commission must review power plant applications for certification to assess potential environmental and public health and safety impacts, potential measures to mitigate those impacts (Pub. Resources Code, section 25519), and compliance with applicable governmental laws and standards [Pub. Resources Code, section 25523(d)].
Local LORS	
Title 8, Riverside County Code, Chapter 8.16 – Blowing Sand Control Regulations, Section 8.16.010 et seq.	These regulations require implementation of wind erosion controls and protections during excavation and ground disturbance on properties with sand or sandy loam soil.
Title 8, Riverside County Code, Chapter 8.124 – Sewage Discharges, Section 8.124.010 et seq.	This code section establishes the requirements and standards for the design, installation, and maintenance of onsite wastewater treatment systems (OWTS), including septic tanks and leach lines. CWC section 13282 allows RWQCBs to authorize local public agencies to issue permits and regulate OWTS. The Riverside County Department of Environmental Health implements the County Code OWTS provisions.
Title 13, Riverside County Code, Chapter 13.20 – Water Wells (section 13.20.010 et seq.)	These regulations establish the minimum well standards and permitting requirements for the construction, operation, and destruction of ground water wells within Riverside County. Wells subject to the regulations include individual domestic water wells, community water supply wells, agriculture wells, exploration holes, and monitoring wells.
Title 15, Riverside County Code, Buildings	These chapters of the County Code set forth

and Construction, Chapters 15.04 (General Provisions, Administration and Enforcement), 15.12 (Uniform Building Code) and 15.24 (Uniform Plumbing Code).	building, grading, erosion/sediment control, storm water management, and septic system plumbing requirements for all construction within Riverside County, unless otherwise specifically exempted or excluded.
State Policies and Guidance	
State Water Resources Control Board Resolution No. 68-16	The “Antidegradation Policy” mandates that: 1) existing high quality waters of the State are maintained until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonable affect present and anticipated beneficial uses, and will not result in waste quality less than adopted policies; and 2) requires that any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters, must meet WDRs which will result in the best practicable treatment or control of the discharge necessary to assure that: a) a pollution or nuisance will not occur and b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.
SWRCB Resolution No. 75-58 — Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling (adopted June 19, 1975).	This SWRCB policy specifically addresses the use of inland waters for power plant cooling. The policy states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. The policy establishes a general hierarchy for cooling water whereby the lowest quality water reasonably available is to be utilized for evaporative cooling processes. It also includes cooling water discharge prohibitions.
SWRCB Resolution No. 88-63 —Sources of Drinking Water Policy	This policy states that all surface and groundwaters of the state are considered to be suitable, or potentially suitable, for municipal or domestic water supply, and should be designated as such by the RWQCBs, with the exception of certain waters (such as contaminated sources or process wastewaters).
State Water Resources Control Board Resolution No. 2005-0006	Adopts the concept of sustainability as a core value for State Water Board programs and directs its incorporation in all future policies, guidelines, and regulatory actions.
State Water Resources Control Board Resolution No. 2008-0030	Requires sustainable water resources management such as low impact development (LID) and climate change considerations, in all

	future policies, guidelines, and regulatory actions. Directs Regional Water Boards to “aggressively promote measures such as recycled water, conservation and LID Best Management Practices where appropriate and work with Dischargers to ensure proposed compliance documents include appropriate, sustainable water management strategies.”
The 2003 California Energy Commission <i>Integrated Energy Policy Report (IEPR)</i>	The 2003 <i>IEPR</i> was developed and adopted pursuant to Public Resources Code sections 25301 and 25302. It includes a water and wastewater policy stating that the Energy Commission will approve the use of fresh water for cooling purposes by power plants it licenses only where alternative water supply sources and alternative cooling technologies are shown to be “environmentally undesirable” or “economically unsound.” In addition, the policy states that the Energy Commission will also require that zero-liquid discharge technologies be used to manage project wastewater unless such technologies are shown to be “environmentally undesirable” or “economically unsound.”

Method and threshold for determining significance

This section provides an evaluation of the expected direct, indirect, and cumulative impacts to soil and water resources that would be caused by construction, operation, and maintenance of the project. Staff’s analysis of potential impacts consists of a description of the potential effect, an analysis of the relevant facts, and application of the threshold criteria for significance to the facts. If mitigation is warranted, staff provides a summary of the applicant’s proposed mitigation and a discussion of the adequacy of the proposed mitigation. If necessary, staff presents additional or alternative mitigation measures and refers to specific conditions of certification related to a potential impact and the required mitigation. Mitigation is designed to reduce the effects of potential significant project impacts to a level that is less than significant.

Impacts leading to soil erosion or depletion or degradation of water resources, including beneficial uses, are among those staff believes could be most potentially significant soil and water resource issues associated with the proposed project. The thresholds of significance for these issues are discussed below.

Soil Resources

Staff evaluated the potential impacts to soil resources including the effects of construction and operation activities that could result in erosion and downstream transportation of soils and the potential contamination of soil and water resources. There are extensive regulatory programs in effect designed to prevent or minimize these types of impacts. These programs are effective, and absent unusual circumstances, an applicant’s ability to identify and implement BMPs to prevent erosion

or contamination is sufficient to ensure that these impacts would be less than significant. In addition, soils would be protected by the development and implementation of grading plans and a DESCP. Should these assumptions and calculations be inaccurate, the consequences of modified sedimentation and erosion rates may be significant. Staff has proposed conditions of certification that would mitigate these potential impacts. The LORS and policies presented in **Soil & Water Table 1** were used to determine the threshold of significance of project impacts with respect to CEQA.

Water Resources

Staff evaluated the potential of the project's proposed water use to cause a substantial depletion or degradation of groundwater resources, including beneficial uses. Staff considered compliance with the LORS and policies presented in **Soil & Water Table 1** and whether there would be a significant California Environmental Quality Act (CEQA) impact. Compliance with LORS and policies includes the Energy Commission's and State Water Resources Control Board's policy against using freshwater for power plant cooling unless other sources or other methods of cooling would be environmentally undesirable or economically unsound.

To evaluate if significant CEQA impacts to soil or water resources would occur, the following criteria were used. Where a potentially significant impact was identified, staff or the applicant proposed mitigation to ensure the impacts would be less than significant.

- Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding or substantial erosion or siltation on or offsite?
- Would the project create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?
- Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?
- Would the project violate any water quality standards or waste discharge requirements?
- Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?
- Would the project contribute to any lowering of groundwater levels in the groundwater wells of other public or private water users?
- Would the project contribute to any lowering of the groundwater levels such that protected species or habitats are affected?
- Would the project cause substantial degradation to surface water or groundwater quality?

PROPOSED ACTION ALTERNATIVE/PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The RSEP project would be located near the town of Rice in the eastern portion of California's Colorado Desert, along the northern edge of Riverside County. The proposed project's transmission line construction would occur in a portion of federal land administered by the Bureau of Land Management (BLM). Water resources in the proposed project's vicinity are extremely limited and vegetation sparse. Due to these limitations, there is a need for a higher degree of water use management (SR 2009a).

The proposed project would be developed on a shallow alluvial fan below the Turtle Mountains in Rice Valley. The Rice Valley extends across the Riverside and San Bernardino County line and is bound by the Big and Little Maria Mountains in the south and the Riverside Mountains in the east. The Rice Valley is hydraulically connected to both the Ward Valley to the northwest and the Vidal Valley to the northeast. Precipitation in the surrounding mountains provides the Rice Valley with water. Surface water runoff of mountain precipitation flows through washes and infiltrates into the alluvium-filled valley. The Rice Valley is topographically closed and is an area of internal drainage, with no perennial streams (USGS 1963).

The Rice Valley is approximately 355 square miles in size (DWR 1963). No permanent residents inhabit the valley. The RSEP project would be located on the site of the former Rice Army Airfield, which was abandoned between 1954 and 1958. The proposed project footprint is expected to total 1,410 acres and to utilize a configuration similar to that of the airfield in terms of drainage and disturbed areas (SR 2009a).

The valley floor ranges in elevation between 675 feet in the valley center and 1,000 feet above sea level at the mountain fronts. Mountain peaks surrounding the valley range from 2,000 to 5,866 feet above sea level (DWR 2004). The proposed project is sited near the toe of the alluvial fan that extends from the Turtle Mountains where annual rainfall is approximately four inches. The proposed project is not within an Alquist-Priolo zone. The closest identified fault is approximately 65 miles from the site. Ground rupture is unlikely at the proposed project site (SR 2009a).

Groundwater recharge to the Rice Valley is likely a result of mountain-front infiltration of precipitation. A lesser to negligible amount of recharge is expected to result from infiltration on the valley floor. Direct recharge from rainfall on the valley floor is substantially less than the potential rate of evapotranspiration and potential for soil moisture retention. Another component of recharge to the valley could also be underflow from the Ward Valley, northwest of the Rice Valley (SR 2009a).

PROPOSED PROJECT DESCRIPTION

The RSEP project would be a 150-MW capacity solar electric generating system that would be constructed between the spring of 2011 and October 2013. The design incorporates 17,500 tracking heliostats that concentrate solar radiation onto a tower-mounted receiver. The solar field would cover 1,410 acres, including the 80-acre power block in the center of the array. Each heliostat would be approximately 24 feet high and 28 feet wide, while the central receiver tower would be 653 feet tall. The solar

technology proposed by the applicant allows solar energy to be captured and retained in a liquid salt heat transfer fluid. When needed, electricity is generated by routing the hot salt through a series of heat exchangers to produce steam. The steam is then used to generate electricity in a steam turbine cycle. The project also proposes to use an air-cooled condenser to minimize water use. Three lined 5-acre evaporation ponds would contain all process blowdown and storm water drainage from the central power block (SR 2009a).

Construction would also include a 10-mile generator tie-line that would trend southeast from the project to where it could connect to the Western Area Power Administration, Parker-Blythe No. 2 transmission line. The tie-line would be constructed across land managed by BLM (SR 2009a).

A summary of the proposed project's project water uses is contained in **SOIL & WATER Table 2** below.

**SOIL & WATER Table 2
RSEP Projected Water Uses**

Water Use	Average Daily Use (gpm)¹	Annual Use (AFY)²
Heliostat Mirror Wash	51	31
Steam Cycle Makeup	52	31
Potable Water	5	3
Other uses including wet surface air cooler (WSAC), service water, quench water	62	38
Average Use Total	170	103
Margin for other uses	25	15
Total Plant Consumption	195	118
Maximum Annual Use	--	150
Wastewater Discharge		
Service water	5	--
WSAC blowdown	27	--
Hydrostatic test water	*	--
Average discharge to evap. ponds	32	~20

Storm Water and Drainage

In reference to **Soil & Water Resources Figure 1 – RSEP Proposed Drainage Plan**, the proposed project would utilize a drainage design similar to that of the former Rice Airfield. Runoff received from the north of State Route (SR) 62 would be diverted outward and away from the site's eastern boundary by re-establishing the 1940s-era diversion dike. Onsite runoff would only be contained in areas where rainwater could be

¹ Gallons per minute

² Acre-feet per year, based on 3286 hours of operation per year .

* A volume of approximately 6 million gallons will be used during hydrostatic testing. Wastewater discharge facilities shall be operational, and monitoring networks must be installed prior to discharge.

exposed to contaminants. The solar field runoff would be allowed to discharge freely with minimal concentration. Runoff generated between SR-62 and the site would be conveyed around the site's perimeter by a natural bottom channel (SR 2009a).

The existing storm water flow across the proposed project is generally from north to south, across the toe of an alluvial fan originating in the Turtle Mountains. Storm water is conveyed across the site through an extensive network of ephemeral drainages with an average slope length of 2%. All drainage in the Rice Valley flows toward the valley's topographic low point, Rice Valley dry playa. During major storm events, the ephemeral washes can flow for periods of a few hours to 24-hours with the possibility of flash floods and mass wasting. The ephemeral drainages are expected to be determined non-jurisdictional features by the Army Corps of Engineers under Section 404 of the Clean Water Act (USACE2009), but are still expected to be considered waters of the State (SR 2009a). For further discussion on the jurisdictional determination, please refer to the **Biological Resources** section.

The proposed project is sited within a previously modified drainage shed and would be constructed in the same location as the Rice Army Airfield. Directly north of the proposed location and north of SR-62 is a railroad currently owned by the Arizona and California Railroad Co. This section of railroad originally owned by Santa Fe Railroad was built no later than the early 1900s. Diversion dikes built to capture runoff from the Turtle Mountains, channel water beneath the railroad tracks. In the late 1930s, the Colorado Aqueduct was constructed immediately up gradient of the railroad. The aqueduct required its own set of dikes to channel water above the siphoned section of the canal. In its present-day state, these current dikes capture all runoff up-gradient of SR-62 and channel it across the road to the south (SR 2009a) and on to the project site.

The Rice Municipal Airport was acquired by the U.S. Army in 1942 and is presumed to have utilized the drainage system currently in place. Water generated up-gradient of the site, in the Turtle Mountains, is conveyed by two diversion dikes to around the airfield. These dikes are not currently functioning, due to a lack of maintenance since the airfield was abandoned. After the dikes were breached, it is presumed that the historical natural drainage network re-established itself. The most hydraulically significant drainages on site are those crossing SR-62 adjacent to the project. Two road crossings at SR-62, convey all drainage generated up gradient of the site through or around the project (SR 2009a).

The proposed project is located in Federal Emergency Management Agency (FEMA) Zone D, which is classified as an area with a possible but undetermined flood hazard (Map #06065C0575G, 2008). A flood hazard analysis has not yet been conducted by FEMA for this area, so the applicant completed a Conceptual Drainage Study. The proposed project is not within a 100-year floodplain (SR 2009a). Therefore, DOE will not include a floodplain assessment in the EIS as described in the DOE Regulations for Compliance with Floodplain and Wetland Environmental Review Requirements (10 CFR Part 1022).

Soil Erosion Due to Water and Wind

Construction activities can adversely impact soil resources by increasing soil erosion, soil compaction, loss of soil productivity, and disturbance of soils crucial for supporting vegetation and water dependant habitats. Activities that expose and disturb the soil leave soil particles vulnerable to detachment by wind and water. Soil erosion results in the loss of topsoil and increased sediment loading to nearby receiving waters. The magnitude, extent, and duration of those impacts would depend on several factors, including the proximity of the RSEP site to surface water and dunes, the soil types affected, and the method, duration, and time of year of construction activities. Prolonged periods of precipitation, or high intensity and short duration runoff events coupled with earth disturbance activities can result in on-site erosion. In addition, high winds during grading and excavation activities can result in wind borne erosion leading to increased particulate emissions that adversely affect air quality.

The proposed project would discharge toward the Rice Valley dry playa, which has no direct connection to a perennial stream or other navigable waters or permanent water source such as a lake or spring and do not qualify as jurisdictional features subject to regulation under the federal Clean Water Act. Soil loss from the proposed project is not expected to have a significant impact on sensitive surface waters subject to regulation under the federal Clean Water Act, because these waters are likely not present.

Development activities, including compaction associated with vehicle access, grading (in limited areas), and removal of vegetation, would generally result in reduced soil infiltration rates and an increase in the volume and velocity of runoff associated with storm events. If used, soil binders would also tend to reduce the soil infiltration rates. Erosion rates are closely associated with runoff and infiltration rates, which could be affected by land disturbance activities.

The dominant soils present on site are sand-sized grains and extremely susceptible to wind erosion. Wind erosion is likely the most significant agent of sediment transport in the region. Dune migration in the region depends on aeolian transport (SR 2009a).

Project Water Supply

Groundwater is the primary natural water supply to the Rice Valley region. The test wells developed at the site indicate groundwater occurs within an upper unconsolidated Holocene and underlying unconsolidated to semi-consolidated Pliocene alluvial unit within the valley. The upper alluvium, described as ranging between 80 and 630 feet below ground surface (bgs), contains clay to sand grains, and is dominated by finer grains. The lower alluvium occurs between 630 and 810 feet bgs and contains clay, sand, and gravel, and is dominated by coarser grains. The Rice Valley may also contain a marine to brackish sequence known as the Bouse Formation, below the lower Pliocene alluvial unit. Its presence is inferred through various studies of adjacent groundwater basins. Two known water-bearing zones were identified by the applicant, the upper unconfined aquifer, less than 400 feet bgs, and the lower confined aquifer, more than 600 feet bgs (SR 2009a).

Transmissivity within the lower alluvial water-bearing unit, estimated from well tests, is approximately 5,000 gallons per day per foot (gpd/ft), drawing up to 89% from 625 to

785 feet bgs (WP, 2009). The storage capacity on the California side of the valley of the Rice Valley groundwater basin is estimated to be between 125,000 and 2,280,000 acre-feet (af) (DWR, 2003). Various reports indicate that groundwater level trends in the basin are stable and that the basin is not in overdraft and groundwater storage has remained stable for the period of record (SR 2009a).

The natural groundwater quality varies widely, but is characterized as sodium chloride-sulfate or sodium chloride-bicarbonate (DWR 2003). Between July 2008 and August 2009, the applicant conducted a site-specific investigation of two wells, Rice #1 and Rice #2. Based on the groundwater investigation, total dissolved solids (TDS) in the project vicinity ranges from 662 to 3,540 milligrams per liter (mg/l) (SR 2009a).

The applicant has proposed to pump groundwater from one of two onsite wells for all potable water and plant operation needs. Computer modeling by the applicant of the potential impacts associated with the use of groundwater was based on both construction pump rates and also operations pump rates, assuming 750 AF of water use during the 30-month construction period and 118 AFY during the 30-year life of the project.

Groundwater will be treated onsite through a multiple step process including multimedia filters utilizing a coagulant, reverse osmosis, and electro-deionization. Prior to treatment, the expected physical and chemical composition of the water reaching the ground surface is presented below in **Soil and Water Table 2**. These estimates represent the best quality water that could be drawn from the onsite well and are based on the applicant's onsite groundwater investigation (SR 2009a).

SOIL & WATER Table 2
Expected Groundwater Quality

Parameter	Concentration
Total Dissolved Solids (TDS)	880 mg/L
Hardness as CaCO ₃	142 mg/L
Copper	<0.011 mg/L
Iron	<0.064 mg/L
Chlorides	508 mg/L
Specific Conductance	2,010 µS/cm
pH	8.3

Source: (SR 2009a).

Note: mg/L = milligrams per liter; µS/cm = microsiemens per centimeter.

WASTEWATER

Both domestic/sanitary wastes and industrial process wastewater would be generated by construction and operation of the proposed RSEP. During construction, sanitary wastes would be managed using portable toilets and showers, with collected wastes trucked offsite for disposal. A temporary septic tank and leach field may also be used near the construction trailers and crew parking and housing areas.

During operation, the RSEP would manage domestic/sanitary wastes through the use of two separate septic systems: one located near the facility's main entrance that would service the administration building and workshop; and one located within the facility power block that would be connected to the control and operations building. Industrial process wastewaters generated during facility operation and water collected in equipment drains within the power block would be discharged to three five-acre, lined evaporation ponds located at the southern end of the project site, just outside the heliostat field. A system of floor drains, hub drains, sumps, and piping would collect containment area wash down and storm water from facility areas within the power block. Water from these areas would be collected and then routed to a wastewater collection system with an oil/water separator. Effluent from the oil/water separator would then be discharged to the evaporation ponds (SR 2009a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Construction of the proposed project would include soil excavation, grading, installation of utility connections, and the use of groundwater. Groundwater use would primarily be for dust suppression and hydrostatic testing of the proposed project's piping connections. Potential impacts to soils related to increased erosion or release of hazardous materials are possible during construction. Potential storm water impacts could result if increased runoff flow rates and volume discharge from the site were to increase flooding and sedimentation downstream. Water quality could be impacted by discharge of hazardous materials released during construction. Project water demand could affect the quantity of available groundwater. Potential construction related impacts to soil, storm water, and water quality or quantity, including the Applicant's proposed mitigation measures and staff's proposed mitigation measures are discussed below.

Operation of the proposed project could lead to accelerated soil erosion and increased storm water runoff. The project's operation could also lead to potential water quality and water supply impacts. Soils may be potentially impacted through erosion or the release of hazardous materials used in the operation of the proposed project. Storm water runoff from the project could result in potential impacts if increased runoff flow rates and volumes discharged from the project increase erosion of the soil and increase downstream flooding. Water quality could be impacted by discharge of eroded sediments from the project or discharge of hazardous materials released during operation. Water supply used for plant processes, heliostat mirror washing, and fire protection could lead to potential quantity or quality impacts to Rice Valley groundwater resources. Potential impacts to water quality and water supply and the potential acceleration of soil erosion and increased storm water runoff related to the operation of

the project, including the applicant's proposed mitigation measures and staff's proposed mitigation measures, are discussed below.

Storm Water and Drainage

The proposed project would be located near the toe of an alluvial fan that originates in the Turtle Mountains. Storm water runoff either percolates into the soil of the alluvial fan or is conveyed through the alluvial fan wash channels or as sheet flow across the fan. Several project features would contribute to the potential for increased water erosion, including earth displacement, the long duration for construction, and changes to the properties of the soil. Construction of the proposed project would change natural drainages, remove natural vegetation and soil structure, add small amounts of impervious areas to the site, and could cause an increase in storm water runoff (SR 2009a).

To support the final design parameters for design of the drainage system for the project, the applicant conducted an onsite investigation of the hydrology of the project area and computer modeling of the storm flows. The applicant initially characterized existing runoff and flows using the Soils Conservation Service (SCS) methodology, similar to that utilized in the Riverside County Hydrology Manual, and utilized the Bentley Pondpack to design the onsite detention basin. The applicant provided further analysis in response to staff's data requests regarding drainage conveyance, and utilized Bentley Flowmaster to calculate flows in the site's east and west diversion channels. The applicant utilized soil data available through the Natural Resource Conservation Service (NRCS), and precipitation data from the National Oceanic Atmospheric Administration (NOAA) Precipitation Frequency Atlas. The potential storm water capture area for the project was determined by the applicant to be 4,568 acres. Peak flows from each of the sub-watersheds within the drainage was determined to range from 1.8 cubic feet per second (cfs) to 622 cfs. **SOIL&WATER Table 3** below summarizes the pre-and post-construction flow conditions within the proposed site's vicinity. The peak flow was calculated from the 100-year, 24-hour event (SR 2009a).

SOIL & WATER Table 3
Change in Storm Water Runoff and Peak Flow Volume

Sub-Area	Area (acres)	Peak Discharge (cfs) Pre-Const.	Peak Discharge (cfs) Post-Const.
1	1,472	563	563
2	2,398	622	622
3	9.9	1.8	1.8
4	98	10	10
5	89	9.78	9.78
6	186	17.7	17.7
7	212	15.2	15.2
8	103	9.9	9.2
9 (Project Site)	1369	91	91

Source: (SR 2009a).

Storm water flow volume and velocity are affected by surface infiltration rate and the roughness of the flow surface. Construction, operation, and decommissioning of the proposed project may modify the infiltration rate through several processes, including earthmoving, compaction, and use of dust suppressants.

On-site Drainage

While the proposed project would minimize disturbance of vegetation during construction and operations, long-term response of vegetation to the site development is difficult to predict. Onsite drainage is that generated within Sub-Area 9, described in **SOIL & WATER Table 3** above. This drainage area includes the entire solar field. All drainage will collect at the south end of the project in a shallow 30-acre detention facility. This unlined basin will allow for discharge through either infiltration or through a discharge pipe at the lower end of the basin. The function of the discharge pipe would be to maintain the pre-developed discharge rate for the 100-year, 24-hour storm. This pipe would allow the basin to discharge at a maximum rate of 91 cubic feet per second (cfs). The project would result in an increase in impervious area within Sub-Area 9, from construction of an administration building, a warehouse, power block areas, and a perimeter road. These new impervious areas are not expected to increase either volume or rate of discharge from this sub-area significantly because their acreage is small compared to the overall site, except the powerblock, which will be protected with gravel mimicking existing site conditions. On-site activities such as maintenance in the solar field are expected to have a minor affect on soil compaction and soil infiltration capacity. The increase in flow is expected to be insignificant because all onsite water will be captured within the on-site detention basins and discharged at a rate no greater than 91 cfs. The Applicant's proposal to capture sediment on-site also provides reassurance that industrial contaminants, if generated within the heliostat field, will not be transported off-site.

Staff believes that the detention of on-site flows would result in a less than significant modification of local hydrology when compared to the volume and velocity of storm water that flows from the Turtle Mountains. Onsite storm water would be collected in on-site detention basins, with a capacity of approximately 30 acre-feet. The detention basin would return all design storm flows to their pre-project runoff rate via discharge through a pipe.

The applicant submitted a Drainage Erosion and Sediment Control Plan (DESCP) in the original AFC and a revised version in a data response 4-27-10 (Docket TN 56445) that includes Best Management Practices (BMPs) that reduce the potential for on-site contaminants coming into contact with storm water. The draft DESCP also describes the use of the detention basin described above. Staff concludes the proposed on-site drainage management design would protect upstream and downstream resources and any potential impacts would be mitigated if Condition of Certification **SOIL&WATER-1** is implemented as proposed.

Off-site Drainage

As proposed, the graded project site would be left in a natural state and slope towards the south with a slope of approximately 2%. Two proposed earthen-bottomed and soil cemented drainage channels intercept storm water run-on from the northern site boundaries and convey it around the project through the channels. The proposed outlet

structures would allow for a transition of flow to its original velocity and depth. The eastern diversion channel could handle flows between 659 and 1,460 cubic feet per second (cfs) depending on the channel bottom width, 30 to 600 feet wide. The western diversion channel could handle flows between 16 and 47 cfs, with bottom widths 5 to 15 feet. Designed site drainages convey the 100-year storm. Grading plans propose to use soil cement as necessary to ensure channel and drop structure stability. Staff agrees that soil cement will be necessary to protect all channel banks and drop structures, given the proposed velocities and slope lengths. Soil cement would also be necessary to prevent headward erosion at the north end of the channel that receives flow.

Staff's analysis concurs with the Applicant's conclusion that sediment loss or gain would be minor. The proposed drainage diversion allows a historically similar volume of water and sediment conveyance to and around the site perimeter. Storm water entering the diversions from upstream areas is already saturated with sediment and has limited ability to acquire more sediment.

Proposed drainage channels may be subject to scour and erosion, which could alter their hydraulic capacity or functionality or create erosion towards the solar field. The RSEP project would alter natural storm water drainages but is not expected to significantly alter sediment migration patterns within the drainage area if a maintenance program is implemented. Maintenance of drainage channels and diversions is required to ensure peak flood flows are routed away from the solar field. Staff believes the applicant should be required to develop and implement a channel maintenance program, which will ensure that the project's channels perform at design capacity throughout the life of the project. Condition of Certification **SOIL&WATER-1 and -3** would require that the applicant identify activities and procedures needed to maintain the design capacity of the drainage features to avoid future potential on-site flood related impacts. Condition of Certification **SOIL&WATER-3** requires the project owner prepare a channel maintenance program and obtain Compliance Project Manager (CPM) approval prior to implementation. These conditions will require the applicant to identify activities and procedures needed to maintain the design capacity of the drainage features to avoid future potential flood related impacts.

Staff reviewed the applicant's hydrologic calculations in the Conceptual Drainage Plan and Data Responses to evaluate the off-site areas tributary to the RSEP. Historically storm water from off-site areas would form a braided channel network, south of SR-62. As proposed, the RSEP project would concentrate a portion of these flows to protect the property. The applicant proposes two diversion channels, along both east and west edges of the solar field. The minor washes intercepted by the diversions will return to their original discharge rate after discharging through a dissipation device at the south end of the project. Staff reviewed the applicant's drainage design drawings and assumptions and agrees that the proposed diversions adequately convey run-on around the project and will return flow to its upstream volume and flow rate prior to discharge, without affecting upstream or downstream resources.

Staff also assessed the potential for the proposed drainage design to cause impacts related to off-site flooding. Staff reviewed appropriate federal, state and local guidelines and specifications applicable to engineered channels. Staff used these criteria to examine the applicant's flood management plan and to provide comment on the

limitations and thresholds of the plan to avoid potential impacts. Staff concludes the proposed off-site drainage management design would perform adequately and any potential impacts would be mitigated if Condition of Certification **SOIL&WATER-1** and **-3** are implemented as proposed.

Soil Erosion Due to Water and Wind

Construction activities can lead to adverse impacts to soil resources including increased soil erosion, soil compaction, loss of soil productivity, and disturbance of soils crucial for supporting vegetation and ephemeral water dependant habitats. Activities that expose and disturb the soil leave soil particles vulnerable to detachment by wind and water. Soil erosion results in the loss of topsoil and increased sediment deposition downstream. To minimize the effects of construction to the soil the applicant proposes to remove only enough top soil to remove vegetation (SR 2009a).

The magnitude, extent, and duration of those impacts depends on several factors, including the exposure of the soils to water and wind, the soil types affected, and the method, duration, and time of year of construction activities. Prolonged periods of precipitation or high intensity and short duration runoff events coupled with earth disturbance activities, which can result in accelerated onsite erosion. High winds during grading and excavation activities can result in wind borne erosion leading to increased particulate emissions that adversely impact air quality. The implementation of appropriate erosion control measures would help conserve soil resources, protect downstream properties and resources, and protect air quality. Condition of Certification **AQ-SC3** in the **Air Quality** section requires an Air Quality Construction Mitigation Plan to prevent significant impacts from fugitive dust and wind erosion during construction. These prevention measures include: employing an on-site mitigation manager, limiting vehicle speed to 10 miles per hour during construction; requiring all unpaved roads and disturbed areas and linear construction sites to be watered as frequently as necessary during grading and stabilized thereafter with a non-toxic soil stabilizer or soil weighting agent to comply with the dust mitigation objectives; and establish performance standards for controlling fugitive dust and requirements for response should they be exceeded. The requirement to use soil weighting and bonding agents following grading would conserve freshwater by reducing the need for water as a means to control fugitive dust.

The Natural Resources Conservation Service (NRCS) classifies soils at the project site as almost entirely Rosaritos-Carrizo, which developed through both alluvial and aeolian processes. An on-site geotechnical investigation describes the soil characteristics similarly. The investigation included eight test borings up to 87 feet below ground surface and concluded that the site soils are primarily silty sand (SM). A sieve and hydrometer analysis concluded that the percentage of sand in the samples ranges between 55 and 91% by weight (SR 2009a).

These soils are primarily classified as hydrologic group A soils, which are expected to have rapid permeability rates and low(er) rates of runoff. The NRCS reports a soil erodibility factor K-factor of 0.10 to 0.24 for these soils, indicating a relatively low erodibility. These factors were used by the applicant to estimate soil loss. The Revised Universal Soil Loss Equation, version 2 (RUSLE2) was used to estimate potential soil

loss on site during both construction and operations. In its undisturbed state, the project area could lose approximately 21 tons/acre/year due to water erosion, during the proposed 30-month construction period. If the project applies effective sediment and erosion control BMPs during construction, soil loss could be approximately 1.12 tons/acre/year. The proposed project would have even lower rates of erosion during the operations phase of the project, because on-site storm water would be completely contained (SR 2009A).

Local soils are poorly consolidated and highly susceptible to wind erosion. After reviewing the applicant's analysis of projected soil loss rates, Staff performed its own analysis to estimate a worst-case scenario. Staff's predicted wind erosion rates are similarly high for the existing site condition and the construction phase. The estimated wind erosion rate for these phases is 315 tons/acre/year and 342 tons/acre/year, respectively.

The applicant proposes regular applications of dust palliatives and water that would reduce wind erosion. Reduced wind erosion would also result in reduced mirror damage due to sediment abrasion. If utilized during construction, regular water applications could reduce soil losses to 264 tons/acre/year. During operations, the proposed project expects to reduce wind erosion to 13 ton/acre/year (USDA 2010). Staff believes these BMP's would be sufficient to mitigate potential impacts from wind erosion.

SOIL & WATER Table 4
Soil Loss Estimates Due to Wind Erosion

Activity	Soil Loss, No BMPs (tons/acre/year)	Soil Loss, With BMPs (tons/acre/year)
Undisturbed (current condition)	315	-
Construction	342	264
Operations	342	13

Notes:

1. Estimates generated using USDA application WEPS 1.0
2. Estimates for "Soil Loss, With BMPs" assume water or other dust suppressant

A draft project grading plan and Storm Water Pollution Prevention Plan (SWPPP) was prepared by the applicant that includes Best Management Practices (BMPs) for wind and water erosion control during project construction. Though a SWPPP would not be applicable to the proposed project, it contains the necessary element of a Drainage, Erosion, and Sediment Control Plan (DESCP). All elements of the originally proposed SWPPP are contained in the revised DESCP submitted to staff in response to Data Request 121 and docketed 4-27-10 (CH2MHill 2010f). The implementation of appropriate control measures described in this plan would help conserve soil resources, maintain water quality, prevent accelerated soil loss, and protect air quality. The erosion and sedimentation control measures include applying water or soil binders to the roads in active construction and laydown areas; controlling speed on unpaved surfaces; installing stabilized entrances/exits; use of earthen berms, silt fences, or fiber rolls to control sedimentation; and preserving existing vegetation. During grading work, soil

would also be stabilized by maintaining sufficient water content to make it resistant to weathering and erosion by wind and water.

To reduce the impact of these development activities on infiltration, runoff, and erosion, the applicant proposes to implement BMPs to reduce the impact of development to less than significant. The goal of the applicant's proposed BMP implementation plan is to maintain the functions of the soil system while minimizing the risk of accelerated erosion and increased storm water runoff. Specific BMPs will be described in the applicant's final DESCP and required in Condition of Certification **SOIL&WATER-1**. The DESCP would include the applicant's construction phase and operations phase storm water quality protection measures. Staff worked with the State Water Resources Control Board (SWRCB), to ensure that Condition of Certification **SOIL&WATER-1** contains measures necessary to effectively protect the waters of the State. **SOIL&WATER-1** would require the Applicant to submit the final DESCP to the SWRCB for review and comment.

Transmission line construction would result in soil disturbance by vehicles and other equipment during installation. Use of construction BMPs in these areas is expected to control soil loss during construction and to mitigate potential impacts to air and downstream properties and resources. Soil erosion and loss of top-soil due to project activities could be substantial and would need to be mitigated. The proposed erosion and sedimentation control measures include: preserving the existing vegetation to the extent possible; wetting or using soil binders or weighting agents active construction and laydown areas; controlling speed on unpaved surfaces; and placing gravel in entrance ways. Staff recommends the development and implementation of specific BMPs to address transmission line construction within the Rice Valley. A DESCP prepared in accordance with Condition of Certification **SOIL&WATER-1** would ensure adequate BMPs are in place to mitigate otherwise undue erosion and loss of soil from transmission line construction activities..

Project Water Supply

Staff has analyzed the project's proposed groundwater use to determine if it would cause substantial depletion or degradation of local or regional groundwater quality and supply. Water for the proposed construction and operation phases of the project would be drawn from two onsite wells. One well is currently installed, another would be drilled early in the construction phase. The currently installed well, Rice 2, produces water representative of the proposed project supply. Groundwater will be processed through pretreatment and purified for use as boiler makeup water and for heliostat washing. Groundwater will also be used to a lesser extent for hydro-testing of the liquid salt system, fire suppression supply, and for domestic and sanitary uses. During plant operation, potable water would be supplied by onsite well water. Potable water would be used for drinking and sanitary uses. The estimated annual potable water demand during plant operation would be approximately 3 acre-feet or less. Groundwater from onsite wells would also be used to meet the project's construction water demands. Construction of the proposed project is expected to take 30 months. Water use during the grading phase of construction is supposed to be approximately 35 AF per month, while use during the remainder of the construction period would be approximately 24 AF per month. This equates to a rate of approximately 637 acre-feet per year (AFY) during

the first 10 months of construction and about 253 AFY during the remainder of the construction period. **Soil & Water Table 5** below presents a summary of the rate of water use during construction.

SOIL & WATER Table 5
Estimated Daily and Annual Construction Water Demands

Project Phase	Average Annual Construction Water Demand (AFY)	Water Supply Source
Months 0 - 12	420	Onsite Groundwater Wells
Months 13 - 30	240	

Source: (SR 2009a).

Note: Additional water could be used during construction for hydrostatic testing of the proposed project's piping.

The project also proposes to use groundwater during plant operations. A maximum consumptive use has been estimated at approximately 150 AFY, while the average use is expected to be approximately 118 AFY. Groundwater would be pumped at this rate for the 30-year life of the project and used for steam-cycle makeup, heliostat washing, liquid salt system testing during commissioning, boiler makeup, and for domestic uses. **Soil & Water Table 6** below summarizes the volume of water the project proposes to use for all power plant process and potable water needs during the operational life of the project (SR 2009A).

SOIL & WATER Table 6
Estimated Annual Operational Water Demands

Water Use	Water Source	Approximate Annual Use (AF)
Heliostat washing	Groundwater Wells	31
Steam cycle makeup	Groundwater Wells	31
Potable water	Groundwater Wells	3
WSAC, other service	Groundwater Wells	38
Margin	Groundwater Wells	15
Avg. Annual Consumption	--	118

Source: (SR 2009a).

Note: Based on 3,286 hours of operation per year.

Drinking Water Supply

The RSEP will provide drinking water for its employees during both construction and operation. Well water would need to be treated to meet the California Safe Drinking Water Act requirements, including those contained in Title 17 and Title 22 of the California Code of Regulations (CCR).

The RSEP would qualify as a Public Supply System by serving more than 25 people for more than 60 days. The RSEP is expected to employ 47 full-time employees during operations and many more during construction. The facility would also qualify as a nontransient noncommunity water system, serving 25 persons for over 6 months per year.

Senate Bill 1307 passed in 1997, which enabled California to implement the provisions of the federal Safe Drinking Water Act. The California Department of Public Health administers the state's authority. The California Department of Public Health has authority to delegate regulatory authority, over public water supplies serving 200 or fewer connections, to a local health officer authorized by the board of supervisors. The Riverside County Department of Environmental Health regulates all such projects in Riverside County, including the RSEP.

Staff recommends Condition of Certification **SOIL&WATER-9**, which would require the applicant to obtain a permit to operate a non-transient, non-community water system with the County of Riverside at least sixty (60) days prior to commencement of construction at the site. This condition would ensure that the applicant meets all provisions of Title 22, Section 3 to provide a suitable domestic water supply.

Impacts to Wells

Analysis of potential changes in groundwater levels from project pumping was necessary in order to evaluate whether there would be any impacts to other groundwater wells. Drawdown or a decrease in groundwater levels due to groundwater pumping can result in significant impacts when the pumping results in lower groundwater levels in nearby wells. These impacts can be both short- and long-term. Interference or drawdown can result in increased pumping lifts and declines in well productivity. Mitigation of these impacts could require costly modifications including the cost of lowering pumps, the cost of deepening a well, and well redevelopment costs. Substantial increases in pumping lift can also cause substantial increases in energy costs.

The magnitude of groundwater drawdown impact is controlled by five factors: (1) the rate of pumping; (2) the duration of pumping; (3) the depth of the well screens (water-intake depth of well); (4) aquifer parameters; and (5) aquifer boundary conditions. Aquifer parameters, such as specific yield and hydraulic conductivity, are controlled by layering and thickness of the water bearing materials such as gravel, sand, silt, and clay. The composition and flow characteristics of an aquifer can vary widely.

Rice Valley currently contains no known pumping. The Applicant provided a description of all wells within five miles of the project, but none are currently being pumped. The California DWR has very limited groundwater level data for the Rice Basin. No reliable record of water levels exists for the Rice Valley area. DWR data only spans a few years at a time. The most significant use of water within the basin may have been during the operation of the Rice Army Airfield. Staff was unable to determine the extent of pumping

during base operation. Many of the wells were completed prior to the construction of the airfield and have since collapsed. Groundwater extractions were estimated at 1 AFY in 1952.

The applicant ran a model to determine the drawdown in groundwater levels resulting from their activities. One of the fundamental assumptions made by the applicant to run the simulation model was that the aquitard separating the surface and deep aquifers terminates at the mountain fronts and that all the recharge from the mountain fronts, goes directly to the lower aquifer. Based on limited data from adjacent groundwater basins and regional geologic information, staff believes that this is an inaccurate representation of the geology of that aquifer and the adjacent aquifers. If the aquitard is not present by the mountain fronts that means that the upper and lower aquifers would be connected and that the potentiometric head in the lower aquifer would be about the same as the water table elevation in the upper aquifer. However, the limited data about static water elevation in the lower aquifer in applicant's well Rice #2 showed that the static elevation in the lower confined aquifer was about 90 feet lower than the water table elevation in the unconfined upper aquifer. The fact that there is such a great difference between the potentiometric head in the lower aquifer and the water table elevation in the upper aquifer suggests that the two aquifers are disconnected. Also, as discussed below in further detail, the geology of the area suggests that it is more likely that the aquitard extends along the mountain fronts, suggesting that the mountain front recharge in fact goes to the upper aquifer, not the lower one.

The assumption made by the applicant, that recharge from the mountain fronts feeds into the confined aquifer, is not a conservative one, and would result in underestimation of well drawdown. Staff performed computations using the Theis equation similar to what the applicant used to estimate drawdown caused by the pumping well. The Theis equation is a mathematical solution for calculating drawdown from two-dimensional radial flow to a point source in an infinite, homogeneous aquifer. However, staff removed the affects of the image wells that were used by the applicant to model recharge of the lower aquifer and estimated drawdowns from project pumping that are roughly double the applicant's estimates (approximately 3.53 ft vs. about 1.8 ft).

Staff was unable to identify any wells within the Rice Valley that were being used for beneficial purposes. As a result, the limited data available for characterization of the aquifer system in Rice Valley indicate the drawdown predicted would not have a significant impact on other groundwater users in the basin. Although the lack of any other current groundwater users in the basin indicate there is no potential for significant impacts due to lower groundwater levels, staff believes that given the limited data available for analysis of groundwater impacts it is important to protect limited and precious desert groundwater resources for further and future beneficial uses. Staff believes the applicant should be required to comply with Condition of Certification **SOIL&WATER -6**. This condition would require the applicant to monitor groundwater levels and evaluate whether there is any significant change in levels due to project pumping as predicted by the model and whether there would be affects to future users.

Basin Balance

Estimating groundwater recharge is critical to estimating the balance of groundwater available for development in a given basin without causing significant impacts to basin

storage. **Soil and Water Table 7** presents a summary of estimates of groundwater recharge in the Rice Valley. The estimates of recharge vary due to assumptions about the combined hydrologic and geographic constraints.

SOIL & WATER Table 7
Groundwater Recharge Estimates Summary

Method	Estimate Basis	Source	Estimated Groundwater Recharge (AFY)
Modified Hely and Peck ¹	Rainfall	Applicant	1,160
Unknown	Underflow*	DWR	500
Regional Data/Percentage ²	Rainfall	CEC Staff	468
Modified DWR ³	Underflow*	Applicant	394
Modified Maxey-Eakin ⁴	Rainfall	CEC Staff	159

Sources: 1. AFC, 2010; 2. Bedinger et al., 1989; 3. (SR 2009a); 4. Donovan and Katzer, 2000, Metzger et al., 1973.

*Documentation of estimation method is unavailable.

The United States Geological Survey (USGS) and DWR performed the most significant research within Rice Valley. A commonly referenced work in these historic studies was a comprehensive study of the Mojave and Colorado Desert water resources by David Thompson, published in 1929. Later studies by the USGS and DWR frequently cite this study as one of the few in the region. The Rice Valley is still poorly understood geologically. Limited information is available about the boundary conditions of the basin, making an assessment of underflow in and out of the basin difficult. DWR classifies the basin as having a poorly understood groundwater budget, "Type C" (DWR 2004, Bedinger et al.1989).

All recharge estimates for the Rice Valley assume steady-state-equilibrium within the groundwater basin. This assumes that basin inflows and outflows are in equilibrium. This condition is supported by steady groundwater levels recorded by the Department of Water Resources (DWR) between 1962 and 1983 (DWR 2004). This assumption makes it possible to determine basin recharge by quantifying basin inflows or outflows. It is therefore not necessary to differentiate between basin inflows from underflow, versus inflows from mountain-front recharge. Methods summarized in **Soil and Water Table 7** estimate recharge based on either an inflow or outflow condition.

Discharge of underflow can be estimated using equation $Q = (T)(I)(W)$, where Q is the discharge volume, T is transmissivity, I is water level gradient across basin boundaries, and W is the width of the boundary gap at the water table (Freiwald 1983). If a reasonable estimate of the basin's boundaries could be made, an estimate of underflow-outflow would also be a good estimate of basin inflows. Though some geophysical basin boundary information is available for the Rice Valley (Bedinger 1989), this data is not useful for constraining outflow conditions. Not only are there no cross-sections directly across or parallel to basin boundaries, but well data from either side of the boundary gaps are limited. The water levels most pertinent to assessing gradient across the basin boundaries date back as far as 1917 (DWR 1954), and were taken from wells that have since collapsed.

The Rice Valley is unlikely to have any significant outflows, other than through underflow. Because the Rice Valley basin contains no significant pumpers (1 AFY in 1952) (DWR 2004), and the central playa is dry and does not appear to be hydrologically connected to the groundwater table (SR 2009A), extraction and evapotranspiration are considered to be insignificant sources of outflow for the purposes of this assessment.

Following a comprehensive review of available sources, Staff assessed the two most reasonable locations for basin outflows, through the northeast Grommet gap, and through the southeast Big Wash gap (Thompson 1929). The National Research Council also considers these pathways possible, following an examination of connectivity between Ward Valley and the Colorado River (NRC 1995). Both gaps contain alluvial fill to a surface elevation of approximately 950 feet above mean sea level (amsl). A USGS cross-section across the SE gap indicates a possible obstruction to outflow due to a metamorphic basement. The same report indicates that groundwater in the Rice Valley moves primarily through the SE gap (Bedinger 1989). Staff is unable to reconcile this potentially conflicting information. With so little information available about possible underflow-outflow at this gap, Staff is unable to draw conclusions about outflow at the SE gap. No additional information was recovered in Staff's literature review regarding outflow quantities at this gap (Thompson 1929; DWR 1954, 1963; Hely and Peck 1969; Metzger et al. 1973; Bedinger 1989; Owen-Joyce and Wilson 1994; Owen-Joyce et al. 2000; Wiele et al. 2008; Leake et al. 2008).

The NE gap appears to contain alluvial fill as indicated in various USGS and DWR publications (DWR 1954, 1963; Thompson 1929; Bedinger 1989). Its alluvial depth is unknown. Cross-sections across this boundary are not available. The width of the basin gap, at the water table, is not known. After a review of maps and surface topography, Staff estimates the width of the NE gap at the water table to be between two to six miles (Wiele et al. 2008).

The well data necessary to determine a gradient across each of these gaps is limited. Thompson, 1929, indicated that a gradient of up to 10 feet per mile could be possible from Rice to Vidal through the NE gap. USGS well data suggests the gradient across the SE gap could be as great as 16 feet per mile towards the Colorado River. These gradients would only be representative of the valley's boundary conditions if subsurface conditions were continuous and un-obstructed by faulting, etc. In the absence of comprehensive subsurface geology and water level data across the gaps, Staff is reluctant to assign a gradient for underflow-outflow from Rice Valley (Thompson 1929; DWR 1954, 1963; Hely and Peck 1969; Metzger et al. 1973; Bedinger 1989; Owen-Joyce and Wilson 1994; Owen-Joyce et al. 2000; Wiele et al. 2008; Leake et al. 2008).

A representative transmissivity across each boundary is also very difficult to determine. The Applicant's groundwater investigation indicates the transmissivities in the upper and lower aquifer are about 96 ft²/day and 5,000 ft²/day, respectfully. The difference in transmissivities is very large, which makes any determination of an underflow-outflow calculation subject to a large error. Staff's review of literature did not reveal any additional representative transmissivities within Rice Valley. Historic values documented in USGS and DWR documents are very limited (Thompson 1929; DWR 1954, 1963; Hely and Peck 1969; Metzger et al. 1973; Bedinger 1989; Owen-Joyce and Wilson

1994; Owen-Joyce et al. 2000; Wiele et al. 2008; Leake et al. 2008). The Applicant's Groundwater Investigation was most useful in providing an expected transmissivity value for the upper and lower aquifer, but Staff is still reluctant to assume a rate of ground water transmission across the basin's boundaries.

Staff chose to estimate groundwater recharge in the Rice Valley based on available studies of recharge in the Sonoran Desert Region (Bedinger 1989) and the Basin and Range geologic province (Maxey and Eakin 1949). The Sonoran Desert is widely considered to be less dry than the Mojave Desert and other areas west of 116 degrees latitude. Staff modeled rates of recharge based on empirical data derived from basin studies of similar climatic regions including basins north of Rice in Nevada and other basins within the Sonoran Desert (Bedinger 1989). Staff chose two methods for estimating recharge, both with very conservative assumptions. Staff's first method is the "Modified Maxey-Eakin" method. Staff's second method is the "Percentage" method. It is important to note however that historical documentation does not show the presence of a lower alluvial aquifer as discovered in the applicant's groundwater resources investigation. All historical data describes what the applicant refers to as the upper alluvial aquifer. Staff still decided to investigate recharge to the upper alluvial aquifer like previous studies of the region. The recharge of the upper alluvial aquifer may still provide some guidance on the general availability of water in the region.

Staff utilized precipitation data provided by the PRISM (PRISM 2006) precipitation model, a United States Department of Agriculture geospatial dataset. The PRISM model enabled Staff to bracket average annual precipitation zones for the years 1971-2000, within the Rice hydrologic unit. (Please see **Soil & Water Figure 2 – Precipitation Within the Watershed Recharging Rice Valley Groundwater Basin.**) The Applicant provided data derived from Hely and Peck, 1964, which was also considered by staff, but staff did not believe it was adequate for providing a worst-case estimate. Hely and Peck isohyets estimate a greater average annual rainfall rate than those provided by PRISM.

Staff's Modified Maxey-Eakin method uses a methodology utilized by Donovan and Katzer, 2000. Donovan and Katzer's method extrapolates recharge estimates for areas with very low annual precipitation, between 0 and 8 inches. Similarly, Avon and Durbin's 1994 study revealed a recharge rate of 1.1% in 0-8 inch annual rainfall zones (Avon and Durbin, 1994; Donovan and Katzer, 2000). Like Donovan and Katzer, staff's method applies a recharge percentage of about 0.01% to the 1-inch annual precipitation zone, 0.1% to the 3-inch zone, and 1.0% to the 6-inch zone. Staff's calculations using this method, are summarized in **SOIL & WATER Table 8**. Staff used the lower end of the range of data available for each region. This method agrees with the general principle that recharge occurs due to run-off from mountain slopes. The five, and seven-inch mountain zones are most likely to result in recharge along the mountain-front, where concentrated flow reaches the alluvial basin. The resulting estimate of 159 AFY is staff's lower bound estimate for possible recharge to Rice Valley.

Staff also estimated recharge based on conclusions of Metzinger, 1989, about recharge in the Sonoran Desert. Metzinger concluded that within the Sonoran Desert, recharge from mountain peaks is likely less than 6 mm and that recharge in the basins is likely less than 2 mm. This agrees with Staff's investigation of available literature and

documentation on the region (Thompson, 1929; DWR, 1954, 1963; Hely and Peck, 1969; Metzger et al., 1973; Bedinger, 1989; Owen-Joyce and Wilson, 1994; Owen-Joyce et al., 2000; Wiele et al., 2008; Leake et al., 2008). Staff also agrees with the conclusion that three times the volume of rain falling in the mountains is likely to become recharge, when compared with that falling in the basin valley floor. A study summarized by Metzinger, concluded that Basin and Range recharge varies between 0.7% and 7%. Staff applied the lower bound of this range, 0.7%, to the basin of Rice Valley, equivalent to 0.021 inches of recharge per year. An application of the 3:1 ratio for mountain to basin provides a rate of 0.063 inches per year going to recharge from the mountain peaks. The resulting recharge volume ratio is approximately 1.5 mm to 0.5mm, well within the range suggested by Metzinger of less than 6 mm to less than 2 mm. The resulting recharge using this method is 468 AFY. Staff's estimates are contained in **SOIL & WATER Table 9**.

Staff believes that both applicant-determined and staff-determined recharge estimates summarized in **SOIL & WATER Table 7** are reasonable and well supported by opportunities for underflow-outflow at the NE and SE basin boundary. Staff attempted to evaluate a worst-case scenario for groundwater recharge, by assuming that the lower bound averages for annual precipitation in each zone and by assuming minimal percentage of precipitation goes to recharge of the confined aquifer.

As was mentioned above, the applicant assumed that recharge from the mountain fronts feeds the confined aquifer, which is not a conservative assumption as it results in smaller drawdown in the aquifer. The only way the recharge from the mountain front can go into the lower aquifer is if the lower aquifer discharge point is lower than the standing water elevation in well Rice #2, and that would imply that the aquitard goes upward in the northeast direction such that the two aquifers remain separated. However, the water elevation in the Vidal aquifer, which is the likely receiver of any underflow outflow from Rice Valley is higher than the potentiometric head in Rice Valley's confined aquifer. Therefore, with the very limited geologic information at hand, and given the potentiometric head in the confined aquifer which is lower than the water table in the upper aquifer, staff believes that the only plausible explanation is that the bedrock underlying the confined aquifer slopes upward toward the boundary with Vidal Valley and intersects with the aquitard above, thereby terminating the confined aquifer at that boundary. Following this logic, staff further believes that the mountain front recharge goes into the surface aquifer and subsequently discharges into Vidal Valley, which is a very likely scenario given the fact that the water elevation in the Vidal Valley aquifer is slightly lower than the water table elevation in the upper Rice Valley aquifer.

In light of the foregoing, the only possible source for any water that would be extracted is aquifer storage. However, given the total volume pumped by the plant for the lifetime of the project of about 5,250 AF and the lowest estimates that could be found of the total storage volume of the Rice Aquifer, the applicant's use would not exceed 3% of total basin storage and would not cause an adverse impact on the stored volume of the aquifer.

Due to lack of information available about Rice Valley and the range of reasonable estimates for recharge to groundwater, staff proposes to limit groundwater use resulting from the proposed project. To ensure that the RSEP's water use is consistent with the

volume of groundwater use analyzed by staff, Condition of Certification **SOIL&WATER-5** would limit construction water use to average 420 AFY and operation water use to 150 AFY. Staff also points out that there are variations in the natural environment that could affect the results predicted by a groundwater model. To ensure that the predictive results of the groundwater model are representative of site conditions, staff recommends Condition of Certification **SOIL&WATER-6** which would require the project to establish a groundwater monitoring network and monitor and document groundwater use, groundwater levels, and groundwater level trends. This condition of certification would provide a baseline of groundwater elevations and groundwater elevation trend to identify potential future changes to groundwater elevations owing to the project's pumping.

**SOIL & WATER Table 8
Modified Maxey-Eakin Method – Recharge Estimate**

Area	Area Represented by the Precipitation Zone (acres)	Average Annual Precipitation (inches)	Recharge Efficiency Factor	Estimated Actual Precipitation Recharge (acre-feet)
1	2,995	7.00	0.0114	20
2	19,589	5.00	0.0045	37
3	154,947	3.00	0.0011	43
4	2,235	5.00	0.0045	4
5	2,110	5.00	0.0045	4
6	14	5.00	0.0045	0
7	14,777	5.00	0.0045	28
8	12,891	5.00	0.0045	24
Total	209,558		Total Recharge	159

**SOIL & WATER Table 9
Regional Data/Percentage Method – Recharge Estimate**

Area	Area Represented by the Precipitation Zone (acres)	Average Annual Precipitation (inches)	Recharge (inches)	Estimated Actual Precipitation Recharge (acre-feet)	% Precip.
1	2,995	7.00	0.0630	16	0.009
2	19,589	5.00	0.0420	69	0.008
3	154,947	3.00	0.0210	271	0.007
4	2,234	5.00	0.0420	8	0.008
5	2,110	5.00	0.0420	7	0.008
6	14	5.00	0.0420	0	0.008

7	14,777	5.00	0.0420	52	0.008
8	12,891	5.00	0.0420	45	0.008
Total	209,557	-		468	

**SOIL & WATER Table 10
Rice Valley Groundwater Basin Balance**

Basin Inflows and Outflows	Pre-Development Basin Balance	Post Development Basin Balance	
		Construction	Operation
Inflows (AFY) Recharge ¹	159 to 468	159 to 468	159 to 468
Outflows (construction, AFY) Groundwater Pumping Earth Moving Dust Control Backfill 25% Contingency	0 0 0 0	0 - 350 170 24 59	- - - -
Outflows (operation, AFY) Groundwater Pumping Heliostat Wash Steam cycle makeup Potable water WSAC and other service Contingency	0 0 0 0 0	- - - - -	31 31 3 38 15
Total Groundwater Pumping (AFY, average)	0	300 ²	118 ²
Basin Balance (AFY)	159 to 468	- 141 to 168	41 to 350

Notes: 1. Recharge estimates encompass a range determined by Staff.
2. All pumping volumes are from the AFC.

Groundwater Quality

Water quality can be impacted by migration of low quality or contaminated water towards pumping wells and by sustained pumping of the groundwater basin. By providing a measure of water salinity, total dissolved solids (TDS) is a primary indicator of the natural quality of groundwater and is a measure of acceptance for the use of groundwater as a drinking water source. Water with TDS concentrations greater than 3,000 mg/l is generally considered undrinkable. In California, the recommended Secondary MCL or 'Consumer Acceptance Contaminant Level' for TDS is 500 mg/l, and upper and short term ranges can be 1,000 and 1,500 mg/l, respectively (DWR 2004).

The natural groundwater quality in the Rice Valley groundwater basin varies widely, but can be characterized as sodium chloride-sulfate or sodium chloride-bicarbonate (DWR 2004). Between July 2008 and August 2009, the applicant conducted a site-specific investigation of two wells, one screened in the upper alluvial aquifer, Rice #1, and the other in the lower confined aquifer, Rice #2. Based on the groundwater investigation, TDS in the project vicinity ranges from 662 to 3,540 milligrams per liter (mg/l). A three-day pump test of Rice #2, produced water ranging from 1,220 mg/L TDS at the beginning of the test to 885 mg/L TDS at the end of the test. The proposed project would likely draw water of a similar quality during both construction and operation. Based on the pump tests described in the AFC, the project would likely draw water from the lower alluvial aquifer of 885 mg/L TDS, or lower throughout the operational life of the project. A summary of the expected water quality from onsite production wells is contained in **SOIL & WATER Table 2**.

The upper alluvial aquifer contains water with TDS of approximately 3,000 mg/L as indicated from samples of Rice #1. The lower alluvial aquifer contains water with TDS of approximately 900 mg/L as indicated from pump tests of Rice #2. As discussed above the two units appear to be separated by a low permeability, confining layer that limits communication between the two aquifers based on the difference in hydraulic head. The standing water in Rice #1 is approximately 90 feet above the confined water in Rice #2. The contrast in water quality between the two aquifers may also suggest there is limited communication between the aquifers. Staff evaluated the potential increase in vertical gradient created by project pumping that may induce flow from the upper alluvial unit into the lower, through the confining zone. Staff calculated the increase in vertical gradient created by project pumping. The pumping would create an increased downward gradient from the upper alluvium towards the lower confined aquifer. The area across which the pumping could induce flow is equal to the area of the simulated cone of depression. Staff calculated the annual volume of flow that could be induced from the confining unit into the lower alluvial aquifer. Staff concluded that the confining unit is sufficiently thick, 150-300 feet, and of low enough hydraulic conductivity that induced flow of lesser quality water into the lower alluvial unit is negligible in volume. Assuming the aquatard has a storativity less than that of the lower aquifer (0.0001 assumed by applicant), the volume induced through the confining layer would be less than 5 AF/y. Staff computed the volume of stored water in the lower confined aquifer, within the Rice Valley groundwater basin and got a number very similar to DWR's

2,280,000 AF. Therefore, the proportion of water flow induced from the upper confining layer even if high in TDS would not cause significant degradation to the lower aquifer. In addition, as discussed above staff has shown that the assumptions about recharge to the lower aquifer are appropriate and drawdown could be significantly great, up to double those predicted by the applicant's model. These increases in drawdown could also change gradients in the basin and result in drawdown affects that cross basin boundaries or have a more widespread regional effect on the confined aquifer. Staff's review of the applicant's modeling indicates that drawdown from the proposed pumping could be much greater than that proposed by the applicant. Given staff's interpretation that there is likely a hydrogeologic connection of the confined aquifer with groundwater in the adjacent Ward Valley, project pumping could induce or increase flow from the Ward Valley. Staff also has not seen any other historical data on water quality for the aquifer system at the site other than what the applicant has provided. It is unknown how extensive the confined and overlying unconfined aquifer system is beyond the site wells because there is no subsurface data available. Project pumping could induce flow of an unknown quality from an unknown source outside the Rice groundwater basin. Due to the unknown nature and extent of the regional aquifer system, the unknown extent of the confining layer, the unknown distribution of water quality, the significantly higher drawdowns predicted by staff due to project pumping, and limited pumping data from adjacent groundwater basins, staff believes the applicant should be required to monitor the water quality to determine if there are any changes or potential impacts to future users of groundwater in Rice Valley or its adjacent basins. To further evaluate basin water quality and ensure no impacts to the basin water quality, Condition of Certification **SOIL&WATER-6** requires that the project monitor water quality in the on-site extraction wells, and collect water samples semi-annually and report the results annually to the Energy Commission.

Industrial Process Wastewater

The project proposes to use three five (5)-acre, double-lined evaporation ponds to manage the industrial wastewaters generated by the power block. Each brine pond would have an average design depth of at least six feet to allow for one foot of sludge build up, three feet of operational depth, and two feet of freeboard. The ponds would be constructed and lined as follows:

- a base layer consisting of either a geosynthetic clay liner (GCL) or 2 feet of onsite material with a hydraulic conductivity of less than 1×10^{-6} cm/sec;
- a secondary HDPE liner (minimum of 40 mil);
- a leak detection and removal system comprising a geonet and collection sump; and
- a primary 60 mil high density polyethylene (HDPE) liner at the surface of the ponds.

The wastewater to be discharged into the evaporation ponds is anticipated to be non-hazardous; however, it would contain pollutants which could exceed water quality objectives or affect the beneficial uses of ground water, if released. Therefore, the wastewater would be classified as a "designated waste." This classification would be consistent with CCR Title 27, Chapter 3, Subchapter 2, Article 2, Section 20210.

In California, discharges of wastes to land that may impact the beneficial uses of waters of the state, such as the proposed use of evaporation ponds for disposal of designated waste, would be regulated by the State and Regional Water Boards. The Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) has jurisdiction over the area where the RSEP would be located. Normally the CRBRWQCB would evaluate the proposed discharge and issue Waste Discharge Requirements (WDRs) setting forth the conditions under which the discharge would be allowed. However, as noted previously, the Warren-Alquist Act (Pub. Resources Code § 25500) identifies the Energy Commission's power plant siting certification to be "in lieu of" any other state, local, and regional permits, including non-federal WDRs adopted by the CRBRWQCB.

In light of the in-lieu permit provisions, staff coordinated environmental review of RSEP project application materials (including a draft Report of Waste Discharge) with the State Water Board and CRBRWQCB. Water Board staff reviewed the project ROWD and the proposed waste discharge for compliance with waste management and water quality protection standards, and provided to the Energy Commission draft waste discharge requirements for the project evaporation ponds. These requirements are included in this staff assessment as Appendices B and C.

Appendix B presents the WDRs for the evaporation ponds, including information describing the environment and waters potentially impacted by the discharge, the anticipated waste streams, the proposed design of the ponds, and the discharge specifications, prohibitions, and provisions deemed necessary by the CRBRWQCB. The WDRs include requirements for implementation of a monitoring and reporting program (including development of a groundwater monitoring network). They also include a requirement for establishment of a bond or other financial assurance mechanism to be used by the Energy Commission for cleanup and remediation of any wastewater releases in the event that the project owner fails to perform that duty for whatever reason. Appendix C presents the required Monitoring and Reporting Program for the evaporation ponds. It establishes how and when the project would monitor the discharge and operation of the ponds to both document and prevent unauthorized releases of wastewater.

Staff concurs with the requirements set forth in Appendices B and C and, pursuant to the in-lieu permitting function of the Energy Commission's certification, proposes adoption of Condition of Certification **SOIL & WATER-2** requiring project compliance with the provisions of Appendices B and C. The requirements provided in Appendices B and C establish a comprehensive set of standards, specifications, and prohibitions that are designed to protect the waters of the state from any potential adverse impacts associated with onsite management of project wastewaters.

Domestic/Sanitary Wastewater

As noted previously, the RSEP would utilize two separate permanent septic systems (septic tanks and leach fields) to collect and treat all sanitary and domestic wastewater from sinks, toilets, showers, and kitchens located onsite. One system would be located

near the facility's main entrance and would service the administration building and workshop. The other system would be located near the control and operations building within the facility power block.

The use of septic tanks and leach fields for onsite treatment and disposal of domestic wastes is an established practice. However, improper construction and operation of these systems may adversely impact nearby surface and ground waters. To ensure protection of human health and the environment from improper disposal of sewage, Riverside County adopted Ordinance 650 (Chapter 8.124 of the Riverside County Code) establishing specific requirements for the discharge of sewage within the unincorporated areas of the County. Included in the requirements are soil percolation standards; minimum separation/set back distances to prevent impacts to groundwater and nearby water wells; and septic tank and leach field design, sizing and construction standards to ensure adequate capacity and proper treatment and disposal of the wastewaters. The County Code also requires persons constructing septic systems to apply for a permit for the construction and operation of the system.

In response to staff workshop inquiries, the applicant provided a Conceptual Septic System Design and Layout Memorandum for the RSEP (**CH2MHill 2010e**). While adjustments may be made to locations, sizing and soil substrate during final design of the system, the preliminary design and location plans provided are consistent with the established Riverside County Code requirements. The septic system to be located by the administration building would be sized to accommodate 66 fixtures, which would require use of a 2,750 gallon minimum volume septic tank. The second system to be located in the power block would be sized to accommodate 52 fixtures, which would require use of a 2,250 gallon septic tank. The applicant proposes to use the most conservative leach field design parameter of one square foot of leaching area per gallon of septic tank capacity. Therefore, the septic tank near the administration building would have a 2,750 square foot disposal field, and the power block system would have a 2,250 square foot disposal field. The County Code requires that septic systems be at least five feet above groundwater and eight feet above bedrock. Construction of the project septic systems would easily meet these criteria because the depth to groundwater in the project area is greater than 250 feet and the depth to bedrock is at least 800 feet. Given the site conditions and proposed design criteria for the RSEP, no significant adverse impacts to soil and water resources are anticipated from construction and operation of the project septic systems.

However, consistent with the CEC's in-lieu permit provisions, staff proposes adoption of Condition of Certification **SOIL&WATER-8** requiring compliance with the requirements of the County of Riverside Ordinance Code Title 8, Chapter 8.124 and the California Plumbing Code (California Code of Regulations Title 24, Part 5) for all project sanitary waste disposal facilities, such as septic systems and leach fields. Adoption of Condition of Certification **SOIL&WATER-8** would both ensure compliance with LORS and, through the protectiveness provided by the County regulatory standards, reduce potential impacts from project septic systems to a less than significant level.

Contaminated Soil and Groundwater

The applicant performed a Phase I and II Environmental Site Assessment (ESA) in 2009. The reports conclude that soils beneath the site are not significantly impacted with hazardous substances as a result of historical site activities.

Project Closure and Decommissioning

After the end of the project's useful life, it would be decommissioned as described in the AFC. The removal of the existing facility could cause substantial disturbance to soil and water resources and result in significant impacts. These impacts would be similar to impacts that could occur during construction.

To mitigate for any potential significant impacts associated with project closure, staff proposes **SOIL&WATER-10**, which would require the project owner to prepare a decommissioning plan that meets the requirements of the BLM. The plan would identify likely decommissioning scenarios and develop specific decommissioning plans for each scenario that will identify actions to be taken to avoid or mitigate long-term impacts related to water and wind erosion after decommissioning. Actions may include such measures as a decommissioning SWPPP, revegetation and restoration of disturbed areas, post-decommissioning maintenance, collection and disposal of project materials and chemicals, groundwater well abandonment, and access restrictions.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe No. 2 transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker Blythe 161 kV transmission line.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to

help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

Under the Reduced Acreage Alternative, the agencies would approve a facility with a 7.2% heliostat field reduction and not the 150 MW project that is proposed.

Setting and Existing Conditions

The setting for the Reduced Acreage Alternative is the same as for the proposed project except that the heliostat field would occupy 1,270 acres within the 1,370-acre footprint of the proposed project.

Assessment of Impacts and Discussion of Mitigation

The Reduced Acreage Alternative is unlikely to significantly change the impacts to soil and water resources or mitigation proposed by staff for Proposed Project.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. An existing SCE 161-kV transmission line traverses the alternative site. The boundaries of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

The North of Desert Center Alternative would require an approximately 4.6-mile transmission interconnection. The transmission interconnection would exit the site and proceed southeast for approximately 2.5 miles. The transmission line would then turn directly south for approximately 2.1 miles and enter the proposed Red Bluff Substation from the north.

The Desert Center Alternative is evaluated in this SA/DEIS because it would reduce impacts to cultural resources; the RSEP is located on the historic Rice Army Airfield. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

Setting and Existing Conditions

Soil and Water Resources

Soils in the North of Desert Center Alternative site include primarily Rositas and Carsitas series. Other soil series mapped for the North of Desert Center Alternative include Vaiva, Quilotosa, Hyder, Cipriano, and Cherioni (Soil Survey Staff 2009). These soils are generally formed in mixed alluvium and in sandy deposits blown from alluvium (CPUC 2006). Soil types include sandy to coarse sandy loam, fine sand, stony sand, very

gravelly coarse sand, and very stony coarse sand. Soils containing high percentages of fine sands and silt and that are low in density are generally the most erodible. These soil types generally coincide with soils such as young alluvium and other surficial deposits as within the alternative site (CPUC 2006). Approximately 3,000 acres of land on this alternative site would be disturbed by the construction.

The North of Desert Center Alternative site lies within the Chuckwalla Valley Groundwater Basin part of the Colorado River Hydrologic Region. The site is located on fallow agriculture land. A main wash crosses the northern section of the alternative site. This wash supports desert dry wash woodland and would be considered waters of the state under the jurisdiction of the CDFG and could potentially be considered waters of the U.S. under the jurisdiction of the ACOE. However, based on review of regional aerial photography, it does not appear that this wash is connected to any waters of the U.S. A focused delineation may be necessary to confirm that this is the case. Topography on the North of Desert Center Alternative site is relatively flat, with elevation ranging from approximately 500 to 700 feet above mean sea level, from the north to the south.

As with the proposed RSEP site, the North of Desert Center Alternative would use groundwater as the water supply.

Environmental Impacts

Soil Erosion Potential by Wind and Water. As discussed in the **Soils and Water** section of this SA/DEIS, construction activities can lead to adverse impacts to soil resources including increased soil erosion, soil compaction, loss of soil productivity, and disturbance of soils crucial for supporting vegetation and water-dependent habitats. Activities that expose and disturb the soil leave soil particles vulnerable to detachment by wind and water. Soil erosion results in the loss of topsoil and increased sediment loading to nearby receiving waters. Although access to the site would be from existing roads, construction of the solar fields would require substantial grading as in the proposed project. While the volume of earth movement required at the alternative site is unknown, the topography and slope of the North of Desert Center Alternative site are less severe than at the proposed RSEP site.

Being situated in a flat area downstream of a major desert wash, portions of the Desert Center Alternative would be subject to sediment deposition and flooding from large floods on crossing the site. This impact would primarily affect the project itself, but the adverse effect could be significant. It may not be possible to practically mitigate this impact except by mapping and avoiding the severe hazard areas, which would result in a smaller alternative.

As at the RSEP site, grading plans, a Storm Water Pollution Prevention Plan (SWPPP), and a Drainage Erosion and Sediment Control Plan (DESCP) could be required. Due to the flat terrain and existing disturbed condition of this site, the SWPPP and/or DESCP would likely be sufficient to mitigate soil erosion impacts to a level less than significant.

Project Water Supply. The North of Desert Center Alternative site would require the use of groundwater. It is unknown if there is sufficient groundwater available at the

North of Desert Center Alternative; however, the alternative site has supported irrigated agriculture in the past, primarily jojoba. The analysis of the applicants proposed water use at the RSEP site suggests that Colorado River water may be withdrawn from production wells over the life of the Project. At present, it is unclear when and if the US Bureau of Reclamation will promulgate regulations concerning the identifying users of Lower Colorado River water. The North of Desert Center Alternative conditions of certification would require that the Project owner assess the applicability of any regulations concerning use of Colorado River water.

Wastewater/Storm Water Quality. Storm water runoff from the site during construction and operation could have similar impacts as proposed for the proposed project. The site construction will require a SWPPP which will specify Best Management Practices (BMPs) to minimize or eliminate water contamination. Water quality impacts would likely not be significant.

Sanitary waste disposal would likely be through on-site facilities as for the proposed project. No significant adverse impact is anticipated.

Comparison to Proposed Project. The level terrain with minimal existing drainage ways on the North of Desert Center Alternative results no lessening of impacts to hydrology, water use and water quality, as compared with the proposed project. As with the RSEP, a finding by the U.S. Army Corps of Engineers of whether the ephemeral drainages on the North of Desert Center Alternative site are jurisdictional waters of the U.S. would be required. Without this determination, staff cannot determine whether the Project would comply with Section 404 of the Clean Water Act.

Assessment of Impacts and Discussion of Mitigation

The North of Desert Center Alternative is unlikely to change the impacts to soil and water resources or mitigation proposed by Staff for the Proposed Project.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe No. 2 transmission line at the same location as the proposed project transmission line. This alternative generation tie line would exit the proposed solar facility at the northeast corner and follow State Route 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.0 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe No. 2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 3**.

The SR 62/Rice Valley Road Generation Tie Line Alternative is evaluated in this SA/DEIS because it would:

1. Avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise.
2. Avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road. The proposed new vehicle access route would necessitate additional enforcement and maintenance to prevent unauthorized off-road vehicle access, propagation of new, unauthorized vehicle routes, and consequent habitat damage, soil erosion, and vehicle disturbance.

Setting and Existing Conditions

The SR 62/Rice Valley Road Generation Tie Line Alternative would not significantly change the setting or existing conditions previously described by Staff for the Proposed Project.

Assessment of Impacts and Discussion of Mitigation

The SR 62/Rice Valley Road Generation Tie Line Alternative is unlikely to change the impacts to soil and water resources or mitigation proposed by Staff for Proposed Project.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the impacts to soil or water resources from the proposed project would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACT ANALYSIS

Geographic Extent

If cumulative impacts to soil and water resources were to occur as a result of the proposed project, it would be either within the Rice Valley Groundwater Basin or within the Rice Valley Watershed or Sub-Watershed.

Existing Cumulative Conditions

There are currently no facilities or projects within the vicinity that significantly impact soil or water resources. The RSEP does not contribute significantly to the environmental condition of soil and water resources due to existing projects in the area.

Future Foreseeable Projects

No reasonable foreseeable project within the vicinity will cause an impact to soil or water resources. In combination with future foreseeable projects, RSEP would not cause a cumulative impact to soil and water resources in the area.

Overall Conclusion – Cumulative Impacts

No cumulative impacts to soil or water resources were identified by Staff.

COMPLIANCE WITH LORS

CLEAN WATER ACT

Staff has determined that the proposed project would satisfy the requirements of the SWQCB with the adoption of the following Conditions of Certification: 1) Development of the DESCP in accordance with **SOIL&WATER-1**; 2) Compliance with wastewater discharge requirements in accordance with **SOIL&WATER-2** and as specified in Appendix B and C. In addition, the applicant would be required to comply with California Department of Fish and Game's Streambed Alteration Agreement requirements in accordance with Conditions of Certification for Biological Resources.

SWRCB RESOLUTION 75-58, ENERGY COMMISSION'S 2003 INTEGRATED ENERGY POLICY REPORT, AND THE WARREN-ALQUIST ACT

The California Energy Commission, under legislative mandate specified in the 2003 *Integrated Energy Policy Report (IEPR)*, would approve the use of fresh water for cooling purposes by power plants it licenses only where alternative water supply sources and alternative cooling technologies are shown to be environmentally undesirable or economically unsound. SWRCB Resolution 75-78 states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. . The Warren-Alquist Act promotes all feasible means of water conservation. The proposed power plant includes a steam turbine using an air-cooled condenser, which achieves maximum water conservation associated with cooling. Therefore, the proposed project complies

with the requirements of SWRCB Resolution 75-78, the Energy Commission's 2003 Integrated Energy Policy Report (IEPR), and the Warren-Alquist Act.

NOTEWORTHY PUBLIC BENEFITS

Staff has not identified any noteworthy public benefits of the proposed project that are associated with soil and water resources.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No comments were received for the RSEP.

MITIGATION MEASURES/PROPOSED CONDITIONS OF CERTIFICATION

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and to assure conformance with LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for U.S. Bureau of Reclamation's (BLM's) and Western Area Power Administration's (Western's) analysis that can be considered in their Records of Decision.

DRAINAGE EROSION AND SEDIMENTATION CONTROL PLAN

SOIL&WATER-1: Prior to site mobilization, the project owner shall obtain the CPM's approval for a site specific DESCOP that ensures protection of water quality and soil resources of the project site and all linear facilities for both the construction and operation phases of the project. This plan shall address appropriate methods and actions, both temporary and permanent, for the protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, and identify all monitoring and maintenance activities. The project owner shall complete all engineering plans, reports, and documents necessary for the CPM to conduct a review of the proposed project and provide a written evaluation as to whether the proposed grading, drainage improvements, and flood management activities comply with all requirements presented herein. The plan shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1** and shall contain the following elements:

Vicinity Map: A map shall be provided indicating the location of all project elements with depictions of all major geographic features to include watercourses, washes, irrigation and drainage canals, major utilities, and sensitive areas.

Site Delineation: The site and all project elements shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, underground utilities, roads, and drainage facilities. Adjacent property owners shall be identified on the plan maps. All maps shall be presented at a legible scale

Drainage: The DESCPC shall include the following elements:

- a. Topography. Topography for off-site areas to define the existing upstream tributary areas to the site and downstream to provide enough definition to map the existing storm water flow and flood hazard. Spot elevations shall be required where relatively flat conditions exist.
- b. Proposed Grade. Proposed grade contours shall be shown at a scale appropriate for delineation of on-site ephemeral washes, drainage ditches, and tie-ins to the existing topography.
- c. Hydrology. Existing and proposed hydrologic calculations for on-site areas and off-site areas that drain to the site; include maps showing the drainage area boundaries and sizes in acres, topography and typical overland flow directions, and show all existing, interim, and proposed drainage infrastructure and their intended direction of flow.
- d. Hydraulics. Provide hydraulic calculations to support the selection and sizing of the on-site drainage network, diversion facilities and BMPs.

Watercourses and Critical Areas: The DESCPC shall show the location of all on-site and nearby watercourses including washes, irrigation and drainage canals, and drainage ditches, and shall indicate the proximity of those features to the construction site. Maps shall identify high hazard flood prone areas.

Clearing and Grading: The plan shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross-sections, cut/fill depths or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography tying in proposed contours with existing topography shall be illustrated. The DESCPC shall include a statement of the quantities of material excavated at the site, whether such excavations or fill is temporary or permanent, and the amount of such material to be imported or exported or a statement explaining that there would be no clearing and/or grading conducted for each element of the project. Areas of no disturbance shall be properly identified and delineated on the plan maps.

Soil Wind and Water Erosion Control: The plan shall address exposed soil treatments to be used during construction and operation of the proposed project for both road and non-road surfaces including specifically identifying all chemical based dust palliatives, soil bonding, and weighting agents appropriate for use at the proposed project site that would not

cause adverse effects to vegetation; BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use. All dust palliatives, soil binders, and weighting agents shall be approved by the CPM prior to use.

Project Schedule: The DESCPC shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element construction, and final grading/stabilization). BMP implementation schedules shall be provided for each project element for each phase of construction.

Best Management Practices: The DESCPC shall show the location, timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during project element excavation and construction, during final grading/stabilization, and after construction. BMPs shall include measures designed to control dust and stabilize construction access roads and entrances. The maintenance schedule shall include post-construction maintenance of treatment-control BMPs applied to disturbed areas following construction.

Erosion Control Drawings: The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion-control specialist.

Agency Comments: The DESCPC shall include copies of recommendations from the County of Riverside and RWQCB, if applicable.

Monitoring Plan: Monitoring activities shall include routine measurement of the volume of accumulated sediment and scour in storm water diversions channels. The monitoring plan shall be part of the channel maintenance plan in Condition of Certification **SOIL&WATER-3**.

Verification: The DESCPC shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**, and relevant portions of the DESCPC shall be submitted to the chief building official (CBO) for review and approval. In addition, the project owner shall do all of the following:

1. No later than ninety (90) days prior to start of site mobilization, the project owner shall submit a copy of the DESCPC to Riverside County and the RWQCB for review and comment. The CPM shall consider comments received from Riverside County and RWQCB and approve the DESCPC.
2. During construction, the project owner shall provide an analysis in the monthly compliance report on the effectiveness of the drainage, erosion, and sediment control measures and the results of monitoring and maintenance activities.
3. Once operational, the project owner shall provide in the annual compliance report information on the results of storm water BMP monitoring and maintenance activities.

4. Provide the CPM with two (2) copies each of all monitoring or compliance reports.

WASTE DISCHARGE REQUIREMENTS

SOIL&WATER-2: The Project Owner shall comply with the requirements specified in Appendices B and C, and any updates to these Waste Discharge Requirements that may be required as the project design is refined. These requirements relate to discharges, or potential discharges, of waste that could affect the quality of waters of the state, and were developed in consultation with staff of the State Water Resources Control Board and/or the applicable California Regional Water Quality Control Board (hereafter "Water Boards"), for the discharge to evaporation ponds. It is the Commission's intent that these requirements be enforceable by both the Commission and the Water Boards. In furtherance of that objective, the Commission hereby delegates the enforcement of these requirements, and associated monitoring, inspection and annual fee collection authority, to the Water Boards. Accordingly, the Commission and the Water Board shall confer with each other and coordinate, as needed, in the enforcement of the requirements. The Project Owner shall pay the annual waste discharge permit fee associated with this facility to the Water Boards. In addition, the Water Boards may "prescribe" these requirements as waste discharge requirements pursuant to Water Code Section 13263 solely for the purposes of enforcement, monitoring, inspection, and the assessment of annual fees, consistent with Public Resources Code Section 25531, subdivision (c).

Verification: No later than sixty (60) days prior to any wastewater discharge, the RSEP project shall provide documentation to the CPM, with copies to the Colorado River Basin RWQCB, demonstrating compliance with the WDRs established in Appendices B and C, including any updates that may be required as the project design is refined. Any changes to the design, construction, or operation of the ponds shall be requested in writing to the CPM, with copies to the Colorado River Basin RWQCB, and approved by the CPM, in consultation with the Colorado River Basin RWQCB, prior to initiation of any changes. The RSEP project shall provide to the CPM, with copies to the Colorado River Basin RWQCB, all monitoring reports required by the WDRs, and fully explain any violations, exceedances, enforcement actions, or corrective actions related to construction or operation of the ponds, treatment units, or storm water system.

Channel Maintenance Program

SOIL&WATER-3: The project owner shall develop and implement a Channel Maintenance Program (Program) that provides long-term guidance to implement routine channel maintenance projects and to comply with **SOIL&WATER-1** in a feasible and environmentally-sensitive manner. The Program will be a process and policy document prepared by the project owner, reviewed by the CPM. The Channel Maintenance Program shall include the following:

- A. Purpose and Objectives – establishes the main goals of the program, of indefinite length, to maintain channels to meet their original design

capacity for flood protection and conveyance, and maintain groundwater recharge.

- B. Application and Use - The channel maintenance work area is defined as the RSEP engineered channels, typically extending to the top of bank, include access roads, and any adjacent property that the RSEP owns or holds an easement for access and maintenance. The program would include all channel maintenance as needed to protect the RSEP facilities and downstream property.
- C. Channel Maintenance Activities
 - 1. Sediment Removal - sediment is removed if it: (1) reduces the effective flood capacity, to less than the design discharge, (2) prevents appurtenant hydraulic structures from functioning as intended, and (3) becomes a permanent, non-erodible barrier to instream flows.
 - 2. Vegetation Management - manage vegetation in and adjacent to the channels to maintain hydraulic capacity. Vegetation management shall include control of invasive or nonnative vegetation.
 - 3. Bank Protection and Grade Control Repairs – Bank protection and grade control structure repairs involve any action by the project owner to repair eroding banks, incising toes, scoured channel beds, as well as preventative erosion protection. The project owner would implement instream repairs when the problem: (1) causes or could cause significant damage to the RSEP project; adjacent property, or the structural elements of the channels; (2) is a public safety concern; (3) negatively affects groundwater recharge; or (4) negatively affects the mitigation vegetation, habitat, or species of concern.
 - 4. Routine Channel Maintenance - trash removal and associated debris to maintain channel design capacity; repair and installation of fences, gates and signs; grading and other repairs to restore the original contour of access roads and levees (if applicable).
- D. Related Programmatic Documentation – the CPM will review and approve the Program documentation.
- E. Channel Maintenance Process Overview
 - 1. Program Development and Documentation – This documentation provides the permitting requirements for channel maintenance work in accordance with the conditions of certification for individual routine maintenance of the engineered channel without having to perform separate CEQA review or obtain permits.
 - 2. Maintenance Guidelines - based on two concepts: (1) the maintenance standard and (2) the acceptable maintenance condition, and applies to sediment removal, vegetation management, trash and debris collection, blockage removal, fence repairs, and access road maintenance.

3. Implementation – Sets Maintenance Guidelines for vegetation and sediment management. Maintenance Guidelines for sediment removal provide information on the allowable depth of sediment for the engineered channel that would continue to provide design discharge protection.
4. Reporting – the CPM requires the following reports to be submitted each year as part of the Annual Compliance Report:
 - a. Channel Maintenance Work Plan - Describes the planned “major” maintenance activities and extent of work to be accomplished; and
 - b. Channel Maintenance Program Annual Report – Specifies which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

Verification: At least 60 days prior to the start of any project-related site disturbance activities, the project owner shall coordinate with the CPM to develop the Channel Maintenance Program. The project owner shall submit two copies of the programmatic documentation, describing the proposed Channel Maintenance Program, to the CPM (for review and approval). The project owner shall provide written notification that they plan to adopt and implement the measures identified in the approved Channel Maintenance Program. The project owner shall:

1. Supervise the implementation of a Channel Maintenance Program in accordance with conditions of certification;
2. Ensure that the RSEP Construction and Operations Manager receive training on the Channel Maintenance Program;
3. As part of the RSEP Annual Compliance Report to the CPM, submit a Channel Maintenance Program Annual Report specifying which maintenance activities were completed during the year including type of work, location, and measure of the activity (e.g. cubic yards of sediment removed).

PROJECT GROUNDWATER WELLS

SOIL&WATER-4: Pre-Well Installation. The project owner shall construct and operate up to two on-site groundwater wells that produce water from the Rice Valley Groundwater Basin. The project owner shall ensure that the wells are completed in accordance with all applicable state and local water well construction requirements. Prior to the start of well construction activities, the project owner shall submit for review and comment a well construction packet in accordance with Riverside County Ordinance 682, containing the documentation, plans, and fees normally required for the county’s well permit, with copies to the CPM. The project shall not construct a well or extract and use groundwater until the CPM provides approval to construct and operate the well.

Post-Well Installation. The project owner shall provide documentation to the CPM that the well has been properly completed. In accordance with California's Water Code section 13754, the driller of the well shall submit to the DWR a Well Completion Report for each well installed.

Groundwater Well Abandonment. On property controlled by the project owner, the project owner shall protect groundwater resources by abandoning all groundwater wells that are constructed in such a manner that the screen interval of the well intercepts poor quality and better quality aquifer water. Alternatively, wells that are otherwise in good condition may be modified, if feasible, such that the screen interval does not cross connect zones of varying water quality. Groundwater wells shall be abandoned or modified in accordance with all applicable state and local water well abandonment or construction requirements, including the California Department of Water Resources Bulletins 74-81 & 74-90. Prior to the start of well construction activities, the project owner shall submit for review and comment, a well abandonment or modification packet to Riverside County in accordance with Ordinance 682 containing the documentation, plans, and fees normally required for the county's well abandonment permit, with copies to the CPM. The project shall not abandon or modify a well until the CPM provides approval.

Verification: The project owner shall ensure the Well Completion Reports are submitted and shall ensure compliance with all State and county water well standards and requirements for the life of the wells. The project owner shall do all of the following:

1. No later than 60 days prior to the use of groundwater for site construction , the project owner shall submit a Groundwater Monitoring and Management Plan to Riverside County for review and comment (see Condition of Certification **SOIL&WATER-6**).
2. No later than sixty (60) days prior to the abandonment and construction of the on-site groundwater wells, the project owner shall submit to the CPM a copy of the water well abandonment and construction packet submitted to the County of Riverside for review and comment.
3. No later than thirty (30) days prior to the construction of the on-site water supply wells, the project owner shall submit a copy of any written comments received from the Riverside County indicating whether the proposed well abandonment and construction activities comply with all county well requirements and meet the requirements established by the county's water well permit program.
4. No later than sixty (60) days after installation of each well at the project site, the project owner shall provide to the CPM copies of the Well Completion Reports submitted to the DWR by the well driller. The project owner shall submit to the CPM, together with the Well Completion Report, a copy of well drilling logs, water quality analyses, and any inspection reports.

5. During well construction and for the operational life of the well, the project owner shall submit two (2) copies to the CPM for review and approval any proposed well construction or operation changes. .
6. No later than fifteen (15) days after completion of the on-site water supply wells, including removal of drilling mud, the project owner shall submit documentation to the CPM confirming that well drilling activities were conducted in compliance with Title 23, California Code of Regulations, Chapter 15, Discharges of Hazardous Wastes to Land, (23 CCR, sections 2510 et seq.) requirements and that any on-site drilling sumps used for project drilling activities were removed in compliance with 23 CCR section 2511(c).

CONSTRUCTION AND OPERATIONS WATER USE

SOIL&WATER-5: The proposed project's use of groundwater for all construction activities shall not exceed an average rate of 420 acre-feet per year of construction. The proposed project's use of groundwater for all operations activities shall not exceed 150 acre-feet per year. Water quality used for project construction and operation will be reported in accordance with Condition of Certification **SOIL&WATER-6** to ensure compliance with this condition. Prior to the use of groundwater for construction, the project owner shall install and maintain metering devices as part of the water supply and distribution system to document project water use and to monitor and record in gallons per month the total volume(s) of water supplied to the project from this water source. The metering devices shall be operational for the life of the project.

Verification: Beginning six (6) months after the start of construction, the project owner shall prepare a semi-annual summary report of the amount of water used for construction purposes. The summary shall include the monthly water usage in gallons.

At least sixty (60) days prior to the start of construction of the proposed project, the project owner shall submit to the CPM a copy of evidence that metering devices have been installed and are operational.

The project owner shall prepare an annual summary report, which will include daily usage, monthly range and monthly average of daily water usage in gallons per day, and total water used on a monthly and annual basis in acre-feet. For years subsequent to the initial year of operation, the annual summary report will also include the yearly range and yearly average water use by source. For calculating the total water use, the term "year" will correspond to the date established for the annual compliance report submittal.

GROUNDWATER LEVEL AND QUALITY MONITORING AND REPORTING PLAN

SOIL&WATER-6: The project owner shall submit a Groundwater Level and Quality Monitoring and Reporting Plan to the CPM for review and approval. The Groundwater Level and Quality Monitoring and Reporting Plan shall provide a description of the methodology for monitoring background and site

groundwater levels and quality. Prior to project construction, monitoring shall commence to establish pre-construction base-line groundwater level conditions in the upper and lower aquifer and shall include pre-construction, construction, and project operation water use. The primary objectives for the monitoring is to ensure the project's water use is consistent with predicted drawdown in the lower aquifer, establish pre-construction and project related groundwater quality and groundwater elevation levels that can be quantitatively compared against observed and simulated levels near the project pumping well, and to avoid, minimize, or mitigate impacts to the Rice Valley groundwater basin storage.

Verification: The project owner shall complete the following:

1. At least six (6) weeks prior to construction, a Groundwater Level and Quality Monitoring and Reporting Plan shall be submitted to the CPM for review and approval before completion of Condition of Certification **SOIL & WATER-4**. The Plan shall include a scaled map showing the site and vicinity, existing well locations, and proposed monitoring locations (both existing wells and new monitoring wells proposed for construction). The map shall also include relevant natural and anthropogenic features (existing and proposed as part of this project). The plan also shall provide: (1) well construction information and borehole lithology for each existing well proposed for use as a monitoring well; (2) description of proposed drilling and well installation methods; (3) proposed monitoring well design; and, (4) schedule for completion of the work.
2. At least four (4) weeks prior to construction, a Well Monitoring Installation and Groundwater Level Network Report shall be submitted to the CPM for review and approval. The report shall include a scaled map showing the final monitoring well network. If applicable, it shall document the drilling methods employed, provide individual well construction as-builds, borehole lithology recorded from the drill cuttings, well development, and well survey results. The well survey shall measure the location and elevation of the top of the well casing and reference point for all water level measurements, and shall include the coordinate system and datum for the survey measurements. Additionally, the report shall describe the water level monitoring equipment employed in the wells and document their deployment and use.
3. As part of the monitoring well network development, all newly constructed monitoring wells shall be constructed consistent with State and Riverside County specifications.
4. At least four (4) weeks prior to beginning groundwater pumping for project construction, baseline groundwater quality and groundwater level monitoring data shall be reported to the CPM. The report shall include the following:
 - An assessment of pre-project groundwater levels in the upper and lower aquifer, a summary of available climatic information (monthly average temperature and rainfall records from the nearest weather station), and a comparison and assessment of water level data relative to the assumptions and spatial trends simulated by the applicant's groundwater model.

- An assessment of pre-project groundwater quality with groundwater samples analyzed for TDS, chloride, nitrates, major cations and anions, and oxygen-18 and deuterium isotopes. These analyses, and particularly the stable isotope data, can be useful for identifying partially evaporated water sources and assessing their contributions to the quality of water produced by wells.
 - The data shall be tabulated, summarized, and submitted to the CPM. The data summary shall include the estimated range (minimum and maximum values), average, and median for each constituent analyzed. The data shall also be analyzed using the Mann-Kendall test for trend to assess whether pre-project water quality trends, if any, are statistically significant.
5. During project construction and during project operations, the project owner shall semi-annually monitor the quality of groundwater and changes in groundwater elevations and submit data semi-annually to the CPM. The summary report shall document water level monitoring methods, the water level data, water level plots, and a comparison between pre- and post-project start-up water level trends as itemized below. The report shall also include a summary of actual water use conditions, monthly climatic information (temperature and rainfall), and a comparison and assessment of water level data relative to the assumptions and simulated spatial trends predicted by the applicant's groundwater model.
- Groundwater samples from all wells in the monitoring well network, which shall include production wells, shall be analyzed and reported semi-annually for TDS, chloride, nitrates, cations and anions, and oxygen-18 and deuterium isotopes. These analyses, and particularly the stable isotope data, can be useful for identifying partially evaporated water sources and assessing their contributions to the quality of water produced by wells.
 - Water quality and level trends shall be analyzed using the Mann-Kendall test for trend. Trends in the compliance data shall be compared and contrasted to pre-project trends, if any.
 - If no significant trends exist in the compliance data, or the data set is insufficient to assess trends, all water-supply well compliance data shall be pooled and contrast to the pre-project data set. If significant pre-project trends are identified, the compliance data can first be corrected to remove pre-project trends and then contrast to the pre-project data.
 - The contrast between pre-project and compliance mean or median concentrations shall be compared using an Analysis of Variance (ANOVA). A parametric ANOVA (for example, an F-test) can be conducted on the two data sets if the residuals between observed and expected values are normally distributed and have equal variance, or the data can be transformed to an approximately normal distribution. If the data cannot be represented by a normal distribution, then a nonparametric ANOVA shall be conducted (for example, the Kruskal-Wallis test). If a statistically significant difference is identified between the two data sets, the monitoring data are inconsistent with random

differences between the pre-project and baseline data indicating a significant water quality impact from project pumping may be occurring.

- If compliance data indicate the quality of the production water has changed by a statistically significant amount for three consecutive years and the constituent concentrations exceed Water Quality Objectives, the applicant shall supply the CPM and RWQCB with a report describing the exceedances.

GROUNDWATER PRODUCTION REPORTING

SOIL&WATER-7: The Project is subject to the requirement of Water Code Sections 4999 et. seq. for reporting of groundwater production in excess of 25 acre feet per year.

Verification: The project owner shall file an annual "Notice of Extraction and Diversion of Water" with the SWRCB in accordance with Water Code Sections 4999 et. seq. The Project Owner shall include a copy of the filing in the annual compliance report.

SEPTIC SYSTEM AND LEACH FIELD REQUIREMENTS

SOIL&WATER-8: The project owner shall comply with the requirements of the County of Riverside Ordinance Code Title 8, Chapter 8.124 and the California Plumbing Code (California Code of Regulations Title 24, Part 5) regarding sanitary waste disposal facilities such as septic systems and leach fields. The septic system and leach fields shall be designed, operated, and maintained in a manner that ensures no deleterious impact to groundwater or surface water. Compliance shall include an engineering report on the septic system and leach field design, operation, maintenance, and loading impact to groundwater. If a temporary septic system and leach field will be used for management of worker housing domestic and sanitary wastes or construction trailer areas, the project owner shall ensure that the system is designed, operated, and destroyed prior to facility operation, in accordance with County of Riverside requirements. Use of the permanent facility septic systems and leach fields for onsite disposal of domestic wastes generated from temporary worker housing or construction trailer areas is prohibited without prior approval from the CPM.

Verification: The project owner shall submit all necessary information and the appropriate fee to the County of Riverside to ensure that the project has complied with county sanitary waste disposal facilities requirements. Written assessments prepared by the County of Riverside regarding the project's compliance with these requirements must be submitted to the CPM for review and approval at least thirty (30) days prior to use of the septic systems. Any requests to use the permanent facility septic systems for onsite disposal of domestic wastes generated from temporary worker housing or construction trailer areas must be made at least ninety (90) days in advance of the proposed use and shall be accompanied by a complete technical assessment

demonstrating that the proposed use is consistent with the County of Riverside sanitary waste disposal facility requirements and would not cause the system to fail or exceed regulatory standards.

NON-TRANSIENT, NON-COMMUNITY WATER SYSTEM

SOIL&WATER-9: The Project is subject to the requirement of Title 22, Article 3, Sections 64400.80 through 64445 for a non-transient, non-community water system (serving 25 people or more for more than six months). In addition, the system will require periodic monitoring for various bacteriological, inorganic and organic constituents.

Verification: The project owner shall obtain a permit to operate a non-transient, non-community water system with the County of Riverside at least sixty (60) days prior to use of a domestic water supply at the site. In addition, the project owner shall submit to the CPM a monitoring and reporting plan for production wells operated as part of the domestic water supply system prior to plant operations. The plan will include reporting requirements including monthly, quarterly, and annual submissions.

The project owner shall designate a California Certified Water Treatment Plant Operator as well as the technical, managerial, and financial requirements as prescribed by State law. The project owner will supply updates on an annual basis regarding monitoring requirements, any submittals to the County of Riverside, and proof of annual renewal of the operating permit.

CLOSURE AND DECOMMISSIONING PLAN

SOIL&WATER-10: The project owner will prepare a decommissioning plan for the transmission line and substation that will meet the requirements of the BLM. The project owner shall identify likely decommissioning scenarios and develop specific decommissioning plans for each scenario that will identify actions to be taken to avoid or mitigate long-term impacts related to water and wind erosion after decommissioning. Actions may include such measures as a decommissioning SWPPP, revegetation and restoration of disturbed areas, post-decommissioning maintenance, collection and disposal of project materials and chemicals, and access restrictions.

Verification: At least sixty (60) days prior to the start of site mobilization or alternate date as agreed to with BLM, the project owner shall submit decommissioning plans to BLM for comment and the CPM for review and approval. The project owner shall amend these documents as necessary, with approval from the CPM, should the decommissioning scenario change in the future.

CONCLUSIONS

With the information provided to date, Staff determined that construction, operation, and decommissioning of the proposed project could potentially impact soil and water resources. Where Staff identified potential impacts, mitigation measures were proposed

to reduce identified impacts to levels that are less than significant. The mitigation measures, as well as specifications for LORS conformance, are included herein as conditions of certification. Conditions of Certification referred to herein serve the purpose of both the Energy Commission's Conditions of Certification for purposes of the CEQA and BLM's Mitigation Measures for purposes of the NEPA. With these mitigation measures implemented, the project would conform to all applicable LORS. Staff's conclusions based on analysis of the information submitted to-date are as follows:

1. The proposed project would be located at the toe of an alluvial fan where substantial storm water run-on could occur. Project-related changes to the alluvial fan hydrology however are less than significant. The applicant completed a hydrologic study, which modeled expected run-on and run-off changes that could occur because of the proposed project. Based on this work, Staff believes the risk from flooding to the proposed project or adjacent properties would be less than significant with the implementation of Condition of Certification **SOIL&WATER-3**. In addition, a DESCOP was developed by the Applicant to mitigate potential, project-related erosion and sedimentation impacts. With the implementation of Condition of Certification **SOIL&WATER-1**, Staff believes the erosion and sedimentation impacts from the proposed project would be less than significant.
2. The proposed project would use an air-cooled condenser for heat rejection and would recycle process wastewater from all plant equipment, including boilers and water treatment equipment, to the extent practicable. Recycling the wastewater would maximize reuse of process water and conserve freshwater. Use of this technology would substantially reduce water use and is consistent with water policy and the constitutional requirement that State water resources be put to beneficial use to the fullest extent possible.
3. Impacts to groundwater supply and quality would be less than significant. In the Rice Valley Groundwater Basin, there is no current groundwater pumping. Though precipitation patterns could vary over the 30-year life of the proposed project, the basin is expected to receive enough natural recharge to support the proposed project. To ensure that the project's proposed use of groundwater does not significantly impact groundwater basin storage, Staff proposes groundwater monitoring parameters and a reporting program as Condition of Certification **SOIL&WATER-6**, which would require the Applicant to compare project pumping with modeled impacts. Substantial changes to groundwater levels caused by the proposed project would be documented by this monitoring and reporting program in accordance with Condition of Certification **SOIL&WATER-6**.

REFERENCES

Avon and Durbin 1994 – American Water Resources Association. Water Resources Bulletin Vol. 30, No. 1, Evaluation of the Maxey-Eakin Method for Estimating Recharge to Ground-Water Basins in Nevada (1994)

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SOIL AND WATER RESOURCES - Appendix A

Acronyms Used in the Soil and Water Resources Section

amsl	above mean sea level	IEPR	Integrated Energy Policy Report
AF	acre-feet	lbs	pounds
AFY	acre-feet per year	LID	Low Impact Development
BLM	Bureau of Land Management	LORS	laws, ordinances, regulations, and standards
bgs	below ground surface	MCL	maximum contaminant level
BMP	Best Management Practices	mg/l	milligrams per liter
CDPH	California Department of Public Health	mph	miles per hour
CEQA	California Environmental Quality Act	MOU	Memorandum of Understanding
cfs	cubic feet per second	MW	megawatt
CPM	Compliance Project Manager	NEPA	National Environmental Policy Act
DESCP	Drainage, Erosion, and Sediment Control Plan	NPDES	National Pollutant Discharge Elimination System
DTSC	Department of Toxic Substances Control	RCRA	Resource Conservation and Recovery Act
DWR	Department of Water Resources	REC	Recognized Environmental Condition
ESA	Environmental Site Assessment	ROC	Record of Conversation
FEMA	Federal Emergency Management Agency	RSEP	Rice Solar Energy Project
ft/day	feet per day	RWQCB	Regional Water Quality Control Board
fps	feet per second	SR	Solar Reserve
FSA	Final Staff Assessment	SWPPP	Storm Water Pollution Prevention Plan
ft/ft	feet per foot	SWRCB	State Water Resources Control Board
ft/yr	feet per year	TDS	total dissolved solids
gpd	gallons per day	µS/cm	microsiemens per centimeter
gpd/ft	gallons per day per foot	USCS	Unified Soil Classification System
gpm	gallons per minute	WWTP	wastewater treatment plant

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SOIL AND WATER RESOURCES – APPENDIX B

WASTE DISCHARGE REQUIREMENTS – Rice Solar Energy Project Class II Disposal Facility, Riverside County

FINDINGS

1. Rice Solar Energy, LLC, a wholly owned subsidiary of Solar Reserve, LLC, a Delaware limited liability company with its principal place of business in Santa Monica, California, is hereafter referred to as “Discharger”. The Discharger proposes to construct, own, and operate a solar electrical generating plant (hereafter referred to as “facility”) on approximately 1,410 acre site in eastern Riverside County, California. The Rice Solar Energy Project (RSEP) uses solar thermal power generating technology incorporating solar tracking heliostats that reflect solar energy to a central receiver that is mounted on a tower. Except during initial melting and conditioning of the salt, no fossil fuels will be utilized in the solar-thermal power generation at the facility.
2. The project site is a privately owned parcel located in eastern Riverside County, California situated south of State Route 62 at milepost 109. The RSEP is within a larger owned parcel of 3,324 acres. Within this larger property, the RSEP is sited within a new square-shaped parcel that will be created by merging four different assessor’s parcels, resulting in a single 2,560-acre parcel. The project site will include an administration building, heliostat field with power block, and double-lined evaporation ponds totaling 1,410 acres surrounded by a security fence.
3. The project site is located in a very sparsely settled portion of the Colorado Desert, a sub region of the Sonoran Desert. The nearest residence and permanent settlement to the RSEP is Vidal Junction, which is 14.8 miles northeast at the junction of SR 62 and US Route 95. The nearest residence and permanent settlement to the west of the project site is the Iron Mountain Pumping Plant operated by the Metropolitan Water District of Southern California, where there are several residences. The Iron Mountain Pumping Plant is located 17.8 miles northwest of the RSEP site. The nearest town offering significant services to the RSEP is Parker, Arizona, located approximately 32.5 road miles to the east.
4. The project site is surrounded by private land to the west and north, and uninhabited public lands managed by the Bureau of Land Management (BLM) to the east and south. SR 62 and the Colorado River Aqueduct are located just north of the project site in San Bernardino County. There are sand dunes known as the Rice Valley Dunes to the south of the project site which formerly contained the Rice Valley Dunes Off-Highway Vehicle Recreation area.
5. The Discharger has filed an application for certification under the California Energy Commission’s (CEC) standard certification process. Project construction is planned

to begin in spring 2011 with an estimated construction period of 30 months. Facility operation is targeted for October 2013.

6. The CEC is the lead agency under the California Environmental Quality Act (CEQA) for all thermal power plants greater than 50 MW. The CEC's power plant licensing process is a CEQA-equivalent process. The RWD indicates that environmental review documents produced by the CEC staff are called the Preliminary Staff Assessment, which is similar to a draft Environmental Impact Report (EIR), and the Final Staff Assessment (FSA) which is like a Final EIR. The CEC licensing process is a 12-month process in which the CEC evaluates the application and formulates its decision on the project proponent's Application for Certification (AFC). The Discharger submitted the project's AFC in October 2009.
7. The Discharger submitted a Report of Waste Discharge/Joint Technical Document (hereafter collectively referred to as the RWD) with the California Energy Commission (CEC) and Colorado River Basin Regional Water Quality Control Board (Regional Board). CEC will coordinate reviews and approvals with the regulatory agencies to ensure that the proposed project meets the California Environmental Quality Act (CEQA) requirements. This includes obtaining waste discharge requirements (WDRs) from staff of the CRBRWQCB. The CEC will certify this project and will include these WDRs as conditions of certification in accordance with the Warren-Alquist Act³. These WDRs are not being proposed by staff of the Regional Board to its Board for consideration and adoption at this time. After the CEC certifies the project, these WDRs may be re-issued by the Board of the Regional Board under Section 13263 of the Water Code without substantive amendments if deemed appropriate for enforcement, annual fee collection, inspection and monitoring, and related purposes, but any action of the Board of the Regional Board to re-issue these WDRs under Section 13263 of the Water Code must be consistent with the Warren-Alquist Act, including without limitation the non-reviewability provision of subdivision (c) of Section 25531 of the Public Resources Code.
8. RSEP Process: The RSEP technology will generate power from the sunlight by focusing energy from a field of mirrors known as heliostats to a central receiver. Molten Salt is circulated through tubes in the receiver, which collects energy gathered from the sun. The heated salt is then routed to an insulated storage tank where it is stored with minimum energy loss. The salt has a melting temperature of 450° F. Salt is a heat storage medium that retains thermal energy over time. Once

³ The Warren-Alquist State Energy Resources Conservation and Development Act is the authorizing legislation for the California Energy Commission. The Act is codified as Public Resources Code (PRC), Section 25000 et seq.. PRC Section 25500 establishes the Commission's authority to certify all sites and related facilities for thermal power plants with power ratings of 50 megawatts or more. The section further declares that "the issuance of a certificate by the commission shall be in lieu of any permit, certificate, or similar document required by any state, local or regional agency, or federal agency to the extent permitted by federal law, for such use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law."

the salt is melted to a liquid form during construction, it will remain heated and in a liquid state throughout the facility's operating life.

On any given operating day, when sunrise begins, the receiver is filled with 550° F cold salt and is preheated by incremental redirection of small numbers of heliostats onto the receiver panels. As the sun rises above the horizon, the full array of heliostats are directed onto the receiver, and salt temperature begins to rise. Salt flow through the receiver is recirculated back to the cold salt tank until the salt outlet temperature reaches 1,050°F. Salt is then continuously transferred from the cold salt tank, through the receiver and into the hot salt tank. The quantity of salt in the cold tank decreases while the quantity in the hot tank increases during solar energy collection.

As a decoupled process, small amount of cold salt is circulated continuously through the steam generation system to produce steam. The steam is continuously applied to the steam seals on the turbine to keep the turbine warm while it rotates slowly on the turning gear when the steam turbine is not in production. During power generation cycle, a hot salt pump will gradually send hot salt to mix with the cold salt flow through the steam generation system to increase the temperature of the steam generation system. The RSEP will use dry cooling technology for the steam turbine cycle using an air-cooled condenser.

9. The RSEP technology consists of the following elements: 1) 17,500 heliostats or mirrors, each encompasses 672 square feet in area occupying approximately 1,370 acres; 2) A 538-foot-high concrete solar receiver tower with a 100-foot-tall solar receiver and 15-foot-long crane; 3) A liquid salt circulation and storage system capable of storing 70 million pounds of liquid salt (sodium nitrate/potassium nitrate mixture); 4) A 150 Mega Watt condensing steam turbine generator system and equipment; 5) A 20 cell ACC for cooling of the steam turbine exhaust; 6) A 10 mile long generation tie-line to connect with the Parker-Blythe No. 2 transmission line; 7) A new interconnection substation; 8) An onsite switchyard; 9) Two onsite wells for industrial water use and a water treatment system; 10) Three evaporation ponds for waste disposal, approximately 5 acres each; 11) A 30-acre storm water detention pond; 12) Two diesel fire-water pumps and two emergency diesel generator sets for backup emergency power supply; and 13) The existing 12-kV electrical distribution line is extended to have a total length of approximately 1.1 miles long to the facility fence-line.
10. The facility water demand is met by pumping raw water from two onsite water wells. Each well will have sufficient capacity to supply water for the plant needs throughout the expected 30-year operational life of the plant. Groundwater will go through pre-treatment system and then be further purified for use as boiler makeup water and for pressure washing of the heliostats (mirrors). Pretreatment of groundwater is necessary because it contains undesirable levels of TDS unsuitable for heliostat/mirror washing, and for boiler feed water. The Discharger's initial RWD provided project average daily use and estimated maximum annual water requirements. The project water use and discharge estimates were later amended

by the Discharger in March 2010 in response to CEC staff data requests on project water conservation measures. The project water balance was revised to allow for reuse of water treatment reject and WSAC blowdown, thereby reducing both the project's water demand and the volume of wastewater discharged to the evaporation ponds. The revised average water use and discharge estimates are as follows:

Water Use	Average Daily Use (gpm)⁴	Annual Use (AFY)⁵
Heliostat Wash	51	31
Steam Cycle Makeup	52	31
Potable Water	5	3
Other uses including wet surface air cooler (WSAC), service water, quench water	62	38
Average Use Total	170	103
Margin for other uses	25	15
Total Plant Consumption	195	118
Maximum Annual Use	--	150
Wastewater Discharge		
Service water	5	--
WSAC blowdown	27	--
Hydrostatic test water	*	--
Average discharge to evap. ponds	32	~20

11. The RWD, as amended by data responses, indicates that the raw water treatment system will include the following components: 1) Reverse Osmosis (RO) system; and 2) Electro-deionization. The steam-power generation cycle heat rejection system will consist of an air-cooled steam condenser and includes a generator, turbine lube oil system, and pumps. The cooling is achieved through a closed-loop cooling circuit that utilizes fin-fan heat exchangers that are cooled by mechanical draft ambient airflow forced across the finned-tubes to cool the water circulating within. A small quantity of make-up water will be required to compensate for minor leakage and to maintain system-water-chemistry to prevent corrosion.

WASTEWATER CHARACTER & PROPOSED DISCHARGE

12. The Discharger proposes to use double-lined evaporation ponds as part of its waste disposal. The evaporation ponds will receive, store and evaporate wastewater from operations at the project site. The proposed discharge to lined evaporation ponds was initially reported to be derived from five sources: 1) Reaction Chamber and

⁴ Gallons per minute

⁵ Acre-feet per year, based on 3286 hours of operation per year .

* A volume of approximately 6 million gallons will be used during hydrostatic testing. Wastewater discharge facilities shall be operational, and monitoring networks must be installed prior to discharge.

Clarifier waste stream; 2) Steam Cycle Blow down; 3) Treated effluent from the oil water separator; 4) Wet Surface Air Cooler (WSAC) Blow down; and 5) Service Water. However, the Discharger revised the project water use in response to CEC staff data requests and now proposes to reuse the RO/reaction chamber waste and steam cycle blow down. Consequently, the proposed discharge would instead be derived just from the WSAC blow down, service water, and treated effluent from the oil/water separator. The estimated flow rate and volume of wastewater discharge is tabulated above in Finding No. 10.

13. The RWD indicates that plant drains will collect containment area wash down and drainage from facility equipment drains. Wastewater from these areas will be collected in a system of floor drains, hub drains, sumps, and piping and then routed to a wastewater collection system. Drains that would contain water mixed with oil and grease will first pass through an oil/water separator unit. Ultimately, wastewater from the wastewater collection system will be piped to three 5-acre lined evaporation ponds for disposal.
14. The RWD states that wastewater discharge into the evaporation ponds is non hazardous; however, it does contain pollutants which could exceed water quality objectives if released, or that could be expected to affect the beneficial uses of ground water. Therefore, the wastewater is classified as a “designated waste.” This classification is consistent with CCR Title 27, Chapter 3, Subchapter 2, Article 2 Section 20210.
15. The RWD indicates that approximately 31 acre-feet per year of heliostat/mirror wash water will be used by the project. Any wash water from mirror washing that does not infiltrate into the soil around the heliostats would be allowed to sheet flow along the site’s current drainage pattern to the south end of the heliostat field. An expansive and shallow detention basin of 30 acre-feet capacity will be constructed to detain any increase in storm flows.
16. The RWD states that during facility construction the average water use over the 30-month construction period will be approximately 780 acre-feet. The water will be required for soil moisture conditioning during earthmoving operations and for dust control.
17. Sanitary waste will be generated from the onsite toilets and showers. The wastewater disposal will be to two (2) separate septic tank leach-field systems. The Riverside County Department of Environmental Health would normally issue a permit for construction of the septic-tank leach-field system and regulate the discharge. However, pursuant to provisions of the Warren-Alquist Act, the CEC’s certification would act as an “in-lieu” permit for the Riverside County sewage permit by incorporating the regulatory requirements and conditions of those permits into the Commission’s certification.

18. Solid waste such as oily rags, broken and rusted metal and machine parts, empty containers, and broken materials generated at the facility will be trucked off site for recycling, or disposed off to a designated waste disposal facility.
19. The RWD indicates that during the 30-year operating life of the facility, about 1-ft of sludge may accumulate at the bottom of the evaporation ponds, which consists of precipitated solids from the evaporated wastewater. Over 30 years, the sludge accumulation is estimated to be about 4,600 tons.

HYDROLOGY, SOILS & BENEFICIAL USES

20. The project site is located in the Rice Hydrological Unit (716.00) of the Hayfield Planning Area. The Hayfield Planning Area covers approximately 1,860 square miles of desert with barren mountains and valleys, with the Chuckwalla Mountains on the south boundary and the McCoy Mountains on the east boundary. Beneficial uses for the Rice Hydrologic Unit include municipal and domestic supply
21. The project site is located within the Rice Valley and has a slope of less than 2%. Runoff occurs primarily during thunderstorms and the surface runoff from the mountains drains towards the center of the valley, except in the eastern part of the valley, where Big Wash drains to the Colorado River.
22. The RWD indicates that the Rice Valley area is in the Sonoran Desert / Mojave Desert physiographic province of California. The Sonoran Desert / Mojave Desert region is dominated by broad alluvial basins that are mostly aggrading surfaces receiving non-marine continental deposits from adjacent uplands.
23. The RWD indicates that subsurface soils at the project site consist of dense silty sands and poorly graded sands interpreted from onsite drilled borings. Specifically, the onsite soils are classified as typical durorthids, loamy-skeletal mixed, hyperthermic and shallow, and typical torripsamments, mixed, hyperthermic. Boring depths ranged from approximately 10 to 85 feet below ground surface (bgs). Expansive soils were not encountered in any site borings.
24. The project site is located in the north central portion of the Rice Valley Groundwater Basin, a desert basin with relatively limited groundwater recharge and little existing groundwater use. The RWD indicates that site specific investigations were conducted and it was found that the alluvium can be divided into two units, the upper alluvium and the lower alluvial aquifer. The saturated upper alluvium occurs from approximately 80 feet bgs to 600 feet bgs and the lower alluvial aquifer occurs from approximately 600 feet bgs to 810 feet bgs. The upper alluvium is comprised of clays and sands with finer grained materials dominating. The lower alluvial aquifer is comprised of sands, gravels and clays with coarser grained materials dominating.
25. The RWD states that depth to ground water ranged between 150 to 153 feet bgs. Groundwater beneath the project site is approximately 285 feet bgs, and flows northeast in the direction of the Vidal Valley Groundwater Basin. Five wells in the basin tested for groundwater quality showed total dissolved solids (TDS) levels

range between 662 mg/L to 3,540 mg/L. The average TDS concentration is about 1,900 mg/L. At one well, fluoride content was 1.8 mg/L and boron content was 2.8 mg/L, which may indicate a local impairment of the groundwater.

26. The RWD reflects that recharge within the basin is mainly from infiltration of runoff through alluvial deposits and by mountain front recharge with negligible amount of areal recharge from precipitation. Natural recharge is estimated to be 500 acre-feet per year and represents mountain front recharge. Additional recharge could be from subsurface inflow from the Ward Valley Groundwater Basin but is not quantified.
27. The project site is located in an arid desert climate, low annual precipitation, strong seasonal winds and mostly clear skies. Average annual evaporation in the project area, based on published data at the Indio Fire Station about eighty five miles southwest of the site is 105 inches.
28. Average annual precipitation ranges from 3 inches to 8 inches west of the Rice Valley (source: SWRCB, 2006; DWR, 2004). The RWD indicates that average annual precipitation in the project area, based on the gauging station at Blythe is 3.55 inches.
29. Surface water runoff from the mountains drains towards the center of the valley, except in the eastern part of the valley, where Big Wash drains to the Colorado River. The RWD indicates that there are no perennial streams in the vicinity of project site, and most of the moisture from rain is lost through evapotranspiration. The Colorado River aqueduct flows in an east-west direction within 1,000 feet north of the project site. The aqueduct is a concrete lined manmade controlled feature, and does not affect the natural hydrology of Rice Valley.
30. The off-site storm water flows originate from an area north of SR-62 (i.e., the Arizona-California Railroad, and the Colorado River Aqueduct). Small dikes have been constructed to control the flow of water across these features. The dikes direct the offsite flows from the north to specific channels/culverts over the aqueduct, under the railroad and then across SR-62 through small dips in the roadway.
31. The project site, including the utility lines, lies entirely within an area designated by FEMA as Zone D, where there are possible but undetermined flood hazards. The RWD indicates that evaporation ponds will be protected from offsite and onsite flows by the perimeter road. Storm water will be managed around the evaporation ponds to prevent inundation or washout due to floods in a 100 year storm event.
32. The RWD indicates that, based on site's earthquake history, the site could be subject to minor to moderate ground accelerations. Based on National Seismic Hazard Maps 2002 (USGS, 2008a) the peak bedrock acceleration at the site is 0.14 g for a 2,475 year recurrence interval or 2% probability of exceedance in 50 years. The San Andreas Fault is the controlling fault impacting the potential ground motion at the Project site.

33. The Water Quality Control Plan Colorado River Basin- Region 7, (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies, for Basin Waters. These requirements implement the Basin Plan.
34. Federal regulations for storm water discharge were promulgated by the United States Environmental Protection Agency (USEPA) on 16 November 1990 (Title 40 CFR Parts 122, 123, and 124). The regulations require specific categories of activities (construction and industrial) and facilities that discharge storm water to waters of the United States to obtain a National Pollutant Discharge Elimination System permit (NPDES), and to implement Best Conventional Pollutant Technology to reduce or eliminate industrial storm water pollution. The Rice Solar Energy Project, however, would be excluded from the requirement to obtain both the construction and the industrial NPDES storm water permits because it would not discharge storm water to waters of the United States.
35. The conditional discharge as described herein is consistent with the antidegradation provisions of State Water Resources Control Board Resolution No. 68-16. Degradation of groundwater immediately beneath the WMUs is unlikely to occur if the proposed project complies with the terms and conditions of these WDRs and MRP. The proposed project appears to be consistent with maximum benefit to the people of the State, as the land use at this location is not expected to change and best practical treatment or control can be achieved through a combination of the described treatment processes, WMU design and construction, and ground water quality monitoring.

WASTE MANAGEMENT UNIT DESIGN & CONSTRUCTION

36. The Discharger proposes to construct three Class II Surface Impoundment Waste Management Units (WMU) to handle designated liquid waste generated at the facility as described in Finding Nos. 12, 13, and 14. The three 5-acre evaporation ponds will have a proposed average design depth of 6 feet across each pond to ensure: one foot of sludge build up; three feet of operational depth; and two feet of freeboard.
37. The RWD indicates that containment design for the evaporation ponds from surface of the evaporation ponds downwards will consist of the following: 1) a primary 60 mil high density polyethylene (HDPE) liner; 2) a leak detection and removal system comprising a geonet and collection sump; 3) a secondary HDPE liner (minimum of 40 mil); and 4) a base layer consisting of either a geosynthetic clay liner (GCL) or 2 feet of onsite material with a hydraulic conductivity of less than 1×10^{-6} cm/sec of which at least 30%, by weight, shall pass through a No. 200 Standard sieve. If this material is unavailable, then a geosynthetic clay liner (GCL) or approved equivalent is the alternative design for the base layer. The GCL option is proposed as an engineered alternative.

38. The RWD states that a ramp will be constructed to provide access for equipment and maintenance to each pond. At the ramp location, there will be a protective layer above the primary HDPE liner.
39. The RWD indicates that side slopes around the evaporation ponds will contain the same liner system as the base of the ponds, except that leak collection pipes will not be located on the pond side slopes. The berms shall be covered with a minimum 6-inch thickness of road base or approved equivalent. The top of the berms will be a minimum of 2 feet above the surrounding existing grade to prevent potential inflow of storm water.
40. The RWD indicates that the leak detection system between the upper and lower liners will consist of a geonet drainage media and a trench containing piping and sand bedding. The sand bedding in the trench, including the perforated piping system, will have to be carefully placed on top of the underlying 40 mil HDPE liner. The geonet will be placed across the top of the sand-filled trench to avoid strain on the material.
41. The RWD indicates that the moisture detection system below the liner system will consist of continuous carrier pipes installed at the sides and low point of each pond (one carrier pipe per pond) at a depth of approximately 5 feet below the secondary liner. The carrier pipes will be terminated at the surface on each side of the pond and will be equipped with a pull cable system for conveyance of a neutron probe for moisture detection.
42. The RWD indicates that excavation and berm construction will use standard cut and fill techniques. The sub grade will be moisture conditioned to 2% above the optimum moisture content, compacted to at least 90% relative compaction as determined by American Society for Testing and Materials (ASTM) D1557, and proof-rolled using a smooth drum roller prior to placement of the GCL or the 2 feet of low permeable onsite material.
43. The RWD further states that the quality assurance program will be implemented consistent with the State Water Resources Control Board's Construction Quality Assurance (CQA) Requirements. CQA testing will be performed on the sub-grade, GCL, HDPE liners, granular/free draining native soil, and hard surface materials.

IMPROVEMENTS OVER EXISTING TITLE 27 PRESCRIPTIVE STANDARDS

44. Under this Order, the Title 27 prescriptive standard, set forth in Title 27 of the California Code of Regulations, Section 20415(e)(8)(E)2, to use what would, in modern phraseology, be called a pass-2-of-3 retesting approach for statistical compliance testing has been replaced by the far more statistically powerful pass-1-of-3 retesting approach suggested in the USEPA's **Unified Guidance** ("UG," 2009). (All subsequent regulatory citations shall be to Title 27.) Likewise, the prescriptive standard to take all retest samples within 30 days of a preliminary release indication (Section 20415(e)(8)(E)3) has been replaced by the UG-supported improvement of

allowing roughly 90 days to separate successive samples (for a given monitoring parameter at a given well), in order to avoid serial correlation that would likely invalidate the retest. These improvements are implemented as allowed under Section 20080(a)(1) and constitute the means for assuring that the monitoring program meets Title 27's performance standard for a Detection Monitoring Program (Section 20420(b)), i.e., that the water quality monitoring systems required to be installed "are appropriate for detecting, at the earliest possible time, a release from the Unit..."

MONITORING AND REPORTING PROGRAM (MRP) TO PHASE IN

45. It is not possible to initiate monitoring for a release until after the groundwater flow direction, and groundwater monitoring points and background monitoring points have been established, and each monitored waste constituent (Monitoring Parameter {MonPar}) has, at each Monitoring Point (MonPt), an approved Concentration Limit (suite of background reference data) and an approved data analysis method to apply to that Concentration Limit in order to obtain the retest-triggering concentration ("Threshold Value"), against which each new datum will be compared, for that MonPar at that MonPt (i.e., for that "MonPt/MonPar pair"). Therefore, as noted at the start of the attached Monitoring and Reporting Program (MRP), most of the MRP does not come into effect until the Discharger has completed this preparatory work.

Therefore, the first six-monthly Reporting Period during which the MRP will become fully in-effect (i.e., the Discharger initiates compliance monitoring and testing for all MonPt/MonPar pairs), will start around 2.5 years after the Monitoring Points and Background Monitoring Points are installed. This delay in initiating compliance analysis monitoring should cause no absence of water quality protection, given that a release from one of the three impoundments would, most likely, take several years to reach the down gradient wells and be detected. Nevertheless, it is not possible to conduct an effective monitoring program absent the completion of the above-described preparatory work.

A. DISCHARGE SPECIFICATIONS

1. The Discharger shall inform the Energy Commission's Compliance Project Manager (CPM) and the Regional Board immediately upon its determination that this Order fails to implement any applicable requirement of Title 27.
2. Wastes must be only discharged into, and confined to, approved WMUs specifically designed for their containment, as described in Finding Nos. 36 and 37.
3. The Discharger must follow the Water Quality Protection Standard (WQPS) for detection monitoring established by the Regional Board. The following are parts of the WQPS, as established by the Regional Board.

- a. The Discharger must test for the monitoring parameters⁶ (MonPars) in the attached Monitoring and Reporting Program (MRP) and revisions thereto. The MRP is an integral part of the proposed WDRs and must be implemented.
 - b. **Concentration Limits [see also Provisions C.6 through C.10]** – for each monitoring point, the concentration limit for each monitoring parameter shall be its background value, as represented by a set of at least eight background data points collected from an appropriate up gradient “interpoint” background monitoring point (or an “intrapoint” concentration limit using data collected from that compliance-testing monitoring point before there is any evidence of a release there).
 - c. The monitoring wells, including those located along the Point of Compliance⁷ (which follows the down gradient boundary of the WMU) will be determined when the Discharger submits its ground water monitoring work plan for approval by the CPM, in consultation with the Regional Board Executive Officer, in accordance with Discharge Specification A.6 of these WDRs. The up gradient and down gradient wells (i.e., background monitoring points and monitoring points, respectively) and their location must be specified in the work plan. These monitoring points, and the location of the surface trace of the Point of Compliance, will be approved based on calculated groundwater gradient at the site. A revised MRP may be required if the groundwater gradient changes. All proposed changes to the monitoring program, including any additional or replacement monitoring points, would need approval in advance of implementation.
4. The Discharger must report test results to the CPM, with copies to the Regional Board, for monitoring parameters listed in the MRP and future revisions thereto. Monitoring parameters and COCs are subject to the most appropriate statistical or non-statistical test under the MRP, and any revised MRP approved by the CPM, in consultation with the Regional Board. Typically, such testing involves applying the approved statistical or nonstatistical test to the appropriate background data set (“Concentration Limit” for a given constituent at a given monitoring point) to determine a “Threshold Value” (a concentration above which a release is indicated, triggering a retest for validation), which is then compared with the then-current concentration of that constituent at that Monitoring Point.
 5. Discharges to a WMU must cease immediately, and the Discharger must empty the WMU by conveying its waste to a functioning WMU, if there is any containment system failure of that unit, including, but not limited to, any detectable flow of the

⁶ At this site, every Constituent of Concern (COC) is also a monitoring parameter (MonPar), so the two terms are equivalent.

⁷ The “Point of Compliance” is a conceptual curvilinear vertical surface that extends down into the uppermost aquifer. Its surface trace follows along the down gradient side(s) of the WMU. At least one of the down gradient monitoring wells must be placed along the Point of Compliance, and the Point of Compliance, once determined, must show up on the site map in each monitoring report.

Unit's contained liquid waste into the leak-detection system (between the upper and lower liners), until such time as the cause of the failure has been remedied to restore complete containment to the WMU. The Discharger must inform the CPM and Regional Board immediately upon discovering the failure and convey to them promptly information concerning all remedial actions taken to remedy the condition.

6. Containment of waste shall be limited to the areas designated for such activity. Any revision or modification of the waste containment area, or change in operation that alters the nature and constituents of the waste produced, must be submitted in writing to the CPM, with copies to the Regional Board Executive Officer, for review. The CPM, in consultation with the Regional Board Executive Officer, must approve the proposed change before the change in operation or modification of the designated area is implemented.
7. At any WMU where the groundwater separation is less than five feet below the base of the waste, the Discharger shall construct a groundwater drainage system capable of maintaining this minimum allowable separation. The design's separation from groundwater must be based upon the separation between the pond's uppermost liner and the highest anticipated groundwater elevation.
8. Wastewater to be discharged from the project, as defined in Finding Nos. 12 and 13, must not overflow the ponds. Liquids must maintain a minimum freeboard of two feet at all times.
9. The Discharger must install in all surface impoundments/WMUs (as in this case) a permanent marker delineating the brim of the WMU. The marker is to be maintained as a reference point for measuring the freeboard.
10. Prior to removal of solids accumulated in the evaporation ponds, an analysis of the material must be conducted to verify that it is not a hazardous waste and the material must be disposed of in a manner consistent with that analysis and applicable laws and regulations. After removing the residual solids, prior to resuming use of that impoundment, the Discharger must inspect all portions of the impoundment's uppermost geomembrane to identify, and repair, any breaches in it (including any damage to underlying liner system components), and must submit a report to the CPM, with a copy to the Regional Board, that is signed by a suitably-licensed professional, detailing the location and nature of any such repair and certifying the pond's readiness for continued use.
11. The lined waste disposal ponds must be designed, constructed, operated, and maintained to prevent inundation or washout due to floods using the 24-hour/100-year design storm in water balance calculations.
12. Prior to the use of any new chemicals for control of microbes, pH, scale, and corrosion of equipments or pipelines, the Discharger must request review and approval by the CPM, in consultation with the Regional Board Executive Officer, in writing.

13. Waste conveyance systems throughout the facility area must be cleaned at least once every 90 days to prevent the buildup of solids, or when activity at the site creates the potential for release of solid materials from the conveyance systems.
14. Pipe maintenance and de-scaling activities that may include hydroblasting or sandblasting must be performed in a designated area to prevent wastes generated from these activities from impacting the environment.
15. Public contact with wastes must be precluded through means such as fences, signs, or other alternatives acceptable to the CPM, in consultation with the Regional Board Executive Officer.
16. The WMUs/surface impoundments must be managed and maintained to ensure their effectiveness, in particular:
 - a. Erosion control measures must be implemented to ensure small coves and irregularities are not created, and
 - b. Solid materials must be removed in a manner that does not damage or compromise the integrity of the liners, or any component of the containment systems.
17. Water used in the processes, dust control, and maintenance (i.e., cleanup) must be limited to the least amount necessary.

B. DISCHARGE PROHIBITIONS

1. The Discharger is prohibited from discharging, treating or composting the following wastes to the WMUs (evaporation ponds) at the facility:
 - a. Municipal solid and liquid waste;
 - b. Sludge (including sewage sludge, water treatment sludge, and industrial sludge);
 - c. Septage;
 - d. Oily and greasy liquid waste;
 - e. Radioactive waste;
 - f. Infectious or bio-hazardous materials, as defined by Health and Safety Code Section 25020.5;
 - g. Hot, burning waste materials or ash; and
 - h. Filter cake, if it is hazardous, and, thus, must be disposed of at a Class I Hazardous Waste Landfill.
2. The Class II WMUs (i.e., lined evaporation ponds) must receive only waste streams as identified in Finding Nos. 12 and 13.

3. Discharge of waste streams as mentioned above (Discharge Specifications A.2) to an area other than the evaporation ponds is strictly forbidden.
4. The Discharger must not cause degradation of any groundwater aquifer or water supply.
5. The discharge of waste to land not owned or controlled by the Discharger is prohibited.
6. Use of industrial waste streams generated at the facility for dust control on access roads, the heliostat field, or other locations is prohibited.
7. The discharge of hazardous is prohibited. The discharge of designated waste to an area other than waste management units authorized to receive such waste is prohibited.
8. The treatment or disposal of wastes at this facility must not cause pollution or nuisance, as defined in Section 13050 of the California Water Code.
9. The Discharger must not cause the concentration of any Constituent of Concern or Monitoring Parameter to exceed its respective background value (as represented by its respective Concentration Limit {suite of at least eight background data points}) at any Monitoring Point in any monitored medium addressed in the attached MRP, which is a part of these WDRs.

C. PROVISIONS

1. The Monitoring and Reporting Program is necessary to determine compliance with the WDRs and to identify facility impacts, if any, to receiving waters.
2. The Discharger must notify the CPM and the Regional Board Executive Officer at least **10 days** prior to construction of the sub grade, the installation of an unsaturated zone monitoring system, the installation of all soil and synthetic liners for containment and ancillary cover systems, and the construction of the LCRS(s) for any WMUs.
3. Visual observations and detailed geologic mapping of foundation conditions underlying each excavation for a WMU must be made during construction by a California registered geologist. A geologic report and map of the excavation for each WMU must be submitted to the CPM, with a copy to the Regional Board Executive officer, before discharging waste to the WMU.
4. The groundwater detection monitoring system must consist of monitoring wells as approved by the CPM, in consultation with the Regional Board Executive Officer. The Discharger must maintain all onsite groundwater monitoring wells in good working order at all times to ensure compliance with the monitoring provisions of these WDRs. Well maintenance may include, but need not be limited to, periodic well re-development to remove sediments.

5. **One Hundred Eighty days (180)** prior to facility operation, the Discharger must submit for approval by the CPM, in consultation with the Regional Board Executive Officer, assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the WMUs. The financial assurance mechanism must be made payable to the CEC and must address the cost for a third party (i.e., someone other than the Discharger) to complete remediation of the most likely release scenario. In the event of a release, the Discharger is expected to finance the cleanup. But in the event that the Discharger fails to perform that duty, for whatever reason, the financial assurance mechanism will be used by the CEC to provide it with the funds to address the release.
6. **One Hundred Eighty Days (180)** prior to discharge into the WMUs, the Discharger must submit to the CPM, with a copy to the Regional Board Executive Officer, a technical report describing a work plan for the installation of a groundwater-monitoring network. The network must consist of one or more background monitoring wells and two or more down gradient wells capable of yielding representative samples from the uppermost portion of the uppermost aquifer located at the hydraulically down gradient limit(s) of the WMUs. All monitoring wells must meet DWR Well Standards in addition to performance standards prescribed by Section 20415(b)(4).. All well locations and construction features are subject to the prior approval of the CPM, in consultation with the Regional Board Executive Officer, and must be sufficient to monitor potential impacts of wastes (leaked from any one of the lined evaporation ponds) on the uppermost groundwater aquifer underneath the WMUs.
7. Within **60 days** following work plan approval, the Discharger must implement the program. Within **30 days** following the construction of the approved network, the Discharger must submit copies of drillers' logs and "as built" construction drawings of each groundwater monitoring well, as well as properly surveyed reference point elevations for each well, to the CPM, with a copy to the Regional Board Executive Officer.
8. The Discharger must notify the CPM and the Regional Board Executive Officer at least **10 days** prior to installing groundwater monitoring well(s).
9. The Discharger shall commence monitoring of the background monitoring wells within **30 days** of completion of the approved groundwater monitoring network and must monitor for all specified Constituents of Concern by collecting a sample from each down gradient and background well quarterly for two years and then proposing (to the CPM, with a copy to the Regional Board Executive Officer) the most appropriate Concentration Limit (background location and suite of at least eight data points from that location). The groundwater monitoring program must include consistent sampling and analytical procedures that are designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points.

10. The Discharger's report, under Provision C.9, must characterize background groundwater quality using data from approved background well(s) using methods as prescribed in Section 20415(e)(10) by proposing a Concentration Limit for each MonPt/MonPar pair (for each MonPar at each monitoring point, including a determination of the best background data source⁸ and a set of at least eight data points from it. The Discharger's report should also propose (for each MonPt/MonPar pair, considered individually) an appropriate statistical or nonstatistical data analysis method [see Section 20415(e)(7)-(9), the USEPA's **Unified Guidance**⁹ (2009), and MRP Parts I.D.1, II.A.4., and III], to be used to determine that MonPt/MonPar pair's respective retest-triggering/confirming concentration (here called the "Threshold Value") which, if exceeded by that pair in a future sample, would provide an initial release indication, subject to validation by retesting. The proposal shall also include a retesting approach in accordance with MRP Part III, with the Threshold Value for any statistical method lowered to compensate for retesting effects, as described either in the **Unified Guidance** or, for a 95% Gamma Upper Prediction Limit method, in the two papers referenced in the footnote to Part II.A.3. of the MRP.
11. The Discharger must implement the MRP, Attachment C and revisions thereto as specified by the CPM, in consultation with the Regional Board Executive Officer, to detect at the earliest opportunity any unauthorized discharge of waste constituents from the facility, or any impairment of beneficial uses associated with brine or waste discharge from similar identified processes (i.e., boiler blow down, WSAC blow down, etc) to the evaporation ponds.
12. The Discharger should use the constituents listed in the MRP and revisions thereto, as Monitoring Parameters (i.e., all COCs are Monitoring Parameters).
13. The Discharger must submit technical and monitoring program reports, as directed by the CPM, in consultation with the Regional Board Executive Officer. Monitoring reports must be certified to be true and correct, and signed under penalty of perjury, by an authorized official of the company.
14. All monitoring must be conducted pursuant to a compliance testing program the CPM, in consultation with the Regional Board Executive Officer, has determined meets the requirements of Title 27 of the California Code of Regulations.
15. The Discharger must maintain records that contain appropriate supporting documentation of the nonhazardous nature of each waste stream accepted for on-site disposal or treatment. The records must contain certified analytical results of waste streams and a description of the waste stream generating processes, and any

⁸ The Concentration Limit can be either a (preferred) "intra-well" background data set collected from the same well that will be tested in the future or an "inter-well" background data set collected from an up gradient well, with the most appropriate being the source that produces the lowest Threshold Value (using an appropriate data analysis method), and, for the interpoint approach only, that has a mean that is comparable to that of the compliance well mean.

⁹ The **Unified Guidance** is available for downloading from <http://www.epa.gov/osw/hazard/correctiveaction/resources/guidance/sitechar/gwstats/>.

other information that may be necessary to demonstrate the nonhazardous nature of the waste being disposed into the lined ponds.

16. The Discharger must retain records of all monitoring information, copies of all reports required by these WDRs, and records of all data for a period of at least five (5) years from the date of the sample, measurement, report or application.
17. Unless otherwise approved by the CPM, in consultation with the Regional Board Executive Officer, all analyses should be conducted at a laboratory certified for such analyses by the California Department of Public Health. All analyses must be conducted in accordance with the latest California Environmental Laboratory Accreditation Program (ELAP) rulings.
18. The laboratory must use the lowest achievable reporting limits for groundwater samples required under the MRP.
19. **Ninety days (90)** prior to terminating discharge operation, the Discharger must submit a work plan, for review and approval by the CPM, in consultation with the Regional Board Executive Officer, to determine the extent (if any) of contamination to natural geologic materials and underlying groundwater by the waste. **One hundred twenty days (120)** following work plan approval, the Discharger must submit a technical contamination assessment report. A California Registered Civil Engineer or Certified Engineering Geologist must prepare the work plan and technical contamination assessment report.
20. Upon ceasing operation at this facility, all waste, liner system components, and natural geologic material contaminated by waste and surplus or unprocessed material, shall be removed from the site and disposed of in accordance with applicable laws and regulations. After removal of all wastes, the Discharger should request in writing an inspection and approval by the CPM and a representative of the Regional Board Executive Officer.
21. **Two years prior** to closure of the facility or any portion thereof, the Discharger must submit, for review and approval by the CPM, in consultation with the Regional Board Executive Officer, a closure plan in accordance with Section 21769.
22. The closure plan must include at least the following:
 - ii. Facility location map;
 - iii. Topographic maps;
 - iv. Existing monitoring and control systems;
 - v. Land uses;
 - vi. Estimated closure date and schedule;
 - vii. General closure description;
 - viii. Other special requirements;
 - ix. Revised closure cost estimates (if appropriate); and
 - x. Any other applicable requirements as specified in CCR Title 27.

23. The Discharger must notify the CPM and the Regional Board Executive Officer at least **180 days** prior to beginning of any partial or final closure activity of the evaporation ponds.
24. The Discharger must maintain the established irrevocable bond for closure in an amount acceptable to the CPM, in consultation with the Regional Board Executive Officer, or provide other means to ensure financial security for closure. The amount of bond may be changed to reflect updated closure cost adjusted for inflation at the discretion of the CPM, in consultation with the Regional Board Executive Officer.
25. In the event of any change in control or ownership of land or waste discharge facility presently owned or controlled by the Discharger, the Discharger must notify the succeeding owner or operator of the existence of these WDRs by letter, a copy of which must be immediately forwarded to the CPM and the Regional Board.

To assume operation under these WDRs, the succeeding owner or operator must apply in writing to the CPM and the Regional Board Executive Officer requesting transfer of these WDRs. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for maintaining contact with the CPM and the Regional Board, and a statement, as follows. The statement shall comply with the signatory paragraph of Standard Provision and shall state that the new owner or operator assumes full responsibility for compliance with these WDRs. Failure to submit the request will be considered a discharge without requirements, a violation of the California Water Code. Transfer must be approved or disapproved in writing by the CPM, in consultation with the Regional Board Executive Officer.

26. Prior to a modification that results in any material change in the quality or quantity of waste discharge, or a material change in the location of waste discharge, the Discharger must report all pertinent information in writing to the CPM and the Regional Board Executive Officer and obtain revised WDRs for inclusion in the CEC certification.
27. All permanent containment structures, and erosion and drainage control systems, must be certified by a California Registered Civil Engineer or Certified Engineering Geologist to meet prescriptive standards and performance goals.
28. The Discharger must ensure that all site-operating personnel are familiar with the content of these requirements, and that a copy of these WDRs remains available at the facility.
29. The Discharger must allow authorized representative(s) of the CPM and/or Regional Board to:
 - a. Enter the premises regulated by these WDRs, or the place where records are kept under the conditions of these WDRs;
 - b. Have access to and copy records kept under the condition of these WDRs;

- c. Inspect at reasonable times facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under these WDRs; and
 - d. Sample or monitor for the purpose of assuring compliance with these WDRs or as authorized by the California Water Code, any substance or parameter at this location.
30. The Discharger must comply with terms and conditions of these WDRs. Any noncompliance constitutes a violation of the WDRs pursuant to the Porter-Cologne Water Quality Act (Water Code Section 13000 et seq.), and is grounds for enforcement action by the CEC or the Regional Board.
31. These WDRs do not convey property rights of any sort, or any exclusive privilege, nor does it authorize injury to private property, or invasion of personal rights, nor infringement of federal, state or local laws or regulations.
32. Pursuant to the California Business and Professions Code Sections 6735, 7835, and 7835.1 all engineering and geologic evaluations and judgments must be performed by or under the direction of California registered professionals.

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SOIL AND WATER RESOURCES – APPENDIX C

MONITORING AND REPORTING PROGRAM – Rice Solar Energy Project, Class II Disposal Facility, Riverside County

Note: the site's declared Monitoring Parameters (MonPars) under Part II.A.4 and the Reporting Period declaration under Part I.D.1, of this Monitoring and Reporting Program (MRP), together with MRP Part III (for reference purposes) and the waste and surface impoundment sampling of Parts II.B. and II.C., become effective on the day that the CEC certification for this site becomes effective. All MRP requirements are in-effect as of the start of the first six-month-long Reporting Period [see Part I.D.1 of this MRP] following approval of the Discharger's Concentration Limit Report [see WDR Provisions C.10].

PART I -- GENERAL REQUIREMENTS

A. GENERAL

A Discharger who owns or operates a Class II Surface Impoundment is required to comply with this site-specific Monitoring and Reporting Program (MRP) in order to meet the provisions of Title 27, Division 2, Chapter 3, Subchapter 3, Article 1 of the California Code of Regulations for the purpose of detecting, characterizing, and responding to releases to the groundwater. Because this will be a new facility, there is no existing release. Therefore, the purpose of this MRP is to establish a Detection Monitoring Program that meets the first of the Title 27 purposes ("detecting").

1. This MRP is established pursuant to Provisions C.1 of the Appendix B WDRs. The principal purpose of this self-monitoring program is:
 - a. To document compliance with Waste Discharge Requirements (WDRs), and prohibitions established by the California Energy Commission, in consultation with the Colorado River Basin Regional Water Quality Control Board (Regional Water Board);
 - b. To facilitate self-policing by the Discharger in the prevention and abatement of pollution arising from waste discharge;
 - c. To conduct water quality analyses designed to detect a release from any of the three regulated surface impoundments at the facility.
2. The Energy Commission's Compliance Project Manager (CPM), in consultation with the Regional Water Board Executive Officer, may alter the monitoring parameters and/or the monitoring frequency during the course of this monitoring program if deemed necessary. *Failure to comply with this MRP constitutes noncompliance with the WDRs and the California Water Code, which can result in imposition of civil monetary liability.*

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analysis must be performed according to the most recent version of USEPA approved methods. Specific methods of analysis must be identified. If methods other than USEPA-approved methods are used, the exact methodology must be submitted for review and approval by the CPM, in consultation with the Regional Water Board Executive Officer, prior to use. All analyses shall be conducted by a laboratory certified by the California Department of Public Health to perform the required analyses. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the CPM and the Regional Water Board. All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurement. For any left-censored concentration data point (i.e., either a non-detect {ND} value, or trace value), the laboratory should report the Method Detection Limit (MDL) and Practical Quantitation Limit (PQL) for that determination and, if feasible, should include an estimated concentration (e.g., with a "P-value" flag, and with the concentration estimate in parentheses) for any trace value determination.

C. RECORDS TO BE MAINTAINED

Written reports shall be maintained by the Discharger or laboratory, and shall be retained for a minimum of five years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the CPM, in consultation with the Regional Water Board. Such records shall show the following for each sample:

1. Identity of sample and of the Monitoring Point or Background Monitoring Point from which it was taken, along with the identity of the individual who obtained the sample;
2. Date and time of sampling;
3. Date and time that analyses were started and completed, and the initials of the personnel performing each analysis;
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
5. Calculations of results; and
6. Results of analyses, and the MDL and PQL for each analysis.

D. REPORTING

1. Detection Monitoring Reports – For each Monitored Medium, all Monitoring Points and Background Monitoring Points assigned to detection monitoring under Part II.A.7 of this MRP shall be monitored **semiannually** for the **Monitoring Parameters (Part II.A.4)**. Unlike with most WMUs under Title 27 WDRs, there will be no five-yearly monitoring for those COCs that are not Monitoring Parameters, given that, for this site's WMUs, there are so few waste constituents that each COC is a Monitoring

Parameter. The monitoring year's first Reporting Period begins on March 1 and ends on August 31, with the report due by September 15; the second Reporting Period begins on September 1 and ends on February 28, with the report due by March 15.

A "Detection Monitoring Report" shall be submitted to both the CPM and the Regional Water Board in accordance with the schedule contained in the Summary of Self-Monitoring and Reporting Requirements, and shall include the following:

- a. A Letter of Transmittal that summarizes the essential points in each report shall accompany each report submittal. The letter of transmittal shall be signed by a principal executive officer at the level of vice-president or above, or by his/her duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter of transmittal must include:
 - i. A discussion of any violations noted since the previous report submittal and a description of the actions taken or planned for correcting those violations. If no violations have occurred since the last submittal, that should be so stated;
 - ii. If the Discharger has previously submitted a detailed time schedule or plan for correcting any violations, a progress report on the time schedule and status of the corrective actions being taken; and
 - iii. A statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.
- b. A Compliance Evaluation Summary shall be included in each Detection Monitoring Report. The compliance evaluation summary shall contain at least:
 - i. Velocity and direction of groundwater flow for each monitored groundwater body under and around the surface impoundment based upon the water level elevations taken during the collection of water quality data at the start of the Reporting Period and during a separate mid-Period velocity-and-direction determination. For each of these two determinations, include a description and graphical presentation (e.g., arrow on a map);
 - ii. Methods used for water level measurement and pre-sampling purging for each monitoring well addressed by the report including:
 - a. Method, time, and equipment used for water level measurement;
 - b. Type of pump used for purging, placement of the pump in the well, pumping rate, and well recovery rate;
 - c. Methods and results of field testing for pH, temperature, electrical conductivity, and turbidity, including; equipment calibration methods, and method for disposing of purge water

- iii. Methods used for sampling each Monitoring Point and Background Monitoring Point, including:
 - a. A description of the type of pump, or other device used, and its placement for sampling;
 - b. A detailed description of the sampling procedure: number and description of samples, field blanks, travel blanks, and duplicate samples; types of containers and preservatives used; date and time of sampling; name and qualifications of individual collecting samples, and other relevant observations;
 - c. A map or aerial photograph showing the locations of Monitoring Points, and Background Monitoring Points;
 - d. For each Detection Monitoring Report, provide all relevant laboratory information including results of all analyses;
 - e. An evaluation of the effectiveness of the run-off/run-on control facilities;
 - f. A summary of reportable spills/leaks occurring during the reporting period; include estimated volume of liquids/solids discharged outside designated containment area, a description of management practices to address spills/leaks, and actions taken to prevent reoccurrence.
2. Annual Summary Report – The Discharger shall submit to the CPM and Regional Water Board, an “Annual Summary Report” for the period the prior and current Reporting Periods; this Annual Summary Report can be combined with the monitoring report for the Reporting Period just ending (see Part I.D.1 of this MRP). The “Annual Summary Report” is due **March 15** of each year, and shall include the following:
 - a. A graphical presentation of analytical data for each Monitoring Point and Background Monitoring Point (Title 27, Section 20415(e)(14)), in the form of a concentration-versus-time plot showing all data, for that MonPt/MonPar pair, obtained for that pair during at least the prior five calendar years. Each such graph can plot the concentration of a given MonPar over time for a given Monitoring Point and Background Monitoring Point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given monitoring parameter, the scale for background plots shall be the same as that used to plot down gradient data. On the basis of any aberrations noted in the plotted data, the CPM, in coordination with the Regional Water Board Executive Officer, may direct the Discharger to carry out a preliminary investigation (Title 27, Section 20080(d)(2)) the results of which will determine whether or not a release is indicated;

- b. A tabular presentation of all monitoring analytical data obtained during the previous two Monitoring and Reporting Periods, submitted on hard copy within the annual report as well as digitally on electronic media in a file format acceptable to the CPM, in consultation with the Regional Water Board Executive Officer (Title 27, Section 20420(h)). The submittal of data in hard copy and on diskette CD-ROM constitutes the "... form necessary for..." statistical analysis, in that this facilitates periodic review of the Discharger's declared monitoring and testing results;
- c. A comprehensive discussion of the compliance record and any corrective actions taken or planned, which may be needed to bring the Discharger into full compliance with WDRs;
- d. **Annual Influent sampling report** containing analytical results of quarterly samples collected from the waste collection system prior to disposal to evaporation ponds, and evaporation pond sampling results as specified in Part II B and C of this MRP, respectively.
- e. A written summary of the groundwater analyses, indicating changes made since the previous annual report;
- f. An evaluation of the effectiveness of the run on/run-off control facilities, pursuant to Title 27, Section 20365;
- g. The following two appendices, updated to reflect conditions at the end of that monitoring year's just-completed (#2-of-2) Reporting Period:
 - i. **Appendix A** — a table having a record (row) for each MonPt/MPar pair (i.e., for each Monitoring Parameter at each Monitoring Point) that shows that pair's: then-current concentration limit type (e.g., enter "interpoint" and background MonPt name, if the data is from a background MonPt, or enter "intrapoint," if the data comes from that same MonPt during at least its initial two years); retesting method (either "pass-1-of-3" or "pass-1-of-2"); background data points; Threshold Value ("TV," calculated by applying the data analysis method {declared under Part I.D.2.g.i} to that pair's concentration limit); and compliance status (enter "Detection Mode" if the pair has shown no retest-verified release indication or "Tracking Mode" if there has been such an indication). This is how this MRP implements Title 27, Section 20390(a); and
 - ii. **Appendix B** — a table showing, for each then-current data analysis compliance-testing method, a description thereof [including, for statistical methods applied to readily-detectable inorganic waste constituents, the value used for each parameter setting (e.g., $\alpha = 0.01$)], and a list of each MonPt/MonPar pair that uses that method. For "Detection Mode" MonPt/MonPar pairs (i.e., pairs that have not shown a verified release indication) that are evaluated under the California Nonstatistical Data Analysis Method (CNSDAM), the description is "CNSDAM, per the MRP." For a

statistical method applied to a MonPt/MonPar pair in Detection Mode, the description is adequate if a person familiar with the method can apply it to that pair's declared concentration limit in the above-required table (Part I.D.2.g.i of this MRP) and come up with the same Threshold Value (TV) as declared for that pair in that table. For any (release-affected) MonPt/MonPar pair in Tracking Mode, the TV is the background mean value (serving as that pair's respective cleanup concentration goal), which shall be plotted as a horizontal line on that pair's respective concentration-versus-time plot (included elsewhere in the Annual report). For any statistical method following the USEPA's 2009 Unified Guidance (UG) the method description can be the method's name, the UG page range(s) to be following in calculating the TV, and the parameter settings. This is how this MRP implements Title 27, Sections 20415(e)(7) and 20420(e); and

- h. If appropriate (every four years) a proposed-and-validated update, under Part II.A.7.b. of this MRP, of the Concentration Limits to include appropriate new background data (from that MonPt/MonPar pair's declared background data source).

3. Contingency Reporting

The Discharger shall report by telephone any spill that may endanger human health or the environment to the Regional Water Board Executive Officer and the California Emergency Management Agency as soon as: (1) the Discharger has knowledge of the discharge, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures. During non-business hours, the Discharger shall leave a message on the Regional Water Board office voice recorder. Any other type of spill, regardless of type or size, is to be reported to the CPM and the Regional Water Board by telephone within 48 hours.

After reporting a spill, a written report shall be filed with the CPM and the Regional Water Board Executive Officer within seven days, containing at a minimum the following:

- i. A map showing the location(s) of the discharge/spill;
 - ii. A description of the nature of the discharge (all pertinent observations and analyses including quantity, duration, etc.); and
 - iii. Corrective measures underway or proposed.
- a. Should the initial statistical comparison (Part III.A.1.) or non-statistical comparison (Part III.A.2.) indicate, for any Monitoring Parameter (MonPar), that a release is tentatively identified, the Discharger shall immediately notify the CPM and the Regional Water Board verbally as to the Monitoring Point(s) and MonPar(s) involved, shall provide written notification by certified mail within seven days of such determination (Title 27, Section 20420(j)(1)), and shall conduct a discrete retest in accordance with Part III.A.3. If the retesting confirms the existence of a release, the Discharger shall carry out the requirements of Part I.D.3.d. In any case, the Discharger shall inform the CPM and the Regional

Water Board of the outcome of the retest as soon as the results are available, following up with written results submitted by certified mail within seven days of completing the retest and the inclusion of a discussion of the event in the next scheduled Monitoring Report and a notation on it in the Annual Summary Monitoring Report summary section.

- b. If either the Discharger or the CPM, in consultation with the Regional Water Board, determines that there is significant physical evidence of a release (Title 27, Section 20385(a)(3)), the Discharger shall immediately notify the CPM and the Regional Water Board of this fact by certified mail (or acknowledge the CPM's determination made in consultation with the Regional Water Board) and shall carry out the requirements of Part I.D.3.d. for all potentially-affected monitored media.
- c. If the Discharger concludes that a release has been discovered:
 - i. If this conclusion is not based upon "direct monitoring" and compliance testing of the MonPars, pursuant to Part II.A.5., then the Discharger shall, within thirty days, sample for all MonPars at all Monitoring Points and submit them for laboratory analysis. Within seven days of receiving the laboratory analytical results, the Discharger shall notify the CPM and Regional Water Board, by certified mail, of the concentration of all MonPars at each Monitoring Point. Because this is a scan, rather than an application of the site's statistical-or-nonstatistical data analysis method, merely obtain and report a single concentration datum for each MonPar at each Monitoring Point (Title 27 Section 20420(k)(1));
 - ii. The Discharger shall, within 90 days of discovering the release (Title 27, Section 20420(k)(5)), submit to the CPM and the Regional Water Board an addendum to the site's Report of Waste Discharge proposing an Evaluation Monitoring Program meeting the requirements of Title 27, Section 20425; and
 - iii. The Discharger shall, within 180 days of discovering the release [Title 27, Section 20420(k)(6)], submit to the CPM and the Regional Water Board a preliminary engineering feasibility study meeting the requirements of Title 27, Section 20430.
- d. Any time the Discharger concludes - or the CPM, in consultation with the Regional Water Board Executive Officer directs, the Discharger to conclude - that a release from the surface impoundment has proceeded beyond the facility boundary, the Discharger shall so notify all persons who either own or reside upon the land that directly overlies any part of the plume (Affected Persons).
 - i. Initial notification to Affected Persons should be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release; and

- ii. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding a material change in the nature or extent of the release has occurred.

4. Leakage Detection System (LDS), and Solids Monitoring

- a. Reporting shall be conducted **semi-annually**.
- b. Provide volume of solids removed from the holding pond each month for that reporting period, and transported to a waste management facility for disposal. Include name and location of waste management facility.
- c. Conduct **quarterly** inspections of Leakage Detection System (LDS), and evaporation ponds.

PART II -- MONITORING REQUIREMENTS FOR GROUNDWATER

A. GROUNDWATER SAMPLING AND ANALYSIS FOR DETECTION MONITORING

1. Groundwater Surface Elevation and Field Parameters – Groundwater sampling and analysis shall be conducted semiannually pursuant to California rulings, and include an accurate determination of the groundwater surface elevation and field parameters (temperature, electrical conductivity, turbidity) at each groundwater sampling location (Title 27, Section 20415(e)(13) & (e)(15)). In addition, the Discharger shall make a mid-Reporting-Period determination of the elevation (at each groundwater sampling location). If a given well is to be sampled (in addition to the groundwater elevation determination), the groundwater elevation shall be obtained prior to purging the well and sample collection. The resulting suite of location-specific groundwater elevation values shall be used to produce the quarterly groundwater flow rate/direction analyses required under Part I.D.1.b.i. Groundwater wells shall have their water surface elevation gauged using an electronic sounder capable of measuring depth to groundwater within 100th of an inch. Following gauging, wells that are to be sampled shall be purged according to EPA groundwater sampling procedures until:
 - a. pH, temperature, and conductivity are stabilized within 10%, and
 - b. turbidity has been reduced to 10 NTUs or the lowest practical levels achievable.

The above identified parameters shall be recorded in the field, and submitted in the monitoring report. Sampling equipment shall be decontaminated between wells. Purge water may be discharged to the brine pond; discharge to the ground surface is prohibited.

2. Groundwater Sample Collection – Groundwater samples shall be collected from all groundwater monitoring points and background monitoring points after wells recharge to within at least 80% of their original static water level. Groundwater samples shall be collected with a peristaltic pump that is decontaminated between sampling events. Samples shall be labeled, logged on chain-of-custody forms, and placed in cold storage pending delivery to a State certified analytical laboratory.
3. Five-Day Sample Procurement Limitation – To satisfy data analysis requirements for a given reporting period, samples collected from all Monitoring Points and Background Monitoring Points shall be taken within a span not exceeding five days, and shall be taken in a manner that insures sample independence to the greatest extent feasible (Title 27, Section 20415(e)(12)(B)). Therefore, in order to accommodate the pass-1-of-3 retesting approach used under the MRP for statistically-tested Monitoring Parameters (MonPars), and the pass-1-of-2 retesting approach used for VOCs under the nonstatistical test method, the first sample of the Reporting Period, for all COCs at all Monitoring Points and Background Monitoring Points, shall be taken at the very start of the Reporting Period. If the first sample

exceeds that MonPt/MonPar pair's respective Threshold Value, then the Discharger shall take and process a mid-Reporting-Period retest sample (for that MonPt/MonPar pair). If a second retest is needed (pass-1-of-3 approach only), the Discharger will take the sample just prior to the end of that Period and, in that case only, will not take a sample for that MonPt/MonPar pair at the start of the subsequent Report.

Under a pass-1-of-3 retesting approach for a statistically-based test, the Threshold Value shall be calculated in accordance with the USEPA's **Unified Guidance** (2009) or other guidance that lowers the TV to compensate for the effect of retesting¹⁰, and the initial release-indication shall prevail only if both retests confirm the original indication. This MRP applies this improved approach in place of Title 27's prescriptive pass-2-of-3 approach and retest-within-30-days approach (applicable to statistical tests), as allowed pursuant to §20080(a)(1) of that Title.

Under a pass-1-of-2 retesting approach for the nonstatistical method included in this MRP, the initial **release**-indication shall prevail only if the single retest confirms the original indication.

4. Groundwater Monitoring Parameters for Detection Monitoring – Groundwater samples collected from monitoring points and background monitoring points shall be analyzed for the following:

<u>Parameter</u>	<u>Unit</u>	<u>Sample Type</u>
Total Dissolved Solids (TDS)	mg/L	Grab
EC (Electrical Conductivity)	µmhos/cm	Grab
pH	pH units	Grab
All Volatile Organic Compounds ever detected above their PQL in wastewater (see MRP Part II.B)	µg/L	Grab
CCR Title 22 Heavy Metals, Dissolved (As, Ba, Cd, Pb, Zn, etc)	mg/L	Grab
Oil & Grease	mg/L	Grab
Total Petroleum Hydrocarbon (TPH-gas & diesel)	µg/L	Grab

For all Monitoring Points and Background Monitoring Points, the initial sampling event for each of the two semi-annual Reporting Periods shall early in March and

¹⁰ For example, for a 95% Gamma Upper Prediction Limit, see the Table 4 discussion at the back of: **One-Sided Approximate Prediction Intervals for at Least p of m Observations from a Gamma Population at Each of r Locations**, by DK Bhaumik and RD Gibbons [TECHNOMETRICS, February 2006, VOL. 48, NO. 1] and **Simultaneous Gamma Prediction Limits for Ground Water Monitoring**, by RD Gibbons and DK Bhaumik [Ground Water Monitoring & Remediation 26, no. 3 / Summer 2006 / pages 105-116].

September, respectively, of each year in accordance with Parts I.D.1 and II.A.3. of this MRP. Monitoring results obtained during a given Reporting Period shall be reported in the semiannual Detection Monitoring Report for that Reporting Period.

5. Data Analysis – Non-statistical and statistical compliance-testing data analysis, whether for an initial sample (for that Reporting Period) or a retest sample, shall be carried out as soon as the data is available, in accordance with Part III of this monitoring program.
6. Monitoring Points and Background Monitoring Points – The Discharger shall sample the Monitoring Points and Background Monitoring Points listed in the approved report submitted under Part C.10 of the WDRs, which report is incorporated by reference in this MRP, in accordance with the sampling schedule given under Parts I.D.1., II.A.3, and II.A.4 of this MRP, by obtaining a single new concentration datum for each MonPt/MonPar pair for each initial test (for that Reporting Period) or retest, and subjecting it to the most appropriate test under Part III. In addition, the Discharger shall sample each background monitoring point at least once each Reporting Period.
7. Initial Background Determination – The initial background data set (Concentration Limit) for each MonPt/MonPar pair is established under the approved report submitted under Part C.10 of the WDRs. However:
 - a. **New MonPars or Wells**
 - i. Whenever a new waste constituent is added to the MonPars in the Water Quality Protection Standard, the Discharger shall collect at least one (1) sample **quarterly** for two (1) years from each Monitoring Point and Background Monitoring Point in each monitored medium. Nevertheless, for any of these eight data points (for that new MonPar at each sampling location), the Discharger can substitute existing data for that constituent, from the sampling location. As part of the next scheduled Monitoring Report following completion of this data collection effort, the Discharger shall propose a Concentration Limit for that new MonPar at each Monitoring Point, as was done initially under Part C.10 of the WDRs. The new Monitoring Parameter and its Concentration Limits become effective during the Reporting Period following the approval of the Rice Solar Energy Project; and
 - ii. Whenever a new Monitoring Point is added, the Discharger shall sample the new monitoring point at least **quarterly** for at least two (2) years, and shall propose an appropriate Concentration Limit for each MonPar there, as done initially under Part C.10 of the WDRs analyzing for all Monitoring Parameters. The new Monitoring Point, and the Concentration Limits for each MonPar there, become effective during the Reporting Period following the approval of the Rice Solar Energy Project.

- b. **Updating Concentration Limits** — The updating of the Concentration Limit for each MonPt/MonPar pair follows a four-year cycle, regardless of whether the Concentration Limit is of the interpoint or intrapoint type. Every four years after this monitoring program becomes effective, the Annual Summary Monitoring Report will include a proposal to update each Concentration Limit by adding the data from its background data source, if appropriate. For each given MonPt/MonPar pair, the proposal shall create a pool of the eight prospective new data points and the Concentration Limit's most recent background data points and shall run a Sen's-Slope/Mann-Kendall test at 90% confidence, looking only for a significant upward slope (thus, it is really a one-tailed test at 95% confidence). In the absence of a significant slope indication, the Discharger shall declare that result and propose that the new data be added to that MonPt/MonPar pair's Concentration Limit. The revised Concentration Limits become effective during the Reporting Period following approval of the Rice Solar Energy Project.

8. Semiannual Reporting of the Quarterly Determination of Groundwater Flow Rate/Direction [Title 27, Section 20415(e)(13) & (e)(15)] – The groundwater flow rate and direction determinations done twice each Reporting Period under Part I.D.1.b of this MRP.

B. WASTE COLLECTION SYSTEM SAMPLING

Influent samples shall be collected from the waste collection system, which receives combined industrial waste streams generated at the facility. The samples should be representative of the volume and nature of the discharge. Influent sampling should include the following, with the results included in each Annual Summary Monitoring Report and with due attention paid to any non-MonPar constituent present in excess of its respective PQL:

<u>Parameter</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>
Total Dissolved Solids (TDS)	mg/L	Grab	Quarterly
EC (Electrical Conductivity)	µmhos/cm	Grab	Quarterly
pH	pH units	Grab	Quarterly
Volatile Organic Compounds	µg/L	Grab	Annually
CCR Title 22 Heavy Metals, Dissolved (As, Ba, Cd, Pb, Zn, etc)	mg/L	Grab	Annually
Oil & Grease	mg/L	Grab	Quarterly
Total Petroleum Hydrocarbon (TPH-gas & diesel)	µg/L	Grab	Quarterly

For Volatile Organic Compounds (VOCs), any VOC detected pursuant to this waste testing that is present in excess of its respective PQL concentration becomes a

Groundwater MonPar. For any such new VOC MonPar, the Discharger shall meet the data gathering and submittal requirements of MRP Part II.A.7.a.i.

Note that sampling and analysis under this Part and Part II.C. begins as soon as there is waste to sample, even though groundwater compliance testing is not yet in effect, and that, until groundwater compliance testing begins, this information will constitute the majority of the information in the semi-annual Monitoring Reports and the Annual Summary Monitoring Report.

C. EVAPORATION PONDS / SURFACE IMPOUNDMENT SAMPLING

<u>Parameter</u>	<u>Unit</u>	<u>Sample Type</u>	<u>Frequency</u>
Freeboard	feet	Measurement	Monthly

The Discharger must inspect the condition of lined evaporation ponds each month and record visual observations (e.g., in data sheets or bound logbook). Notations, which shall be included in each Reporting Period's monitoring report, shall include observations of whether weeds are developing along the bank, whether scum, or debris accumulating on the water surface; whether burrowing animals or insects are present.

D. FACILITY MONITORING

1. Annual Inspection

The Discharger should conduct an annual rainy season inspection. The inspection must assess the facility drainage control systems, WMUs, retention basin, groundwater monitoring wells, and fencing. Any necessary construction, maintenance, or repairs must be completed within 15 days of the inspection. The Discharger must include its finding and any corrective action taken in the Annual report.

2. Seismic Events

The Discharger must implement the Post-Earthquake Inspection and Response Plan following any seismic event which causes significant ground motion at the site.

PART III -- STATISTICAL AND NON-STATISTICAL ANALYSES

A. STATISTICAL DATA ANALYSIS METHODS

The Discharger shall use any one of the following statistical data analysis methods for each MonPt/MonPar pair having a Concentration Limit consisting of (all or mostly) numerical concentration values, including estimated concentrations (“J” values), rather than “ND” determinations. The best method for a given MonPt/MonPar pair may not be the same for another MonPar at that MonPt or for that same MonPar at another MonPt, so the proposal [under WDR Part C.10] must be specific to each MonPt/MonPar pair:

1. A parametric Upper Prediction Limit run in accordance with the USEPA’s **Unified Guidance**¹¹ (“UG”, 2009) manual;
2. A parametric Shewhart Control Chart run in accordance with the USEPA’s UG;
3. A parametric 95% Gamma Upper Prediction Limit run in accordance with the two papers (by Gibbons and Bhaumik) listed in the footnote to MRP Part II.A.3; or
4. If none of the above methods are suitable, another method used in accordance with the USEPA’s UG.

All statistical methods used for validating ongoing compliance (Detection Mode testing) shall use a pass-1-of-3 plan for retesting [see MRP Part II.A.3], with the retest-triggering concentration (Threshold Value) lowered to compensate for the retesting approach, pursuant to the UG or the Gibbons/Bhaumik papers referenced above.

B. NONSTATISTICAL DATA ANALYSIS METHOD (NSDAM)¹²

1. **Non-Statistical Method For Detection Mode MonPars Seldom Found In Background** — For any given Monitoring Point (MonPt) subject to compliance testing each Reporting Period, the discharger shall use this data analysis method, jointly, for all Monitoring Parameters (MonPars) on that MonPt’s “scope list” (see ¶III.B.1.a. for the initial test scope list and ¶III.B.2.b for the modified scope list used during the single retest).
 - a. **Scope List** — Create a current “scope list” for that MonPt showing each detection mode MonPar, at that MonPt, that exceeds its respective MDL in less than 10% of its background data set (Concentration Limit).
 - b. **Two Triggers** — From the scope list made for that MonPt under ¶III.B.1.a. above, for an initial test [or, for a retest, the modified scope list under ¶III.B.2.b, below], identify each scope-list-MonPar in the current sample from that MonPt that exceeds either its respective MDL or its respective PQL. The discharger shall conclude that these exceeding MonPars provide a preliminary indication [or,

¹¹ The **Unified Guidance** is available for downloading from <http://www.epa.gov/osw/hazard/correctiveaction/resources/guidance/sitechar/gwstats/> .

¹² For this site, this nonstatistical test applies mainly to the VOC MonPars (i.e., those VOCs that have been detected above their respective PQL in the facility waste stream).

for a retest, provide a measurably significant release indication], at that MonPt, if either:

- i. two or more of the MonPars on the MonPt's scope list exceed their respective MDL; or
- ii. at least one of the MonPars on the MonPt's scope list equals or exceeds its respective PQL.

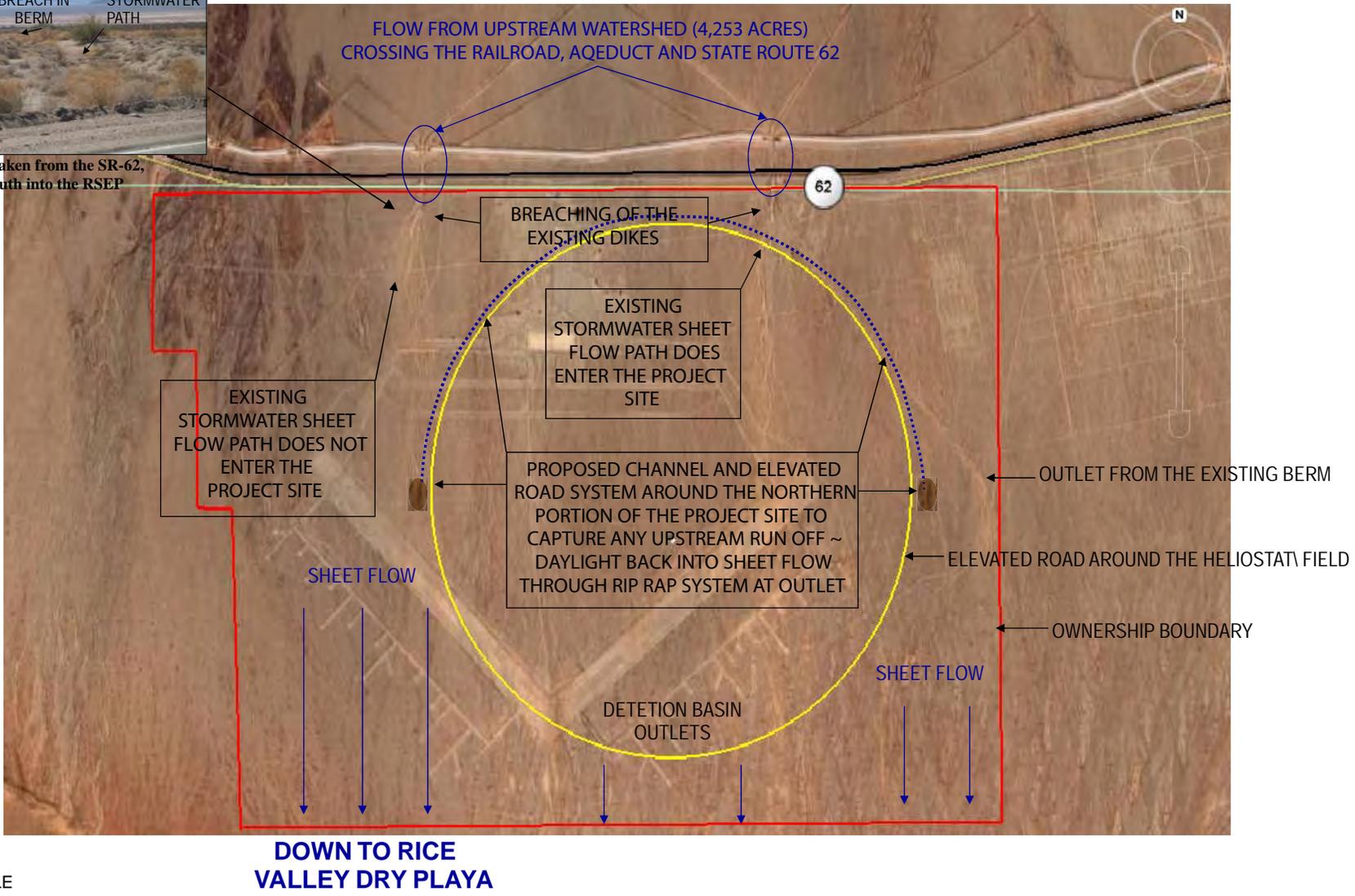
2. Single Discrete Retest (A "Pass-1-of-2" Plan):

- a. In the event that the discharger concludes [pursuant to paragraph III.B.1.ii.b., above] that there is a preliminary indication, then the discharger shall immediately notify the CPM and the Regional Water Board staff by phone or e-mail and obtain a new independent (retest) sample from the indicating MonPar at mid-Reporting-Period.
- b. For any given MonPt retest sample, the discharger shall include, in the retest analysis, only the laboratory analytical results for those constituents indicated in that MonPt's original test [under ¶III.B.1.b.], and these indicated constituents shall comprise the MonPt's "modified scope list," for use in the retest. As soon as the retest data are available, the discharger shall apply the same test [under ¶III.B.1.b, above, but using this modified scope list] to analyze the retest sample's data at that compliance MonPt.
- c. If the retest sample trips either (or both) of the triggers under ¶ III.B.1.b, then the Discharger shall conclude that there is a measurably significant increase at that MonPt for the constituent(s) indicated in the validating retest sample. Furthermore, given a confirming retest, beginning with the next Reporting Period, the discharger shall monitor the indicated-and-verified constituent(s) in Tracking Mode (instead of Detection Mode) at that MonPt, shall report this conclusion immediately to the CPM and Regional Water Board, shall remove the indicating constituent(s) from the scope list created (under ¶III.B.1.a. of this M&RP) for that MonPt, and shall highlight this release-indication conclusion and these changes in the next scheduled monitoring report and in the facility's operating record.

SOIL AND WATER RESOURCES - FIGURE 1
 Rice Solar Energy Project - Proposed Drainage Plan



Photo A: Taken from the SR-62, Looking South into the RSEP

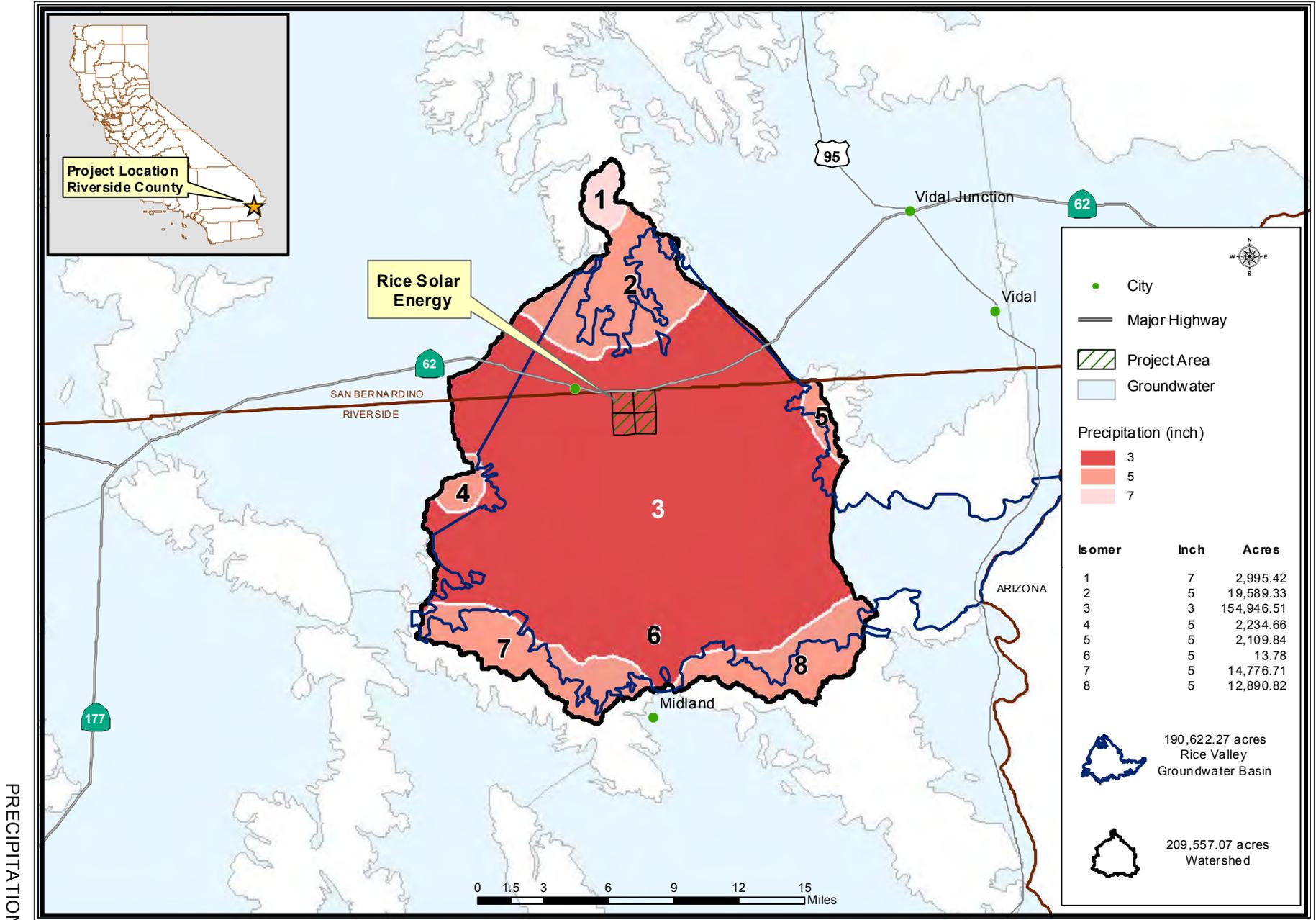


SOIL AND WATER RESOURCES

NOT TO SCALE
 Source: Google Earth, 2009
 Photos from B.Anders,
 Rice Solar Energy Project
 Site Visit 2008

SOIL AND WATER RESOURCES - FIGURE 2

Rice Solar Energy Project - Precipitation within the Watershed Recharging Rice Valley Groundwater Basin



PRECIPITATION

TRAFFIC AND TRANSPORTATION

Testimony of James Jewell, Alan Lindsley, Shaelyn Strattan, Clifford Ho and Scott Debauche

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that with the adoption of the attached Conditions of Certification **TRANS-1** through **TRANS- 10**, the RSEP would not cause a significant adverse direct or indirect impact or contribute significantly to cumulative transportation or traffic impacts associated with RSEP construction, operation and decommissioning. These Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of traffic and transportation-related impacts to less than significant and for the project to conform with all applicable traffic and transportation-related laws, ordinances, regulations, and standards (LORS). The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in its Record of Decision.

INTRODUCTION

In the **Traffic and Transportation** section, the agencies address the extent to which the proposed RSEP may affect the traffic and transportation system within the vicinity of the project site. This analysis focuses on whether construction and operation of RSEP would cause traffic and transportation impact(s) under CEQA and NEPA and whether the project complies with the applicable LORS.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Traffic and Transportation Table 1 provides a general description of adopted federal, state, and local LORS pertaining to traffic and transportation relevant to the proposed project.

Traffic and Transportation Table 1
Laws, Ordinances, Regulations, and Standards

Applicable Law	Description
Federal	
Code of Federal Regulations, Title 14 Aeronautics and Space, Part 77 Objects Affecting Navigable Airspace	This regulation establishes standards for determining physical obstructions to navigable airspace; sets noticing and hearing requirements; and provides for aeronautical studies to determine the effect of physical obstructions on the safe and efficient use of airspace.

(14 CFR 77/FAR Part 77)	
49 CFR, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (including hazardous materials program procedures) and provides safety measures for motor carriers and motor vehicles that operate on public highways.
State	
California Vehicle Code (CVC), division 2, chapter 2.5; div. 6, chap. 7; div. 13, chap. 5; div. 14.1, chap. 1 & 2; div. 14.8; div. 15	Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.
California Streets and Highway Code, division 1 & 2, chapter 3 & chapter 5.5	Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits.
California Street and Highway Code §§670-695	Includes permit provisions from California Department of Transportation (Caltrans) including but not limited to permits for roadway encroachment during truck transportation and delivery and permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.
Government Code §§65940 and 65944	Requires identification of military installations within 1,000 feet of the project site, low-level flight paths, special use airspace, and urbanized areas in the project area, and requires consultation among the project applicant, public agency, and the affected military branch to reduce the potential for impacts to military operations.
Local	
Riverside County Ordinance 461	Provides road improvement standards and specifications.
Riverside County General Plan Transportation Element	Specifies that all County maintained roads and conventional state highways shall operate at a Level of Service (LOS) C or better.
Riverside County Code, Ordinance 448 (as amended through 448.A) Airport Operations (2000)	This ordinance establishes airport operating areas and regulates height standards and limits within those areas. (Applies only to North of Desert Center Alternative)
Riverside County Congestion Management Plan (CMP)	Specifies that all CMP roadways shall operate at a LOS E or better.
Riverside County Airport Land Use Compatibility Plan (ALUCP); 2004	The intent of the ALUCP to promote compatibility between airports in Riverside County and the land uses that surround them. It sets compatibility criteria applicable to local agencies, in their preparation or amendment of land use plans and ordinances, and landowners (including special districts, other local government entities, and private parties) in their design of new development.
San Bernardino County Code, Title 5, Division 1, Highway Permit	Addresses permitting requirements for oversize/overweight vehicles.
San Bernardino Association of Governments CMP	Specifies that all CMP roadways shall operate at a LOS E or better.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The analysis of proposed project effects must comply with both CEQA and NEPA requirements given the respective power plant licensing and land jurisdictions of the California Energy Commission and BLM. CEQA requires that the significance of individual effects be determined by the Lead Agency; however, the use of specific significance criteria is not required under NEPA. Because this document is intended to meet the requirements of both NEPA and CEQA, the methodology used for determining environmental impacts of the proposed project includes a consideration of guidance provided by both laws.

Based on a review of recent environmental assessment documents prepared for the BLM and the CEQA Guidelines, Appendix G (amendments of the CEQA Guidelines, effective March 18, 2010), staff has determined the list of thresholds below to be appropriate for analysis of traffic and transportation impacts under both NEPA and CEQA. A project may have a significant effect on traffic and transportation if the project would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersection);
- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes and transportation, including mass transit and nonmotorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths;
- Conflict with an applicable congestion management program, including, but not limited to, level of service standards (LOS) and travel demand measures or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic counts or a change in location, that results in increased safety risks.
- Interfere with the takeoff, landing, or maneuvering of aircraft within an airport approach zone, airport turning zone, or airport transition zone, or in an area where flight paths are expected to occur below 1,000 feet above ground level (AGL)?
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). CEQA compliance to this guideline is determined by the extent, if any, that the project would substantially increase hazards due to a design feature;
- Result in inadequate emergency access;
- Result in inadequate parking capacity;
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Have individual environmental effects which, when considered with other impacts from the same project or in conjunction with impacts from other closely related past, present, and reasonably foreseeable future projects, are considerable, compound, or increase other environmental impacts. In general, a power plant and its related facilities may also result in potentially significant impacts if it is located near schools, results in ground-level fogging of roads and highways, or requires the transportation, storage, and/or use of hazardous materials. Please see other sections of this document, as noted, for a detailed discussion of any additional discussion of project impacts, recommended mitigation, or conditions of certification. Criteria for the transport of hazardous materials are analyzed in the **Hazardous Materials** section of this document.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The RSEP will be located in rural eastern Riverside County, CA. The project site is located adjacent to State Route (SR) 62 between Parker, AZ, and Twentynine Palms, CA. The project will be located in a sparsely settled portion of the Sonoran Desert on abandoned private land that was formerly used as a private military airfield (SR 2009a, p. 5.12-1). The nearest residences are located in Vidal Junction, about 15 miles northeast of the site; and at the Metropolitan Water District's Iron Mountain Pumping Plant, about 17 miles to the west (SR 2009a, p. 5.12-1). The nearest urban communities to the project site are Parker, Arizona, approximately 32 miles east and Blythe, California approximately 40 miles south.

CRITICAL ROADS AND FREEWAYS

The transportation network within the proposed RSEP region is composed of a mix of interstate, county highways, and rural local roadways. State Route (SR) 62 would provide local access and is immediately adjacent to and north of the RSEP site (SR 2009a, p. 5.12-1). SR 177 intersects SR 62 approximately 25 miles southwest of the site. US Route 95 connects with SR 62 approximately 16 miles east of the RSEP site. Additional freeways serving the regional area are Interstate 10 (I-10), approximately 32 miles south of the site, and Interstate 40 (I-40), approximately 55 miles north of the site. US Route 95 connects I-40 and I-10 in the north/south direction. The following describes the main regional and local roadways that would be used for RSEP construction and operational related traffic accessing the proposed project site, as shown in **Traffic and Transportation Figure 1**.

Existing Regional and Local Transportation Facilities

US Route 95

US Route 95 is an undivided two-lane rural highway that connects I-10 and I-40 to SR 62 east of the RSEP site. According to traffic counts published by the California Department of Transportation (Caltrans) in 2008, the average daily traffic volume on US 95 near the junction with SR 62 is 3,000 vehicles per day with truck trips accounting for approximately 12% of all traffic (SR 2009a, p. 5.12-2).

Interstate 10

I-10 is an east-west freeway connecting to SR 177 at the city of Desert Center, 35 miles southwest of the site, and to US 95 at the city of Blythe, California approximately 30 miles southeast of the RSEP site. Access from I-10 to the project site is provided via SR 62 (connected from either SR 177 from the southwest or US 95 from the southeast). Near the proposed project, I-10 has two lanes in each direction. Caltrans 2008 traffic counts indicate the average daily traffic volume on I-10 near the junction with SR 177 is 23,000 vehicles per day with trucks trips comprising approximately 40% of all traffic (SR 2009a, pp. 5.12-1 and 5.12-2).

Interstate 40

I-40 connects to US 95 at Needles, California, approximately 40 miles northeast of the RSEP site. Access from I-40 to the RSEP site is via US 95 and SR 62 to the east. Nearest the RSEP site, I-40 has two lanes in each direction (SR 2009a, p. 5.12-2). According to traffic counts published by Caltrans in 2008, the average daily traffic volume on I-40 near the junction with US 95 is 15,000 vehicles per day with truck trips comprising approximately 50% of all traffic (SR 2009a, p. 5.12-2).

State Route 62

SR 62 is an east-west roadway immediately north of the RSEP site; it is also known as Twentynine Palms Highway or Aqueduct Road west of SR 177. SR 62 is an undivided two-lane highway in California, but widens to four lanes in downtown Parker, Arizona (SR 2009a, p. 5.12-2). Caltrans 2008 traffic counts indicate the average daily traffic volume on SR 62 near the junction with SR 177 is 2,200 vehicles per day with truck trips comprising approximately 7% of all traffic (SR 2009a, p. 5.12-2).

State Route 177

SR 177 is a north-south roadway west of the RSEP site and is also known as Desert Center-Rice Road. It is an undivided two-lane highway. Caltrans 2008 traffic counts indicate the average daily traffic volume on SR 177 near the junction with SR 62 is 1,300 vehicles per day with truck trips comprising approximately 20% of all traffic (SR 2009a, p. 5.12-2).

Current Roadway Conditions

Level of Service

To quantify the existing baseline traffic conditions, the RSEP area roadways likely used by construction traffic were analyzed to determine their operating conditions. Based on the traffic volumes, the turning movement counts, and the existing number of lanes along each roadway, the volume/capacity (V/C) ratios and levels of service (LOS) have been determined for each roadway.

LOS is a qualitative measure describing operational conditions within a traffic stream. It is used to describe and quantify the congestion level on a particular roadway or intersection and generally describes these conditions in terms of such factors as speed or vehicle movement. **Traffic and Transportation Table 2** summarizes roadway LOS for associated V/C ratios.

**Traffic and Transportation Table 2
Level of Service Criteria Definition for Roadways**

Level of Service	Volume/Capacity	Description
A	0.00 – 0.60	Free flow; insignificant delays
B	0.61 – 0.70	Stable operation; minimal delays
C	0.71 – 0.80	Stable operation; acceptable delays
D	0.81 – 0.90	Approaching unstable flow; queues develop rapidly but no excessive delays
E	0.91 – 1.00	Unstable operation; significant delays
F	> 1.00	Forced flow; jammed conditions

Source: SR 2009a, p. 5.12-6

Level of Service — Existing Roadway Conditions

Traffic and Transportation Table 3 summarizes the results of the existing morning and afternoon peak-hour LOS analysis for roadway segments located within the proposed RSEP area that could be impacted by proposed project construction and operational related traffic (SR 2009a, p. 5.12-14).

AVIATION

Civilian

The proposed project would be located, in part, on the site of the Rice Airport (formerly Rice AAF), a closed and abandoned airfield about three miles east of the Rice townsite. The site is approximately 26 miles northeast of the Desert Center Airport; 30 miles from the Blythe Airport; 39 miles east of Twenty-nine Palms Airport (KTMP); 45 miles south of the Needles Airport in San Bernardino County; 35 miles west of Avi Suquilla Airport in Parker, Arizona; and 40 miles southwest of Lake Havasu City Airport in Lake Havasu City, Arizona. There are no public or private airports within two miles of the project site.

The closest airstrip to the project site is the Iron Mountain Pumping Plant Airport (FAA Airport Designation: 72CL), a private, unattended airstrip approximately seven miles northeast, that is owned by the Metropolitan Water District of Southern California. It has a single, 3200 foot-long asphalt runway (RWY 17/35), but no services. The airstrip is for the owner's use only and permission is required prior to landing. There are no published instrument procedures for this airport. (2010b,d)

The project's power block and solar arrays would be located on the site of the Rice Army Air Field and a portion of Camp Rice, a World War II (WWII) desert training base that was part of the infantry and artillery Desert Training Center, California-Arizona Maneuver Area (DTC-CAMA). It was used by General George S. Patton, Jr., from 1942-1944 to prepare American soldiers for combat in the North African desert. This location, a municipal airfield prior to WWII, reverted to civilian/public airport status again about 1949, then to a private airfield around 1952. Apparently abandoned between 1955-1958, the airport continued to be used sporadically by private pilots until the runways became unsafe. It was no longer shown at all on the March 1958 LA Sectional Chart and was depicted as an abandoned airfield on the 1998 World Aeronautical Chart. (ARPT 2009a) To the east, Camp Rice (Rice Divisional Camp) housed the 5th Armored Division during its training at the CAMA, and maintained a large quartermaster

depot at that location. (CSMD 2010) The area surrounding the project site was also used for Joint Exercise Desert Strike in 1964 (SR2009a). Little remains of Camp Rice or the Rice Army Airfield, aside a few foundations, concrete pads, and defunct runways. Although the outline of both the airport and Camp Rice can still be easily discerned from the air, the sense of place is deteriorating at ground level. (See **Cultural Resources** section for additional information.)

National parks, wilderness areas, and national wildlife refuge areas all fall under the definition of “National Park” for aviation purposes and the areas above them are considered special use airspace. All aircraft are to maintain a minimum altitude of 2,000 feet AGL. There are 11 wilderness areas and one national park within 50 miles of the project site that are overlain by designated special use airspace (see **Land Use, Recreation, and Wilderness** section of this document for further information).

Military

There are three military airfields and three operational areas within 50 miles of the proposed project site. The Twenty-nine Palms Strategic Expeditionary Landing Field (SELF; KNXP) is approximately 39 miles west of the project site and serves the Marine Corps Air Ground Combat Center (MCAGCC) Twenty-nine Palms. SELF is the largest expeditionary airfield (EAF) operated by the U.S. Marine Corps and has an 8,000-foot long aluminum-mat runway that can accommodate the largest aircraft in the military inventory. The Marine Wing Support Squadron 374 operates the SELF 300 days, conducts 3,600 hours of flight operations, and supports up to 16,647 aircraft. Except for emergencies, the SELF field is for military use only. (ARPT 2010f; WIKI 2010j)

The Chocolate Mountain Naval Aerial Gunnery Range is about 50 miles southwest of the project site and is a 456,000 acre restricted area used by the Navy and Marines for aerial bombing and live fire aerial gunnery practice (WIKI 2010k). It includes the Kane and Abel North Military Operations Areas and has several areas of restricted airspace extending from the surface to 40,000 feet AGL (FL 400). There is no airfield within the range.

Thirty-five miles southeast of the project site is the U.S. Army’s Yuma Proving Ground (YPG). One of the largest military installations in the world, YPG is located about 30 miles northeast of Yuma, Arizona. The facility covers over 1,307 square miles of the Sonoran Desert and includes portions of southwestern La Paz County and western Yuma County. Unlike CAMA, the YPG (originally part of Camp Laguna and the U.S. Army Corps of Engineers Yuma Test Branch) was gradually expanded after the end of WWII until, by 1973, it had achieved its current status. Both the Laguna Army Airfield complex, including two runways (5,150 and 6,000 feet in length) and the Castle Dome Army Heliport, part of the Western Army National Guard Aviation Training Site, are located within the YPG.

Due to the significant military presence in the southern desert areas, there are a number of military training routes designated for aircraft exercises in the vicinity of the proposed project site and alternatives. Military training routes (MTRs) are aerial corridors across the United States in which military aircraft can operate faster than 250 knots at altitudes below 10,000 feet. Civilian aircraft are not prohibited from these areas, but are required

to operate at slower speeds and are usually diverted from the areas by enroute controllers when operations are in progress. The routes are divided into Instrument Routes (IR), and Visual Routes (VR). There are also Slow Routes (SR) for aircraft operating below 250 knots and between 250 feet and 1,500 feet AGL, and Aerial Refueling Routes (AR), areas where military tankers routinely refuel other military aircraft, generally at altitudes above 10,000 feet AGL. Military aircraft flying within an IR or AR route are under positive Air Traffic Control. Those in VR or SR routes areas generally are not. The vast majority of military training flights on MTRs are on VR routes. There are three low-level military training routes above the proposed project site, designated IR250, IR255, and SR397, which place limitations on the use of airspace above the project site from the surface to varying altitudes above 10,000 AGL.

RAILWAYS

Four Arizona and California Railroad (ARZC) rail lines represent the nearest railways to the proposed RSEP site. These four rail lines contain at-grade public railroad crossings (SR 2009a, p. 5.12-12). One line runs parallel to SR 62 north of both the RSEP site and SR 62, crossing SR 62 near Radio Tower Road about 7.5 miles northeast of the project site, while another crossing of this line is on US 95 near Old Parker Road, about 17.5 miles northeast of the RSEP site (SR 2009a, p. 5.12-12). Both of these crossings are protected with automatic arms (SR 2009a, p. 5.12-12). Northwest of the RSEP site, two additional crossings are located on SR 62, about 2.5 miles from the project site with flashing beacons but no arms (SR 2009a, p. 5.12-12). These two crossings are on an abandoned spur of the ARZC (SR 2009a, p. 5.12-12).

**Traffic and Transportation Table 3
Existing (2008) Roadway Segment Level of Service Summary**

County	Roadway Segment	Number of Lanes	Peak Hour Capacity	AM Peak Hour V/C	AM Peak Hour LOS	PM Peak Hour V/C	PM Peak Hour LOS
Riverside, CA	US 95 NB between Hobson Way and San Bernardino/Riverside County Line	1	1,700	N/A	C or Better	N/A	LOS C or Better
	US 95 SB between Hobson Way and San Bernardino/Riverside County Line	1	1,700	N/A	C or Better	N/A	LOS C or Better
San Bernardino, CA	SR 62 EB between California/Arizona State Line and junction with US 95	1	1,700	0.40	D	0.26	C
	SR 62 WB between California/Arizona State Line and junction with US 95	1	1,700	0.21	B	0.37	C
	SR 62 EB between junction with US 95 and San Bernardino/Riverside County Line	1	1,700	0.03	A	0.03	A
	SR 62 WB between junction with US 95 and San Bernardino/Riverside County Line	1	1,700	0.15	B	0.16	B
	SR 62 EB between San Bernardino/Riverside County Line and Utah Trail	1	1,700	0.02	A	0.06	A
	SR 62 WB between San Bernardino/Riverside County Line and Utah Trail	1	1,700	0.08	A	0.02	A
	SR 62 EB between Utah Trail and Adobe Trail	1	1,700	0.23	B	0.75	E
	SR 62 WB between Utah Trail and Adobe Trail	1	1,700	0.92	E	0.26	C
La Paz, AZ	SR 62 EB between California/Arizona State Line and junction with US 95	2	18,200	0.50	C	0.50	C
	SR 62 WB between California/Arizona State Line and junction with US 95	2	18,200	0.50	C	0.50	C

Source: SR 2009a, p. 5.12-9

Notes: N/A –data not available; NB – Northbound, SB – Southbound, EB – Eastbound, WB – Westbound, V/C = Traffic Volume/Traffic Capacity of Roadway

BUS TRANSPORTATION

No public transportation is available to or from the RSEP site (SR 2009a, p. 5.12-11). The nearest local bus service is provided by the Palo VerdeValley Transit Agency, with the nearest bus line located approximately 25 miles southeast of the RSEP site in the city of Blythe (SR 2009a, p. 5.12-12)

BICYCLES AND PEDESTRIANS

The Riverside County General Plan discusses the development of bikeways and regional trails within the County. As the proposed RSEP site is not designated as being located within or along any Riverside County General Plan designated bikeway, a regional discussion is provided as RSEP traffic would access the site throughout Countywide roadways. US 95 (within the county) is classified as a Regional Trail, a designation assigned to roadways that could provide linkages between areas that connect state and federal trails (SR 2009a, p. 5.12-11). Additionally, within Riverside County, the Bradshaw Trail is a historic trail that runs along part of I-10 in Blythe and offers bicycle use, located approximately 25 miles southeast of the RSEP site (SR 2009a, p. 5.12-11). No pedestrian facilities were identified by staff as being located within proximity of the proposed RSEP site or along identified travel routes of construction-related traffic.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

PERFORMANCE OF THE CIRCULATION SYSTEM

Roadway Levels of Service – Performance Standards

As discussed earlier, State Route (SR) 62 would provide local access, which is immediately adjacent to and north of the site (SR 2009a, p. 5.12-1). SR 177 intersects SR 62 approximately 25 miles southwest of the site. US Route 95 connects with SR 62 approximately 16 miles east of the RSEP site (SR 2009a, p. 5.12-1). To determine impacts to roadway capacity, applicable LOS standards and thresholds established by potentially impacted local jurisdictions are utilized. As shown in **Traffic and Transportation Table 1**, the Riverside County General Plan specifies that all conventional state highways not part of the Congestion Management Plan (CMP) shall operate at a LOS C or better. With regard to California roadways analyzed as likely utilized by RSEP construction traffic, all roadway segments belong to either Riverside County or San Bernardino CMP routes (AFC, p. 5.12-2). Therefore, these applicable standards are utilized as thresholds for determining impacts to California roadways. As shown in **Traffic and Transportation Table 1**, in both Riverside and San Bernardino Counties, CMP roadways must achieve LOS E or better. The portion of SR 62 in Arizona is in a rural area and, as such, must achieve LOS C or better (SR 2009a, p. 5.12-5).

Roadway Levels of Service – Construction Analysis

The applicant expects that construction of the proposed project would last approximately thirty months, starting in the first quarter of 2011 and ending in the third quarter of 2013 (SR 2009a, p. 2-37). There would be a peak daily workforce of 483 between months 8 and 20 of construction (SR 2009a, p. 2-37). This peak workforce

time would be the critical construction period when the highest total number of daily trips is anticipated. Therefore, estimated daily construction trips during this peak construction period were used to determine potential impacts, as this would represent the worst-case construction traffic scenario. Because of the proposed projects remote location, it is estimated that 30% of the workforce will carpool (SR 2009a, p. 5.12-13). Furthermore, the proposed project will include an on-site worker camp for temporary construction worker lodging (SR 2009a, Figure 2.2-6).

For purposes of this analysis, construction truck trips were converted to passenger car equivalent (PCE) trips consistent with the *Highway Capacity Manual* guidelines. A detailed breakdown of this determination and methodology is provided in the AFC (SR 2009a, pp. 5.12-14 and 15). **Traffic and Transportation Table 4** lists the estimate of total construction vehicle trip for the proposed RSEP, including identifying which of those would be generated during both the A.M. and P.M. peak hour periods. The RSEP will make available a workforce RV/trailer park with a capacity of up to 300 trailers/RVs and will provide basic electric, water, and sanitary sewer services for the park (SR 2009a, p. 5.12-14). However, to analyze the most conservative case for construction worker traffic, the AFC traffic analysis (approved by staff and utilized within this section) did not assume that any workers would use the park (SR 2009a, p. 5.12-14).

Traffic and Transportation Table 4
Estimated Total and Peak Hour Trip Generation – Maximum Construction Period

	Total Daily Trips	A.M. Peak Hour			P.M. Peak Hour		
		In	Out	Total	In	Out	Total
Total Construction Traffic in PCE	765 ¹	330	15	345	15	330	345

Source: SR 2009a, p.5.12-14

¹Total Average Daily Trips includes off-peak hour construction related trips

Based on the construction vehicle trip calculations presented in **Traffic and Transportation Table 4**, an analysis was conducted in the AFC to determine the impacts of these construction vehicle trips on current LOS for project area roadways. **Traffic and Transportation Table 5** identifies the LOS anticipated with and without RSEP construction vehicle traffic for critical roadways in the vicinity of the project. As shown, with the addition of the RSEP peak construction traffic, all study area roadways will continue to operate within the designated LOS thresholds during both the A.M. and P.M. peak hours as compared to without project conditions. Therefore, construction related trips would not exceed any designated threshold and result in less than significant impacts to performance standards of utilized roadways.

Linear Facilities

In addition to direct construction related trips, interconnecting the RSEP project into the Western Area Power Administration system will require the construction of approximately 10-miles of generation tie line (SR 2009a, p. 3-1). The RSEP will also extend an existing 12-kV distribution line for 1.1 miles from a point 175 feet east of the project site boundary, along the northern boundary of the site paralleling SR 62, to the proposed administration building area for construction power purposes (SR 2009a, pp. 3-1 and 2). The stringing of power line adjacent to and across roadways could result in temporary lane closures, thus temporarily impacting traffic LOS. To minimize impacts from required power line infrastructure, Condition of Certification **TRANS-1**, which would

require the applicant to prepare a Construction Traffic Control Plan prior to construction, would also include the identification and minimization of any disruptions to street segments during power line construction activities, to the maximum extent feasible. Therefore, Condition of Certification **TRANS-1** will reduce transmission related construction activity impacts to roadway LOS to a less than significant level.

**Traffic and Transportation Table 5
With and Without Project Roadways Levels of Service - Construction**

County	Roadway Segment	AM PEAK HOUR				PM PEAK HOUR				AM and PM Peak Hour CMP Threshold	Exceed CMP Threshold?
		Existing Peak Hour LOS	Added Vehicles	Peak Hour V/C With Project	Peak Hour LOS With Project	Existing Peak Hour LOS	Added Vehicles	Peak Hour V/C With Project	Peak Hour LOS With Project		
Riverside, CA	US 95 NB between Hobson Way and San Bernardino/Riverside County Line ¹	C or Better	298	--	C or Better	LOS C or Better	298	--	LOS C or Better	E	NO
	US 95 SB between Hobson Way and San Bernardino/Riverside County Line ¹	C or Better	298	--	C or Better	LOS C or Better	298	--	LOS C or Better	E	NO
San Bernardino, CA	SR 62 EB between California/Arizona State Line and junction with US 95	D	63	0.44	D	C	0	0.26	C	E	NO
	SR 62 WB between California/Arizona State Line and junction with US 95	B	0	0.21	B	C	63	0.41	D	E	NO
	SR 62 EB between junction with US 95 and San Bernardino/Riverside County Line	A	211	0.15	B	A	6	0.03	A	E	NO
	SR 62 WB between junction with US 95 and San Bernardino/Riverside County Line	B	6	0.16	B	B	211	0.28	C	E	NO
	SR 62 EB between San Bernardino/Riverside County Line and Utah	A	119	0.09	A	A	9	0.07	A	E	NO
	SR 62 WB between San Bernardino/Riverside County Line and Utah Trail	A	9	0.08	A	A	119	0.09	A	E	NO
	SR 62 EB between Utah Trail and Adobe Trail	B	110	0.29	C	E	0	0.75	E	E	NO
	SR 62 WB between Utah Trail and Adobe Trail	E	0	0.92	E	C	110	0.33	C	E	NO
La Paz, AZ	SR 62 EB between California/Arizona State Line and junction with US 95	C	126	0.50	C	C	126	0.50	C	C	NO
	SR 62 WB between California/Arizona State Line and junction with US 95	C	126	0.50	C	C	126	0.50	C	C	NO

Source: SR 2009a, p. 5.12-17

Notes: ¹ Refer to AFC p. 5.12-7 for methodology used to determine LOS with project traffic to existing traffic volumes without V/C ratio calculations (SR 2009a).

ROADWAY LEVELS OF SERVICE - OPERATION ANALYSIS

During operation, the proposed project is expected to require approximately 47 staff members (SR 2009a, p. 5.12-13). A quantitative traffic analysis was not conducted in the AFC for the long-term (30-year) operations phase because it would generate such a low volume of trips that it was found to not have the potential to generate a measurable impact on the project area roadways (SR 2009a, p. 5.12-13). Staff agrees with this conclusion as this volume of traffic represents a minimal increase over existing traffic volumes and peak hour capacity available on local roadways as presented in **Traffic and Transportation Table 3**. Therefore, RSEP operation would have only minor effects and would not alter performance standards of RSEP area roadways, which would result in a less than significant impact with respect to CEQA.

REGIONAL CONGESTION MANAGEMENT PLANS

California State Proposition 111, passed by voters in 1990, established a requirement that urbanized areas prepare and regularly update a Congestion Management Plan (CMP). The purpose of the CMP is to monitor the performance of the countywide transportation system, develop programs to address near-term and long-term congestion, and better integrate transportation and land use planning. Both Riverside County and the San Bernardino Association of Governments (SANBAG), as the designated Congestion Management Agency for the RSEP region, must develop, adopt, and regularly update the CMP.

The Riverside County 2006 CMP Update identifies US 95 as a CMP roadway (Riverside County 2006), while the SANBAG 2007 CMP identifies US 95 and SR 62 as CMP roadways (SANBAG 2010). These CMP's both identify that all roadway segments on the Congestion Management network shall maintain a LOS E or better (refer to **Traffic and Transportation Table 1**). As shown in **Traffic and Transportation Table 5**, RSEP construction traffic would not exceed CMP LOS thresholds on analyzed roadways. Furthermore, as discussed above, RSEP operational traffic would represent a minimal increase over existing traffic volumes and peak hour capacity available on local roadways as presented in **Traffic and Transportation Table 3**. Therefore, no impacts to CMP designated roadways would occur from RSEP construction- or operational-related traffic.

AVIATION

Would the project result in a change in air traffic patterns, including either an increase in traffic counts or a change in location, which results in increased safety risks.

The project would not result in a change to civilian air traffic patterns in the project vicinity. There are no published commercial aviation (Victor) routes below 18,000 feet AGL or other published departure/arrival or regularly traveled route that would bring aircraft into the vicinity of the project stack below 2,500 feet AGL.

The project would, however, result in a change in air traffic patterns for military aircraft operating within the MTRs over the project area. The project site and alternative locations proposed in the general vicinity underlie three low-level military training routes,

designated IR250, IR255, and SR397, which place limitations on the use of airspace above the project site from the surface to varying altitudes above 10,000 AGL. However, the military has agreed to alter operational training procedures and flight patterns to avoid the project's proposed solar tower, in conjunction with marking and notification requirements identified in conditions of certification **TRANS-8** and **TRANS-9**. As a result the changes in air traffic patterns would not result in increased safety risks. (See further discussion of military operational impacts and conditions of certification below.)

Would the project interfere with the takeoff, landing, or maneuvering of aircraft within an airport approach zone, airport turning zone, or airport transition zone, or in an area where flight paths are expected to occur below 1,000 feet above ground level (AGL)?

The proposed project is not within an airport approach, turning, or transition zone, and would not interfere with the takeoff, landing, or maneuvering of any aircraft during approach or departure from any airport. As noted in the Setting discussion above, the closest airstrip is the Iron Mountain Pumping Plant Airport, a private, little used field approximately seven miles northwest of the project site. The closest commercial airport is over 30 miles away, in Blythe. However, under visual flight rules (VFR), aircraft may legally fly below 1,000 feet AGL in the project area. Aircraft, except for helicopters, flying VFR are normally required to remain 500 feet above structures. There are currently no structures in the project vicinity that would pose a hazard to aircraft flying at that altitude.

The project proposes to construct a solar collection stack that would rise 653 feet AGL. The applicant submitted Form 7460-1 advising the Federal Aviation Administration (FAA) of the project proposal to construct a structure exceeding 200 feet AGL. An FAA Determination of No Hazard to Air Navigation has been received (FAA 2009c), which indicated that the solar tower would not be a hazard to air navigation, as defined by 14 CFR 77/FAR Part 77, provided the structure did not exceed 653 feet AGL in height and would be marked and lighted in accordance with FAA Obstruction Marking and Lighting requirements. Condition of certification **TRANS-8** meets this requirement. As this would be a unique structure within the Rice Valley, staff is also recommending condition of certification **TRANS-9**, which would require notations on the appropriate aeronautical charts, identifying the location and height of the stack, to ensure pilots are aware of the structure and able to see and avoid it, as required under VFR.

In addition, as noted in the Operational Intrusive Light discussion below, reflections from the solar heliostats have the potential to cause annoyance, discomfort, or loss of visual performance and visibility, up to and including retinal damage, to pilots or observers within a certain range of the project's solar array. This poses a potentially significant health and safety risk for pilots and observers overflying the project site. Therefore, **TRANS-9** would also require chart notation and airport advisory notices that inform pilots of the potential safety risk and recommend that overflight of the project stack and solar arrays be avoided below 1,500 feet AGL. This would reduce impacts to general aviation aircraft to a less than significant level. If overflight of the project site is avoided, incidental intrusive light may still occur, but would not present a substantial hazard to aircraft operations or a health risk to aircraft occupants.

Construction and operation of the proposed project would also impact existing military training operations in the project vicinity. As noted in the Setting discussion above, there are three low-level military training routes (MTRs), designated IR250, IR255, and SR397, which place limitations on the use of airspace above the project site from the surface to varying altitudes above 10,000 AGL. Based on information provided by the Department of Defense (DOD) Southwest Renewable Energy Work Group (DOD 2010), the proposed solar power tower would encroach into airspace used by the military to conduct low-level and night training exercises and has the potential to significantly impact the safety of military testing and operations conducted along these MTRs. Regular stack lighting, consistent with FAA obstruction lighting requirements, is not sufficient for military pilots to see and avoid the stack obstruction during low-level or lights-out training missions. Therefore, condition of certification **TRANS-8** would require solar tower lighting consistent with both FAA and DOD requirements.

In addition, frequencies used during normal power plant construction and operations have the potential to interfere with military transmissions and equipment operation. Therefore, condition of certification **LAND-9** addresses the issue of frequency interference and would require coordination with the military to ensure that no frequencies used at the project site or in conjunction with plant construction or operation would interfere with frequencies used for communication or other military operations. The military has indicated a willingness to alter training patterns to avoid the project area, to the extent feasible, which, in conjunction with full implementation of all other proposed aviation-related conditions of certification, would reduce any potential impacts to military operations to a less than significant level.

HAZARDS AND PUBLIC SAFETY

Construction impacts to vehicle hazards and public safety would be minimized by proposed Condition of Certification **TRANS-1**, which requires the preparation of a Construction Traffic Control Plan that includes use of flagging and covering open trenches, would minimize hazards due to possible backup as construction workers enter and exit the RSEP site when their shifts begin and end. As construction related traffic would access the sites from a number of regional areas with the potential for traveling along roadways with residential development, Condition of Certification **TRANS-1** requires that all construction-related traffic be diverted to the maximum extent feasible away from residential areas.

Additionally, another potential safety hazard for the public is at-grade railroad crossings which creates a potential for train to vehicle collisions, particularly with RSEP construction-related large trucks hauling heavy loads. As discussed earlier, four at-grade public crossings are close to the project site. To minimize any potential impacts from rail crossings, Condition of Certification **TRANS-1** requires the preparation of a Construction Traffic Control Plan that includes identifying safety measures in the event oversized vehicles cross any railroad tracks.

There is also a potential for unexpected damage to roads by vehicles and equipment within the project area that could result in a roadway hazard to the public. Therefore, staff is proposing Condition of Certification **TRANS-3**, which would require that any road damaged by project construction be repaired to its original condition. This will ensure

that any damage to local roadways will not be a safety hazard to motorists.

The use of oversize vehicles during construction can create a hazard to the public by limiting motorist views on roadways and by the obstruction of space. As described above in **Traffic and Transportation Table 1**, CVC Sections 35550-35559 establish guidelines for oversize vehicle loads. To ensure consistency with these applicable ordinances, staff is proposing Condition of Certification **TRANS-4**, which would require that all oversize vehicles used on public roadways during construction comply with Caltrans, Riverside County, San Bernardino County, and other relevant jurisdiction's limitations on vehicle sizes and weights, as well as oversize vehicle routes and any other applicable limitations or other relevant jurisdictional policies.

As discussed in the **Visual Resources** section in this SA/DEIS, a ground fogging plume analysis was not considered necessary for the following reasons:

- 1) For operations, the main steam-cycle cooling is done by an Air Cooled Condenser.
- 2) There are no boilers; therefore, there are no boiler visible plumes.
- 3) There is a very small Wet Surface Air Condenser for auxiliary cooling loads, but the plumes from this device will be very limited in both frequency and size.

Temporary visible water vapor plumes associated with salt conditioning may occur during construction. Visible plumes could occur at higher temperatures depending on relative humidity, but in general very few plumes would occur when the temperature was above 90 – 95 °F. Therefore, if the conditioning occurs in the winter, the visible plumes would likely be constant during the 140 days of conditioning. If salt conditioning occurred in the peak of summer, plumes would likely form in the late afternoon, night, and morning when the atmospheric temperatures are below 85F. When occurring, the plumes would be small in size and would be limited to the internal portion of the RSEP site due to the limited exhaust source flow rate. As the main power block area where these activities will take place is over 1,000 meters from Hwy 62, visible plumes would not reach adjacent public roadways. Therefore, no impact on surface traffic safety would occur from any ground fogging plumes related to RSEP activities.

The implementation of Conditions of Certification **TRANS-1**, **TRANS-3**, and **TRANS-4** would ensure that the proposed project would avoid or result in only minor hazard and safety impacts to motorists. These would be less than significant with respect to CEQA and would ensure project compliance with applicable LORS.

Another potential traffic and transportation hazard impact would come from the delivery of hazardous materials and removal of wastes. For a discussion of the potential impacts related to the transport of hazardous materials please see the **Hazardous Materials** section in this Staff Assessment/Draft Environmental Impact Statement (SA/DEIS).

Operational Intrusive Light

The proposed RSEP involves the use of mirrors mounted on pylons with motor controls for following the sun (heliostats) to redirect sunlight at a solar power receiver to generate heat for use in electric power generation (SR 2009a). Because of the possible impact of this redirected sunlight on observers such as motorists on the adjacent

highway or in aircraft overhead, these impacts are analyzed below.

Total solar energy is the complete spectrum of sunlight including ultra violet energy (UV), the visible spectrum, and infrared energy (IR). It is this total solar irradiation that has the potential to create a human safety impact by causing erythema damage, such as sunburn and retinal damage. Total solar energy is evaluated in units of power as kilowatts per square meter (kW/m²).

Intrusive light or glare is defined as the sensation produced by a point luminance within the visual field that is sufficiently greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss of visual performance and visibility. Luminance or brightness perceived by observers is evaluated in units of candelas per square meter (cd/m²) and its impact as illuminance in lux or lumens per square meter (lm/m²).

Energy and Safety

There are currently no regulations specific to light reflected from solar arrays; however, potential safety effects of solar radiation from the proposed project have been analyzed within the context of principles and procedures developed for beam safety in the Solar 1 experimental plant at Daggett, California, as conducted by the Sandia National Laboratories (Sandia Report SAND83-8035 by T.D. Brumleve), which identified the following maximum permissible exposure (MPE) limits for reflected sunlight:

- MPE for momentary exposure (for a period of 0.15 second or less) is a retinal irradiance of 10 kW/m² that could cause temporary flash blindness
- MPE for continuous exposure (for a period greater than 0.15 second) is a retinal irradiance of 1 kW/m² that could cause permanent retinal injury (Sloney and Freasier, 1973)

With regard to heliostat safety, the highest intensity of solar radiation that could be directly reflected from a single heliostat would be that of one sun. The RSEP heliostats are flat, mirrored 672 square foot surfaces 28 feet by 24 feet mounted on twelve-foot pedestals. Because the mirrors are flat rather than a segment of a sphere or of a parabola, they will not concentrate the solar radiation. Eight years of data collection at the site show the direct normal irradiance (DNI) does not to exceed 1,005 W/m² per heliostat. Since the mirrors have a reflectivity of 94% the reflected beam will have a total reflected solar energy of no greater than 945 W/m² per heliostat. This assumes that there will be a clear line of sight from the mirror to an observer (CH2MHill 2010a, DR 153).

It is intended that the flat mirrors be mounted as close to each other as is possible without causing a shading effect. The heliostat spacing will vary through the field with tighter spacing in the center of the field near the power block and central tower. The spacing will gradually become greater as the heliostats are arranged further from the central tower in concentric rows, since the outermost rows will reflect at a flatter angle and require more spacing to avoid blocking effects on each other. The nearest spacing will average 30 feet between heliostats and 27 feet between rows (foundation center to foundation center) at the first two rows nearest the solar tower. The farthest spacing will range from an average of 57 feet between heliostats and 67 feet between rows at the outermost rows on the south side of the solar field, and an average of 60 feet between

heliostats and 80 feet between rows at the outermost rows on the north side (CH2MHill 2010a, DR 101). They will be arranged in a circular field with the solar power receiver tower located slightly beyond center in the southern portion of field. As a result of this arrangement, the square heliostats will tend to mask each other and the backs of them will present a wall-like surface to an observer outside the project fence line and at a similar elevation as the project. The heliostats adjacent to SR 62 will face south away from State route 62 towards the solar power receiver and a smaller number, masked by the south-facing heliostats will face north, east and west. This also makes it unlikely that an observer near SR 62 would be exposed to reflected solar energy during normal operation of the plant.

The heliostats have the ability to rotate 360 degrees around the pedestal and would move in the vertical plane within an approximate range from facing laterally to facing upward. The range of vertical motion can more specifically be defined by referencing two points in that range defined by 0 degrees as facing laterally and 90 degrees as facing upward. If looking at the heliostat from a side view, the full vertical range would vary from a position of six degrees upward from facing laterally and would extend to 10 degrees beyond facing perfectly upward (or at a position corresponding to an arc of 100 degrees from facing laterally). The range of motion is as illustrated in **Project Description Figure 4**. Daily positioning of the heliostats would vary according to operating mode and is described as follows:

1. Night Stow position – During the night, the heliostats would face upward;
2. Morning startup - At dawn, the applicant proposes that the heliostats would be moved from the stowed position to their respective standby position to be readied for sun tracking;
3. Standby position - The standby position is proposed to be relatively close to the tracking position, but instead of reflecting solar energy to the receiver, it would be reflected to one of four target points located at the horizontal center plane elevation of the receiver and approximately 100 feet radially from the receiver surface;
4. Sun tracking - The tracking position that would vary according to the heliostat's location in proximity to the power tower and the sun's position;
5. Evening shutdown – Heliostats would move slowly along predefined paths of motion in groups specified to minimize simultaneous power consumption, and come to rest in the stow position facing upward;
6. Load (power output) reduction – The RSEP thermal energy receiver and storage system can receive all solar energy collected at any time of day, and thus heliostats would not need to be directed away from the receiver to control power output;
7. Reducing solar input to avoid overheating the receiver – In the event the receiver is at risk of overheating, such as related to equipment failure, pre-assigned groups of heliostats would be placed in standby position in order to off-point from the receiver; Should the condition persist for a longer period, the heliostats would be directed to the stow position.

8. Loss of AC station power – The emergency standby generator(s) will automatically start and the entire collector field will begin an emergency defocus sequence where all the heliostats are commanded to point off of the receiver so that all concentrated solar energy is removed within 60 seconds; The applicant has proposed that the heliostats would focus on one of four target points according to the Standby position.
9. Mirror washing - Approximately every two weeks, mirrors would be washed during the night by moving the heliostats into a position between 6 and 45 degrees (CH2MHill 2010a, DRs 150, 151).

The aiming control system of the heliostats uses optimization software to instruct the solar field controller where each heliostat should aim to maximize solar energy collection and output. The software accounts for the light flux intensity and distribution required for the solar energy receiver and various other conditions such as sun radiation, wind, air pressure, and the number of heliostats available for tracking. When computing the optimal aiming policy, the control system factors in the differences between heliostats with respect to their tracking accuracy, the intensity of the beam they reflect, and other relevant aspects. The applicant has indicated that the optimization software would also prevent the mirrors from being aimed toward SR 62 or at any angle that would reflect sunlight near the ground surface. If, however, they were to be observed and if only one mirror was reflected toward an observer at a time, the effect would be comparable to observing the sun reflected from the windows of a building or from automobile windshields, both common occurrences.

The RSEP site underlies two low-level military aircraft training routes in which the proposed RSEP could impact the training conducted on those routes. The affected routes are identified as IR250 and IR255, and both extend down to ground level. The proposed 653-foot high solar receiver tower would encroach into those routes. This issue is discussed further in the Land Use section. While the military has the ability to recognize and avoid obstruction hazards such as the tower, there is need for non-obstruction hazards such as any potential for concentrated solar energy to affect aviation safety to be fully assessed and mitigated. Assuming all mirrors are returned to the horizontal stowed position (facing upwards) before dawn, staff has identified three circumstances under which an observer or wildlife could potentially be exposed to reflected solar radiation from one or more heliostats, including:

1. **Standby Position.** During daylight hours, some or all of the heliostats could be focused according to the stand-by position to one of four target points located at the horizontal center plane elevation of the receiver and approximately 100 feet radially from the receiver surface. This would result in the potential for sunlight to be reflected upward at focal points and concentrated to levels that could incinerate birds or affect the vision of airborne observers.
2. **Technical Malfunction.** Solar radiation could be reflected offsite as a result of a technical malfunction if the mirror position was such that it would reflect sunlight toward an observer;
3. **Maintenance.** During day-time maintenance if the heliostat was moved from the stowed to the wash position and passed momentarily through a position that would reflect sunlight to an observer;

4. **Stowed Position:** When the heliostats are stowed in the face-up position during daylight hours (due to high wind or other factors), the reflection of the sun in the mirrors may be observable at great distances (many miles) from pilots flying overhead. The irradiance will be no greater than that of the sun, and the effect will be analogous to viewing the sun's reflection off of a large, still body of water, although the irradiance will be greater due to the high specular reflectivity of the mirrors.

Staff expects that, for all of the scenarios described above, the exposure to solar radiation reflected from heliostats would be momentary because the observers would most likely be in motion—traveling either by vehicle or aircraft. In the case of reflection from stowed heliostats, the intrusive light could persist as long as the reflected sun image from the heliostats was viewable by an observer flying overhead. The applicant has indicated that, in the event a heliostat is not aimed at the solar receiver tower, there would never be more than one heliostat aimed at a single location or angle in the sky, except for those focused at the standby positions. Based on the applicant's proposed positioning of heliostats, it is likely that an observer on the ground would not be exposed to solar energy exceeding one sun, as would be reflected from a single heliostat mirror. An airborne observer, however, could be exposed to continuous reflected solar radiation at a level exceeding the continuous MPE threshold (causing permanent eye damage) if an aircraft were to fly through or near one of the four stand-by focal points. The applicant proposes that the focal points be located at the horizontal center plane elevation of the receiver at approximately 588 feet above ground and approximately 100 feet radially outward from the receiver surface. The concentration of solar energy to each of the four standby focal points would increase as the sun's energy reflects from each heliostat mirror surface near ground level and approaches its maximum at the focal point. The concentration would tend to create a conical path of light and energy from the ground tapering and increasing in concentration to the focal point. The concentrated solar energy would then dissipate in a similar conical pattern expanding and decreasing in concentration as it radiates above the focal point. The potential for encountering harmful concentrations of solar energy while airborne would occur above and below the focal point elevation at the horizontal center plane elevation of the receiver. In general, the height range could be considered harmful between the heliostats near ground level to a height that is twice the height of the horizontal center plane elevation of the receiver, or roughly a range from 0 to 1,100 feet above ground in the vicinity of the four focal points. While the brightness of light reflected from heliostats would not likely cause permanent eye damage (retinal burn) to pilots or people on the ground, the potential for momentary flash blindness exists at large distances. According to the models presented in Ho et al. (2010), temporary flash blindness can occur at distances up to 6400 m (4 miles) resulting from solar reflection from a flat heliostat with an effective size of 62.4 m^2 (672 ft^2), a reflectivity of 0.94, a slope error of 1 mrad, a direct normal insolation of 1000 W/m^2 , no atmospheric attenuation, and ocular parameters recommended in Ho et al. (2010) (pupil diameter = 2 mm, eye focal length = 17 mm, ocular transmission coefficient = 0.5). Intrusive light caused by the tower receiver or the array of heliostats while in a stowed face-up position may also cause temporary flash blindness.

The airspace above the proposed project site is not restricted. General aviation aircraft may fly as low as 500 feet about the solar arrays, at pilot's discretion. There are also

three low-level military training routes above the project site, designated IR250, IR255 & SR397, that extends from the surface through 10,000 feet AGL. Therefore, there is the potential for both civilian and military aircraft to pass through or near any of the four focal points where the project-reflected solar energy could be up to 4,300 suns.

While the brightness of light reflected from the heliostats would likely cause observers to avoid looking directly into the light for longer than a fraction of a second, similar to the potential exposure to observers on the ground, it is not conclusive that the personal reaction of those overflying the area to the intensely bright light, at locations near the focal point where solar energy could be concentrated, would adequately mitigate the risk of exposure that could cause retinal injury. Each point will receive the solar energy of approximately 4,300 suns. The amount of solar energy will vary with the solar irradiance available at any given moment. Based on the applicant's estimation of 950 W/m² as the reflected solar flux of each heliostat, the maximum solar flux at the stand by points will be 4.06 MW/m². Outside of a range of 0 to 1,100 feet AGL in the vicinity of the standby focal points and within a horizontal plane directly above the RSEP solar field, there would not be a substantial risk to airborne observers. Once the beams pass through this high-energy zone, they would disperse and would no longer pose a substantial threat. Therefore, given the potential safety risk to aircraft pilots and passengers, staff has recommended condition of certification **TRANS-9**, which would inform pilots of the potential hazard and advise that overflight of the project's solar stack or heliostat arrays should be avoided below 1,500 feet AGL. Military training exercises within the MTRs would be altered as necessary to avoid overflight of the site below 1,100 feet AGL during daylight hours and avoidance of the solar tower at all times (DOD 2010).

Because the agencies have limited experience with the impacts associated with the performance of concentrated solar power technologies, including associated intrusive light issues, and in consideration of potential harmful and/or distractive solar energy exposure to ground and airborne observers, staff recommends long-term monitoring to identify the risk of exposure to light reflected from heliostats. Condition of Certification **TRANS-6** would require the applicant to prepare a Heliostat Positioning Plan that would accomplish the following:

1. Identify the heliostat movements and positions (including reasonably possible malfunctions) that could result in potential exposure of observers at various locations including in aircraft, motorists, pedestrians and hikers in nearby wilderness areas to reflected solar radiation from heliostats;
2. Describe within the HPP how programmed heliostat operation would avoid potential for human health and safety hazards at locations of observers, and would limit or avoid potential for harm to birds;
3. Prepare a monitoring plan that would: a) obtain field measurements in response to legitimate complaints; b) verify that the Heliostat Positioning Plan would avoid potential for human health and safety hazards including temporary or permanent blindness at locations of observers; and c) provide requirements and procedures to document, investigate and resolve legitimate complaints regarding intrusive light.
4. Provide that the monitoring plan would be coordinated with the CalTrans, CHP, FAA, U.S. Military and the Riverside County Airport Land Use Commission and be

updated on an annual basis for the first 5 years, and at 2-year intervals thereafter for the life of the project.

In addition to aircraft, birds could also fly through or near the potentially harmful range of a focal point and likely would be injured or incinerated. In consideration of the potential for birds to pass through a focal point and to be incinerated, staff has proposed Condition of Certification **BIO-25** in the **Biological Resources** section to be prepared in coordination with the Heliostat Positioning Plan and to minimize death and injury to birds. This mitigation would require the applicant to prepare an Avian Protection Plan and include modifications to proposed plant operation during standby mode to avoid or minimize directing heliostats to aim at focal points. Instead of directing heliostats to the focal points, staff is recommending that during standby mode the heliostats be placed into the stowed position or another alternative configuration that would avoid concentrating energy from more than one heliostat on any one location.

Solar Power Receiver Tower

With regard to solar receiver tower safety, the highest intensity of incident solar radiation expected to be reflected from the solar power receiver tower at its surface would be as high as 688 kw/m². However, as noted, the intensity of reflected light and solar radiation diminishes as distance from the source increases. The solar receiver tower will consist of a 538-foot concrete tower topped by a solar power receiver 100 feet high for a height of 638 topped by a crane (total height = 653 feet AGL). Applicant states that the energy design point for the solar power receiver is calculated assuming a solar irradiance of 950 W/m² from each heliostat and has calculated that at a distance of 1600 meters, the distance from the nearest location on SR 62 to the solar receiver tower and nearly twice the distance from KOP-1, the luminous flux will be 200 lux (lumens/m²). This light level at the human eye is only roughly twice that of common 60-watt incandescent lamp and well within normal levels of illuminance in domestic architecture. Therefore, solar radiation reflected from the solar receiver of the tower is not expected to pose a health and safety hazard to motorists on SR 62 and is not expected to pose a health and safety hazard to pilots or passengers in aircraft flying over the site. It would remain a bright, intrusive object in the field of view, but without the potential for physical hazard. To ensure the solar receiver tower would have less than significant impacts to motorists or aviation activities, the agencies have identified and staff has recommended Condition of Certification **TRANS-7**, which would require the applicant to prepare a Solar Energy Receiver Luminance Monitoring Plan to provide procedures for conducting periodic monitoring and to document, investigate, and resolve complaints regarding distracting effects from potentially excessive brightness on aviation, vehicular traffic, and other possible observers from the solar energy receiver.

EMERGENCY ACCESS

In the event of an emergency at the RSEP site during construction or operation, emergency vehicles would likely use SR 62 to the plant entrance driveway to access the project site. To maintain temporary access for emergency vehicles and allow for adequate access into the facility, proposed Condition of Certification **TRANS-1** requires the preparation of a Construction Traffic Control Plan, which includes the assurance of access and movement of emergency vehicles during construction. To ensure all RSEP

internal access roadways required for operation (including a proposed new one-lane dirt access road for 4.6 miles between the project site fence line and Rice Valley Road) would be designed consistent with all Riverside County Ordinance 461 requirements, Condition of Certification **TRANS-5** is required to ensure adequate turning radius for emergency vehicles to navigate within the facility boundaries and internal circulation roadways. Proposed Condition of Certification **WORKER SAFETY-6** would add a second access road to the project for emergency services. For additional discussion of access/movement of emergency vehicles within the site for the RSEP, refer to the **Worker Safety and Fire Protection** section in this SA/DEIS.

ALTERNATIVE TRANSPORTATION

As discussed earlier, no public bus transportation is available to or from the RSEP site. Therefore, no local bus stops are in immediate proximity of the RSEP site. Because the Riverside County General Plan designates US 95 (within the county) as a Regional Trail for bicycle use and this roadway would be utilized by RSEP construction vehicles, Condition of Certification **TRANS-1** requires the preparation of a Construction Traffic Control Plan which includes the assurance of access and movement of bicycles along construction truck routes. Once operational, the RSEP involves minimal traffic that would not impact pedestrian or bicycle routes. The incorporation of this condition ensures impacts would not occur or would only be minor to alternative transportation facilities or use during the 30-month construction of the proposed RSEP, and these would not be significant with respect to CEQA.

PROJECT CLOSURE AND DECOMMISSIONING

As described in the **Project Description** section of the SA/DEIS, it is assumed the planned operational life of the RSEP is 30 years, but the facility conceivably could operate for a longer or shorter period depending on economic or other circumstances (SR 2009a, p. 2-51). If the RSEP remains economically viable, it could operate for more than 30 years, which would defer environmental impacts associated with closure and with the development of replacement power generating facilities. However, if the facility were to become economically non-viable before 30 years of operation, permanent closure could occur sooner. In any case, a Facility Closure Plan in accordance with Condition of Certification **COMPLIANCE-11** (See the General Conditions section) would be prepared at RSEP closure and put into effect when permanent closure occurs. In general, the Facility Closure Plan will address: decommissioning measures for the RSEP and all associated facilities; activities necessary for site restoration/revegetation if removal of all equipment and facilities is needed; recycling of facility components, collection and disposal of hazardous wastes, and resale of unused chemicals to other parties; decommissioning alternatives other than full site restoration; costs associated with the planned decommissioning activities and where funding will come from for these activities; and conformance with applicable LORS (SR 2009a, p. 2-51). It should be noted that closure and decommissioning of the RSEP would likely require further environmental impact evaluation.

It is assumed that the number and type of workers required for closure and decommissioning activities would be similar to that described above for construction of the RSEP. Also, it is assumed decommissioning activities would utilize the same regional and local roadways that currently serve the RSEP site. Staff cannot speculate

as to the capacity or LOS of these roadways at the time of decommissioning activities because future conditions are unknown. However, as closure and decommissioning activities would be temporary in duration resulting in a similar or less number of vehicle trips to that presented above for proposed project construction, no significant traffic or transportation impacts to RSEP area roadways or transportation related facilities are expected to result from RSEP closure and decommissioning activities. Therefore, closure and decommissioning of the proposed RSEP would not result in any direct permanent effects to local and regional roadway capacities serving the site, or alternative transportation facilities.

REDUCE ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid via the proposed 10-mile long Generation Tie Line through the planned Western substation to be located adjacent to Western's Parker Blythe 161 kV transmission line.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

SETTING AND EXISTING CONDITIONS

Based on the alternative description above, the setting for the Reduced Acreage Alternative is the same as for the proposed project. As the reduced project footprint would not result in a change to the overall site location as analyzed for the RSEP, this alternative would have the identical traffic and transportation regional and local area resources as those described above serving the proposed RSEP.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

PERFORMANCE OF THE CIRCULATION SYSTEM

The roadway LOS impacts of the Reduced Acreage Alternative would be similar to those of the proposed RSEP, as described above. The same regional and local area roadways would continue to provide access to the Reduced Acreage Alternative site. It is possible due to the smaller footprint of the site that construction activities could be decreased, resulting in a shorter overall construction schedule and a potential decrease to the number of construction related trips from both construction workers and construction activities. However, this potential reduction in construction activities is not anticipated to result in a substantial change to roadway LOS impacts when compared to the proposed RSEP (as presented in **Traffic and Transportation Table 5**). Therefore, less than significant impacts regarding performance standards of utilized roadways by construction related traffic would occur.

Regarding linear facilities, it is assumed that construction of required transmission interconnections would remain the same as the proposed RSEP. Therefore, Condition of Certification **TRANS-1** would be required to reduce any potential disruption to roadways during Generation Tie Line construction. The implementation of this measure would reduce any potential capacity issues to roadways impacts by temporary transmission line infrastructure installation associated with the Reduced Acreage Alternative to a less than significant level.

It is assumed that the Reduced Acreage Alternative would require a similar number of operational employees as the RSEP. As discussed above for the RSEP, operational related traffic from employees would generate minimal traffic volumes on the regional and local area roadways and would have no impact on utilized roadway capacities during an estimated 30-year RSEP operational life. Therefore with respect to CEQA, RSEP operational related traffic would have less than significant impacts to utilized roadways under the Reduced Acreage Alternative.

REGIONAL CONGESTION MANAGEMENT PLANS

As discussed above, the Reduce Acreage Alternative would utilize identical roadways for construction and operational related traffic as the RSEP and result in similar or slightly decreased traffic volumes as those presented for the RSEP. As discussed above for the RSEP, all analyzed California roadways are contained within both the Riverside County and SANBAG CMPs. As shown in **Traffic and Transportation Table 5** for the RSEP, construction traffic would not exceed CMP LOS thresholds on analyzed roadways. Furthermore, as discussed above, RSEP operational traffic would represent a minimal increase over existing traffic volumes and peak hour capacity available on local roadways as presented in **Traffic and Transportation Table 3**. Therefore, no impacts to CMP designated roadways would occur from Reduced Acreage Alternative construction- or operational-related traffic.

AVIATION

Aviation hazards and potential impacts would be identical to those of the proposed RSEP. All conditions of certification for the proposed project would also apply to this alternative. Full implementation of the recommended conditions of certification would reduce potential aviation impacts to a less than significant level. No substantial residual effects would remain as all potential adverse effects would be avoided.

HAZARDS AND PUBLIC SAFETY

Hazards and public safety impacts of the Reduced Acreage Alternative would be identical to those of the proposed RSEP, as described above. While this alternative could result in a potential reduction in construction activities, Condition of Certification **TRANS-1** would still be required to minimize construction vehicle impacts to vehicle hazards and public safety as well as potential hazards from oversize vehicles crossing at-grade railroad crossings. This alternative would result in similar potential for unexpected damage to roads by vehicles and equipment within the project area and require Condition of Certification **TRANS-3**. Additionally, as this alternative would likely use identical regional and local area roadways to access the site, Condition of Certification **TRANS-4** would also be required for this alternative to ensure that all oversize vehicles used on public roadways during construction comply with Caltrans, Riverside County, San Bernardino County, and other relevant jurisdictions limitations on vehicle sizes and weights to ensure consistency with applicable LORS (as described above in **Traffic and Transportation Table 1**). The potential for ground fogging from the Reduced Acreage Alternative is assumed identical to that described above for the proposed RSEP, resulting in no potential adverse impacts to surface transportation.

OPERATIONAL INTRUSIVE LIGHT

With regard to intrusive light, this alternative reduces the size of the heliostat field with no changes to other aspects of the proposed RSEP. The northern edge of the heliostat field will remain in the same relation to SR 62. However, the heliostats may be located closer together so as to retain maximum solar energy at the solar receiver tower. If so, the masking that the flat mirrors provide for each other may improve. Therefore, the Reduced Acreage Alternative would make no significant changes to the impacts of reflected total solar energy or to reflected solar brightness (intrusive light) as described for the proposed RSEP, as described above. As for the proposed project, recommended Condition of Certification **TRANS-6** (Heliostat Positioning Plan) ; **TRANS-7** (Solar Energy Receiver Luminance Monitoring Plan); and **TRANS-8** would reduce any potential adverse impacts from excessive brightness on aviation and vehicular traffic to a less than significant level.

EMERGENCY ACCESS

Emergency access impacts of the Reduced Acreage Alternative would be identical to those of the proposed RSEP, as described above. During construction, access to the site is assumed to be to the same as that proposed for RSEP. With implementation of a Construction Transportation Plan in accordance with Condition of Certification **TRANS-1**, emergency access would be maintained during site and generation tie line construction . Therefore, emergency access associated with the Reduced Acreage Alternative construction would conform to LORS.

To ensure all Reduced Acreage internal access roadways required for operation be designed consistent with all applicable Riverside County Ordinance 461 requirements, Condition of Certification **TRANS-5** is required to ensure adequate turning radius for emergency vehicles to navigate within the facility boundaries and internal circulation roadways. The Reduced Acreage Alternative would also require the implementation of

Condition of Certification Worker Safety and Fire Protection **WORKER SAFETY-6**, which would add a second access road for emergency services. For additional discussion of access/movement of emergency vehicles within the site for the Reduced Acreage Alternative, refer to the **Worker Safety and Fire Protection** section in this SA/DEIS.

ALTERNATIVE TRANSPORTATION

Potential impacts to alternative transportation facilities from the Reduced Acreage Alternative would be identical to those of the proposed RSEP, as described above. The alternative site is located within the proposed RSEP site and construction vehicle access and travel routes to the site would be similar or identical to that of the proposed RSEP. Therefore, no local bus stops are in immediate proximity of the Reduced Acreage Alternative site and would not be impacted. Identical to the proposed RSEP, Condition of Certification **TRANS-1** would be required for this alternative to ensure the access and movement of bicycles along US 95 construction truck routes. With this condition incorporated, the Reduced Acreage Alternative would not substantially affect alternative transportation during construction and would be less than significant with respect to CEQA.

Identical to the proposed RSEP, once operational the Reduce Acreage Alternative would involve minimal daily traffic that would not adversely affect any existing pedestrian or bicycle routes or facilities. Therefore, the Reduced Acreage Alternative would result in no operational impacts to alternative transportation routes or facilities.

CUMULATIVE TRAFFIC AND TRANSPORTATION EFFECTS

The cumulative traffic and transportation impacts of the Reduced Acreage Alternative would be similar or identical to those of the proposed RSEP, as described below, due to the Reduced Acreage Alternative utilizing the same regional and local area roadways for construction- and operational-related vehicle access. It should be noted this alternative could result in a slight decrease in construction schedule and related vehicle trips when compared to the RSEP. As described for the RSEP, while cumulative project development utilizing the same roadways could combine with this alternative to increase the demand on regional and local area roadways, construction traffic is temporary and short-term, and would be reduced to the maximum extent feasible with the incorporation of Condition of Certification **TRANS-1** (as proposed for the RSEP and required for the Reduced Acreage Alternative). This measure requires the Construction Traffic Control Plan to consider and minimize cumulative traffic impacts of possible overlapping construction schedules of other nearby solar energy projects utilizing SR 62/US 95 during construction. Identical to that described below for the RSEP, once operational the Reduced Acreage Alternative would not contribute daily traffic on regional and local roadways at a volume that could contribute substantially to cumulative impacts of existing roadway LOS, including applicable CMP performance standards.

The contribution of this alternative to the cumulative aviation hazards and potential impacts would also be identical to those of the proposed RSEP. All conditions of certification for the proposed project would also apply to this alternative.

As described, the Reduced Acreage Alternative will make no changes to the impacts of

reflected total solar energy or to reflected solar brightness (intrusive light) as described for the original proposal. The northern edge of the heliostat field will remain in the same relation to SR 62. However, the heliostats may be located closer together so as to retain maximum solar energy at the solar receiver tower. If so, the masking that the flat mirrors provide for each other may increase.

Cumulative hazards and public safety impacts attributable to the Reduced Acreage Alternative, including: damage to roadways, hazards from oversize vehicles, emergency access and circulation, and disruption of alternative transportation; would be reduced during construction would not be substantial through the implementation of mitigation similar to Condition of Certification **TRANS-1**, **TRANS-3**, and **TRANS-4** proposed for the RSEP. Thus the Reduced Acreage Alternatives cumulative contribution to these impacts would be less than significant with respect to CEQA.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

SETTING AND EXISTING CONDITIONS

The North of Desert Center Alternative site is located north of I-10; access to the North of Desert Center Alternative site would be via Rice Road off of I-10. Workers employed to construct the project at this alternative site would most likely commute from Blythe (approximately 50 miles east of the site) or the Coachella and Indio area (approximately 50 miles west of the site) or reside in the construction worker RV Park. Given the western location of this alternative, the primary regional roadway serving this site would be I-10 east of Palm Springs.

Aviation

The North of Desert Center Alternative site is approximately 16 miles east of the Chiriaco Summit Airport (L77); 45 miles west of the Blythe Airport; 45 miles southeast of Twenty-nine Palms Airport (KTMP); and about 50 miles east of several public airports and heliports in the Indio-Palm Springs area. There are no public or private airports within two miles of the project site.

The closest airstrip is the Julian Hinds Pumping Plant Airport (73CL), a private, unattended airstrip approximately twelve miles west of Desert Center. The strip is owned by the MWD. It has a single, 2000 foot-long asphalt runway (RWY 04/22), but no

services. The airstrip is for the owner's use only and permission is required prior to landing. There are no published instrument procedures for this airport. (ARPT 2010i)

The Desert Center Airport (formerly Desert Center Army Air Field), located immediately across SR177 from the North of Desert Center Alternative site, has been closed as a public airport since 1992, although up to 150 aircraft per year continued to land there through at least 2004. The airport recently reopened as a private airfield, in conjunction with the conversion of the remainder of the airport land to the Chuckwalla Valley Raceway. The Raceway's first track opened in April 2010, with plans to construct the remaining tracks and facilities over the next 5-10 years. The original airfield had two runways, capable of accommodating B-24 bombers; tie-down areas, and more than 40 buildings. One asphalt runway (RWY 05/23), 4,200 feet long and 50 feet wide, remains and will be used by the Raceway as a private airstrip. The runway has no lights, services, or published instrument procedures, and permission is required prior to landing. Traffic pattern altitude is 1,000 feet AGL, with a left traffic pattern. Previous use patterns indicate 60% of aircraft landed/departed RWY 05; 40% on RWY 23. There are no existing land use compatibility conflicts and none are anticipated.

National parks, wilderness areas, and national wildlife refuge areas all fall under the definition of "National Park" for aviation purposes and the areas above them are considered special use airspace. All aircraft are to maintain a minimum altitude of 2,000 feet AGL. In the project vicinity, the Joshua Tree National Park and Wilderness Area (6 miles north); Chuckwalla Mountains Wilderness (7 miles south); Orocopia Mountains Wilderness (20 miles southwest); and Palen/McCoy Wilderness (12 miles east) are all designated special use airspace.

As noted in the Aviation discussion of the proposed project, there are a number of MTRs designated for aircraft exercises in the southern desert. There are four low-level MTRs above the North of Desert Center Alternative project site, designated IR217, IR218, VR289 and VR296, which place limitations on the use of airspace above the project site from the surface to varying altitudes above 10,000 AGL.

There is one military airfield and three operational areas within 50 miles of the proposed project site. The Twenty-nine Palms Strategic Expeditionary Landing Field (SELF; KNXP) is approximately 45 miles northwest of the project site and serves the Marine Corps Air Ground Combat Center (MCAGCC) Twenty-nine Palms. Except for emergencies, the SELF field is for military use only. (ARPT 2010f; WIKI 2010j) The Chocolate Mountain Naval Aerial Gunnery Range is about 15 miles south of the project site and includes the Kane and Abel North Military Operations Areas, with areas of restricted airspace extending from the surface to 40,000 feet AGL (FL 400). There is no airfield within the range. The times these areas are active vary within each restricted area, from 0700 to 2300 or continuously, depending on the status of military training exercises in the area. The low-level MTRs above the project site also provide flight corridors between the many desert training areas.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

PERFORMANCE OF THE CIRCULATION SYSTEM

The volume of traffic generated during construction and operation of the North of Desert Center Alternative would be similar or identical to that discussed above for the RSEP; however, utilized roadways by construction traffic are expected to differ significantly when compared to those utilized by the RSEP. Staff assumes Project development at this alternative site would primarily utilize the I-10 freeway segments between the city of Palm Springs, California and the US 95 junction for a large volume of construction related vehicle trips. Therefore, it is expected that a significant change in construction trip distribution would occur to that analyzed above for the RSEP.

To provide a quantitative analysis comparing the potential roadway LOS impacts of the North of Desert Center Alternative to those presented above for the RSEP, traffic data for the proposed adjacent Blythe Solar Power Project (BSPP) is utilized (Solar Millennium 2009a). Staff has determined that absent a detailed traffic report for the North of Desert Center Alternative, the use of the BSPP traffic analysis is reflective of anticipated traffic system impacts of the Project constructed at the North of Desert Center Alternative site due to the similarity of project type (solar power project), project size, and primary construction traffic route (I-10).

As provided in the BSPP SA/DEIS, when construction traffic volumes anticipated to that of the North of Desert Center Alternative are added to existing LOS for I-10 east and west of the alternative site, the addition of this traffic would not impact the performance standards of I-10, with the freeway continuing to operate at LOS A before and during peak hour construction conditions (Solar Millennium2009a). As the I-10 freeway is located within Riverside County and designated a CMP highway, the applicable CMP performance standard threshold would be LOS E, as identified in **Traffic and Transportation Table 1** (Solar Millennium2009a).

It should be noted that the BSPP project proponent has proposed to divide the workforce in shifts and stagger travel times of construction vehicles, thus reducing delays at I-10 exists used to access the project site. It is assumed that for the North of Desert Center Alternative that would result in similar traffic volume impacts as BSPP, this alternative would be required to incorporate similar construction traffic management strategies. These measures would likely be included within a required Construction Traffic Control Plan, similar to that of RSEP Condition of Certification **TRANS-1**. Therefore, based on the assumption that the North of Desert Center Alternative would have similar construction traffic volume increase to I-10 as the BSPP and that the traffic management mitigation measures would substantially lessen impacts, project specific impacts to the LOS performance standards of I-10 would be substantially reduced and would be less than significant with respect to CEQA.

Similarly, it was determined that operation of the BSPP would result in a small amount of daily vehicular traffic, resulting in I-10 to operate well below capacity when BSPP operational traffic is added (Solar Millennium2009a). Based on the level of operational traffic associated with the RSEP and the assumption that an identical level of operational traffic would occur with the North of Desert Center Alternative, it is expected

that operation of this alternative would result in less than significant project specific impacts to the performance standards of the I-10 freeway with respect to CEQA.

REGIONAL CONGESTION MANAGEMENT PLANS

As discussed above, the North of Desert Center Alternative would utilize the I-10 freeway for construction and operational related traffic. I-10 is designated as a Riverside County CMP roadway (Riverside County 2006). As discussed above, it is assumed that North of Desert Center construction- and operational-related traffic would represent a minimal increase over existing traffic volumes and peak hour capacity available on I-10, operating at LOS A (Solar Millennium 2009a and 2009b). Therefore, no impacts to CMP designated roadways are expected to occur from the North of Desert Center Alternative.

AVIATION

As noted above, the Desert Center Airport is about one-quarter mile southeast of the project site. Aircraft departing RWY 23 on a direct heading or entering a left traffic pattern would normally remain southeast of the solar stack and heliostat arrays. However, the proximity of the proposed North of Desert Center Alternative site to the Desert Center Airport increases the potential for intrusive light to affect pilots during takeoff and landing, or when approaching the airport from the north or west. Pattern altitude for the Desert Center Airport is 1,000 feet AGL. The southwest end of RWY 05/23 would be less than one-quarter mile southeast of the project's solar heliostat array. There is a potentially significant health and safety risk should pilots overfly one of the four solar focal points at or below 1,100 feet AG (see Operational Intrusive Light discussion below). Although the airport does not operate at night, the project's solar stack, at 653 feet AGL, would constitute a potentially significant flight obstruction if not lighted appropriately and if pilots were not made aware of its presence. Therefore, conditions of certification **TRANS-8** and **TRANS-9** would also apply to this Alternative to reduce these potential impacts to a less than significant level. Condition of certification **TRANS-8** would require stack lighting consistent with both FAA and DOD requirements and condition of certification **TRANS-9** would inform pilots of the potential hazard and advise that overflight of the project's solar stack or heliostat arrays should be avoided below 1,500 feet AGL. If overflight of the project site is avoided, incidental intrusive light may still occur, but would not present a substantial hazard to aircraft operations or a health risk to aircraft occupants.

As with the proposed project site, military operations in the airspace above and in the vicinity of this alternative site could be significantly impacted. As noted above, there are four low-level military training routes (MTRs), designated IR250, IR255, and SR397, which place limitations on the use of airspace above the site from the surface to varying altitudes above 10,000 AGL. Impacts identical to those discussed in the proposed project Aviation analysis could also occur at this site. Therefore, condition of certification **TRANS-8** would require stack lighting consistent with DOD requirements for military operations. Condition of certification **TRANS-9** would inform military commands of the potential hazard and solar stack (obstruction) height. Military training exercises within the MTRs would be altered as necessary to avoid overflight of the site below 1,100 feet AGL during daylight hours and avoidance of the solar tower at all times (DOD 2010).

In addition, at any site location, frequencies used during normal power plant

construction and operations have the potential to interfere with military transmissions and equipment operation. Therefore, as with the proposed project, condition of certification **LAND-9** would ensure that no frequencies used at the project site or in conjunction with plant construction or operation would interfere with communication or other military operations. The military has indicated a willingness to alter training patterns to avoid the project area, to the extent feasible, which, in conjunction with full implementation of all other proposed aviation-related conditions of certification, would reduce any potential impacts to military operations to a less than significant level.

HAZARDS AND PUBLIC SAFETY

Hazards and public safety impacts of the North of Desert Center Alternative would be similar to those of the proposed RSEP, as described above. It is assumed that this alternative would result in a similar level of construction activities. Condition of Certification **TRANS-1** would still be required to minimize construction vehicle impacts to vehicle hazards and public safety. This alternative would result in similar potential for unexpected damage to roads by vehicles and equipment within the project area and require Condition of Certification **TRANS-3**. Additionally, while this alternative would likely use I-10 as the primary regional and local area roadway to access the site, Condition of Certification **TRANS-4** would also be required for this alternative to ensure that all oversize vehicles used on public roadways during construction comply with Caltrans, Riverside County, San Bernardino County, and other relevant jurisdictions limitations on vehicle sizes and weights to ensure consistency with applicable LORS (as described above in **Traffic and Transportation Table 1**). The potential for ground fogging from the North of Desert Center Alternative is assumed identical to that described above for the proposed RSEP as it is likely ground fogging activities would only occur minimally within the interior of the site at a distance eliminating them from intruding on any public roadway, thus resulting in no potential impacts to surface transportation with respect to CEQA.

Operational Intrusive Light

This alternative relocates the Rice SEP to a location along the Desert Center Rice Road (State Route 177), where the concerns expressed for the proposed RSEP, regarding the exposure of passing motorists along SR 62 or aircraft aloft to the possible misdirection of total solar energy or excessive brightness from a mirror surface, would also apply.

The small Desert Center Airport is located 0.25 miles southeast of the alternative project site. Aircraft landing or departing RWY 23 (southwest) would not be confronted directly by the brightness of direct solar reflections, although they would be skirting the southwestern edge of the solar array. However, pilots landing on Rwy 05 (to the northeast) or circling to land in either direction could pass over the heliostat field during normal solar tracking periods and experience visual adaptation difficulties due to possible exposure to the extreme range of brightness differences between the field of heliostats, the adjacent ground, and cockpit surfaces. In addition, if pilots were to pass over the RSEP during standby mode, when heliostats are directed to the four focal points, the aircraft pilot or passengers could be exposed to hazardous levels of solar radiation. These four standby focal points are approximately 100 feet from the tower and at the center plane elevation of the receiver. The reflected total solar energy at

these points could be up to 4,300 suns or 4.06 MW/m². This is sufficient total solar energy to cause ocular damage. However, because of the proximity of this alternative site to an active airport, the potential for exposure to reflected solar brightness for general aviation air traffic would be greater than at the proposed project site. This would pose a potentially significant health and safety impact under CEQA and could have a substantial effect to aircraft operations and use of navigable airspace under NEPA. Therefore, staff has proposed condition of certification **TRANS-9**, which would advise pilots of the potential hazard and recommend no overflight of the solar stack or heliostat arrays below 1,500 AGL. **TRANS-9** would also inform military commands of the potential hazard and solar stack (obstruction) height. Military training exercises within the MTRs would be altered as necessary to avoid overflight of the site below 1,100 feet AGL during daylight hours and avoidance of the solar tower at all times. This would reduce potential intrusive light-related aviation impacts to a less than significant level.

Similar to the proposed project and in consideration of the potential for birds to pass through a focal point and to be incinerated, staff would recommend Condition of Certification **BIO-25** in the **Biological Resources** section to be prepared in coordination with the Heliostat Positioning Plan and to minimize death and injury to birds. This mitigation would require the applicant to prepare an Avian Protection Plan and include modifications to proposed plant operation during standby mode to avoid or minimize directing heliostats to aim at focal points. Instead of directing heliostats to the focal points, staff is recommending that during standby mode the heliostats be placed into the stowed position or another alternative configuration that would avoid concentrating energy from more than one heliostat on any one location.

EMERGENCY ACCESS

Emergency access plans for the North of Desert Center Alternative would be similar to those of the proposed RSEP, as described above. While this alternative would use I-10 as the primary regional roadway to access the site, Condition of Certification **TRANS-1** would be required to ensure emergency access is maintained during site construction and any generation tie line construction activities. Therefore, operation of the North of Desert Center Alternative would conform to applicable LORS with respect to emergency access.

Furthermore, identical to the proposed RSEP, all internal access roadways required for North of Desert Center Alternative operation and facility access would be required to be designed consistent with all applicable Riverside County Ordinance 461 requirements, with a measure similar or identical to Condition of Certification **TRANS-5** required to ensure adequate turning radius for emergency vehicles to navigate within the facility boundaries and internal circulation roadways. It is assumed that the North of Desert Center Alternative would also require the implementation of Condition of Certification **WORKER SAFETY-6**.

ALTERNATIVE TRANSPORTATION

Alternative transportation impacts of the North of Desert Center Alternative would likely be similar to those of the proposed RSEP, as described above. A brief map survey conducted by staff indicated that this alternative site is not located in immediate proximity of any significant bus, pedestrian, or bicycle routes or facilities. As discussed for the RSEP, the Bradshaw Trail is an historic trail that runs along part of I-10 in Blythe and offers bicycle use (SR 2009a, p. 5.12-11). It is unknown by staff at this time what, if any impacts construction traffic along I-10 could have on this bicycle route. However, as the North of Desert Center Alternative would utilize I-10 as a major transportation route, it is possible that potential impacts to this bicycle route from construction related traffic could occur as compared to that associated with the RSEP. However, measures contained within Condition of Certification **TRANS-1**, including the ensurance of access and movement of bicycles along construction truck routes would be required of this alternative. With this condition incorporated, the North of Desert Center Alternative would not result in a substantial effect to alternative transportation during construction, and the effect would be less than significant with respect to CEQA.

Similar to the proposed RSEP, once operational, the North of Desert Center Alternative would involve minimal daily traffic that is not expected to impact public bus, or bicycle routes. Therefore, the North of Desert Center Alternative would result in no operational impacts to alternative transportation routes or facilities.

CUMULATIVE TRAFFIC AND TRANSPORTATION EFFECTS

The cumulative traffic and transportation impacts of the North of Desert Center Alternative would differ when compared to those of the proposed RSEP, as described below. Because this alternative would likely use I-10 as the primary regional roadway to access the site, the development of the proposed project at this site would have a greater potential to combine with other large solar renewable projects in the area (Palen Solar Power Project (PSPP), Blythe Solar Power Project (BSPP), Genesis Solar Power Project (GSPP), and the Desert Sunlight PV Project) that are identified as using I-10 as a primary travel route for construction related traffic. When using the BSPP cumulative project analysis as an indicator of likely cumulative traffic impacts from the North of Desert Center Alternative to I-10, this alternative would likely combine with the other four proposed projects to increase the demand on regional and local area roadways (Solar Millenium2009a). It is indicated by the BSPP document that although I-10 currently operates at LOS A, the high volume of traffic resulting from the overlapping construction of all projects could result in I-10 operating at an unacceptable LOS. However the BSPP, PSPP, and GSEP staff analysis have included similar conditions of certification as those recommended in Condition of Certification **TRANS-1** to reduce cumulative impacts for those projects. Based on the implementation of those measures, the BSPP concludes that cumulative traffic impacts of I-10 corridor projects would be reduced to a less than significant level (Solar Millenium2009a).

Regarding the potential cumulative impacts of the North of Desert Center Alternative, construction traffic is temporary and short-term (30 months for the North of Desert Center Alternative), and this cumulative impact would be reduced to the maximum extent feasible with the incorporation of a Construction Traffic Control Plan similar to

that identified for the RSEP per Condition of Certification **TRANS-1**. The cumulative component of Condition of Certification **TRANS-1**, the Construction Traffic Control Plan, would need to address and mitigate cumulative construction impacts associated with the North of Desert Center Alternative and the overlapping construction schedules of other nearby solar energy projects utilizing I-10 during construction including the Blythe Solar Power Project, Palen Solar Power Project, and Genesis Solar Energy Project (Solar Millennium2009a, Solar Millennium2009b, GSEP2009a). Therefore, due to the number of renewable energy projects proposed on the I-10 corridor (refer to **Cumulative Impacts Figure 2** and **Cumulative Tables 2 and 3**), it is possible that cumulative construction traffic impacts of the North of Desert Center Alternative could result in significant performance standards impacts on I-10 with respect to CEQA. However, it is unknown at this time if significant cumulative impacts would occur on I-10 absent a quantitative traffic analysis of the RSEP constructed at the North of Desert Center Alternative site (as would be required by Condition of Certification **TRANS-1**). Based on the cumulative analysis performed in the BSPP and used in this document as a likely scenario for North of Desert Center traffic impacts to I-10, staff concludes that with implementation of a Construction Traffic Control Plan as would be required with recommended Condition of Certification **TRANS-1**, it is possible but unknown at this time these cumulative construction traffic impacts would be reduced to less than significant with respect to CEQA (Solar Millennium2009a)

Once operational, the North of Desert Center Alternative would not contribute daily traffic on regional and local roadways at a volume that could contribute substantially to cumulative impacts of existing roadway LOS, including applicable CMP performance standards, similar to that described for the BSPP (Solar Millennium2009a).

Multiple solar projects are proposed along I-10 and SR 177 that would contribute to the need for site avoidance by private aircraft and alterations to military operations over the area. Altitude restrictions would be further expanded in the Chuckwalla Valley and along the I-10 corridor. General aviation would be most affected, as the current long stretches of uncontrolled airspace for VFR flight would be broken up, especially below 2,500 feet AGL. However, military operations could also be adversely affected as more and more training activities would need to be altered to avoid obstructions and intrusive light. While the proposed conditions of certification would allow pilots to avoid the stack obstruction and minimize exposure to intrusive light for this project, when added to the list of similar proposed projects, the cumulative alterations to airspace would be significant, unavoidable, and, possibly, unmitigable. However, as the actual number of similar projects that will be approved and built are speculative, at best, it is difficult to tell what the actual cumulative impact would be. It can only be said that this project would add to the cumulative potential impacts to aviation, as noted above. Due to the cumulative intrusive light impacts and potential for ocular damage from the close adjacency of the Desert Center Airport, intrusive light impacts associated with this alternative would be limited by implementing Conditions of Certification **TRANS-6**, **TRANS-7**, and **TRANS-9** and would be less than significant with respect to CEQA.

Hazards and public safety impacts attributable to the North of Desert Center Alternative, including damage to roadways, hazards from oversize vehicles, emergency access and circulation, and disruption of alternative transportation would be substantially reduced during construction through the implementation of mitigation similar to Condition of

Certification **TRANS-1**, **TRANS-3**, and **TRANS-4** proposed for the RSEP. The North of Desert Center Alternative's cumulative contribution to these impacts would be less than significant with respect to CEQA.

SR 62/Rice Valley Road Generation Tie Line Alternative

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe transmission line at the same location as the proposed project transmission line. This alternative generation tie line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

The SR 62/Rice Valley Road Generation Tie Line Alternative is evaluated in this SA/DEIS because it would reduce Biological Resources impacts and avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road.

Setting and Existing Conditions

Based on the alternative description above, the setting for the SR 62/Rice Valley Road Transmission Line Alternative is the same as for the proposed project. As the project footprint would not result in a change to the overall site location, only resulting in slight changes to the required transmission line routing, this alternative would have the identical traffic and transportation regional and local area resources as those described above serving the proposed RSEP.

Assessment of Impacts and Discussion of Mitigation

PERFORMANCE OF THE CIRCULATION SYSTEM

The roadway LOS impacts of the SR 62/Rice Valley Road Transmission Line Alternative would be similar or identical to those of the proposed RSEP, as described above. The same regional and local area roadways would continue to provide access to the SR 62/Rice Valley Road Transmission Line Alternative site. It is assumed that the level of construction activities would be identical to that of the proposed RSEP, resulting in an identical number of construction related trips from both construction workers and construction activities. Therefore, this alternative would not result in a substantial change to roadway LOS impacts when compared to the proposed RSEP (as presented in **Traffic and Transportation Table 5**), as the same regional and local area roadways

would continue to provide access to the SR 62/Rice Valley Road Transmission Line Alternative. Therefore, less than significant impacts regarding performance standards of utilized roadways by construction related traffic would occur as part of the SR 62/Rice Valley Road Transmission Line Alternative.

Regarding linear facilities, it is assumed that temporary traffic delays associated with construction of required transmission interconnections would remain similar to those described above for the proposed RSEP. While this alternative introduces a change in the transmission line routes as compared to the RSEP, Condition of Certification **TRANS-1** would be required for this alternative to reduce any potential disruption to roadways during transmission line stringing activities. The implementation of this measure would reduce any potential capacity issues to roadways impacts by temporary transmission line infrastructure installation associated with the SR 62/Rice Valley Road Transmission Line Alternative to a less than significant level with respect to CEQA.

It is assumed that operation of this alternative would require an identical number of operational employees as the RSEP. As discussed above for the RSEP, operational related traffic from employees would generate minimal traffic volumes on the regional and local area roadways and would have no impact on utilized roadway capacities. Therefore, less than significant impacts regarding performance standards of utilized roadways by operational related traffic would occur as part of the SR 62/Rice Valley Road Transmission Line Alternative with respect to CEQA.

REGIONAL CONGESTION MANAGEMENT PLANS

As discussed above, the SR 62/Rice Valley Road Transmission Line Alternative would utilize identical roadways for construction and operational related traffic as the RSEP and result in identical construction and operational traffic volumes as those described for the RSEP. As discussed above for the RSEP, all analyzed California roadways are contained within both the Riverside County and SANBAG CMP's. As shown in **Traffic and Transportation Table 5** for the RSEP, construction traffic would not exceed CMP LOS thresholds on analyzed roadways. Furthermore, as discussed above, RSEP operational traffic would represent a minimal increase over existing traffic volumes and peak hour capacity available on local roadways as presented in **Traffic and Transportation Table 3**. Therefore, no impacts to CMP designated roadways would occur from SR 62/Rice Valley Road Transmission Line Alternative construction- or operational-related traffic.

AVIATION

Aviation hazards and potential impacts would be identical to those of the proposed RSEP. All conditions of certification for the proposed project would also apply to this alternative.

HAZARDS AND PUBLIC SAFETY

Hazards and public safety impacts of the SR 62/Rice Valley Road Transmission Line Alternative would be identical to those of the proposed RSEP, as described above. While this alternative would in a slight change to required transmission line interconnection alignments, Condition of Certification **TRANS-1** would still be required

to minimize construction vehicle impacts to vehicle hazards and public safety as well as potential hazards from oversize vehicles crossing at-grade railroad crossings. This alternative would result in similar potential for unexpected damage to roads by vehicles and equipment within the project area and require Condition of Certification **TRANS-3**. Additionally, as this alternative would likely use identical regional and local area roadways to access the site, Condition of Certification **TRANS-4** would also be required for this alternative to ensure that all oversize vehicles used on public roadways during construction comply with Caltrans, Riverside County, San Bernardino County, and other relevant jurisdictions limitations on vehicle sizes and weights to ensure consistency with applicable LORS (as described above in **Traffic and Transportation Table 1**). The potential for ground fogging from the While this alternative would in a slight change to required transmission line interconnection alignments, Alternative is assumed identical to that described above for the proposed RSEP, resulting in no potential impacts to surface transportation.

Operational Intrusive Light

This alternative would not diminish the brightness or the total solar energy impacts associated with the proposed project.

With regard to intrusive light, this alternative would make no significant changes to the potential impacts of reflected total solar energy or to reflected solar brightness (intrusive light), as described for the proposed RSEP. Recommended Conditions of Certification **TRANS-6** (Heliostat Positioning Plan), **TRANS-7** (Solar Energy Receiver Luminance Monitoring Plan), and **TRANS-9** would reduce any potential distracting or adverse effects on aviation and vehicular traffic from excessive brightness to a less than significant level under CEQA.

EMERGENCY ACCESS

Emergency access impacts of the SR 62/Rice Valley Road Transmission Line Alternative would be similar or identical to those of the proposed RSEP, as described above. During construction, access to the site would likely be identical to that of the proposed RSEP, with Condition of Certification **TRANS-1** required to ensure emergency access is maintained during site construction and transmission line stringing activities. Therefore, less than significant emergency access impacts would occur with SR 62/Rice Valley Road Transmission Line Alternative construction.

As discussed above, this alternative would avoid the creation of a new 4.6-mile vehicle access route between the proposed solar facility and the proposed junction of the new transmission line access road with the existing Rice Valley road, as required with the proposed RSEP. However, any required internal access roadways associated with SR 62/Rice Valley Road Transmission Line Alternative operation would require Condition of Certification **TRANS-5** to ensure roadways are designed consistent with all applicable Riverside County Ordinance 461 requirements, thus providing adequate turning radius for emergency vehicles to navigate within the facility boundaries and internal circulation roadways

It is assumed that the SR 62/Rice Valley Road Transmission Line Alternative would also require the implementation of Condition of Certification **WORKER SAFETY-6**. For

additional discussion of access/movement of emergency vehicles within the site for the SR 62/Rice Valley Road Transmission Line, refer to the **Worker Safety and Fire Protection** section in this SA/DEIS. Therefore, less than significant emergency access impacts would occur with SR 62/Rice Valley Road Transmission Line Alternative operations.

ALTERNATIVE TRANSPORTATION

Alternative transportation impacts of the SR 62/Rice Valley Road Transmission Line Alternative would be similar or identical to those of the proposed RSEP, as described above. While this alternative would result in a slight change to required transmission line interconnection alignments, the alternative site is identical to the proposed RSEP site and construction vehicle access and travel routes to the site would be similar or identical to that of the proposed RSEP. Therefore, no local bus stops are in immediate proximity of the SR 62/Rice Valley Road Transmission Line Alternative site and would not be impacted. Identical to the proposed RSEP, Condition of Certification **TRANS-1** would be required for this alternative to ensure the access and movement of bicycles along construction truck routes. With this condition incorporated, the SR 62/Rice Valley Road Transmission Line Alternative would result in less than significant impacts to alternative transportation during construction with respect to CEQA.

Identical to the proposed RSEP, once operational, the SR 62/Rice Valley Road Transmission Line Alternative would involve minimal daily traffic that is not expected to impact public bus or bicycle routes. Therefore, the SR 62/Rice Valley Road Transmission Line Alternative would result in no operational impacts to alternative transportation routes or facilities with respect to CEQA.

CUMULATIVE TRAFFIC AND TRANSPORTATION EFFECTS

The cumulative traffic and transportation impacts of the SR 62/Rice Valley Road Transmission Line Alternative would be similar or identical to those of the proposed RSEP, as described below. This alternative is assumed to result in a similar or identical construction schedule and related vehicle trips when compared to the RSEP. Furthermore, it is assumed the same regional and local area roadways would provide access for the SR 62/Rice Valley Road Transmission Line Alternative. As described for the RSEP, while cumulative project development utilizing the same roadways could combine with this alternative to increase the demand on regional and local area roadways, construction traffic is temporary and short-term, and would be reduced to the maximum extent feasible with the incorporation of Condition of Certification **TRANS-1** (as proposed for the RSEP and required for the SR 62/Rice Valley Road Transmission Line Alternative). This measure requires the Construction Traffic Control Plan to consider and minimize cumulative traffic impacts of possible overlapping construction schedules of other nearby solar energy projects utilizing SR 62/US 95 during construction. Identical to that described below for the RSEP, once operational the SR 62/Rice Valley Road Transmission Line Alternative would not contribute daily traffic on regional and local roadways at a volume that could contribute substantially to cumulative impacts of existing roadway LOS, including applicable CMP performance standards.

[Hazards and public safety impacts not site specific, including: damage to roadways,

hazards from oversize vehicles, emergency access and circulation, and disruption of alternative transportation; would be reduced during construction through the implementation of mitigation similar to Condition of Certification **TRANS-1**, **TRANS-3**, and **TRANS-4** proposed for the RSEP, thus reducing the SR 62/Rice Valley Road Transmission Line Alternatives cumulative contribution to these impacts to a less than significant level with respect to CEQA.

The contribution of this alternative to the cumulative aviation hazards and potential impacts would also be identical to those of the proposed RSEP.

NO PROJECT/NO ACTION ALTERNATIVE - No Project and No Action on proposed transmission line application and on CDCA land use plan amendment

The No Project Alternative under CEQA or the No Action Alternative under NEPA defines the scenario that would exist if the proposed project were not constructed. The CEQA Guidelines state that “the purpose of describing and analyzing a ‘no project’ alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project” (Cal. Code Regs., tit. 14 § 15126.6(i)). The No Project analysis in this SA/EIR considers existing conditions and “what would be reasonably expected to occur in the foreseeable future if the project were not approved...” (Cal. Code Regs, tit. 14 § 15126.6(e)(2)). Under NEPA, the No Action Alternative is used as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the proposed action and the alternatives.

Under this alternative, the Energy Commission would not approve the proposed RSEP; BLM would not approve the generation tie line right-of-way application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line #1 under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

SETTING AND EXISTING CONDITIONS

The No Project analysis in this SA/DEIS considers existing conditions and “what would be reasonably expected to occur in the foreseeable future if the project were not approved...” (Cal. Code Regs, tit. 14 § 15126.6(e)(2)). Under NEPA, the No Action Alternative is used as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the proposed action and the alternatives. The traffic and transportation setting for the No Project/No Action

Alternative would be the same as those of the proposed project local and regional study areas, as described above.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Under this alternative, the proposed RSEP would not be approved by the CEC and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the transportation and traffic related impacts (mitigated to less than significant levels) of the RSEP would not occur at the proposed site. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACTS

A project may result in significant adverse cumulative impacts when its effects are "cumulatively considerable." Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, or the effects of probable future projects (Title 14, California Code of Regulations, section 15130). Cumulative traffic and transportation impacts could occur when more than one project has an overlapping construction schedule that creates additional traffic flow on shared roadways that cannot be met by the existing capacity, resulting in LOS impacts. Operational cumulative socioeconomic impacts could occur when the development of multiple projects significantly impacts the local area roadway LOS.

The Cumulative Scenario section of this SA/DEIS provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these projects comprise the cumulative scenario, which forms the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on State and Private Lands in California Desert District Counties, as shown in **Cumulative Table 1A**, and renewable Energy Projects in the California Desert District, as shown on and in **Cumulative Table 1B**. These projects can be seen on **Cumulative Figure 1**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Existing and foreseeable future projects in the Rice Valley area and Eastern Riverside County, as shown on **Cumulative Impacts Figure 2** and **Cumulative**

Tables 2 and 3. Table 2 presents existing projects in this area and Table 3 presents future foreseeable projects in the Rice Valley area and Eastern Riverside County. Both tables indicate project name and project type, its location and its status.

These projects are defined within a geographic area that has been identified by the CEC and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects described in the Cumulative Scenario section have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this SA/Draft EIS.

Geographic Extent of Cumulative Impact Analysis

The area of cumulative effect for traffic and transportation resources is roadways that may share construction-related traffic associated with the proposed RSEP (as identified in **Traffic and Transportation Table 5**). The analysis of cumulative effects considers a number of variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. The geographic scope of cumulative impact analysis is based on the workforce boundaries of the cumulative development projects. While it is possible that the geographic scope of cumulative effects will extend beyond these three counties with some construction workers and equipment trips potentially coming from adjacent counties beyond a two-hour commute radius of the proposed RSEP site, due to the similar nature of skill set required by the workforce during construction activities as well as the number of proposed cumulative renewable energy projects, it is not anticipated that the geographic scope for cumulative impact analysis extent beyond the scope of the direct and indirect effects of the proposed action.

Effects of Past and Present Projects

A wide variety of past and present development projects contribute to the cumulative conditions for traffic and transportation. As noted above in the “Setting and Existing Conditions” subsection, past development has further urbanized the area and increased traffic conditions and roadway congestion. As shown in the AFC, from 2000 to 2008 the populations of Riverside and San Bernardino Counties increased by 25.6 and 16.2%, respectively while the population within La Paz County increased by 8.5% during the same time frame (SR 2009a, Section 5.11, Socioeconomics). This is an example of the steady growth rate that has occurred throughout the regional area that contributes to daily traffic. As a result, past and present residential, commercial, and industrial development has contributed to the overall traffic and transportation growth within the study area.

Effects of Reasonably Foreseeable Future Projects

Transportation and traffic facilities are also expected to be affected by the following reasonably foreseeable future projects as follows: a number of large electrical generation and distribution infrastructure development projects are proposed within the Rice Valley area and Eastern Riverside County (as shown in **CUMULATIVE IMPACTS Figure 2** and **CUMULATIVE IMPACTS Table 3**); and solar and wind applications

proposed on approximately 1,000,000 acres of BLM land in the California Desert District Planning Area as well as a large number of electrical generation and distribution infrastructure development projects proposed on non-federal land (as shown in **CUMULATIVE IMPACTS Tables 1a and 1b** and on **CUMULATIVE IMPACTS Figure 1**).

Contribution of the RSEP to Cumulative Impacts

Construction. As discussed earlier for the proposed Project, construction of the RSEP will result in a short-term increase in traffic volumes on US 95 and SR 62 related to construction activities and workers. Foreseeable development in the project area at the scope of which may combine with the RSEP cumulatively includes primarily renewable energy electrical generation and transmission infrastructure projects. With the large number of renewable energy projects occurring within the RSEP regional area, it is possible that some overlap of construction phasing could occur between the RSEP and the cumulative development projects as described above and identified in SA/DEIS Section, Cumulative Scenario. Therefore, cumulative projects that may be under construction at the same time as the RSEP could utilize the same regional roadways for construction related vehicle site access during their respective construction periods. However, it should be noted that based on direct construction traffic volumes, the RSEP would be expected to contribute a less than significant increase of daily traffic volumes to the possible short term roadway LOS cumulative impacts.

All cumulative projects identified in **CUMULATIVE IMPACTS Tables 1a, 1b, 2, and 3** would be expected to draw on the regional transportation system serving Riverside/San Bernardino Counties and the State of Arizona. As shown in **CUMULATIVE IMPACTS Figure 1**, the RSEP is located between clustered future development of solar energy projects to the northwest along the SR 62 corridor and to the south along the I-10 corridor. Due to its location to these cumulative development projects and the geography of the regional transportation system, the RSEP has the most potential to contribute cumulatively to those proposed projects located along the SR 62 corridor. As described and analyzed above, RSEP related traffic is considered to only have the potential to impact SR 62 and US 95 (SR 2009a, p. 5.12-14). Therefore, cumulative development located along these corridors is considered to have the greatest cumulative potential. Of these projects, as identified on **CUMULATIVE IMPACTS Figure 2** and provided in **CUMULATIVE IMPACTS Tables 2 and 3**, staff considers the following cumulative projects along both SR 62 and US 95 to have the greatest potential to combine with the RSEP from traffic impact evaluation:

SR 62

- B. Ward Valley, 100-250 MW solar power generating facility utilizing three facilities (with a potential for two additional facilities) encompassing an approximate area of 4,800 (for three facilities) up to 8,000 acres, not inclusive of the required transmission ROW, proposed in the Ward Valley approximately 5 miles northwest of the proposed Rice Solar Energy project;
- C. Clean Air Solar II, 900 MW technology neutral (no specific technology at this time) solar power plant located near Iron Mountains 11 miles west of proposed Rice project;
- D. Clean Air Solar III, 1,700 MW technology neutral (no specific technology at this

time) solar power plant located near Iron Mountains 15 miles west of proposed Rice project;

- E. Killbeck, 1,000 MW solar thermal power plant located 26 miles northwest of proposed Rice project
- F. Cadiz Lake, 1,000 MW solar thermal power plant located 26 miles west of proposed Rice project

US 95

- N. Big Maria Vista Solar Project, 500 MW solar photovoltaic project 14 miles south of proposed Rice project

While **CUMULATIVE IMPACTS Figure 2** shows both the BSPP and McCoy Solar Project located approximately 26 and 20 miles southeast of the proposed RSEP, respectively, staff review of the BSPP AFC indicated that no traffic on US 95 was assumed or evaluated in the traffic analysis (Solar Millennium2009a). Therefore, neither project is assumed to combine with RSEP traffic on US 95. With regards to the adjacent cumulative projects identified above with the potential to combine with RSEP related traffic, at the time of this SA/DEIS publication staff was unable to obtain traffic volume data to consider a quantitative evaluation of cumulative traffic impacts.

To mitigate the potential for cumulative impacts to roadway performance standards, Condition of Certification **TRANS-1** requires that the Construction Traffic Control Plan for the RSEP take into account the cumulative traffic impacts of other nearby solar energy projects utilizing both SR 62 and US 95 during construction. This condition requires coordination with all solar development project applicants likely to share SR 62 and US 95 as key construction vehicle routes in conjunction with the RSEP, ensuring that timing of heavy equipment and building materials deliveries as well as worker trips of overlapping construction schedules do not result in either SR 62/US 95 to operate at an acceptable LOS with the addition of cumulative construction traffic. With the incorporation of this condition, the proposed RSEP would not contribute construction traffic on regional and local roadways at a volume that could contribute substantially to cumulative impacts of existing roadway LOS, including applicable CMP performance standards.

With regards to temporary cumulative safety impacts during construction, incorporation of proposed Conditions of Certification **TRANS-1**, **TRANS-3**, **TRANS-4** and **TRANS-5** as part of the RSEP would ensure that the proposed project not have a considerable contribution to cumulative hazards and public safety, emergency access, or alternative transportation impacts during construction. While cumulative development could result in overlapping construction vehicles on utilized construction traffic routes, it is assumed each cumulative project will include project specific measures similar to that of RSEP Conditions of Certification **TRANS-1**, **TRANS-3**, **TRANS-4** and **TRANS-5** reducing respective traffic hazard impacts and thus insuring each cumulative project to be in compliance with applicable LORS, consistent with those applicable to the RSEP, as described in **Traffic and Transportation Table 1**. Therefore, due to the incorporation of Condition of Certification **TRANS-1**, **TRANS-3**, **TRANS-4** and **TRANS-5**, the RSEP would not contribute to cumulative traffic or transportation related construction vehicle hazard impacts.

Operation. Operation of the RSEP would result in minimal long-term daily traffic volumes on regional and local roadways. Furthermore, staff review of renewable energy electrical generation and transmission infrastructure projects occurring within the RSEP regional area, as identified in SA/DEIS Section Cumulative Scenario, indicated they were also expected to generate negligible daily traffic volumes similar to that of the RSEP. These operational traffic volumes would likely utilize multiple travel routes for worker and maintenance related traffic. Based on the available future capacity and LOS of roadways likely utilized by RSEP operational traffic (as shown in **Traffic and Transportation Table 5** without project scenario), any cumulative increase in traffic volumes by projects identified in SA/DEIS Section Cumulative Scenario, are not expected to significantly impact the performance standards of these roadways. Therefore, the proposed RSEP would not contribute cumulatively to adverse long-term impacts to roadway LOS serving the regional or local area.

With regards to aviation, multiple solar projects are proposed along SR 62, SR 177, I-10, and north into San Bernardino County that would contribute to the need for site avoidance by private aircraft and alterations to military operations over the entire southern desert area. Altitude restrictions would be further expanded in the Rice Valley, Ward Valley, Chuckwalla Valley, and along the I-10 corridor from Desert Center to Blythe and into Arizona. General aviation would be most affected, as the current long stretches of uncontrolled airspace for VFR flight would be broken up, especially below 2,500 feet AGL. Conditions of certification **TRANS-8** and **9** would provide pilots with the information needed to meet FAA requirements to see and avoid the proposed project stack and exhaust plume, and minimize exposure to intrusive light for this project. Construction of additional solar or wind projects in the general vicinity would expand the areas that pilots would need to avoid, but would not substantially increase aviation risks or impose undue hardship on the limited civil aviation traffic in the area at this time. The proposed project would not significantly increase the potential cumulative impacts to civil aviation.

The cumulative alterations to airspace would be significant, unavoidable, and, possibly, unmitigable. However, as the actual number of similar projects that will be approved and built are speculative, at best, it is difficult to tell what the actual cumulative impact would be. It can only be said that this project would add to the cumulative potential impacts to aviation, as noted above.

Aviation and Military Use

As with civilian aviation traffic, the cumulative impacts of the proposed project and all other foreseeable renewable energy projects in the area have the potential to adversely affect the use of the area's airspace as a military training location. There are three low-level military training areas above the Ward and Rice Valleys, extending from the surface to above 10,000 feet AGL. Potential impacts to military maneuvers increase incrementally with each additional facility and can include structural obstructions to the airspace, visibility issues, and frequency interference. Conditions of certification **LAND-7**, **8**, and **9**, in conjunction with the military's willingness to alter its training program, would reduce the proposed project impacts on military operations to a less than significant level. However, this is the first of many projects proposed for this area. While it is reasonable to assume that similar conditions of certification or approval would

be required for similar projects, it would depend on the military's cooperation and ability to repeatedly alter its training patterns to avoid any substantial cumulative impacts. Assuming military cooperation, the proposed project would not contribute significantly to any potential cumulative aviation impacts. Otherwise, the cumulative alterations to military airspace could be significant, unavoidable, and, possibly, unmitigable.

Intrusive Light (glare). Based on review of the past, present and foreseeable projects, the proposed Ward Valley Solar Electric Project is the only project that is potentially foreseeable to be developed within the Visual view shed of the RSEP. The Ward Valley project would be located approximately five miles northwest of RSEP, and would be located north of SR 62. It is expected that the intrusive light impacts associated with the Ward Valley project would be mitigated to less than significant similar to the manner as the agencies have identified for RSEP. The separation by distance of the Ward Valley project from RSEP and even greater distances of existing and foreseeable projects, and the ability to identify mitigation to lessen impacts below levels of significance for both RSEP and Ward Valley, allow staff to conclude that the cumulative effects of intrusive light from RSEP are deemed less than significant if Conditions of Certification **TRANS-6**, **TRANS-7**, and **TRANS-9** are implemented.

Decommissioning. Due to the short-term construction based activities associated with the decommissioning of the RSEP, it is expected to result in similar cumulative impacts related to traffic and transportation as RSEP construction impacts, as described above. It is possible that the decommissioning of nearby proposed solar energy projects, as identified in SA/DEIS Section Cumulative Scenario, could occur concurrently with the decommissioning of this project, due to the similar lifespan of these projects. However, due the unknown roadway capacity or LOS of regional roadways serving the RSEP and cumulative project area at the time of decommissioning, it is not possible at this time for the agencies to speculate the level of, if any, cumulative effects related to traffic and transportation that could occur during decommissioning of the RSEP. However, based on the cumulative impact analysis above for RSEP construction activities, it is likely the impacts of the decommissioning of the RSEP would not be expected to contribute to cumulative impacts related to traffic and transportation because it is assumed that closure and decommissioning activities would include mitigation similar to that proposed for the RSEP as Conditions of Certification **TRANS-1**, **TRANS-3**, **TRANS-4** and **TRANS-5**.

COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Traffic and Transportation Table 6 provides a general description of applicable statutes, regulations, and standards adopted by the federal government, the State of California, and regional/local agencies pertaining to traffic and transportation with which the project is required to comply. Conditions of certification have been proposed to ensure project consistency with a law, ordinance, regulation, or standard where it was not already mandated by federal or state regulations.

Traffic and Transportation Table 6
Project Compliance with Adopted Traffic and Transportation Laws, Ordinances
Regulations, and Standards

Applicable Law	LORS Description and Project Compliance Assessment
<p>Federal</p> <p>Code of Federal Regulations, Title 14 Aeronautics and Space, Part 77 Objects Affecting Navigable Airspace (14 CFR 77/FAR Part 77)</p>	<p>FAR Part 77 establishes standards for evaluating the potential hazards associated with physical objects that extend into navigable airspace. It also sets noticing and hearing requirements and provides for aeronautical studies to determine the effect of physical objects on the safe and efficient use of airspace. Projects that would result in a structure taller than 200 feet AGL or any construction or alteration on a public use or military airport are required to file an FAA Form 7460-1 notification, providing information on the location, height, and other pertinent information. Other conditions may also trigger the need to notify the FAA, including the construction of structures within 10,000 ft. of a public-use or military airport having no runway more than 3200 ft. in length and exceeding a 50:1 slope; within 20,000 ft. of a public-use or military airport having at least one runway more than 3200 ft. in length and exceeding a 100:1 slope; or within 5,000 ft. of any public-use heliport and exceeding a 25:1 slope. It also applies to any highway, railroad, or other traverse way for mobile objects of a height which, if adjusted upward to the height of the highest mobile object that would normally traverse it, would exceed the above-mentioned criteria. However, none of these additional criteria would apply to the proposed project.</p> <p>Once the notification is filed, the FAA Air Traffic Division initiates a review to determine if the proposed structures or objects would affect any public use airport, require a change in aeronautical operations or procedures, exceed obstruction standards, or would have a possible impact on VFR operations. The notification is also circulated to various interested agencies, public-use airports within 13 miles, private-use airports and heliports within five miles, military and state aviation departments, air traffic control facilities and flight service stations that serve the area, and local interested organizations and individuals for comment. To be considered to have an adverse effect on navigation, the obstruction must be a physical structure or object that:</p> <ul style="list-style-type: none"> • Exceeds Part 77 obstruction standards or have a physical or electromagnetic effect on air navigational facilities; • Requires a change to an instrument procedure or minimum flight altitude; • Restricts control tower line-of-site; • Reduces airport capacity and efficiency; or • Affects useable runway length. <p>However, in order to be considered a “hazard” to navigation, the obstruction must also result in a substantial adverse effect. This requires a finding of adverse effect (see list above) that impacts a significant volume of aeronautical operations, which is defined as:</p> <ul style="list-style-type: none"> • One or more aeronautical operations per day (regardless of type of activity); or • An average of one aeronautical operation a week for an affected instrument approach procedure or minimum altitude, if the procedure serves as the primary procedure under specific conditions (i.e., a crosswind runway with an instrument approach procedure). (FAA 2008)

If the proposed obstruction meets both criteria, a hazard determination will be issued. Otherwise, a "Determination of No Hazard to Navigation" will be made. It should be noted that the FAA has no authority to prohibit construction of any project. It can only identify the potential hazard and work with the proponent to mitigate any potential impacts. A Determination of No Hazard to Navigation also does not preclude the potential for aviation hazards not addressed in the rather narrow criteria indicated above.

The proposed project would result in the construction of a single stack structure to a height of approximately 653 feet AGL. An FAA Form 7460-1 was filed by the applicant on May 1, 2009, in compliance with the requirements of FAR Part 77. Although the proposed stack would exceed FAR Part 77 obstruction standards, it was not deemed to result in a substantial adverse effect on navigation, based on the criteria defined above. The FAA Air Traffic Airspace Branch in Fort Worth, Texas, issued a "Determination of No Hazard to Navigation" on December 28, 2009, subject to the following requirements:

- The project owner would be required to file FAA Form 7460-2 Notice of Actual Construction or Alteration (Part 1) at least 10 days prior to the start of construction.
- The project owner would be required to file FAA Form 7460-2 Notice of Actual Construction or Alteration (Part 2) within five days after stack construction reaches its greatest height.
- The project owner would be required to mark and/or light the stack, in accordance with the FAA's requirements for 24-hour medium strobes. (FAA 2007)

The Notice also advised the applicant that construction of any structure with a height exceeding 653 feet AGL (1,461 feet above mean sea level) would result in a substantial adverse effect and would warrant a "Determination of Hazard to Air Navigation." (FAA 2009c)

The project would be consistent with this regulation with full implementation of conditions of certification **TRANS-2** and **TRANS-8**.

CFR, Title 49, Subtitle B	Includes procedures and regulations pertaining to interstate and intrastate transport (includes hazardous materials program procedures) and specifies safety measures for motor carriers and motor vehicles that operate on public highways.
	Enforcement is conducted by state and local law enforcement agencies and through state agency licensing and ministerial permitting (e.g., California Department of Motor Vehicles licensing, Caltrans permits), and/or local agency permitting (e.g., Riverside County Department of Public Works permits). For a discussion of the potential impacts related to the transport of hazardous materials, please refer to the Hazardous Materials Management section in this SA/DEIS.
State	
California Vehicle Code, division 2, chapter 2.5; div. 6, chap. 7; div. 13, chap. 5; div. 14.1, chap. 1 & 2; div. 14.8; div. 15	Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.
	Enforcement is provided by state and local law enforcement agencies and through ministerial state agency licensing and permitting and/or local agency permitting. The use of oversize vehicles during construction can create a hazard to the public by limiting motorist views on roadways and by the obstruction of space by the oversize vehicle. Therefore, staff is proposing Condition of Certification TRANS-4 , which would require that all oversize vehicles used on public roadways during construction comply with Caltrans limitations on vehicle sizes and weights.
California Streets and Highway Code, division 1 & 2, chapter 3 & chapter 5.5	Includes regulations for the care and protection of state and county highways and provisions for the issuance of written permits.
	Enforcement is provided by state and local law enforcement and through ministerial state agency licensing and permitting and/or local agency permitting. There is also a potential for unexpected damage to roads by vehicles and equipment within the project area. Therefore, staff is proposing Condition of Certification TRANS-3 , which would require that any road damaged by project construction be repaired to its original condition.
Government Code §§65940 and 65944	Government Code §§65940 and 65944 require consultation among the project applicant, public agencies, and affected military branch(es) to reduce the potential for project impacts to military operations. The proposed project and all alternatives at the primary project site are in a DOD Airspace Consultation Area and underlie three low-level military training routes, designated IR250, IR255 & SR397. The Desert Center alternate site (Alternative 3) underlies four low-level military training routes, designated IR217, IR218, VR289 and VR296. Consistent with GC §§65940 and 65944, Energy Commission staff has consulted with the Military Sustainability Office - NAVAIR Ranges (Department of Defense Southwest Renewable Energy Work Group), which identified the applicable military training routes and direction for those actions necessary to avoid any impact to military operations (DOD 2010). Staff has proposed three Conditions of Certification (TRANS-8 , TRANS-9 , and TRANS-10) in response to that information, which, when implemented, would reduce potential mission impacts to a less than significant level (also see the Land Use section of this document). The project would then be consistent with the requirements of this portion of the California Government Code.
Local	
Riverside County Ordinance 461	Provides County road improvement standards and specifications.
	Condition of Certification TRANS-5 is required to ensure commercial driveways comply with Riverside County Public Works (Riverside County Ordinance 461) requirements.
Riverside County General Plan Circulation	Specifies that all County maintained roads and conventional state highways shall operate at a Level of Service (LOS) C or better
	As shown in Traffic and Transportation Table 5 , Riverside County roadways

Element	include US 95 NB between Hobson Way and San Bernardino/Riverside County Line. During construction, this segment of US 95 would operate at LOS C or better. Therefore, the RSEP would be in compliance with this LORS.
Riverside County Code, Ordinance 448 (as amended through 448.A) Airport Operations (2000)	The Airport Approaches Zoning Ordinance, adopted pursuant to the Airport Approaches Zoning Law (GC §§50485-50485.14) establishes airport operating areas and regulates height standards and limits therein. "Airport Hazard" is defined as "any structure or tree or use of land which obstructs the airspace required for the flight of aircraft in landing or taking off at an airport or is otherwise hazardous to such landing or taking off of aircraft." The operational area of an airport is all land lying within an area of two miles of the landing area. The proposed North of Desert Center Alt. site is within the Turning Zone of the Desert Center Airport. Height restrictions within the Turning Zone do not allow the construction of any structure over 150 feet tall. A variance to this ordinance requirement can be approved by the Riverside County Planning Commission, except for the Energy Commission's exclusive authority, provided enforcement would result in practical difficulty, the relief granted would not be contrary to the public interest, and it would do substantial justice and be in accordance with the spirit of the regulations and §7(c) of this ordinance. However, lights and markers necessary to indicate the presence of an airport hazard to aerial navigators must be installed, operated, and maintained. Condition of certification TRANS-8 would require appropriate lighting of the solar tower, consistent with both DOD and FAA requirements. Condition of certification TRANS-9 would require notices to aeronautical charts for the area to advise pilots of the airport hazard. This would ensure consistency with this ordinance.
Riverside County Ordinance No. 748	<p>This ordinance adopts and sets forth policies, regulations and fees relating to the funding and installation of Traffic Signals that are a part of the mitigation of the cumulative environmental impacts of traffic congestion generated by new developments and land use changes</p> <p>Prior to issuance of a building permit, the project proponent will coordinate with Riverside County based on final site design the required fees related to Riverside County Ordinance No. 748. The payment of these fees, as assessed and paid during part of the required building permit process, will ensure compliance with this LORS.</p>
Riverside County Congestion Management Plan (CMP)	<p>Specifies that all CMP roadways shall operate at a LOS E or better.</p> <p>The Riverside County 2006 CMP Update identifies US 95 as a CMP roadway. As shown in Traffic and Transportation Table 5, RSEP construction would have no impact on study area roadway LOS, with US 95 operating above LOS E with project construction added. It should also be noted that operational traffic would not reduce any CMP roadway to operate at less than LOS E. Therefore, the proposed RSEP would be in compliance with this LORS.</p>
Riverside County Airport Land Use Compatibility Plan (ALUCP); 2004	The Riverside County ALUCP, adopt by the Riverside County Board of Supervisors in October 2004, contains general compatibility criteria applicable to all airports within Riverside County, as well as specific requirements for individual airports. The Desert Center Airport, known during WWII as the Desert Center Army Airfield, is located directly across SR 177 from the proposed Alternative 3 project site. The airport is privately owned by the developers of the Chuckwalla Valley Raceway and only available for use by members and guests. Activity levels should remain consistent with flight operations prior to 2004 (i.e., no more than 2,300 operations annually). There is no tower or published instrument approach/departure routes. The airspace above the Desert Center Airport is uncontrolled and air traffic control has no authority or responsibility for flights below 1,200 feet AGL within this airspace. There is no master plan for the Desert Center Airport. Standard direct departures from the single remaining runway are to the southwest (heading of 230 degrees) or northeast (heading of 050), into prevailing winds. Straight in(out) departures would remain outside the proposed project site boundaries. The airport is not lighted and is only available during daylight hours. The entire project site, including the central tower, would be

	<p>outside all airport compatibility zones and the airport area of influence boundary (see Land Use Figure 11), but would be within the two-mile Airport Turning Zone. TRANS-8 would require the solar tower to be lighted, consistent with the FAA requirements for Obstruction Marking and Lighting (FAA 2007), requirements in response to FAA 7460 Finding of No Significant Hazard (FAA 2009c), Air Force Aviation Safety-Flight Safety Flash 09-01 (USAF 2009), and FAA Safety Alert for Operators (SAFO) 09007 (FAA 2009a). TRANS-9 would require pilots to be advised of the location of the proposed solar tower through issuance of a temporary Notice to Airmen (NOTAM) that would be superseded by a permanent notation of the tower's location on the applicable aviation charts for the Desert Center Airport and surrounding airspace. (RC 2004, p.3-16) Therefore, this project alternative would be consistent with requirements of the Riverside County ALUCP and the existing airport use.</p>
San Bernardino Association of Governments CMP	<p>Specifies that all CMP roadways shall operate at a LOS E or better.</p> <p>The SANBAG 2007 CMP identifies US 95 and SR 62 as CMP roadways. As shown in Traffic and Transportation Table 5, RSEP construction would have no impact on study area roadway LOS, with US 95 and SR 62 operating above LOS E with project construction added. It should also be noted that operational traffic would not reduce any CMP roadway to operate at less than LOS E. Therefore, the proposed RSEP would be in compliance with this LORS.</p>
San Bernardino County Code, Title 5, Division 1, Highway Permit	<p>Addresses permitting requirements for oversize/overweight vehicles.</p> <p>Enforcement is provided by state and local law enforcement agencies and through ministerial state agency licensing and permitting and/or local agency permitting. The use of oversize vehicles during construction can create a hazard to the public by limiting motorist views on roadways and by the obstruction of space by the oversize vehicle. Therefore, staff is proposing Condition of Certification TRANS-4, which would require that all oversize vehicles used on public roadways during construction comply with San Bernardino County limitations on vehicle sizes and weights.</p>

NOTEWORTHY PUBLIC BENEFITS

Neither the applicant nor staff has identified any traffic-related benefits associated with the proposed RSEP.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for U.S. Bureau of Reclamation's (BLM's) and Western Area Power Administration's (Western's) analysis that can be considered in their Records of Decision.

Construction Traffic Control Plan

TRANS-1—The project owner shall consult with Riverside County, San Bernardino County, and/or Caltrans and shall prepare and submit to the Compliance Project Manager (CPM) for approval a Construction Traffic Control Plan and implementation program. The Traffic Control Plan shall be prepared in accordance with Caltrans Manual

on Uniform Traffic Control Devices and the WATCH Manual and shall include but is not limited to the following issues (as needed and as feasible):

Project Specific Measures:

- Encourage use of carpools, vanpooling or other ride share programs
- Scheduling heavy equipment and building materials deliveries
- Redirecting construction traffic with a flag person as needed
- Signing, lighting, and traffic control device placement if required
- Scheduling of construction work hours and arrival/departure times outside peak traffic periods as needed
- Ensurance of access for emergency vehicles to and within the project site
- Ensurance of access and movement of bicycles along US-95 construction truck routes
- Identification of haul routes requiring rail crossings of oversize vehicles and safety measures to limit potential impacts
- Temporary closure of travel lanes or disruptions to street segments and intersections during generation tie line construction activities or any other utility tie-ins. In the event any lane closures are required on the State Highway System, the Construction Traffic Control plan shall demonstrate compliance with Caltrans Section 517 of the Encroachment Permits Manual
- Access to residential and/or commercial property located near generation tie line routes or any other utility tie ins
- Identification of safety procedures for exiting and entering the site access gate(s)

Cumulative Measures:

- Take into account the cumulative traffic impacts of the overlapping construction schedules of other nearby renewable energy projects utilizing SR 62, US 95, or any roadway indicated by the Construction Traffic Control Plan as a haul route, ensuring that timing of heavy equipment and building materials deliveries as well as worker trips of overlapping construction schedules do not result in SR 62, US 95, or any freeway/roadway to operate at an unacceptable LOS with the addition of cumulative construction traffic. These roadway LOS performance standards shall be established by the applicable General Plan, Congestion Management Plan, or overseeing agency of the utilized roadway
- If required, provide for a coordinated park-and-ride system of bus service for workers at nearby solar energy project sites

Verification: At least 30 days prior to site mobilization, the project owner or contractor shall provide to the CPM a copy of the Construction Traffic Control Plan and implementation program documents for review and approval.

FAA Notice of Actual Construction or Alteration

TRANS-2— The project owner shall file FAA Form 7460-2 Notice of Actual Construction or Alteration with the FAA Air Traffic Airspace Branch (ASW-520) at least 10 days prior to the start of construction and within five days after the construction reaches its greatest height, or immediately following abandonment of the project. A copy of the filing and any related correspondence shall be forwarded to the CMP.

Verification: Within 10 days of the start of construction and, again, within five days after the construction reaches its greatest height, the project owner shall fill FAA Form 7460-2 with the appropriate FAA Air Traffic Airspace Branch and concurrently submit a copy of said completed form to the CPM. Copies of any additional correspondence related to this requirement shall be submitted to the CPM within 10 days of receipt.

Repair of Damage to Public Roadways

TRANS-3—Following completion of project construction, the project owner shall repair any damage to public roadways affected by construction activity along with the primary roadways identified in the traffic control plan for construction traffic to the road's pre-project construction condition. Prior to the start of construction, the project owner shall photograph, videotape, or digitally record images of the roadways that will be affected by all heavy construction traffic and utility line construction. The project owner shall provide the CPM, Riverside County, San Bernardino County, and/or Caltrans with a copy of the images for the roadway segments under its jurisdiction. Also prior to start of construction, the project owner shall notify the Counties and/or Caltrans about the schedule for project construction, providing copies of such to the CPM. The purpose of this notification is to postpone any planned roadway resurfacing and/or improvement projects until after the project construction has taken place and to coordinate construction-related activities associated with other projects.

Verification: At least 30 days prior to site mobilization, the project owner or contractor shall provide to the CPM a copy of all photograph, videotape, or digitally record images of the roadways. Within 30 days after completion of the project, the project owner shall meet with the CPM and affected jurisdictions to determine and receive approval for the actions necessary and schedule to complete the repair of identified sections of public roadways to original or as near-original condition as possible. Following completion of any regional road improvements, the project owner shall provide to the CPM a copy of all required permits and a letter from affected jurisdictions if work occurred within its jurisdictional public right-of-way stating its satisfaction with the road repairs.

Road Use Limitations and Permits

TRANS-4 The project owner shall comply with Caltrans, Riverside County, San Bernardino County, and other relevant jurisdictions limitations on vehicle sizes, weights, and travel routes. In addition, the project owner shall obtain all necessary transportation and encroachment permits from Caltrans, Riverside County, San Bernardino County, and other relevant jurisdictions for roadway use.

Verification: In the Monthly Compliance Reports, the project owner shall submit copies of any permits received during that reporting period. In addition, the project

owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

Road Improvement Standards and Specifications

TRANS-5— The project owner shall comply with Riverside County Public Works requirements (Riverside County Ordinance 461) regarding road improvement standards and specifications, as they apply to the commercial driveway at the primary entrance to the facility. Internal access roads and secondary fire access road shall be constructed and maintained consistent with the requirements stipulated in the **Worker Safety and Fire Protection** section of this document.

Verification: In the Monthly Compliance Reports, the project owner shall submit copies of any permits and approvals received from Riverside County Public Works during that reporting period regarding compliance with Riverside County Ordinance 461 requirements for commercial driveway construction. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for the life of the project.

Heliostat Positioning Plan

TRANS-6—The project owner shall prepare and implement a Heliostat Positioning Plan in coordination with the Avian Protection Plan specified in Condition of Certification **BIO-25** that would avoid potential for human health and safety hazards and minimize bird injury or mortality from solar radiation exposure.

Prior to RSEP commercial operation, the project owner shall submit a Heliostat Positioning Plan (HPP) to the CPM for review and approval. The project owner shall also submit the plan to CalTrans, CHP, FAA, and the Department of Defense (DOD) Southwest Renewable Energy Work Group for review and comment and forward any comments received to the CPM. The Heliostat Positioning Plan shall accomplish the following:

1. Identify the heliostat movements and positions (including reasonably possible malfunctions) that could result in potential exposure of observers at various locations including in aircraft, motorists, pedestrians and hikers in nearby wilderness areas to reflected solar radiation from heliostats;
2. Describe within the HPP how programmed heliostat operation would avoid potential for human health and safety hazards at locations of observers, and would limit or avoid potential for harm to birds;
3. Prepare a monitoring plan that would: a) obtain field measurements in response to legitimate complaints; b) verify that the Heliostat Positioning Plan would avoid potential for human health and safety hazards including temporary or permanent blindness at locations of observers; and c) provide requirements and procedures to document, investigate and resolve legitimate complaints regarding intrusive light.
4. The monitoring plan should be coordinated with the CalTrans, CHP, FAA, Department of Defense (DOD) Southwest Renewable Energy Work Group – and be updated on an annual basis for the first 5 years, and at 2-year intervals thereafter for the life of the project.

Verification: No more than 90 days before commercial operation of the RSEP, the project owner shall submit the Heliostat Positioning Plan to the CPM for review and approval. The project owner shall also submit the plan to CalTrans, CHP, FAA, and the Department of Defense (DOD) Southwest Renewable Energy Work Group for review and comment and forward any comments received to the CPM.

Power Tower Luminance Monitoring Plan

TRANS-7 The project owner shall prepare and implement a Power Tower Luminance Monitoring Plan to provide procedures to conduct periodic monitoring and to document, investigate and resolve complaints regarding distraction effects to aviation, vehicular and pedestrian traffic associated with the RSEP solar receiver tower.

The Power Tower Luminance Monitoring Plan shall include provisions for the following:

1. Coordination of luminance evaluations with the CalTrans, CHP, FAA, and the Department of Defense (DOD) Southwest Renewable Energy Work Group ;
2. Reporting within 30 days after completing luminance measurements required under this plan; the project owner shall submit a summary report to CalTrans, CHP, FAA, and the Department of Defense (DOD) Southwest Renewable Energy Work Group for review and comment, and to the CPM for review and approval.
3. Measurement of luminance at the locations where any distraction effects have been reported and at the locations nearest the solar receiver tower from the four sides of the power plant boundary, and the nearest public road, which may be substituted for one of the sides of the solar receiver tower during the time of day when values would be highest;
4. Measurement of luminance using an illuminance meter, photometer, or similar device and reporting of data in photometric units; the measurements are intended to provide a relative and quantifiable measure of luminance that can be associated with any observed and reported distraction effect from the solar receiver tower that may support anticipation and investigation of any future effects.
5. Provisions for identifying and implementing appropriate mitigation measures if reported distraction is determined to be legitimate and if solar receiver tower is determined to be causing a safety concern; The project owner shall consider and propose any reasonable mitigation measures that are technically and financially feasible. The mitigation measures may include surface treatment or material changes to increase absorption and reduce reflectivity of the solar receiver tower, road signage, screening or other reasonable measures.
6. Post-mitigation verification; Within 30 days following the implementation of mitigation measures designed to reduce reflectivity of the solar receiver tower, the project owner shall repeat the luminance measurements to demonstrate the effectiveness of mitigation measures and prepare a supplemental survey report for review and comment by CalTrans, CHP, FAA, and the Department of Defense (DOD) Southwest Renewable Energy Work Group , and for review and approval by the CPM.

Verification: No later than 60 days prior to RSEP commercial operation, the project owner shall provide a Power Tower Luminance Monitoring Plan applicable to RSEP for review and approval by the CPM. The project owner shall evaluate the effects of the intensity of the luminance of light reflected from the solar receiver tower according to the following:

- A. Within 90 days following commercial operation;
- B. After the initial 5 years of operation;
- C. If a major design change is implemented that results in an increase of the reflective luminance of the RSEP solar receiver tower; and
- D. After receiving a legitimate complaint regarding a distraction associated with the solar receiver tower.

The plan shall specify procedures to document, investigate and resolve complaints regarding intrusive light, and report these to the CPM within 10 days of receiving a complaint.

Solar Receiver Tower Obstruction Marking and Lighting

TRANS-8 The project owner shall install obstruction marking and lighting on the solar receiving tower, consistent with both the FAA and DOD requirements, as expressed in the following documents:

- FAA Advisory Circular 70/7460-1K, Change 2: Obstruction Marking and Lighting, 24-hour medium-strobes;
- Air Force Aviation Safety: Flight Safety Flash 09-01; and
- FAA Safety Alert for Operators (SAFO) 09007.

Temporary lighting shall be installed on the top of the structure once the construction height has exceeded 200 feet AGL, activated within five days of installation, and maintained in operation 24 hours a day, 7 days a week until construction is complete. Permanent lighting consistent with all requirements shall be installed and activated within five days of completion of construction. Lighting shall be operational 24 hours a day, 7 days a week, for the life of the project and until such time as the tower no longer exists at a height exceeding 200 feet AGL. Upgrades to the required lighting configurations, types, location, or duration shall be implemented consistent with any changes to FAA or DOD obstruction marking and lighting requirements.

Verification: At least 60 days prior to the start of construction, the project owner shall submit final design plans for the power plant solar receiving tower that depict the required air traffic obstruction marking and lighting to the CPM for approval.

Within five days of completion of the solar receiving tower to a height exceeding 200 feet AGL, the project owner shall install and activate temporary obstruction marking and lighting at the top of the structure and shall maintain temporary lighting at the top of said structure until construction of the tower is complete. The project owner shall inform the CPM in writing within 10 days of the time the lighting is first installed and activated.

Within five days of completion of the tower construction, the project owner shall install and activate permanent obstruction marking and lighting consistent with both FAA and DOD requirements and shall inform the CPM in writing within 10 days of installation and activation. The lighting shall be inspected and approved by the CPM (or designate inspector) within 30 days of activation.

Notifications of Potential Hazards to Aviation

TRANS-9 The project owner shall initiate the following actions to ensure pilots are aware of the project location, maximum height, and potential hazards to aviation:

- Submit a letter to the FAA requesting a Notice to Airmen (NOTAM), Category D, be issued, advising pilots of the location of the RSEP and height of the solar receiving tower, and recommending that overflight of the project site below 1,500 feet AGL should be avoided. The letter should also request that the NOTAM be maintained in active status until all navigational charts and Airport Facilities Directories (AFDs) have been updated.
- Submit a letter to Mr. Anthony M. Parisi, PE –Department of Defense (DOD) Southwest Renewable Energy Work Group, requesting a military advisory be issued, advising military units and training offices using the low-level military training routes (MTRs) in the vicinity of the project site of the location of the RSEP and height of the solar receiving tower, and recommending that training exercises requiring overflight of the project site (both solar receiving tower and solar arrays) below 1,100 feet AGL during daylight hours should be avoided. The letter should also request that the advisory be maintained in active status until all navigational charts and training patterns have been updated.
- Submit a letter to the FAA requesting a power plant depiction symbol be placed at the RSEP site location on the Los Angeles Sectional Chart, with a notice to “avoid overflight below 1,500 feet AGL”.
- Request the Los Angeles Enroute Traffic Control Center or Riverside Flight Service Station submit aerodrome remarks describing the location of the RSEP plant and advising against direct overflight of the solar receiving tower or solar heliostat arrays below 1,500 feet AGL to the:
 - FAA National Aeronautical Charting Office (Airport/Facility Directory, Southwest United States)
 - Jeppesen Sanderson Inc. (JeppGuide Airport Directory, Western Region)
 - Airguide Publications (Flight Guide, Western States)

Verification:

1. Within 30 days after the start of construction, the project owner shall submit draft language for the FAA and military letters of request to the CPM for review and approval. The project owner shall submit the letters of request to the appropriate agencies within 10 days of receiving CPM approval.

If no response is received within 45 days (at least 60 days prior to the start of operations), the project owner shall follow up with a letter to the respective agencies to confirm implementation of the request. A copy of any resulting correspondence

shall be submitted to the CPM with 10 days of receipt. The project owner shall contact the CPM with 72 hours if notified that any or all of the requested notices cannot be implemented. The project owner shall also advise the CPM at least 15 days prior to the start of operations if any of the notified agencies have failed to respond to these requests.

2. Within 10 days of installing and activating temporary obstruction marking and lighting at the top of the solar receiving tower, but no later than 60 days prior to the start of operations, the project owner shall submit the required letters of request to the FAA and DOD Southwest Renewable Energy Work Group, with copies to the CPM. A copy of any resulting correspondence shall be submitted to the CPM with 10 days of receipt.

Avoidance of Radio Interference

TRANS-10— The project owner shall modify the project's equipment and radio frequency use as necessary to avoid interference with Department of Defense (DOD) military activities, in consultation with the DOD Southwest Renewable Energy Work Group. DOD recommendations, including substitution or modification of equipment or operations, shall be fully implemented prior to or in conjunction with the installation and operation of electronic systems that could result in frequency interference. Prior to the start of operations, the project owner shall provide, to the CPM, written confirmation from DOD that the frequency spectrum usage for the project, as modified, would not interfere with DOD activities.

Verification: At least 90 days prior to the scheduled installation of any equipment capable of producing frequencies that could interfere with DOD operations, the project operator shall consult directly with the DOD Southwest Renewable Energy Work Group and provide details of said equipment to the DOD staff and CPM for evaluation. The project owner shall provide complete information concerning any intended changes to previously approved equipment, project design, or operational procedures; and all correspondence between the project owner, facilities personnel, and DOD representatives to the CPM for review and approval at least 30 days prior to any scheduled equipment installation date or start of operations, whichever occurs first. DOD recommendations, including substitution or modification of equipment or operations, shall be fully implemented prior to or in conjunction with the installation of electronic systems that could result in frequency interference. Copies of any additional correspondence shall be provided to the CPM within 10 days of receipt. The project owner shall provide written verification from DOD to the CPM that the frequency spectrum usage, as modified, would not interfere with DOD activities and that all equipment, installation, and operational procedures comply with DOD requirements at least 10 days prior to the start of operations.

CONCLUSIONS

Based on the list of significance thresholds identified above, staff has analyzed potential construction and operational impacts by the proposed RSEP related to the regional and local traffic and transportation system and conclude the following:

- Construction- and operational-related traffic would not impact transportation facilities and existing traffic LOS within the project area and would not result in a substantial increase in congestion, deterioration of the existing LOS, or operating capacities along the roadways used to access the RSEP site.
- The project would not result in a change to civilian air traffic patterns in the project vicinity. Impacts resulting from changes in air traffic patterns for military aircraft operating within the MTRs over the project area would be mitigated to a less than significant level (under CEQA) with full implementation of conditions of certification **TRANS-8** and **TRANS-9**, in conjunction with the military's willingness to alter training activities in the area.
- Condition of certification **TRANS-8** would require lighting of the solar receiving tower consistent with both FAA and DOD requirements, reducing potential obstruction to military or general aviation airspace, especially at night, to a less than significant level.
- Intrusive light from the solar arrays at specific points over the heliostats has the potential to result in a significant health and safety visual and control risk for aircraft pilots and their passengers. Condition of certification **TRANS-9** would advise pilots of the hazard and the need to avoid overflight of the solar receiving tower and solar arrays below 1,500 feet AGL. Implementation of this condition of certification would reduce the risk to a less than significant level.
- Frequencies used during plant construction and operation have the potential to interfere with military training operations in the project vicinity. Implementation of Condition of certification **TRANS-10** would require military coordination and approval of frequencies in use at the project site and would reduce any potential impact to a less than significant level.
- The project itself would not have a cumulatively considerable impact on either general or military aviation in the project area. However, depending on the number of other similar facilities constructed in the area in the future, there is the potential for a significant cumulative impact to aviation, especially military training, in the vicinity.
- Implementation of Condition of Certification **TRANS-3** would ensure that any road damaged by project construction be repaired to its original condition.
- Implementation of Condition of Certification **TRANS-4** would ensure that all oversize vehicles used on public roadways during construction comply with Caltrans, Riverside County, San Bernardino County, and other relevant jurisdictions limitations on vehicle sizes and weights, as well as oversize vehicle routes and any other applicable limitations or other relevant jurisdictional policies. Implementation of Condition of Certification **TRANS-6** would insure preparation and application of a Heliostat Positioning Plan in coordination with the Avian Protection Plan specified in Condition of Certification **BIO-24** that would avoid potential for human health and safety hazards and bird injury or mortality from solar radiation exposure.

- Implementation of Condition of Certification **TRANS-7** would allow for preparation and application of a Power Tower Luminance Monitoring Plan to provide procedures to conduct periodic monitoring and to document, investigate and resolve complaints regarding distraction effects to aviation, vehicular and pedestrian traffic associated with the RSEP solar receiver tower.
- No local bus stops, pedestrian, or bicycle facilities are in immediate proximity of the proposed RSEP site, and therefore will not be impacted. Furthermore, Condition of Certification **TRANS-1** would be required to ensure the access and movement of bicycles along construction truck routes.

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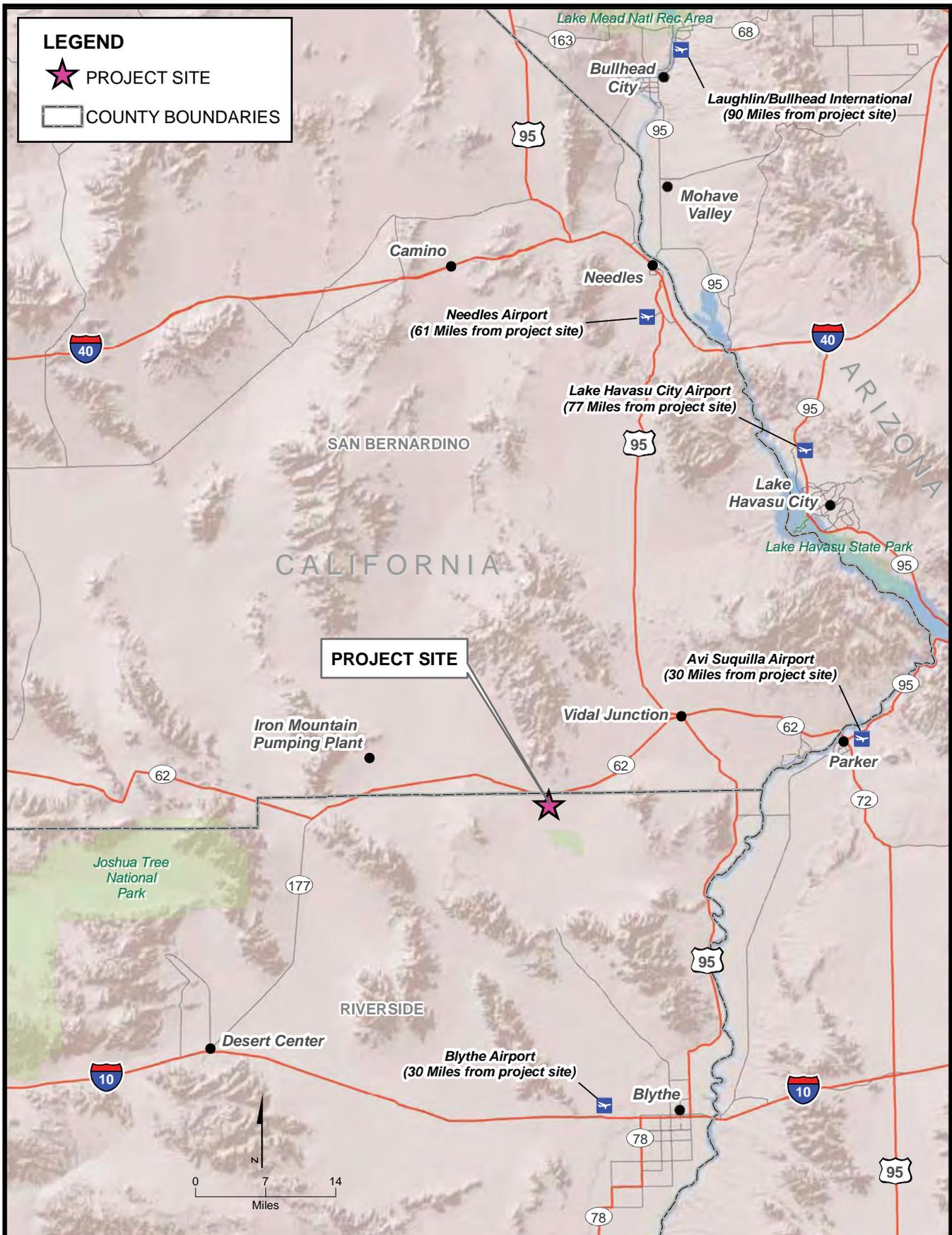
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TRAFFIC AND TRANSPORTATION - FIGURE 1
 Rice Solar Energy Project - Regional Transportation Map



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
 SOURCE: AFC Vol 1, October 2009, Figure 5.12-1

TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

SUMMARY OF CONCLUSIONS

Bureau of Land Management (BLM), Western Area Power Administration (Western), and Energy Commission staff (staff) (hereafter jointly referred to as agencies) have analyzed transmission line safety and nuisance-related information pertaining to the proposed Rice Solar Energy Project (RSEP) for the following potential effects:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

With respect to the California Environmental Quality Act (CEQA), staff concludes that the proposed project, after implementing all staff-recommended conditions of certification, would not cause related field and nonfield impacts that would constitute a significant environmental hazard in the areas around the proposed generation tie line and distribution line routes. RSEP would conform to all related health and safety laws, ordinances, regulations, and standards (LORS).

As a condition of RSEP's proposed generation tie line interconnection to Western's power grid, the generation tie line would be constructed, operated, and maintained according to Western's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards (LORS). Likewise, the extension of the distribution line would be constructed, operated, and maintained according to Southern California Edison's guidelines for line safety and field management which conform to applicable LORS. The routes for both proposed lines would respectively traverse undisturbed, sparsely populated desert land with no residences in the immediate vicinity thereby eliminating the potential for residential electric and magnetic field exposures that have been a health concern of recent past. With staff's four proposed conditions of certification, any safety and nuisance impacts from construction and operation of the proposed lines would be less than significant with respect to CEQA.

INTRODUCTION

The agencies have evaluated transmission line safety and nuisance impacts associated with the proposed RSEP's construction, operating and decommissioning activities. This Staff Assessment/Draft Environmental Impact Statement (SA-DEIS) meets the Energy Commission's responsibility to comply with the California Environmental Quality Act

(CEQA) and BLM's and Western's responsibility to comply with the National Environmental Policy Act (NEPA). The purpose of this Staff Assessment/Draft Environmental Impact Statement (SA/DEIS or staff analysis) is to assess the proposed Rice Solar Energy Project's (RSEP's) generation tie line design and operational plan to determine whether its related field and nonfield impacts would constitute a significant environmental hazard in the areas around the proposed routes. All related health and safety laws, ordinances, regulations, and standards (LORS) are currently aimed at minimizing such hazards. Staff's analysis focuses on the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

The following federal, state, and local laws and policies apply to the control of the field and nonfield impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The potential magnitude of the line impacts of concern in this staff analysis depends on compliance with the listed design-related LORS and industry practices. These LORS and practices have been established to maintain impacts below levels of potential significance. Thus, if the agencies determine that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant under CEQA and NEPA. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

Laws, Ordinances, Regulations, and Standards

**Transmission Line Safety and Nuisance (TLSN) Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR), "Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
Riverside County General Plan, Noise Element	References the county's Ordinance Code for noise limits.
Riverside County Noise Ordinance	Establishes performance standards for planned residential or other noise-sensitive land uses.
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	

Applicable LORS	Description
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-131-D, CPUC "Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California"	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR sections 1250-1258, "Fire Prevention Standards for Electric Utilities"	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

As discussed by the applicant, Rice Solar Energy, LLC, the proposed 150 megawatt (MW) Rice Solar Energy Project (RESP) would be located on a 3,324-acre privately owned site in the eastern area of unincorporated Riverside County immediately south of State Route (SR) 62. The nearest town with a significant population is Parker Arizona, approximately 32 miles to the east. Blythe is approximately 40 miles to the south. The land surrounding the site (a portion of which would be traversed by the project's generation tie line) is mostly federal desert land currently managed by the Bureau of Land Management (BLM). The proposed facility would consist of a solar field and related electric power generating unit from which the generated power would be transmitted via the tie line to the Western power grid. The interconnection would be via a new substation located 10 miles to the southwest and adjacent to the Western Parker-Blythe #2 161/230-kV transmission line built to a capacity of 230 kV but presently operated at 161 kV. The proposed tie line would be an overhead 10-mile long, single-circuit, 161/230-kV line extending from the project's on-site switchyard to the proposed connection point. As with the Western grid line to be interconnected, this tie line would be operated at 161 kV, although built to a capacity of 230 kV (SR 2009a, pp.1-8, 3-1, 3-2, 5.6-1, and 5.7-4), hence, the 161/230-kV designation.

The applicant also proposes a project-related extension of an existing Southern California Edison (SCE) overhead 12-kV distribution line for 1.1 miles from a point 175 feet east of RSEP's property boundary (on the northern side, parallel to SR 62), to the project's administration building area. The design, construction and operation of the 161/230 kV generation tie line would be according to Western's guidelines, and likewise the 12 kV distribution line would be according to SCE's guidelines, and both would reflect compliance with existing safety and field management-related LORS (SR 2009a, pp. 3-1 and 3-2).

The proposed project and related generation tie line would be located in an uninhabited open desert area where the nearest residential area is approximately 17 miles to the northeast at Vidal Junction (SR 2009a 5.7-4), meaning that there would not be the type of residential field exposure that has been of health concern in recent years.

PROJECT DESCRIPTION

The proposed project-related tie-in line and distribution line extension would respectively consist of the following individual segments:

- A new, single-circuit 161/230-kV overhead transmission line extending 10 miles southeast from the on-site project switchyard to the proposed Rice interconnection substation adjacent to Western's Parker-Blythe #2 transmission line ;
- The project's on-site 161/230-kV switchyard from which the conductors would extend to the Western Connection substation; and
- The 1.1-mile extension of the existing SCE 12-kV distribution line.

The proposed 10-mile project generation tie line would be located within its own unshared right-of-way as it extends from the on-site switchyard from take-off structures of approximately 30 to 40 feet in height to the connection point within the new interconnection substation 10 miles to the southeast. These support structures would be up to 115 feet tall in the areas outside the solar field and would be placed approximately 600 feet apart. The conductors would be aluminum steel-reinforced cables supported on steel monopole towers as typical of similar Western lines. The applicant provided the details of the proposed monopole support structures as related to line safety, maintainability, and field reduction efficiency. As previously noted, the line would be designed to be operated at 161 kV or 230 kV as determined by Western (SR 2009a, pp. 3-1 and, 3-2, and Figure 3.1-4). The 1.1 mile extension of the existing 12-kV distribution line would also be designed and erected according to SCE design guidelines for lines in this voltage class.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION

Proposed Project

Aviation Safety

Any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The requirements listed on **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable space and establish the criteria for determining when to notify the FAA about such hazards. As noted by the applicant (SR 2009a, pp. 3-15 and 3-16), these regulations require FAA notification in cases of structures over 200 feet from the ground. Notification is also required if the structure is to be below 200 feet in height but would be located within the restricted airspace in the approaches to public or military airports. For airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area extending 20,000 feet from the runway. For airports with runways of 3,200 feet or less, the restricted airspace would be an area that extends 10,000 feet from this runway. For heliports, the restricted space is an area that extends 5,000 feet.

As noted by applicant, the nearest public airports to the proposed project and related lines are the Avi Sequilla Airport near Arizona, and approximately 32 miles to the east. There is also the Blythe Airport approximately 30 miles to the south. The nearest heliport is the LaPaz Regional Hospital heliport in Parker Arizona and 32 miles to the east (SR 2009a, p. 3-16). These noted distances show the proposed project and related facilities as too far from these airports and the heliport to pose a collision hazard to utilizing aircraft according to FAA criteria. Furthermore, the maximum height of 115 feet for the proposed line support structures (SR 2009a p. 3-2 and Figure 3.1-4) would be much less than the 200-foot height that triggers the concern over aviation hazard according to FAA requirements.

The only project-related structure above the 200-foot FAA aviation hazard threshold would be the 653-foot-high solar receiver tower (SR 2009a, p. 2-4). The applicant would install the aircraft warning lights required by FAA regulations (SR 2009a, p 2-6) and had submitted the required Form 7460 to the FAA for its aviation hazard assessment (SR 2009a, Appendix 3B). The FAA concluded that RSEP would not cause a hazard to aviation safety (CH2MHill 2010a, Attachment DR147-1). (Please see the **Traffic and Transportation** section for more information.) Staff does not recommend any related condition for certification since the FAA is responsible for the related aviation hazard assessment and issuance of any construction and operational permit.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation and is produced by the physical interactions of line electric fields. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge*, but is referred to as *spark gap electric discharge* when it occurs within gaps

between the conductor and insulators or metal fittings. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication. Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas.

The proposed project lines would be built and maintained in keeping with standard Western and SCE practices that minimize surface irregularities and discontinuities. Moreover, the potential for such corona-related interference is usually of concern for lines of 345 kV and above, and not for 161/230-kV and 12-kV lines such as the proposed lines. The lines' proposed low-corona designs are used for all Western and SCE lines of similar voltage ratings to reduce surface-field strengths and the related potential for corona effects. Since the generation tie line would traverse uninhabited open space, and the distribution line extension would have limited exposure associated with RSEP to primarily motorists for only 1.1 miles along SR 62, staff does not expect any corona-related radio-frequency interference or related complaints and does not recommend any related condition of certification.

Audible Noise

The noise-reducing designs related to electric field intensity are not specifically mandated by federal or state regulations in terms of specific noise limits. As with radio noise, such noise is limited instead through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line electric field, the potential for perception can be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345 kV or higher. It is, therefore, not generally expected at significant levels from lines of less than 345 kV as proposed for RSEP. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing the fair-weather audible noise from modern transmission lines to be generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since the low-corona designs are also aimed at minimizing field strengths, staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed line and related facilities, please refer to staff's analysis in the **Noise and Vibration** section.

Fire Hazards

The fire hazards addressed through the related LORS in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects.

Standard fire prevention and suppression measures for similar Western lines would be implemented for the proposed project lines (SR 2009a, p. 3-16). The applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Staff recommends Condition of Certification **TLSN-3** to ensure compliance with important aspects of the fire prevention measures.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

The applicant's stated intention to implement the GO-95-related measures against direct contact with the energized line (SR 2009a, p.3-16) would serve to minimize the risk of hazardous shocks. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). For the proposed project lines, the project owner will be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way.

The potential for nuisance shocks around the proposed lines would be minimized through standard industry grounding practices (SR 2009a, p. 3-17). Staff recommends Condition of Certification **TLSN-4** to ensure such grounding for RSEP.

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows, and exposure to them together is generally referred to as *EMF exposure*. The available evidence as evaluated by the CPUC, other regulatory agencies, and staff has not established that such fields pose a significant health hazard to exposed humans. There are no health-based federal

regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff therefore considers it appropriate, in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the exposed individual will likely be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns are about the magnetic field.
- There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State's Approach to Regulating Field Exposures

In California, the CPUC (which regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were intended by the CPUC to apply to the cost of any redesign to reduce field strength or relocation to reduce exposure. Publicly owned utilities, which are not within the jurisdiction of the CPUC, voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

The CPUC has recently revisited the EMF management issue to assess the need for policy changes to reflect the available information on possible health impacts. The findings specified in Decision D.06-1-42 of January 2006, did not point to a need for significant changes to existing field management policies. Since there are no residences in the immediate vicinity of the proposed project lines, there would not be the long-term residential EMF exposures mostly responsible for the health concern of recent years. The only project-related EMF exposures of potential significance would be the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors,

or individuals in the vicinity of the line. These types of exposures are short term and well understood as not significantly related to the health concern.

In keeping with this CPUC policy, staff requires a showing that each proposed overhead line would be designed according to the EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values can be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths can be estimated for any given design using established procedures. Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m), for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the support structures, degree of cancellation from nearby conductors, distance between conductors, and, in the case of magnetic fields, amount of current in the line.

Since the CPUC currently requires that most new lines in California be designed according to the EMF-reducing guidelines of the electric utility in the service area involved, their fields are required under this CPUC policy to be similar to fields from similar lines in that service area. Designing the proposed project generation tie line according to existing Western field strength-reducing guidelines, and the distribution line extension according to SCE field strength-reducing guidelines, would constitute compliance with the CPUC requirements for line field management.

Industry's and Applicant's Approach to Reducing Field Exposures

The present focus is on the magnetic field because unlike electric fields, it can penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of the health concern of recent years. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case. As one focuses on the strong magnetic fields from the more visible high-voltage power lines, staff considers it important, for perspective, to note that an individual in a home could be exposed to much stronger fields while using some common household appliances than from high-voltage lines (National Institute of Environmental Health Services and the U.S. Department of Energy, 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short term, while the exposures from power lines are lower level, but long term. Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with similar Western lines, specific field strength-reducing measures would be incorporated into the proposed line's design to ensure the field strength minimization currently required by the CPUC in light of the concern over EMF exposure and health.

The field reduction measures to be applied include the following:

1. increasing the distance between the conductors and the ground to an optimal level;
2. reducing the spacing between the conductors to an optimal level;
3. minimizing the current in the line; and
4. arranging current flow to maximize the cancellation effects from interacting of conductor fields.

Since the routes of the proposed project lines would have no nearby residences, the long-term residential field exposures at the root of the health concern of recent years would not be a significant concern. The field strengths of most significance in this regard would be as encountered at the edge of the line's right-of-way. These field intensities would depend on the effectiveness of the applied field-reducing measures. The previously noted short-term exposures for plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the vicinity of the line are expected of all operating lines. Staff recommends the field measurements in Condition of certification **TSLN-2** for RSEP to assess this specific aspect of human exposure.

The applicant (RS 2009a, p. 3-13 and Figure 3.1-4) presented the design and operational measures necessary to maintain the intensity of fields from the proposed generation tie line within the levels established for similar Western lines as required by current field management LORS. Since these field strengths depend on the applied design, their measured values along the proposed route would reflect the efficiency of these control measures. Staff is in agreement with the applicant about the effectiveness of the proposed field control measures but recommends Condition of Certification **TLSN-2** for the field strength measurements necessary to compare resulting exposures to exposures from similar Western lines. It is this similarity in exposure levels that constitutes validation of the applicant's assumed field reduction efficiency.

Facility Closure and Decommissioning

If the proposed RSEP were to be closed, decommissioned and all related structures are removed as described in the **Project Description** section, the minimal area aviation risk and electric shocks and fire hazards from the physical presence of this tie-in line would be eliminated. Decommissioning and removal would also eliminate the line's field impacts assessed in this analysis in terms of nuisance shocks, radio-frequency impacts, audible noise, and electric and magnetic field exposure. Since the generation tie line and extended distribution line would be designed and operated according to existing Western and SCE guidelines, these impacts would be as expected for Western and SCE lines of the same voltage and current-carrying capacity and therefore, at levels reflecting compliance with existing health and safety LORS.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller in occupied area than the proposed RSEP and would be located on the same 2,560-acre square-shaped parcel within the larger 3,324-acre private property proposed for the project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administrative areas) would occupy about 1270 acres instead of the 1,370 acres proposed for the project. The receiver location would remain the same with the edges of the field contracting towards the center. The heliostat footprint for the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, the 653-foot height of the solar tower and receiver, and the transmission interconnection to the Western Area Power Administration's Parker-Blythe line, would remain the same as for the proposed project. The generation capacity would be reduced by approximately 2 MW.

SETTING AND EXISTING CONDITIONS

The setting for the Reduced Acreage Alternative would be the same as described in the **Setting and Existing Conditions** subsection for the proposed project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis focuses on the required transmission line and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

The power from the Reduced Acreage Alternative would be transmitted at the same voltage to Western's power grid through the same new line and substation that would connect the proposed RSEP to the Parker-Blythe line. Therefore, the voltage-related (electric) field impacts of specific concern in this analysis would remain the same as for the proposed 150-MW RSEP. Since the generating capacity would lower at 148 MW, the magnitude of the current-related (magnetic) field impacts of concern would be correspondingly slightly lower.

CEQA LEVEL SIGNIFICANCE

Since staff finds the impacts of line operations to be potentially less than significant for the proposed RSEP design, staff would expect operation of the Reduced Acreage Alternative to also result in field and nonfield impacts that would be less than significant.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a facility of the same 150-MW as proposed and would be located on approximately 2,643 acres along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The site for the North Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land with some orchards. An existing Southern California Edison (SCE) 161-kV transmission line traverses this alternate site and would be realigned to roughly follow the site boundary. A new 0.125-mile transmission line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeastern boundary of the site. The boundaries of the site for this alternative are shown in **Alternatives Figure 3**.

Since North of Desert Center Alternative would have the same generating capacity as the proposed project, the utilized transmission line would be of the same voltage and carrying-capacity as for the proposed project. This alternative is evaluated in this analysis because its use would lead to impact reduction in the areas around the historic Rice Army Airfield with important cultural resources.

SETTING AND EXISTING CONDITIONS

The setting for the North of Desert Center Alternative is generally similar as that described for the proposed RSEP in the **Setting and Existing Conditions** subsection, except that it would be closer to an existing population, in which the nearest existing housing subdivision would be approximately 1 mile away, and there would be an existing racetrack across the road from the North of Desert Center site.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis for this alternative site focuses on the tie line required to serve the generation facility, and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

The main difference with the North of Desert Center Alternative compared to the proposed RSEP is that the generation tie line would be reduced in length to 0.125 miles compared to 10 miles for the proposed project. The shorter tie line would reduce the exposure of potential risks associated with physical interactions of its electric and

magnetic fields, and the risks would be further minimized considering the line would be routed through fallow agricultural land and open space. Since the line for this alternative would be designed, constructed, operated, and maintained according to Western's guidelines for line safety and field management, its use would lead to impacts of the same types and magnitude as the proposed project, but over a much shorter length.

CEQA LEVEL OF SIGNIFICANCE

Since the Northern Desert Alternative would have the same generating capacity as the proposed RSEP, and all the lines would be designed and constructed, and routed according to the same Western guidelines that comply with existing LORS, their respective safety and nuisance impacts would be encountered at less-than-significant levels.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR/62 Rice Valley Road Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe transmission line at the same location as proposed for the project's transmission line. This alternative transmission line would exit the proposed solar facility at the northeast corner and follow State Route 62 for approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend southwards to follow the unpaved Rice Road Valley Road for over 9.5 miles to the connection point at Western's Parker-Blythe #1 transmission line. The route of the SR 62/Rice Valley Road Generation Tie Line Alternative is shown in **Alternatives Figure 4**.

SETTING AND EXISTING CONDITIONS

The setting for the SR 62/Rice Valley Generation Tie Line Alternative is generally the same as that described in the **Setting and Existing Conditions** subsection for the proposed RSEP generation tie line.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis for this alternative tie line line focuses on the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

Since this alternative line would (a) be constructed, operated, and maintained according to Western's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards and (b) would traverse

undisturbed desert land with no nearby residents, its use would eliminate the potential for residential electric and magnetic field exposures as would the lines for proposed project.

CEQA LEVEL OF SIGNIFICANCE

Since the four conditions of certification recommended by staff for the proposed project would also be required of the SR 62 Rice Valley Road Generation Tie Line Alternative (as required for any line interconnected to Western), any safety and nuisance impacts from its operation would be at less-than-significant levels as with the lines for the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE

No Project / No Action on the Application for the Rice Solar Energy Project and no amendment of the CDCA land use plan

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the generation tie line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

The results of the No Project/No Action Alternative would be the following:

- The field and nonfield impacts from operating the project's transmission line would not occur. However, the land to be traversed by the line would become available to other uses that are consistent with BLM's land use plan, including another renewable energy project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis focuses on the tie line required to serve the generation facility, but lacking a project and related generation tie line, there would not be any adverse impacts associated with the physical presence of the line and the physical interactions of its electric and magnetic fields including:

- aviation safety;
- interference with radio-frequency communication;
- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

CEQA LEVEL OF SIGNIFICANCE

Lacking any impacts for the No Project/No Action alternative, there are no effects to evaluate for significance under CEQA.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130). NEPA states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR §1508.7).

When field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or subtractive depending on prevailing conditions. Since the proposed project's generation tie line would be designed, built, and operated according to applicable field-reducing Western guidelines (as currently required by the CPUC for effective field management), any contribution to cumulative area exposures should be at levels expected for Western lines of similar voltage and current-carrying capacity. It is this similarity in intensity that constitutes compliance with current CPUC requirements on EMF management. The actual field strengths and contribution levels for the proposed line design would be assessed from the results of the field strength measurements specified in Condition of Certification **TLSN-2**. Because the generation tie line would only be near other existing transmission lines (where cumulative effects could increase above those of the project alone) at the proposed interconnection with Western's Parker-Blythe Transmission Line, and this location is not near any existing population, the limited exposure for cumulative effects are not cumulatively considerable.

COMPLIANCE WITH LORS

As previously noted, current CPUC policy on safe EMF management requires that any high-voltage line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in the case of RSEP is Western. Since the proposed project's 161/230-kV generator tie line and related substation, as well as the 12-kV distribution line extension would be designed according to the respective requirements of the LORS listed in **TLSN Table 1**, and operated and maintained according to current Western and SCE guidelines on line safety and field strength management, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis. The actual contribution to the area's field exposure levels would be assessed from results of the field strength measurements required in Condition of Certification **TLSN-2**.

NOTEWORTHY PUBLIC BENEFITS

Since the proposed tie-in line would pose specific, although insignificant risks of the field and nonfield effects of concern in this analysis, its building and operation would not yield any public benefits regarding the effort to minimize any human risks from these impacts.

PROPOSED MITIGATION MEASURES/CONDITIONS OF CERTIFICATION

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and to assure conformance with LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for U.S. Bureau of Reclamation's (BLM's) and Western Area Power Administration's (Western's) analysis that can be considered in its Record of Decision.

TLSN-1 The project owner shall construct the extension of the existing 12-kV distribution line according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and SCE's EMF reduction guidelines. The project owner shall construct the proposed 161/230 kV generation tie line according to Western's EMF reduction guidelines.

Verification: At least 30 days before starting the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity along the proposed generation tie line and distribution line route. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed no later than 6 months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

TLSN-3 The project owner shall ensure that the rights-of-way of the proposed generation tie line and distribution line are kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out

along the right-of-way and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-4 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

CONCLUSIONS

Since FAA has concluded that RSEP would not pose a hazard to aviation safety, staff concludes that the proposed 161/230-kV transmission tie-in line and 12-kV distribution line extension would not pose an aviation hazard according to current FAA criteria.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current Western guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of CPUC's General Order 95. Compliance with Title 14, California Code of Regulations, section 1250, would minimize fire hazards while the use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed Rice Solar Energy Project and similar transmission lines, the public health significance of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed line's design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential magnetic exposure of health concern in recent years would be insignificant for the proposed line given the absence of residences along the proposed routes. On-site worker or public exposure would be short term and at levels expected for Western lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a significant human health hazard.

Since the proposed project's lines would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would be routed through areas with no nearby residences, staff considers the proposed design, maintenance, and construction plan as complying with the applicable LORS. With implementation of the four recommended conditions of certification, any related impacts would be at less-than-significant levels.

REFERENCES

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EPRI — Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and Above.

National Institute of Environmental Health Services 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. A Working Group Report. August 1998.

SR 2009a (Solar Reserve)/T Georgis (tn: 53723). Application for Certification for the Rice Solar Energy Project, Volumes I and II. Submitted to the California Energy Commission on October 21, 2009.

VISUAL RESOURCES

Testimony of William Kanemoto, Alan Lindsley and James Jewell

SUMMARY OF CONCLUSIONS

Bureau of Land Management (BLM), Western Area Power Administration (Western), and Energy Commission staff (staff) (hereafter jointly referred to as agencies) have analyzed visual resource-related information pertaining to the proposed RSEP. With respect to CEQA, staff concludes that the proposed project, after implementing all staff-recommended conditions of certification, would still have significant and unavoidable adverse direct and cumulative visual impacts from several Key Observation Points including:

- Highway SR-62 to background distances of 5 miles or more, due particularly to solar receiver brightness; and
- portions of the Turtle Mountain Wilderness Area at distances of roughly 5 miles or under due to the combination of mirror-field visibility, mirror-field glare, and solar receiver glare.

Staff has recommended **Traffic and Transportation** Conditions of Certification **TRANS-6**, Heilostat Positioning Plan, and **TRANS-7**, Power Tower Monitoring Plan, to ensure that potential glare from the project is minimized to the maximum extent possible and does not pose a health and safety risk. However, staff concludes that with these measures, glare from the project, particularly from the solar receiver, would remain a bright, intrusive source of sub-hazardous nuisance glare to viewers on Highway SR 62 and in other locations at distances within a range of 5 miles or more.

Impacts of the Reduced Acreage Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. However, the degree and extent of those impacts would be somewhat less than those of the Proposed Project.

Impacts of the North of Desert Center Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. Comparison to the proposed project is mixed. Impacts would be less than those of the Proposed Project due to the more developed and visually compromised setting when compared to that of the Proposed Project. However, the number of residents adversely affected would be substantial, and viewers in the easternmost slopes of Joshua Tree National Park could be affected.

Impacts of the State Route 62/Rice Valley Road Generation Tie Line Alternative would have the same significant unavoidable visual impacts as the proposed project, and in addition would substantially increase those impacts by introducing a new line into the immediate visual foreground of State Route 62 (SR-62).

The anticipated visual impacts of the Proposed Project, Reduced Acreage, North of Desert Center and SR 62/Rice Valley Road Generation Tie Line Alternatives, in

combination with past and foreseeable future local projects in their local vicinity, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and significant.

Along SR 62, there are four proposed solar energy projects including RSEP that would result in a substantial man-made visual intrusion into a majority of the remaining visually intact and scenic portions of SR 62, potentially rendering it ineligible for designation as a State scenic highway. These four projects would affect over 50 miles of the most scenically intact portions of that highway, altering it from a natural, scenically intact desert landscape into one characterized by the strong visual influence of these industrial facilities. In addition, cumulative night light pollution impacts in the project area could become cumulatively considerable. Therefore, within the local viewshed of Rice Valley and of SR 62 in the project vicinity, the anticipated operational visual impacts of the RSEP in combination with past and foreseeable future projects are considered potentially significant and unmitigable, particularly to motorists on SR 62, and to visitors to the area's many wilderness areas and Joshua Tree National Park.

Within the southern California desert, anticipated cumulative operational impacts of past and foreseeable future region-wide projects are considered cumulatively considerable, potentially significant and unmitigable considering the substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape.

All action alternatives studied, with staff-recommended conditions of certification, would not conform with a number of applicable local Laws, Ordinances, Regulations and Standards (LORS) of San Bernardino and Riverside Counties pertaining to preservation of scenic resources and scenic highway view corridors, as described under the Compliance With LORS section of this analysis.

INTRODUCTION

The following analysis evaluates potential visual impacts of the Rice Solar Energy Project; its consistency with applicable Laws, Ordinances, Regulations and Standards (LORS); and conformance with applicable guidelines of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

To provide a consistent framework for the analysis, a standard visual assessment methodology developed by California Energy Commission staff and applied to numerous siting cases in the past was employed in this study. A description of this methodology is provided in **Appendix VR-1**.

As noted above, the project is evaluated for conformance with applicable LORS. Adopted expressions of local public policy pertaining to visual resources are given great weight in determining levels of viewer concern. In accordance with staff's procedure, conditions of certification are proposed as needed to reduce potentially significant impacts to less than significant levels, and to ensure LORS conformance, if feasible. These Conditions of Certification meet the Energy Commission's responsibility to

comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in its Record of Decision.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Federal

The National Environmental Policy Act (NEPA) requires that the federal government use 'all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S. Code 4331[b][2]).'

Significance under NEPA is defined in terms of a) context and b) intensity. Context means that the significance of an action must be analyzed in several contexts, such as society, the affected region, affected interests, and locale. Intensity refers to the severity of impact, and includes a variety of factors to be considered (40 CFR 1508.27).

Some of the intensity factors cited in 40 CFR 1508.27 that are potentially relevant to visual impacts include 'unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands . . . , degree of controversy, degree of uncertainty about possible effects, degree to which an action may establish a precedent for future actions, and potential for cumulatively significant impacts.

Portions of the proposed project are located on BLM lands. These lands have not been previously inventoried under BLM's Visual Resource management (VRM) system. CEC and BLM staff have thus agreed to assess the visual effects of the project using the CEC visual assessment method. In staff's professional opinion, however, despite differences in application and process, the fundamental visual assessment principles used in the BLM and CEC methodologies are consistent. Staff thus considers that the conclusions of this analysis are substantially equivalent to those that would be reached by applying BLM-specific methods of visual assessment.

State

The CEQA *Guidelines* define a "significant effect" on the environment to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including . . . objects of historic or aesthetic significance." (Cal. Code Regs., tit.14, § 15382.) Appendix G of the *Guidelines*, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

- A Would the project have a substantial adverse effect on a scenic vista?
- B Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

- C Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- D Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, staff evaluates potential impacts in relation to standard criteria described in detail in Appendix VR-1. Staff evaluates both the existing visible physical environmental setting, and the anticipated visual change introduced by the proposed project to the view, from representative, fixed vantage points (called “Key Observation Points” (KOPs). KOPs are selected to be representative of the most characteristic and most critical viewing groups and locations from which the project would be seen. The likelihood of a visual impact exceeding Criterion C. of the CEQA Guidelines, above, is determined in this study by two fundamental factors: the susceptibility of the setting to impact as a result of its existing characteristics (reflected in its current level of visual quality, the potential visibility of the project, and the sensitivity to scenic values of its viewers); and the degree of visual change anticipated as a result of the project. These two factors are summarized respectively as *visual sensitivity* (of the setting and viewers), and *visual change* (due to the project) in the discussions below. Briefly, KOPs with high sensitivity (due to outstanding scenic quality, high levels of viewer concern, etc.), that experience high levels of visual change from a project, are more likely to experience adverse impacts.

Under the Energy Commission criteria, as under all professionally accepted visual assessment methods, visibility of a project per se does not constitute a threshold for significant visual impact, regardless of the sensitivity of viewers, except under unusual circumstances in which applicable legal restrictions apply. For example, within a national park or BLM Wilderness Area, very low levels of visibility of a project may be considered the appropriate significant visual impact threshold.

Local

Staff also reviews local LORS and their policies or guidelines for aesthetics or preservation and protection of sensitive visual resources that may be applicable to the project site and surrounding area. These LORS include local government land use planning documents where applicable.

Please refer to **Appendix VR-1** for a complete description of staff’s visual resources evaluation criteria.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

Regional Landscape

The Project is located within the Colorado Desert, a sub-region of the Sonoran Desert, at the boundary of an ecological transition zone between the Mojave Desert to the

north, and the Colorado Desert to the south. The Colorado Desert is distinguished from the Mojave to the north primarily by elevation and corresponding vegetation types. It is situated primarily below 1,000 feet above mean sea level (amsl) in contrast to the high desert of the Mojave to the north.

The Colorado Desert is typified by creosote and bursage scrub land cover, often mixed with yucca and cholla cactus, sandy soil grasslands and, especially farther to the south, ocotillo cactus, ironwood, and palo verde trees. Like other parts of the Basin and Range physiographic province of which it is a part, the area is characterized by periodic low, barren mountain ranges with jagged peaks and sloping alluvial fans or bajadas at their feet, with arid, sparsely vegetated open valleys in between offering expansive, panoramic views. Dark browns and garnets are the dominant mountain hues, although blues and purples prevail as viewing distance increases. In contrast, lighter brown and tan soils dominate the desert floor, sparsely dotted with the grey-green of low-growing creosote bush and golden bursage scrub vegetation.

Project Site and Vicinity

The 1,410-acre RSEP site is located in Rice Valley, a small desert valley roughly 12 miles long by 18 miles wide with flat to gently sloping terrain and elevations that range from 283 feet amsl in the north, to 205 feet amsl in the south. The northern end of the valley, including the project site, is a portion of the bajada or alluvial fan descending from the southern slopes of the Turtle Mountains; much of the valley south of the project site, including the northern portions of the Rice Valley Wilderness, consists of the Rice Valley Sand Dunes. This system of 30- to 40-foot tall sand dunes is part of a massive sand sheet which extends from Cadiz and Ward Valleys to the west, representing a part of one of the largest dune systems in the California Desert. Typical of the region's basin and range physiography, low, barren mountain ranges enclose the valley: Turtle Mountains, 3 miles to the north; West Riverside and Riverside Mountains, 7 and 10 miles respectively, to the east; Big and Little Maria Mountains, 10 miles to the south; and the Arica and Granite Mountains, 7 and 13 miles respectively, to the west.

The RSEP site is located on private land in an unincorporated area of northeastern Riverside County, immediately south of the Riverside-San Bernardino County line (defined by SR 62) and 20 miles west of the California-Arizona state line. The Riverside County General Plan land use designation for the RSEP site and the non-federal lands that surround it is Open Space-Rural, defined as remote, privately owned open space areas with limited access and a lack of public services (Riverside County, 2003). The site is entirely surrounded by public lands under BLM jurisdiction. A new proposed generation tie-line would extend approximately 10-miles to the southeast of the site, and a new interconnection substation constructed to connect the project with the Western 161/230-kV Parker-Blythe #2 transmission line. The tie-line and substation would be located predominantly within BLM lands. Those lands are classified under the California Desert Conservation Area (CDCA) Plan as Multiple-Use Class M (Moderate Use). No BLM VRM classifications have been assigned to the BLM lands surrounding the project site.

The site occupies the former Rice Army Airfield, a World War II military flight training center that opened in 1942 and closed in 1944. It subsequently operated as a private

airfield until closing around 1956. A few areas of foundation or concrete from two paved 5,000-foot runways and hardstands remain, but there are no standing structures and any remaining features, though visible in aerial photography, are not evident to the public from SR 62. The abandoned town of Rice is located immediately east of the site. Like the abandoned airfield, remaining visible evidence of the town as seen from the highway is very subtle and would not be noticed by most casual observers.

In addition to State Route (SR 62), other existing man-made features within the project viewshed include the Atchison Topeka & Santa Fe (ATSF) Arizona-California Railroad line, and the California Aqueduct, both generally paralleling SR 62 in an east-west direction a short distance north of the highway in the project vicinity. These nearby features obstruct views of the natural terrain surface in views to the north toward the Turtle Mountain; the mountains themselves however remain unobstructed. The earth berm supporting the ATSF rail line in this segment is marked by extensive rock graffiti which, because it is made primarily of rocks from the area, is visible but not highly contrastive and intrusive.

SR 62, which bounds the site to the north, connects Parker, Arizona (32 miles east) to the community of Twenty Nine Palms (75 miles west). Joshua Tree National Park is located south of SR 62 roughly 25 miles to the west of the project site. The nearest community is Vidal Junction, approximately 15 miles northeast. The nearest residence is at the Metropolitan Water District of Southern California's Iron Mountain Pumping Plant, 17 miles west of the project. Two tall communication poles and associated low communication lines are located a short distance east of the project site to the south of the highway. AT&SF railroad crossings and associated warning lights, located roughly two miles to the west and six miles to the east of the project site, respectively, are among the only other man-made intrusions in the larger project viewshed.

Visual Resources Figure 1 depicts photographs of the existing landscape setting.

Scenic Highways

SR 62 north of the RSEP site is part of a 143-mile segment of SR 62 eligible for State Scenic Highway designation. Called the "29 Palms Highway", the eligible scenic highway extends from a 9-mile officially designated State Scenic Highway segment at SR 10 in Riverside County, north into San Bernardino County, and past the project site to the Arizona border at Parker, roughly 30 aerial miles to the east. Highway 62 serves as the principal public access to Joshua Tree National Park roughly 25 aerial miles west of the project site.

Wilderness Areas

There are four BLM wilderness areas (WAs) within 10 miles of the project site: the Rice Valley, Turtle Mountain, Riverside Mountains and Palen/McCoy WAs. No motorized use is allowed within the wilderness areas, and none have established trail networks, parking areas, or areas of known concentrated recreational use. The areas are accessible by off-highway vehicles (OHVs) or high clearance vehicles via unmaintained dirt roads that end 30 feet outside the wilderness boundary. BLM considers that recreational use of the WAs in this area is very low, and that recreational use was not a primary consideration in their establishment as WAs. BLM does attribute high viewer

sensitivity to all areas of the California Desert Conservation Area (CDCA) however, because preservation of scenery is a prime objective of the CDCA.

Turtle Mountain is the nearest wilderness area to the RSEP site and lies roughly 2 miles to the north. The 177,209-acre wilderness reaches a maximum height of 3,865 feet amsl at Horn Peak. The area is considered by the BLM to be a transition zone between the Mojave and Sonoran Deserts, supporting a high diversity of plant and animal species. Three miles south of the RSEP site is the Rice Valley Wilderness, a 41,776-acre area that contains the Rice Valley Sand Dunes. The area is accessible from the north via Rice-Midland Road and unnamed dirt trails. Six miles southwest of the RSEP site is the northernmost portion of the 236,486-acre Palen/McCoy WA, a large area encompassing five separate mountain ranges: the Arica, Granite, Little Maria, Palen, and McCoy. Mountain top elevations range from a high of 3,852 feet amsl in the Palen Mountains, to 3,753 in the Granite Mountains, 2,316 feet amsl in the West Riverside Mountains, and 2,162 in the Arica Mountains, compared to the 200 – 280 foot elevations of the project site.

Project Visual Setting: Viewshed and KOPs

Project Viewshed

A feature of this desert landscape is the potential for large structures to be seen over great distances where even slightly elevated viewpoints exist, due to the large open areas of level topography and absence of intervening landscape features.

As indicated in **Visual Resources Figure 2 - Project Setting, Key Observation Points (KOPs) and Solar Receiver Tower Viewshed**, the project would potentially be visible to background distances of over 20 miles to the east and west on SR 62, and up to 15 miles to the south of the site (SR 2009a). For the roughly 50-mile segment of SR 62 between its intersection with Desert Center Road to the west, and several miles beyond Vidal Junction (at SR 395) to the east, the receiver tower would potentially be visible as a source of nuisance glare to background distances. These potential effects are discussed further in the section on Glare Impacts, below.

As depicted in **Visual Resources Figure 3 - Heliostat Field Viewshed**, visibility of the heliostat field would also potentially extend over a considerable area, extending to background distances to the west, south, and east. As depicted in the figure, however, the extent of potential visibility to viewers on SR 62 would be more limited than for the solar receiving tower. The heliostats would come into view to SR 62 motorists roughly one mile to the west and 3 miles to the east, for an overall distance of roughly 4 miles of the highway.

Viewer Sensitivity and Key Observer Positions: Visual Quality, Viewer Concern, and Viewer Exposure

VISUAL RESOURCES Figure 2 - Project Setting, Key Observation Points (KOPs) & Solar Receiver Tower Viewshed, depicts the location of Key Observation Points (KOPs) used as the basis for this analysis. KOPs are used in the Energy Commission

visual analysis method as the basis for evaluating potential project impacts, and represent the key sensitive viewer groups and viewing locations likely to be affected by the project.

In the CEC assessment approach, each KOP is rated according to the visual quality of its setting, and an assessment of its level of viewer concern and viewer exposure. Those three primary attributes are summarized in a KOP's *overall visual sensitivity* rating, which reflects an assessment of the overall susceptibility to visual impact of the viewer group/receptors it represents. These sensitivity ratings serve as the environmental baseline against which potential project impacts, measured in terms of level of *visual change*, are identified.

KOPs used in this study include those used in the project AFC, which were selected for the AFC in consultation with Energy Commission staff. Two additional KOPs were added by staff for this analysis. For simplicity the numbering of viewpoints in the AFC has been retained in this analysis. (All figures referred to in the text may be found at the end of this section).

In this discussion, the distance-zone term 'foreground' is used generically to refer to viewing distances under ½-mile; 'middle-ground' to distances between ½ and 4 or 5 miles; 'near middle-ground' refers to that portion of middle-ground under roughly one mile; and 'background' to distances over 5 miles.

Because KOP photos represent the existing views of project simulations, the reader is referred below to these 'before project' photos in the discussion that follows. All figures may be found at the end of this section.

KOP 1 - Eastbound SR 62 (Middle-Ground Distance)

KOP 1 represents potential viewers of the project from eastbound SR 62, approximately 1 mile northwest of the RSEP site. The view is toward the southeast where the RSEP site is seen at middle-ground viewing distance. **VISUAL RESOURCES Figure 4a** depicts the existing view from KOP 1. The landscape is characterized by a flat tan, desert plain in the foreground and middle-ground, with dark, jagged garnet to bluish mountain ranges of the West Riverside Mountains and Riverside Mountains in the distant background to the southeast. Land cover consists of sparse, low-growing creosote-bursage scrub characteristic of the area.

Visual Quality: Visual quality of this landscape is moderately high. A relatively high level of intactness and unity of the characteristic landscape results from the absence of human development and disturbance in the Rice Valley Wilderness Area and surrounding mountain ranges in the middle-ground and background distance zones. Panoramic, long-distance views of the vast, undisturbed Rice Valley and surrounding mountain ranges are present to the south through much of this segment of SR 62. These middle-ground and background distance portions of the view are the focus of travelers' attention. Man-made features are present in the foreground of the view in this segment of SR 62, but are not highly intrusive and do not block these scenic views of the valley and mountains to the south of the road. The AT&SF rail line and, to its north, the Colorado Aqueduct, parallel SR 62 for a distance of roughly 6 miles to both the east

and west of the project site at a distance of as little as 150 feet and 500 feet respectively, occupying the roadway foreground to the north. They do not obstruct scenic views of the Turtle Mountains to the north, however, and tend to be overlooked because viewers' attention is so strongly drawn to the scenic views of the valley toward the south. Evidence of past paving and development is visible in the roadway foreground to the south near KOP 1, but does not interfere with scenic views of the valley and mountains in the background.

Viewer Concern: Viewer concern is considered moderately high due to the eligible State Scenic Highway status of SR 62, its designated County scenic highway status, and a presumed high proportion of recreation- and scenery-oriented travelers in this area. According to Caltrans Year 2008 Average Annual Daily Traffic (AADT) volumes, SR 62 averages approximately 2,200 vehicles per day, of which 7 to 21 percent of the vehicles were trucks (SR 2009a, Section 5.13-21). In general, BLM assigns high viewer sensitivity to all viewers in the CDCA due to the emphasis on preservation of scenery in the objectives of the CDCA Plan.

Viewer Exposure: Viewer exposure from eastbound SR 62 up to this point, approximately 1 mile west of the project, is moderate. Up until the vicinity of KOP 1, travelers on eastbound SR 62 would experience partially screened views of the project site due to orientation of the road and intervening topography, which tends to block views of the site ground surface until the westward turn in the road. Between KOP 1 and KOP 2, marked by the turns in SR 62 west and east of the site, respectively, views of the project site would come into full view, as indicated in **VISUAL RESOURCES Figure 3** and discussed further under KOP 4, below,

Overall visual sensitivity of SR 62 motorists in this portion of the viewshed was considered to be moderately high.

KOP 2 - Westbound SR 62 (Middle-Ground Distance)

KOP 2 represents potential viewers of the project from westbound SR 62, approximately 3.5 miles northeast of the RSEP site. The view is to the southwest and the RSEP site is viewed near the boundary of middle-ground/ background viewing distances. **VISUAL RESOURCES Figure 5a** depicts the existing view from KOP 2. The valley floor in the foreground consists of a typically light tan, flat desert floor with low, sparse desert grasses and shrubs typical of the creosote-bursage scrub type of the area. Wood distribution poles parallel the highway. In the background, the Arica Mountains and, behind them, the more distant Granite and Little Maria Mountains can be seen forming the backdrop of westward views. To the right of the photo frame, the low ridges of the Turtle Mountains would appear at middle-ground distances of as little as one mile.

Visual Quality: As described previously, visual quality of this landscape is moderately high due to the relatively high level of intactness and unity that comes from the predominantly unaltered character of the panoramic valley views toward the south. Man-made intrusions into the view include the distribution lines in the photo, and two tall telecommunications towers and associated lines farther to the west. Their effect on scenic long-distance views of the valley and mountains remains minor.

Viewer Concern: Viewer concern is considered moderately high due to the eligible State and designated County Scenic Highway status of SR 62, and a presumed high proportion of recreation- and scenery-oriented travelers in this area.

Viewer Exposure: Viewer exposure in this background distance zone from the project site on SR 62 is moderate. As indicated in **VISUAL RESOURCES Figure 3** (Heliostat Viewshed) and depicted in **VISUAL RESOURCES Figure 5a (KOP 2)**, as travelers progress westward on SR 62, the southwest orientation of the highway and resulting intervening, higher terrain limits views of the valley floor in the direction of the site to a relatively short distance. The ground surface of the project site itself remains obscured until past the westward bend in the highway. West of KOP2 on SR 62, views of the project site would come into full view, as indicated in **VISUAL RESOURCES Figure 3** and discussed further under KOP 4, below,

Overall visual sensitivity of SR 62 motorists in this portion of the viewshed is considered to be moderately high.

KOP 3 - Northbound Rice Road/Rice Valley Wilderness Area

KOP 3 represents potential viewers of the Project from northbound Rice Valley Road, including views of visitors to the Rice Valley Wilderness Area. KOP 3 is approximately 5 miles southwest of the RSEP site where the RSEP generator tie-line would intersect with Rice Valley Road. The view is to the northwest, where the RSEP site is at the edge of the middleground/background viewing distance. **VISUAL RESOURCES Figure 6a** depicts the existing view from KOP 3. Foreground and middleground views are dominated by the flat desert terrain and creosote-bursage scrub of Rice Valley. A dirt OHV road is in the immediate foreground. Distant views of Turtle Mountain on the right, and Iron Mountain on the left, are softened by atmospheric haze.

Visual Quality: Visual quality of this landscape is moderately high due in part to the high level of intactness and unity that comes from vast, unobstructed, panoramic views of a pristine, largely unaltered natural landscape. The ground plane and ground surface appears virtually undisturbed. In this setting this very absence of man-made intrusions over a vast viewshed constitutes one of its principal vivid qualities. The isolated mountain ranges are also a vivid element, emerging like islands within the level plain of Rice Valley, creating a scene of great legibility and visual coherence expressive of the natural processes that formed the landscape.

Viewer Concern: Viewer concern is considered moderately high. The area is used by OHV recreationists accessing the Rice Valley Wilderness Area on closed, designated trails and is representative of the experience of visitors enroute to the wilderness. Presumably, the majority of visitors to the WA would have a high degree of concern for scenic quality.

Viewer Exposure: Viewer exposure is considered moderately low overall. Travelers on northbound Rice Valley Road would experience open, unobstructed views of the project site from KOP 3 and throughout the Rice Valley. View duration would be extended since

travel within the WA would take place on unimproved roads and, within the WA, on foot. However, viewer numbers in and out of the WA are believed by BLM to be extremely low.

Prior to 2002, portions of the Rice Valley and dunes outside of the WA remained open to OHV use. After 2002, however, motorized travel in the area was restricted to designated trails by BLM based on a history of little or no recreational use in the area (DOI, 2002). The large majority of the Rice Valley WA is located in the background distance zone (over 5 miles from the project); this distance would greatly reduce potential project visual effects in the WA.

Accounting for distance and low viewer numbers, overall visual sensitivity of the WA was considered to be moderate.

KOP 4 - Westbound SR 62 (Middleground Distance)

KOP 4 represents potential viewers of the project from SR 62 in the roughly 4.6-mile segment in which the project site and proposed mirror fields would be visible, as depicted in the mapped purple area of **VISUAL RESOURCES Figure 3**. The view is to the southwest and the RSEP site is seen at a viewing distance of approximately 1 mile. **VISUAL RESOURCES Figure 7a** depicts the existing view from KOP 4. In the background, the Arica Mountains and, behind them, the more distant Granite and Little Maria Mountains can be seen forming the backdrop of westward views. Panoramic views of the vast and highly intact expanse of the valley are visible, extending to the Little and Big Maria Mountains to the south.

Visual Quality: As described above, visual quality from this portion of SR 62 is moderately high due to the high level of intactness of the scene, which is largely free of intrusive elements; and the high degree of unity, legibility, and vividness imparted by the panoramic views of the whole of the valley in the background. Some visible evidence of the former Rice Airfield can sometimes be seen in the highway foreground, usually as small bare or sparsely vegetated level areas. These signs are subtle and do not noticeably detract from the scenic long distance views of the valley that are the focus of viewers' attention.

Viewer Concern: Viewer concern is considered moderately high due to the eligible State Scenic Highway status of the highway, and a presumed high proportion of recreation- and scenery-oriented travelers in this area.

Viewer Exposure: Viewer exposure is high within this portion of the project viewshed. Numbers of motorists are relatively high, and views of the site are unobstructed and at close distance.

Overall visual sensitivity is considered to be moderately high.

KOP 5 - Views from Turtle Mountain WA

VISUAL RESOURCES Figure 8 depicts KOP 5. KOP 5 includes two simulated views, created in Google Earth, from elevated ridges within the Turtle Mountain Wilderness Area at distances ranging from 2 to 4.8 aerial miles from the project site, within the

middle-ground distance zone. The views have been adjusted to approximate a 'normal' cameral lens (40-degree horizontal angle of view). The views are all facing south toward the project site, and are representative of the views of climbers within the Turtle Mountain WA. In each view, the bajada or alluvial fan descending from the foot of the mountains is visible in the foreground, with the expanse of the Rice Valley in the distance, and the Little and Big Maria Mountains roughly 15 miles in the background. The KOPs are considered relatively accessible in terms of distance from nearby points on SR 62, although there are no trails within the WA.

Visual Quality: Visual quality of KOPs within the Turtle Mountains is considered to be moderately high. The rocky, jagged ridges and contrasting swales and alluvial washes are highly intact, with vivid form, line, color and texture. Panoramic elevated views of the vast, visually intact Rice Valley Wilderness Area is back-dropped by distant views of the Little and Big Maria Mountains Chuckwalla Mountains to the south.

Viewer Concern: BLM considers all areas of the CDCA to have high viewer sensitivity, and this would be even more so within the wilderness areas and elevated viewpoints, where the panoramic views, sensitivity levels, and scenic values generally would be particularly high.

Viewer Exposure: As depicted in the viewshed mapping of **VISUAL RESOURCES Figure 2**, the project site would be visible within the Turtle Mountains Wilderness Area from a relatively limited area of ridges in the southernmost portions of the Wilderness Area, primarily within middle-ground distance (up to 5 miles) except for small, highly isolated areas representing a minute proportion of the WA. The project, particularly the solar receiver, would be visible at background distances in other directions greater than 5 miles, however, including portions of the Rice Valley and Palen-McCoy Wilderness Areas to the south and west. As suggested in **VISUAL RESOURCES Figure 8b**, depicting a view at a point approaching background distance within the Turtle Mountain Wilderness, intervening ridges would begin to obscure the project site as viewpoints progress farther northward into the Turtle Mountain WA beyond background distance, but in the middle-ground distance zone views from south-facing slopes and high ridges would remain largely unobstructed. The elevated viewing positions would expose the expanse of the mirror field fully to view, although the field would remain oblique. In general, visual magnitude or the proportion of the field of view occupied by the project would decline as the square of the distance; that is, magnitude of the project from 4 miles is $\frac{1}{4}$ that from 2 miles, and so on. Duration of viewer exposure within the WA is considered relatively limited because climbers in the WA would quickly be out of the area of potential visibility. Although user numbers for the WA are not available, viewer numbers are assumed to be extremely low. Accounting for the limited view duration and extent from elevated locations within the WA, and the very low anticipated number of viewers within the project viewshed, exposure is thus considered to be moderately low.

Overall viewer sensitivity is thus considered to be moderate.

Project Visual Description

Power Plant

The following description is taken from the AFC project description and applicant data responses (-cite-). **VISUAL RESOURCES Figure 9** (AFC Figure 2.2-1) depicts the proposed project layout. **VISUAL RESOURCES Figure 10** depicts architectural elevations of the proposed power blocks (AFC Figure 2.2-3A). **VISUAL RESOURCES Figure 11** (DR 156-1, -2) depicts the proposed solar collector mirror units. **VISUAL RESOURCES Figure 12** depicts the proposed generation tie line poles.

The proposed project would include an overall project footprint of approximately 2.14 square miles (1,370 acres), plus an approximately 10-mile-long single-circuit 230-kV generator tie-line. The project would consist of up to 17,500 individual heliostats arranged in a circular formation, with a diameter of 1.63 miles. Each heliostat would be 24 feet long by 28 feet wide, with a 12-foot pedestal height, 14.5-foot overall height in horizontal stowed position, and up to approximately 24-foot overall height in vertical position.

A single concrete solar receiver tower consisting of a 538-foot-tall concrete tower, 100-foot-tall cylindrical solar receiver, and 15-foot crane (overall height of 653 feet) would be located within the mirror field. The tower is proposed to be constructed of untreated and unpolished concrete.

Various other structures include a steam generation building, hot and cold salt storage tanks, pump support and maintenance area, water treatment building, an on-site switchyard, and an air-cooled condenser, as depicted in **VISUAL RESOURCES Figure 10**. The applicant has proposed to paint the buildings in shades of beige, tan, and gray to blend with the surrounding environment.

Three 5-acre evaporation ponds would be built south of the heliostat field, within the project fence line.

Construction Staging Area

A construction laydown area, temporary heliostat assembly building, administration building, workforce parking, and construction parking are proposed in a roughly 65-acre area adjoining SR 62 north of the heliostat field within the project fence line. This area would have a highway frontage of approximately 3,750 feet (AFC Figure 2.2-6). Construction is estimated to last 30 months, and occur between 5 a.m. and 7 p.m. on weekdays and Saturdays, but may take place on a 24-hour, 7-day basis during some periods.

Plant Night Lighting

Outdoor night lighting is proposed in various locations including building exterior entrances and driveways, around outdoor equipment in the power block and switchyard areas, storage tank containment areas, water treatment building, power block perimeter roadway and internal driveways, parking areas, plant entrance road, signage and main gate. Applicant has proposed adoption of standard CEC lighting requirements, such as restricting direct lighting on site, shielding to avoid upward 'backscatter' illumination, etc.

Linear Facilities

A proposed 10-mile generator tie-line would connect the RSEP to the existing Western Area Power Administration (Western) 161/230-kV Parker-Blythe transmission line. The portions of the tie-line right-of-way outside of the heliostat field would be predominantly on BLM land. The tie-line route would extend south through the heliostat field, east to the project site boundary, and southeast across Rice Valley to Rice Valley Road, approximately 1.7 miles north of the Rice Valley Wilderness. From there the tie-line would parallel Rice Valley Road between the northeast border of Rice Valley Wilderness Area and West Riverside Mountains, until intersecting with the existing Parker-Blythe #2 transmission line, where an interconnection substation would be built on BLM land. The tie line would require construction of 4.6 miles of new unpaved access roads, and use of 5.4 miles of existing unpaved roads.

Interconnection Substation

A new interconnection substation of approximately 300 by 400 feet would be constructed at the point of connection with the existing Western Parker-Blythe #2 transmission line.

Telecommunications

Several alternative telecommunication system options have been proposed by the applicant. The telecommunications would serve to provide monitoring of RSEP generation and system protection of Western's transmission system. The options include: 1) optical ground wire (OPGW) – both above ground and underground; 2) microwave (radio-frequency) transmission; 3) power line carrier/broadband-over-Power-Line (BPL and; 4) all-dielectric, self-supporting (ADSS) optical cable.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT PROJECT IMPACTS

Project Operation Impacts

Impacts of Structures on Key Observation Points

KOP 1 – Eastbound SR 62 (approximately 1 mile distance - mirror field not visible)

Visual Resources Figures 4A and 4B depict the view of the site from KOP 1, at a distance of approximately 1 mile looking southeast, and is representative of the view of eastbound motorists on SR 62. As depicted in the simulation, from KOP 1 the mirror fields would remain out of sight. As indicated in **Visual Resources Figure 3**, KOP 1 lies just outside the segment of SR 62 in which the mirror field would be visible. From this point eastward for a distance of roughly 1-1/2 miles, the mirror fields would become visible to eastbound motorists at close distance, after which the project would lie behind them. That segment of roadway, in which the mirror field would be visible, is discussed separately under KOP 4, below.

Visual Contrast. As depicted in the simulation, the receiver tower and other project structures would be visible in eastbound views. The 653-foot tall receiver tower would

exhibit strong vertical form and line contrast, seen against the open sky above the ridgeline of mountains in the distant background. Color contrast of the tower and other structures would vary according to lighting conditions but would generally be moderate with appropriate surface color treatment. However, the bright glare of the 100-foot-tall solar receiver would be highly contrastive, strongly drawing the attention of motorists. At this distance, a staff glare specialist concluded that the receiver would be a bright, visually intrusive, distracting object in the field of view, though it would not represent a physical hazard.

A short distance east of KOP 1, the mirror field would come into full view. This condition is discussed under KOP 4, below, and depicted in **Visual Resources Figure 7b**.

Overall visual contrast for eastbound motorists would be high for a distance of at least two to three miles.

Impacts from proposed construction laydown, operations, and parking would occupy a considerable portion of the immediate foreground highway frontage north of the mirror field. This impact is discussed separately below under Construction Impacts.

Visual Dominance. At this distance the solar receiver tower would exert strong scale dominance, as the only comparable vertical element within the immediate field of view, in a setting characterized by flat, horizontal topography. It would exert strong spatial dominance by strongly attracting attention to the bright solar receiver. Shortly east of KOP 1, the mirror field would also come into full view. That condition is discussed under KOP 4, below. Before the bend in the highway at KOP 1, the mirror field itself would remain out of view and visual effects would be limited largely to the tower and receiver.

View Blockage. View blockage would be moderate. The receiver tower would intrude into views of the Rice Valley and mountains behind, and penetrate the ridgeline of those mountains from some viewing angles. The bright receiver would be a highly distracting element in the view at this distance.

From KOP 1 at a distance of one mile, overall visual change for viewers on SR 62 is considered high. The project would demand attention, could not be overlooked, and would be dominant in the landscape. In the context of the setting's moderately high visual sensitivity, this high level of visual change would represent a significant adverse impact.

Mitigation

To minimize form and color contrast of the project features, staff recommends Condition of Certification VIS-1, Surface Color Treatment of Non-Mirror Structures. Applicant has proposed to color-treat structures other than the receiver tower to blend with the visual background. In addition, Condition of Certification VIS-1 recommends similar color treatment of the receiver tower and heliostat backs to minimize color contrast and blend with the background of the valley floor. With this measure, project color contrast could be reduced considerably. However, visual change would remain high, and impacts significant.

KOP 2 – Westbound SR 62 (approximately 3.5 miles distance – mirror field not visible)

Visual Resources Figures 5A and 5B depict the view of the site from KOP 2, at a distance of approximately 3.5 miles looking southeast, and is representative of the view of motorists, in this case westbound, on SR 62 at distances of roughly 3 miles or greater. As depicted in the simulation, from KOP 2 the mirror fields would remain out of sight. As indicated in **Visual Resources Figure 3**, KOP 2 lies just outside the segment of SR 62 in which the mirror field would be visible. From approximately one mile west of this point for a distance of roughly 3-1/2 miles, the mirror fields would become visible to westbound motorists at close distance, after which the project would lie behind them.

Visual Contrast. At this distance and greater, the project would exhibit moderate form and line contrast. Although contrasting with the predominant horizontal line of the landscape, at this distance the overall magnitude of the structure is small and does not penetrate the mountain ridgeline. As depicted in the simulation, color contrast is relatively high. The tower appears bright against the tan and darker colored background of the mountains behind. This color contrast could be reduced, as discussed under Mitigation, below. In this particular view, the tower is seen against the foreground of small distribution line poles that echo its vertical form. What is not known at this time is how bright the solar receiver would appear to motorists at this distance, and how strongly that brightness would act as a distraction or nuisance. Although it is known that the brightness of the receiver is not capable of causing physical harm to viewers's eyes, the subjective brightness as experienced by motorists is not well-understood. For the purposes of this analysis, staff assumed that at distances of roughly 3 miles or more, as depicted in KOP 2, this brightness would represent a moderately high level of contrast. Overall contrast at this distance and greater is thus considered to be moderate to high.

Visual Dominance. At this distance, the solar receiver would exert moderately high visual spatial and scale dominance. Particularly due to the brightness of the receiver, the tower would draw attention to itself.

View Blockage. View blockage would be moderately low at this distance. The receiver tower would intrude into views of the mountains behind, but would not penetrate their ridgeline. From this distance and greater, the mirror field would not be visible. However, the brightness of the receiver within the field of view could distract from any views seen behind it.

Overall, visual change from KOP 2 and other SR 62 viewpoints at distances of roughly 3 miles or more is considered moderately high. In the context of the setting's moderately high visual sensitivity, this would represent a potentially significant impact with respect to CEQA.

If brightness of the receiver is perceived to be stronger than currently anticipated during operation, significant impacts could extend for greater distances than represented by this KOP. Brightness would however decline as the square of the distance from the light source (solar receiver).

KOP 3 – Northbound Rice Road/Rice Valley/Rice Valley Wilderness (approximately 5 miles from site)

Visual Resources Figures 6A and 6B depict the view of the site from KOP 3, at a distance of approximately 5 miles to the southeast, and is representative of the view from northbound Rice Valley Road, as well as of visitors to the Rice Valley Wilderness. The northern boundary of the Rice Valley Wilderness is located approximately 3 miles south of the project site and includes the Rice Valley Dunes, located in the northern portion of the WA. The northern portions of the WA are thus located at comparable distance to the project site.

Visual Contrast. In this view, the proposed tie-line is viewed in the immediate foreground and is highly prominent. Throughout the rest of the area represented in this KOP, including the WA, the tie-line would remain visible but less prominent, representing a generally moderate level of form, line, and texture contrast. As depicted in this view at background distance, overall project contrast remains moderately high. Even at background distance the mirror field occupies a substantial proportion of the field of view. Further, it is seen within a view notable for the pristine, intact character of panoramic views of the natural valley-and-mountain landscape. Against this backdrop, color, texture, and form contrast of the project would all be high. As accurately indicated in the simulation, from such viewpoints south of the site, heliostat reflection would be visible due to the southward sloping gradient of the mirror field. The receiver tower would be conspicuous in its vertical form contrast, which is accentuated by its brightness.

Visual Dominance. To at least the background distance represented in this view, project spatial dominance would remain moderately high. The bright receiver tower and, under most light conditions, the bright mirror field would strongly draw attention to themselves.

View Blockage. The mirror field would block views of the currently intact valley floor to a moderate degree. The receiver tower would intrude into views of background mountain ridges in some locations and not, as in this photo, of others. The proposed tie-line would intrude into views to varying degrees according especially to distance from the viewer. These would be seen primarily under front-lit conditions. This view intrusion of generation tie line towers is considered moderate, and could be reduced somewhat by color treatment. Overall, view blockage to visitors to the WA would be moderate.

Overall, visual change from KOP 3 and other similar viewpoints in the Rice Valley WA to at least 5 miles' distance is considered moderately high, decreasing with distance.

In the context of the setting's moderate visual sensitivity, this moderately high level of visual change is considered adverse but less than significant, decreasing with greater distance. Because the WA lies predominantly in the background distance zone, potential impacts to visitors in the WA are considered less-than-significant.

Mitigation

To minimize form and color contrast of the project features, staff recommends Condition of Certification VIS-1, Surface Color Treatment of Non-Mirror Structures. Applicant has proposed to color-treat structures other than the receiver tower to blend with the visual background. In addition, Condition of Certification VIS-1 recommends similar color treatment of the receiver tower, heliostat backs, and generation tie line tower to minimize color contrast and blend with the background of the valley floor. Although staff experience has indicated that lattice towers produce less contrast at medium and background distance than the proposed transmission line monopoles, lattice towers have not been recommended on this project due to potentially substantial secondary biological impacts that could result from their use. .

KOP 4 - Westbound SR 62 (approximately 1 mile distance – mirror field visible)

Visual Resources Figures 7A and 7B (DR# 157-2) depict the view of the site from KOP 4, at a distance of approximately 1 mile looking southeast, and is representative of the view of motorists on SR 62 in the roughly 4.6-mile segment of the highway in which the mirror field would be visible to either west- or east-bound motorists. This portion of the highway is also indicated in **Visual Resources Figure 3** (Heliostat Viewshed). As depicted in the simulation, from KOP 4 the mirror fields would be prominently visible in near middle-ground distance from the highway, for roughly 3 miles of the highway for westbound motorists, and for roughly 1 mile for eastbound motorists.

Visual Contrast. Form contrast of the receiver tower (653-foot height) and other tall power plant structures, particularly the steam generation building (150-foot height) and air-cooled condensers (112-foot height), would be high at near-middle-ground distance. The receiver tower would penetrate the skyline of background mountain ridges. Overall contrast of these prominent structures could be reduced considerably by color treatment to reduce color contrast. However, the anticipated brightness of the solar receiver would strongly accentuate project contrast.

As shown in the simulation, the heliostats are dark-colored, strongly increasing color contrast against the generally light-valued, tan-hued foreground and background. As discussed further under the separate analysis of glare impacts, below, a staff glare expert concluded that the amount of reflective glare from the mirror field of this particular project is not anticipated to be high or greatly problematic for viewers on the highway. This is because the backs of the southward-oriented heliostats in the northern portions of the mirror field are expected to physically mask the slightly lower-elevation, northward-oriented heliostats behind them to a large degree. In other words, the mirror field would tilt away (southward) from viewers on SR 62, and mirrors facing motorists on the road would tend to be screened by the backs of closer, southward facing heliostats. This effect would tend to minimize anticipated contrast due to reflective glare from the mirrors as seen from the roadway to the north.

Not depicted in the simulation are the 75 – foot (220/160 kV transmission tie-line power poles, which would be visible from distances of as little as 2 miles, and would exhibit a moderate level of contrast due to their conspicuous vertical form and intrusion into views of the background valley and mountains, contributing further to overall project

contrast. Their contrast would be heightened by the fact that they would be seen most often in back-lit condition.

Also not depicted in this view is the condition that would be experienced by viewers nearer to the center of the project site. At its nearest point to the highway at the center of the site, the mirror field would be quite close to the highway. For some portion of this road segment, the 14.5 to 20+ foot-high heliostats in the foreground would completely block southward views to Rice Valley from the roadway.

Given the vast extent of the mirror field seen at close distances, and the high contrast of the tall, brightly lit receiver tower, overall project contrast from this portion of the highway would be high.

Visual Dominance. As depicted in the simulation, from this portion of SR 62 the mirror field, with a diameter of 1.6 miles, would be seen at an oblique angle, but would extend across the entire field of view, occupying much of the foreground and near-middle-ground view. Views would be strongly drawn by the bright solar receiver, and high contrast of the tall receiver tower. The vast expanse of the mirror field would be highly prominent. For a portion of this segment, the heliostats would dominate and block views from the highway. Visual dominance from this and similar KOPs would be high.

View Blockage. View blockage would be moderate. The receiver tower would intrude into views of the Rice Valley and mountains behind, and penetrate the ridgeline of those mountains from most viewing angles. The mirror field would obstruct views of the bajada floor that would otherwise be visible, but as seen in the simulation, long-distance views of the Rice Valley in the background would remain an attractive, scenic element visible behind it, as would the Little and Big Maria, Arica and Iron Mountains (depending upon direction of view). However, for some portion of the highway toward the center of the site, the heliostats would also completely block views of the valley to the south. Motorists' views would be enclosed on both sides of the highway for a short distance, the aqueduct to the north, and the heliostats to the south.

Overall visual change for viewers on SR 62 in this and other KOPs in this 4.6-mile segment of highway would be high. The project would demand attention, could not be overlooked, and would be dominant in the landscape.

In the context of the setting's moderately high visual sensitivity, this high level of visual change would represent a significant adverse impact.

Mitigation -

To reduce potentially significant visual impacts from this and similar KOPs, staff recommends Condition of Certification VIS-1, Surface Treatment of Non-Mirror Project Structures and Buildings, including backs of heliostats, to reduce color contrast with the project setting. However, even with available mitigation measures, impacts are anticipated to remain significant.

KOP 5a, 5b – Turtle Mountain Wilderness Elevated Viewpoints

VISUAL RESOURCES Figures 8A and 8B are virtual views created with Google Earth to simulate views toward the project site from ridges within the Turtle Mountain Wilderness Area north of the project site. These schematic simulated views are created from accurately scaled layouts of the project footprint, and have been cropped to emulate a 'normal' camera lens (approximately 40 degree horizontal angle of view). Distances to the project site for the two viewpoints are 2 and 4.8 miles respectively, i.e., representing a range of distance zones from near-middle-ground to background distance. Elevations of viewpoints generally increase with distance, from the foot of the mountains near the project site to the higher ridges at background distance to the north.

KOP 5A - As suggested in **VISUAL RESOURCES Figure 8A**, from elevated middle-ground viewpoints in the Turtle Mountains, the vertical angle of view is such that visual exposure of the mirror fields would exhibit moderate form contrast, as well as strong color and texture contrast with the setting. The latter, however, would vary greatly according to changing brightness levels of diffuse reflected sunlight, as described further under a separate discussion of project glare, below. At this height and distance (2 miles distance, 1,380-foot elevation), the project would appear as more than a thin contrasting line, as it would in views from the valley; however, the angle of view also remains sufficiently oblique that the proportion of the overall view occupied by the mirrors is moderate. The solar receiver tower would present strong vertical form contrast; overall tower contrast could be moderated by surface treatment to reduce color contrast. However, contrast of the tower would be heightened substantially by the brightness of the receiver which, though not blinding, would strongly draw attention and detract from views in the direction of the project. Overall, contrast from this KOP would be high.

Visual Dominance. The project would exert moderately high visual dominance at this distance. The mirror fields occupy a relatively high portion of the overall field of view. Their potentially high contrast under bright reflective conditions would further attract attention. The bright solar receiver would strongly attract attention, tending to dominate attention.

View Blockage. The project heliostat field would block views of the portion of the valley floor that it occupies. At this distance this would represent a moderate portion of the field of view. The solar receiver tower would intrude into background views of the valley and mountains to a moderately high degree due to the continuous brightness of the receiver.

At this distance (approximately 2 miles), overall visual change from elevated viewpoints would be high. In the context of the setting's moderate visual sensitivity, this would represent a potentially significant impact.

KOP 5B - (background) - **VISUAL RESOURCES Figures 8A and 8B** is representative of background distance zone viewpoints within the Turtle Mountains. It is a virtual view of the project footprint from the KOP is roughly 4.8 miles from the project site at an elevation of approximately 2,428 feet or roughly 2,100 feet or more above the project site, at the top of a ridge.

Visual Contrast. As suggested in the figure, at this distance and elevation, visual magnitude of the mirror field has declined substantially from the view at 2 miles. The vertical angle of view remains relatively oblique, and foreground features, particularly intervening ridges of the Turtle Mountains, are beginning to block a part of the view of the project. Form contrast would be moderately low; color and texture contrast would be moderately high. Contrast would range from moderate to moderately high depending upon the brightness of the mirror field, which would vary according to season and time; and the solar receiver. The latter would appear bright, and contrast with the darker visual background.

Visual Dominance. Visual dominance would be moderate. The overall portion of the view occupied by the project is moderate. Dominance would depend to a degree on how much attention the solar receiver and mirror field attract due to brightness. At this distance, the dominance of these bright objects is anticipated to be moderate.

View Blockage. The project heliostat field would block views of the portion of the valley floor that it occupies. At this distance this would represent a moderately low portion of the field of view. The solar receiver tower would intrude into background views of the valley and mountains to a minor degree due to the continuous brightness of the receiver.

Overall, visual change from elevated viewpoints in the Turtle Mountains would decrease with distance. From viewpoints approaching background such as KOP 5B, visual change would be moderate overall. In the context of the setting's moderate visual sensitivity, this would represent an adverse but less-than-significant impact.

Glare Impacts

As discussed in detail in the **Traffic and Transportation** section, based on applicant's Data Response #148, at 1,000 meters (3,281 feet or .62 miles), the distance from the nearest point on SR 62 to the solar receiver tower, reflected luminous flux would be 200 lumens (CH2MHill 2010a). At this level of brightness, staff determined that the solar tower, while not constituting a hazard, would represent a very bright, intrusive and distracting object in the field of view. Staff also concluded that the receiver could be visible as a bright object in the field of view to a distance of ten miles or more. To minimize potential adverse impacts on the solar receiver tower on motorists or aviation activities, cooperating agencies have identified and staff has recommended Condition of Certification **TRANS-7**, which would require the applicant to prepare a Solar Energy Receiver Luminance Monitoring Plan, as described in the Transportation section of this Staff Assessment. However, with this measure, illumination from the solar receiver, although not hazardous, would remain bright, intrusive and distracting to considerable distances.

The majority of mirrors in the solar field, including those nearest SR 62, would point south toward the receiver tower and would not be expected to direct light toward the highway. A smaller proportion of mirrors would face north toward SR 62. These would be largely shielded by the closely mounted heliostats to their north, whose backs face the highway. As a result none of the mirrors can be expected to direct total solar energy towards motorists during normal operation. The potential aggregate brightness of the

mirror field to observers on the ground is thus believed by staff not to be a hazard. However, under some conditions the mirror field could appear as a bright, distracting source of nuisance glare to observers on the ground, including motorists on SR 62, hikers in the Turtle Mountains to the north, and hikers to the south of the project.

Due to the topography of the site and vicinity, which slopes to the south, some mirror surfaces would be visible in viewpoints to the south, as illustrated in **VISUAL RESOURCES Figure 6B**, depicting a simulated view of the project from KOP 3 south of the project site. Under certain conditions these reflections could appear quite bright, varying by time of day and season. The distances between south-facing mirrors and viewpoints such as KOP 3 would reduce the potential impact. Under no circumstance are the solar reflections likely to represent a hazard to ground-level viewers. However, the level of brightness of reflection from the mirror field could at various times remain a bright, distracting nuisance to observers at this distance.

Thus, for purposes of this visual analysis, glare from both the solar receiver and from heliostats would not represent a hazard to viewers on the ground, but would appear as very bright objects in the field of view. They would attract attention, intrude into scenic views, and contribute to a heightening of the overall contrast and visual change of the project, within the middle-ground distance zone in general, and in those locations where mirror-field and solar tower are both visible together, in particular. This heightening of contrast of the project due to solar tower and heliostat brightness would substantially increase its area of potentially significant adverse visual effects. Project glare, particularly from the solar receiver, is thus considered to be a significant and unmitigable impact.

Project Construction Impacts

Construction Staging Area

Proposed project laydown, parking, and other construction-related facilities would be located along a 3,750 (0.72 mile) length of highway frontage south of SR 62 at the north project site boundary. These facilities would occupy the immediate visual foreground of viewers on SR 62 and would represent a high level of adverse visual change for the estimated 30 months of project construction, plus the time required for full restoration of the ground disturbance caused by these temporary facilities. The existing visual foreground of scrub vegetation would be replaced by the visually dominant presence of equipment, construction materials, parked vehicles and disturbed ground. These disturbances in the immediate highway foreground would represent a high level of visual change and a significant adverse impact for the 30 months of construction, and for some period of time until re-vegetation matures. To address this impact, staff recommends **Condition of Certification VIS-3**, Construction Area Buffer Zone, Screening and Restoration. With this measure, short- and long-term impacts from construction area disturbance could be reduced to a less-than-significant level.

Site Grading

Site grading would potentially represent a substantial visual component of the proposed project during construction. Surface disturbance of the proposed site, as in most desert landscapes of the region, would result in high contrast between the disturbed area and

surroundings, due to high contrast between the disturbed soil color and albedo, and the color and albedo of the existing undisturbed, vegetated surface. Furthermore, effectiveness of revegetation in this arid environment is difficult, often of limited effectiveness, and capable of full recovery only over a long-term time frame. Grading impacts would be similar in extent to the completed project itself, and somewhat less in terms of degree of visual contrast and change, and would be replaced by impacts of the heliostats and power plant themselves, analyzed previously. In effect site grading would represent the onset of project impacts at a slightly earlier date, and would immediately be superceded by the more severe project impacts themselves. Consequently, site grading impacts are considered here as a part of the significant project impacts already identified, above.

Indirect Impacts

Indirect impacts could result from proposed telecommunications interconnections between the RSEP and either or both Western's Parker and Blythe substations. Several alternative telecommunication system options are under consideration. These include: 1) optical ground wire (OPGW) – both above ground and underground; 2) microwave (radio-frequency) transmission; 3) power line carrier/broadband-over-Power-Line (BPL) and; 4) all-dielectric, self-supporting (ADSS) optical cable. These are assessed as follows:

Fiber-optic Cable Alternative

Construction equipment associated with installation of fiber optic cable (either above or below ground) could create short-term temporary (1 to 2 days) impacts to viewers along SR 62 and particularly in segments of the existing transmission line that would be visible to Wilderness area visitors. Visual impacts would be minor in comparison to the overall impacts from the RSEP. Buried cable along SR 62 would have no impact on the highway's potential scenic designation. Visual impacts would be less than significant with respect to CEQA.

Microwave Alternative

A 150-tall microwave tower at either of Western's Headgate Rock, Black Point or Blythe substations would be, by its nature, highly visible since the intent is to have line-of-sight communication with the RSEP directly or via an intermediate tower. The Headgate Rock substation is located south of recreational land associated with the Colorado River, north of a residential development, and in proximity to Highway 62. A microwave tower at this location would create adverse, long-term scenic impacts to visitors and residents. The tower would exhibit strong vertical form and line contrast, seen against the open sky above the ridgeline of mountains in the distant background to the west and to the undeveloped desert land to the east. Color contrast of the tower and other structures would vary according to lighting conditions but would generally be moderate with appropriate surface color treatment.

The Blythe substation location would be located in foreground views of large numbers of motorists on Highway I-10. The visual effects of the alternative would be as described above. However, the existing visual setting is compromised by existing development, including an airport, light industrial uses, and agriculture, moderating the scenic sensitivity of the site.

The Black Point substation location would affect far fewer receptors than at other alternative sites. However, the facility would be visible at foreground distance and thus highly prominent as seen from points within the nearby Big Maria Mountains Wilderness Area, as well as from Highway 95 and the Colorado River, elevating visual sensitivity of the site.

Another microwave site option would be located at Cunningham Mountain, which is an existing telecommunications site that likely would have space on an existing tower for a microwave receiver dish. Because this structure already exists, the addition of an additional receiver dish here would have the least impact of the alternatives described.

A proposed intermediate tower site (if needed) would be visible by motorists traveling along SR 62. The tower would exhibit strong vertical form and line contrast, seen against the open sky above the ridgeline of mountains in the distant background. Color contrast of the tower and other structures would vary according to lighting conditions but would generally be moderate with appropriate surface color treatment. The proposed location appears to be one where several other transmission towers already exist. As such, a new tower would contribute further to the dominance of these strong vertical elements within the immediate field of view, in a setting characterized by flat, horizontal topography. View blockage would be moderate. The receiver tower would intrude into views of the Rice Valley and mountains behind, and penetrate the ridgeline of those mountains from some viewing angles.

Staff concludes that the construction of a microwave tower at the Headgate Rock substation, the Black Point substation, and possibly an intermediate microwave tower in the Rice Valley would result in adverse impacts to existing scenic resource values. However, with the inclusion of the following recommended Conditions of Certification or similar, potential visual impacts would be less than significant:

VIS 1 Surface Color Treatment of Non-Mirror Structures: to lower color contrast of the proposed transmission poles and blend with the visual background;

VIS 3 Construction Area Buffer Zone, Screening and Restoration.: to minimize and remediate construction impacts.

The above measures are recommended by staff for all microwave tower alternatives in order to minimize potential visual impacts.

BPL Alternative

No impacts to visual resources would occur under the BPL alternative.

Closure and Decommissioning Impacts and Mitigation

Permanent closures would require the applicant to submit to the Energy Commission a contingency plan or a decommissioning plan. A decommissioning plan would be implemented to ensure compliance with applicable LORS, removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities.

The removal of the existing facility would leave a very prominent visual impact over the entire site due to form, line, color and texture contrast created between graded or disturbed soil areas and undisturbed areas in the region of the project site. This color contrast is due particularly to the removal of the dark color element contributed by normal scrub vegetation cover. After decommissioning, the site would leave a geometric area of form, line, color and texture contrast visible mainly to elevated locations within the adjacent wilderness area. Revegetation of areas in this desert region are difficult but have been implemented by the BLM with success over time. Thus, visual recovery from land disturbance after closure and decommissioning could take place, although over a long period of time, with implementation of an active and comprehensive revegetation program for the site.

CEQA LEVEL OF SIGNIFICANCE

Appendix G of the CEQA Guidelines lists four significance criteria for evaluating aesthetic impacts, as follows:

A. Would the project have a substantial adverse effect on a scenic vista?

No specific designated scenic vista locations were identified in the project viewshed. However, BLM considers that a primary purpose of the CDCA is to recognize and conserve the natural beauty and scenic recreational qualities of the California Desert. As described above, the project viewshed as a whole is considered to be highly scenic, and various KOPs with high levels of viewer concern for scenic values would be affected by the project, including motorists on Highway SR-62, and visitors to the Turtle Mountain and Rice Valley Wilderness Areas (WAs). In the segment of SR 62 nearest the project, the heliostats would block scenic southward views to the Rice Valley. These effects were determined to be potentially significant in the staff analysis presented above. The effect on existing scenic vistas within the project viewshed, both from SR 62 and within the adjoining WAs, are thus considered significant.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The project is adjacent to Highway SR-62, a 140-mile long eligible State Scenic Highway. Much, though not all, of that eligible segment is currently highly pristine, free of substantial man-made visual intrusion, particularly in the segment east of the town of Twenty Nine Palms to the Arizona border. Therefore, visual intrusions into the scenic corridor of the highway could potentially affect its eligibility for nomination as an officially designated State Scenic Highway. However, the proportion of the eligible scenic segment potentially affected by this project would not, in itself, jeopardize possible future scenic designation. No rock outcroppings or other notable geographic features are found on the project site. However, the site is an abandoned airfield of some historic interest. Whether the site is historically significant or eligible for state or national listing is discussed in the Cultural Resources section of this report. However, the remnants of the airfield and abandoned town of Rice are no longer visually evident to the public traveling on SR 62, so integrity of the visual setting is unlikely to be an important contributing factor to its status as an historic property. The project would therefore not

substantially damage scenic resources or adversely affect the eligible State Scenic Highway to a significant degree.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described in the main analysis above, the project could degrade the existing visual character and quality of views from Highway SR-62 and the Turtle Mountain and Rice Valley Wilderness Areas. With staff-recommended Conditions of Certification, these impacts could be reduced, but would remain significant.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Glare is an issue of concern for the Rice Solar Project, primarily due to the potential to accentuate project contrast and aesthetic impact. Physical hazard from project glare is not anticipated. Glare would take three forms: 1) reflected glare from heliostats as seen from certain viewpoints, particularly elevated viewpoints within the Turtle Mountain WA, and ground-level viewpoints within the Rice Valley WA; 2) direct glare from the solar receiver atop the solar receiver tower; 3) night-time light pollution from both facility lighting and possible FAA-required aviation warning lights atop the solar receiver tower. The first two forms of daytime glare would contribute strongly to overall project contrast and have been analyzed in the discussion on project impacts from various KOPs, above. Because of the strong contribution of daytime glare to project visual incompatibility with the setting, and the substantial expansion of the affected area due to the brightness of the solar receiver, daytime glare is considered to represent a significant and unmitigable impact.

Nighttime light pollution impacts would be of particular concern to visitors to the two WAs. The pristine, completely unlit night sky conditions of the existing setting is a part of the attraction of virtually all WAs within the California Desert, and is often cited as a valued attraction of the desert for campers (IDSA, 2010). However, staff concluded that these night light pollution effects of the project, with appropriate mitigation measures as proposed by the applicant and described in staff-recommended Condition of Certification VIS-2, would not be substantial beyond background distances of very roughly 4 or 5 miles. This radius of effect from FAA aviation lighting and illuminated power block, parking and other associated facilities would correspond roughly to the boundary of the adjoining WAs. Therefore, campers within the boundaries of the WAs would be minimally affected. This, together with the fact that the number of such visitors to either WA is believed to be extremely low, leads staff to the conclusion that such effects would be less-than-significant.

Similarly, motorists on SR 62 would experience these adverse light pollution effects within the same general radius of effect. Sensitivity of night time motorists is believed to be moderate for the following reasons: the brightness of auto headlights would be brighter than the project lighting effects being considered; the overall number of night motorists would be relatively low; the experience for such motorists would be of relatively short duration. Consequently, light pollution impacts to nighttime motorists are considered adverse, but less-than-significant. There are no residents in the viewshed to

experience such effects. The potential for cumulative nighttime light pollution impacts is discussed below under the analysis of cumulative impacts.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2 percent smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker Blythe 161 kV transmission line #2.

1. The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments

SETTING AND EXISTING CONDITIONS

The Reduced Acreage Alternative would incorporate the following changes

- It would modify the boundaries of the heliostat field as follows:
- The northern edge of the heliostat field would remain the same as with the proposed project
- The western, southern, and eastern edges would contract slightly towards the center of the smaller heliostat field

As such, the setting for the Reduced Acreage Alternative is the same as for the proposed project with the exception of the changes addressed above.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Project Operation Impacts

Impacts of the Reduced Acreage Alternative would be similar in character but reduced to a small extent and degree compared to the Proposed Project from all KOPs.

From viewpoints on SR 62, differences in the visual effect of this alternative compared to the proposed project would be minor. Outside of a four-mile segment in which the mirror field would be visible to motorists on SR 62, the impacts of the Reduced Acreage Alternative would be identical to those of the proposed project. Within the segment where the mirror field could be seen from SR 62, reduction in impacts to motorists would be minor and inconsequential. Because the northern edge of the mirror field would remain the same, the nearest and most visually prominent portion of the field would remain generally unaltered from the perspective of motorists. The overall extent of the mirror field would be reduced to an almost imperceptible degree. From the perspective of motorists, the field would still appear vast in extent and spatially dominant where visible. Impacts in the roughly 4-mile segment of SR 62 in which the mirror field would be visible to motorists would thus remain significant. Impacts of other features of the project, particularly the solar receiver and tower, would remain the same as under the proposed project.

From viewpoints in the Turtle Mountain and Rice Valley WAs, the reduction in the overall size of the mirror field would reduce the level of visual change attributable to it, but by a small extent. The contrast, dominance, and blockage of views of the desert floor would remain substantially as under the proposed project, that is, moderately high and impacts significant.

Project Construction Impacts

Construction Staging Area

While the dimensions of construction staging have not been described for this alternative, it is assumed that these could be 7.2% smaller than those of the proposed project. These would be essentially the same as under the proposed project, and would be potentially significant for the duration of construction, and potentially longer. To address this impact, staff recommends **Condition of Certification VIS-3**, Construction Area Buffer Zone, Screening and Restoration. With this measure, short- and long-term impacts from construction area disturbance could be reduced to a less-than-significant level.

Site Grading

As described under the propose project, site grading would in effect represent the onset of project impacts at a slightly earlier date, and would immediately be superceded by the more severe project impacts themselves. Consequently, site grading impacts are considered here as a part of the significant project impacts already identified, above.

CEQA LEVEL OF SIGNIFICANCE

Appendix G of the CEQA Guidelines lists four significance criteria for evaluating aesthetic impacts, as follows:

A. Would the project have a substantial adverse effect on a scenic vista?

No specific designated scenic vista locations were identified in the project viewshed. However, BLM considers that a primary purpose of the CDCA is to recognize and

conserve the natural beauty and scenic recreational qualities of the California Desert. As described above, the project viewshed as a whole is considered to be highly scenic, and various KOPs with high levels of viewer concern for scenic values would be affected by the project, including motorists on Highway SR-62, and visitors to the Turtle Mountain and Rice Valley Wilderness Areas. These effects were determined to be potentially significant in the staff analysis of the Reduced Acreage Alternative presented above. The effect on existing scenic vistas within the project viewshed, both from SR 62 and within the adjoining WAs, are thus considered significant.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The project is adjacent to Highway SR-62, a 140-mile long eligible State Scenic Highway. Much, though not all, of that eligible segment is currently highly pristine, free of substantial man-made visual intrusion, particularly in the segment east of the town of Twenty Nine Palms to the Arizona border. Therefore, visual intrusions into the scenic corridor of the highway could potentially affect its eligibility for nomination as an officially designated State Scenic Highway. However, the proportion of the eligible scenic segment potentially affected by this project would not, in itself, jeopardize possible future scenic designation. No rock outcroppings or other notable geographic features are found on the project site. However, the site is an abandoned airfield of some historic interest. Whether the site is historically significant or eligible for state or national listing is discussed in the Cultural Resources section of this report. However, the remnants of the airfield and abandoned town of Rice are no longer visually evident to the public traveling on SR 62. Consequently, integrity of the site's visual setting *per se* is considered unlikely to be an important contributing factor to its status as an historic property at this time. The Reduced Acreage Alternative is therefore not anticipated to substantially damage scenic resources or adversely affect the eligible State Scenic Highway to a significant degree.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described in the main analysis above, the project could degrade the existing visual character and quality of views from Highway SR-62 and the Turtle Mountain and Rice Valley Wilderness Areas. Under the Reduced Acreage Alternative, these effects would be reduced to a small extent, but as discussed in the analysis above, visual impacts to key receptors would remain moderately high, and significant. With staff-recommended Conditions of Certification, these impacts could be reduced further, but would remain significant.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Glare impacts under the Reduced Acreage Alternative would be essentially identical to those described under the proposed project. Glare from the solar receiver would contribute strongly to the overall visual change of the project, generally representing its most visually conspicuous aspect during daytime. Overall, daytime glare impacts of the alternative are considered significant and unmitigable. Nighttime light pollution impacts, including possible FAA-required aviation, are considered less-than-significant with staff-

recommended Condition of Certification VIS-2 due to the anticipated distance of key sensitive viewers within the adjoining WAs to the light source.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

The Desert Center Alternative is evaluated in this SA/DEIS because it would reduce impacts to cultural resources; the RSEP is located on the historic Rice Army Airfield. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

SETTING AND EXISTING CONDITIONS

The North of Desert Center Alternative site is located on primarily private land adjacent to BLM-managed land north of Desert Center. Surrounding BLM lands are currently under study by BLM as part of the Riverside East Solar Energy Study Area (ANL, 2010). The SCE 161 kV transmission line crosses the site from the northwest to southeast corner. Some active agriculture (date palm orchards) occurs along the southeast corner of the project site. The site is roughly 3 miles north of I-10, immediately east of Rice Road (Highway 177), and a short distance east of the Desert Center Airport and the Chuckwalla Valley Raceway, a 400-acre racing facility that is currently under construction and plans to open in 2010. Other features visible in the SR 177 viewshed include Lake Tamarisk, a small rural residential community, and other small residential settlements; extensive areas of cultivated arid agriculture of different kinds; an auto towing and storage yard; ruins of abandoned buildings and extensive evidence of past ground disturbance in the roadway foreground.

Potential sensitive viewer groups within the viewshed of the North of Desert Center Alternative include motorists on I-10 three miles to the south; motorists on SR 177 (Rice Road); residents off of Rice Road in the western Chuckwalla Valley; potential background distance viewers within Joshua Tree National Park, the BLM Chuckwalla Mountains WA and, to a lesser extent due to greater distance (over 10 miles), the BLM Palen-McCoy WA.

The quality of existing views for these different groups varies. From I-10, this western portion of the Chuckwalla Valley retains the typical characteristics of the region in a relatively undisturbed state – distant views of low, jagged-peaked mountain ranges in

the distance over vast, open areas of level valley floor with characteristic sparse creosote scrub vegetation. From I-10 the overall landscape character and visual quality of the affected area of the Chuckwalla Valley is predominantly natural in appearance from this viewpoint, with a few structures at Desert Center and residences of the community of Lake Tamarisk visible. Similarly, views from within the National Park and BLM WAs are predominantly intact with moderately high visual quality.

Within the view corridor seen from SR 177, the character and quality of views is quite different than that from I-10, and also quite different from the proposed project site in its level of scenic intactness and overall visual quality. Though retaining a picturesque and predominantly natural, rural character, views from SR 177 have substantial evidence of human disturbance and a relatively low level of scenic intactness. There are unquestionably segments of the SR 177 north of Desert Center that retain a relatively natural, undisturbed character, but overall this portion of the viewshed is characterized by human settlement and has moderate visual quality.

The quality of views of local residents varies. Some, particularly those west of SR 177, are predominantly intact and include intact, scenic views of the Eagle and Coxscomb Mountains toward the west and north. Others adjoining SR 177 share the views described for that highway above.

In general, overall sensitivity of motorists on both highways is considered to be moderately high. BLM considers that conservation of scenic qualities of the California Desert is a primary purpose of the CDCA Plan and scenic expectations of motorists in the region, a large proportion engaged in recreation-oriented travel, are considered higher than average. Overall sensitivity of viewers within the special designation recreation areas mentioned are considered to be high. Overall sensitivity of local residents is considered to be moderately high.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Project Operation Impacts

With the addition of the project, views of the North of Desert Center Alternative site would change from an natural or pastoral landscape to a substantially more industrial, highly man-altered one. The industrial landscape would include the 1.63-mile diameter field of 15-to-25-foot-tall heliostats, and the 653-foot-tall solar receiver tower and brightly lit solar receiver. There would be no natural features to substantially block the view of the solar facilities on any side. The North of Desert Center Alternative site would be prominently visible from I-10 for both westbound and eastbound traffic. Travelers would be approximately 3 miles south of the project at their nearest point (middle-ground distance), and there is little elevation or natural contouring to block views of the solar field. Given the terrain and view relationships prevailing at this site, views from I-10 would resemble that depicted in **Visual Resources Figure 7B** (simulation from KOP 3), except that the project would be nearer and thus more prominent. Views from residences west of SR 177 would be similar, or could resemble that depicted in **Visual Resources Figure 8B** (simulation from KOP 4) for those residences located within the near-middle-ground distance zone. Overall project visual change from these viewpoints would range from moderately high to high mainly as a function of distance. In the

context of moderately high visual sensitivity of I-10 motorists and local residents, then, these high levels of visual change are considered a significant adverse impact.

The North of Desert Center Alternative site would be potentially visible from the easternmost portions of Joshua Tree National Park, including east-facing portions of the Eagle Mountains at a distance of approximately 5 miles to the west, and from south-facing portions of the Coxscomb Mountains at a distance of approximately 3.5 miles to the north. It would also be visible from the BLM Desert Lily Preserve ACEC, located across SR 177 at a distance of approximately 3 miles; from the Chuckwalla Wilderness at distances of under 5 miles at its nearest point; and the Palen-McCoy Wilderness at distances of over 10 miles. Elevated views at least within middle-ground distance (5 miles or less) would resemble those depicted in **Visual Resources Figure 9** (simulation of views from KOP 5B). As depicted in that KOP, overall visual change from the combination of mirror field, receiver tower, and bright solar receiver would be moderately high. In the context of these viewpoints' moderately high visual sensitivity, this level of visual change is considered a significant adverse impact.

Within the SR 177 highway corridor, the project would be seen in the near foreground and exhibit high overall visual change. In the context of the highway's moderate visual sensitivity, this would represent a potentially significant impact.

Project Construction Impacts

Construction Staging Area

Construction staging has not been described for this alternative. However, if these were located in the foreground of SR 177, their impacts on views of motorists on the highway could be high, extensive and significant. If this alternative is selected, staff thus recommends **Condition of Certification VIS-3**, Construction Area Buffer Zone, Screening and Restoration. With this measure, short- and long-term impacts from construction area disturbance could be reduced to a less-than-significant level.

Site Grading

As described under the propose project, site grading would in effect represent the onset of project impacts at a slightly earlier date, and would immediately be superceded by the more severe project impacts themselves. Consequently, site grading impacts are considered here as a part of the significant project impacts already identified, above.

Comparison to Proposed Project

The North of Desert Center Alternative site would have significant adverse visual impacts to various sensitive viewers identified within its viewshed. However, in contrast to the highly pristine and undisturbed character of the Rice Valley, this portion of the Chuckwalla Valley on the SR 177 corridor, though retaining a picturesque and predominantly rural character, has substantial evidence of human disturbance and a comparatively low level of scenic intactness, particularly as seen from SR 177. Thus, in terms of impacts to the visual quality of its setting, impacts of this alternative from the adjacent highway would be less severe than the proposed project. Similarly, impacts of this alternative to viewers on I-10 would be less than those of the proposed project to viewers on SR-62, although they would remain significant.

However, compared to the proposed project, the North of Desert Center Alternative would affect a considerable number of residents, whose visual exposure to project impacts would be extended and extensive. The project could also affect viewpoints in the easternmost slopes of the Joshua Tree National Park, although use levels in these portions of the park were not known at the time of writing.

CEQA LEVEL OF SIGNIFICANCE

Appendix G of the CEQA Guidelines lists four significance criteria for evaluating aesthetic impacts, as follows:

A. Would the project have a substantial adverse effect on a scenic vista?

No specific designated scenic vista locations were identified in the viewshed of the North of Desert Center Alternative. However, BLM considers that a primary purpose of the CDCA is to recognize and conserve the natural beauty and scenic recreational qualities of the California Desert. As described above, various KOPs with moderately high or high levels of viewer concern for scenic values would be affected by the project, including motorists on Highway I-10, visitors to the easternmost portions of Joshua Tree National Park and Chuckwalla Mountains WA, and local residents. The effect on existing scenic vistas within the project viewshed, both from I-10 and within the adjoining recreational areas, is thus considered significant.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The North of Desert Center Alternative is not located within the viewshed of any designated or eligible State scenic highways. The site is a brownfield site and does not contain notable scenic resources. The North of Desert Center Alternative is therefore not anticipated to substantially damage scenic resources or adversely affect an eligible State scenic highway.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described in the analysis above, the North of Desert Center Alternative could degrade the existing visual character and quality of views from Highway I-10, portions of Joshua Tree National Park, the Chuckwalla Mountains Wilderness Area, and local residents in the western Chuckwalla Valley. With staff-recommended Conditions of Certification, these impacts could be reduced further, but would remain significant.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

As described for the proposed project, glare would take three forms: 1) reflected glare from heliostats as seen from certain viewpoints, particularly elevated viewpoints within the Joshua Tree National Park and Chuckwalla Mountains WA, and to a lesser degree,

ground-level viewpoints on Highway I-10; 2) direct glare from the solar receiver atop the solar receiver tower; 3) night-time light pollution from both facility lighting and possible FAA-required aviation warning lights atop the solar receiver tower.

Under the North of Desert Center Alternative the first type of glare would be similar to that described for the proposed project.

The other two types of glare would also be comparable to those described under the proposed project. Glare from the solar receiver would contribute strongly to the overall visual change of the project, often representing its most visually conspicuous aspect in daytime. However, in comparison to the proposed project, whose viewers are primarily transient motorists, sensitive receptors of the receiver glare would include substantial numbers of nearby residents, whose exposure would be intensive, continuous, and long-term. Overall, daytime glare impacts of the alternative are considered significant and unmitigable.

Nighttime light pollution impacts are considered potentially significant even with staff-recommended Condition of Certification VIS-2. Although existing developments in the viewshed contribute to existing light pollution, addition of FAA aviation strobe lighting atop the receiver tower could represent a disruptive, character-changing element into the foreground of a substantial number of local residents. This impact is considered significant, and unmitigable.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe #2 transmission line at the same location as the proposed project generation tie line. This alternative generation tie line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

SETTING AND EXISTING CONDITIONS

The setting of the SR 62/Rice Valley Road Generation Tie Line Alternative would be as described for the proposed project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Although the impacts of this alternative would be similar to the proposed project, the SR 62/Rice Valley Road Generation Tie Line Alternative would aggravate the adverse

visual effects of the proposed project by placing a highly prominent transmission line and its attendant 75-foot power poles, in a 3.8-mile segment of the immediate Highway SR-62 visual foreground. In the context of the highly sensitive project setting and the highway's State-eligible scenic status, this impact alone would be considered potentially significant.

From a purely visual standpoint this alternative would substantially increase the visual impact of the proposed project. If this alternative is selected, staff recommends adoption of mitigation measures that include an altered alternative tie-line alignment with substantially greater set-back from SR 62. Depending upon the precise alignment selected, such a measure would have the potential to reduce the additional visual impact of the alternative tie-line to less-than-significant levels.

CEQA LEVEL OF SIGNIFICANCE

Appendix G of the CEQA Guidelines lists four significance criteria for evaluating aesthetic impacts, as follows:

A. Would the project have a substantial adverse effect on a scenic vista?

The SR 62/Rice Valley Road Generation Tie Line Alternative would strongly aggravate significant adverse project impacts on scenic views toward the Rice Valley and from SR 62 in general.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

As described previously, no notable scenic resources were identified within the proposed project site. The proposed project would affect a substantial segment of an eligible State scenic highway. However, the highway is not currently designated. Effects of the project alone would not render SR 62 ineligible for official designation as a State scenic highway, but could affect its ultimate eligibility for designation. The SR 62/Rice Valley Road Generation Tie Line Alternative would add incrementally to those adverse effects on the scenic corridor of the highway. The SR 62/Rice Valley Road Generation Tie Line Alternative would not substantially damage scenic resources.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described previously, the proposed project would substantially degrade the existing visual character and quality of the site and its surroundings. The SR 62/Rice Valley Road Generation Tie Line Alternative would substantially increase those already significant adverse effects.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Light and glare effects under this alternative would be identical to those described under the proposed project, and would be significant and unmitigable.

NO PROJECT/NO ACTION ALTERNATIVE

NO PROJECT AND NO ACTION ON RICE SOLAR ENERGY PROJECT TRANSMISSION LINE APPLICATION AND INTERCONNECTION REQUEST. NO CDCA LAND USE PLAN AMENDMENT.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the generation tie line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the proposed generation tie line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the visual impacts from the proposed project would occur and none of the benefits of the proposed project would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

Visual Resources Table 1 - Comparison of Visual Resources Impacts

Potential Impact	Proposed Project	Reduced Acreage Alternative	North of Desert Center Alternative	SR 62/Rice Valley Road Transmission Line Alternative	No Action Alternative
Appearance during construction	Adverse impacts would be mitigated	Minor, insignificant reduction in overall impact.. Would be mitigated	Adverse impacts would be mitigated	Somewhat greater than proposed project due to transmission towers in highway foreground. Adverse, would not be mitigated.	No potential impact
Appearance from SR 62 (daytime view and night lighting)	Adverse impact, would not be fully mitigated.	Minor, insignificant reduction in overall impact. still adverse and unmitigable	No impact to SR 62. Impacts to I-10, SR 177 less severe than Proposed Project effects on SR 62. Impacts to residents in SR 177 corridor adverse, would not be mitigated.	Somewhat greater than proposed project due to transmission towers in highway foreground. Adverse, would not be mitigated.	No potential impact
Appearance viewing points in adjacent WAs	Adverse impact, would not be fully mitigated.	Minor, insignificant reduction in overall impact., still adverse and unmitigable	Similar to Proposed Project. Impacts to adjacent portions of Joshua Tree NP.	Same as Proposed Project	No potential impact
Glare	Adverse impact, would not be mitigated.	Adverse impact, would not be mitigated.	Similar impacts as Proposed Project to motorists. Greater impacts to nearby residents. Adverse, would not be mitigated.	Same as Proposed Project.	No potential impact
Appearance during decommissioning	Adverse impact, would be mitigated	Adverse impact,. Would be mitigated	Adverse impact. Would be mitigated		No potential impact

CUMULATIVE IMPACTS

GEOGRAPHIC SCOPE OF ANALYSIS

Cumulative impacts could occur if implementation of the Rice Solar Energy Project would combine with those of other local or regional projects. The Rice Solar Energy Project is potentially associated with two types of cumulative impact:

1. cumulative impacts within the immediate, local project viewshed, essentially comprising foreseeable future projects in the Chuckwalla Valley;
2. cumulative impacts of foreseeable future solar and other renewable energy projects within the southern California Colorado (Sonoran) Desert, or other broad regional basin of the project's affected landscape type. The widest applicable basin of cumulative effect would include all of the southern California desert, or the Sonoran and Mojave desert landscapes extending into neighboring states. This analysis, focusing on regional effects of renewable projects only, is considered appropriate because the potential cumulative contribution of all other types of permissible development within this region is comparatively minor, and is dwarfed by the potential cumulative effect of renewable projects.

EXISTING CUMULATIVE CONDITIONS

Existing Projects in the Project Area

Existing cumulative projects potentially affecting the local project viewshed include the ATSF Arizona-California Railroad line and the Colorado River Aqueduct. As described in detail in the project impact analysis above, these projects, though paralleling SR 62 at close distance and quite evident, have had limited effects on the most valued portions of the project viewshed and scenic views. With these present, the viewshed remains relatively intact, natural in character, and highly scenic.

Existing Renewable Projects in the California Desert

The RSEP is among the first of a large number of existing renewable project applications in the southern California desert. As such, past and present projects have had a negligible region-wide cumulative impact on regional visual resources.

FUTURE FORESEEABLE PROJECTS

Foreseeable Projects in the Project Area

Foreseeable projects within the project viewshed primarily include the proposed Ward Valley solar thermal power plant, that could potentially lead to development of up to five projects similar in scope and size to RSEP using concentrated solar technology on up to 8,000 – 10,000 acres as proposed roughly 5 miles northwest of the project site in immediate proximity to SR 62. Other foreseeable projects in close proximity to SR 62 in the project vicinity include the Clean Air Solar II 900 MW solar project (no technology specified), a potentially 13,000-acre project located 11 miles northwest of the project site; and the Cadiz Lake solar thermal power plant, a potentially 35,639-acre, 1,000 MW facility 26 miles west of the project site.

Taken together, these four projects including the proposed project would result in substantial man-made visual intrusion into a majority of the remaining visually intact and scenic portions of SR 62, potentially rendering it ineligible for designation as a State scenic highway. These four projects would affect over 50 miles of the most scenically intact portions of that highway, altering it from a natural, scenically intact desert landscape into one characterized by the strong visual influence of these industrial facilities. In addition, cumulative night light pollution impacts in the project area could become cumulatively considerable. Therefore, the anticipated operational visual impacts of the RSEP in combination with past and foreseeable future projects in the local viewshed of Rice Valley and of SR 62 in the project vicinity are considered potentially significant and unmitigable.

Foreseeable Renewable Projects in the California Desert

As shown on **Cumulative Impacts Figures 1 and 2** and **Cumulative Impacts Table 1A and 1B**, solar and wind applications for use of BLM lands cover approximately 1 million acres in addition to proposed projects on State and private land in the California Desert Conservation Area.

The analysis of cumulative impacts is not necessarily restricted to the immediate viewshed of a project, and the need for cumulative analysis over a broad geographic area may often be determined by the affected resource itself. In this case the affected resource is the unique and highly valued landscape type of which the project site forms a small part – the landscape of the southern California and Sonoran Desert. The Sonoran Desert and California Desert Conservation Area (CDCA) within which the Rice Solar Energy Project is located are a unique and highly valued scenic resource of national importance, as reflected by the presence of three national parks and numerous Wilderness Areas within the CDCA boundaries. **Cumulative Impacts Table 1** identifies 63 solar projects and 62 wind project applications with a total overall area of over one million acres within the CDCA, which is indicative of the interest in, and potential impact on, public lands for renewable energy generation at a regional level. This figure does not include renewable projects within the Nevada and Arizona portions of the Sonoran and Mojave Deserts. Of the 62 wind applications in the California Desert District, only five of the applications are for wind development; the remaining proposals are for site testing and monitoring. BLM's experience is that a small percentage of applications for site testing have resulted in wind development proposals. In regards to the solar applications filed with BLM in California, only approximately 10 percent of the proponents have prepared acceptable detailed Plans of Development required by BLM to begin a NEPA analysis.

Although it is not likely that all of the future solar and wind development projects proposed in the region would be constructed, it is reasonable to assume that some of them will. With this very high number of renewable energy applications currently filed with BLM, the potential for profound widespread cumulative impacts to scenic resources within the southern California desert is clear. These cumulative impacts could include a substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape. In particular, the number of current renewable applications before the BLM and Energy Commission that could potentially be prominently visible

from the desert region's major highways is proportionally high. Likewise, the cumulative length of potentially affected highways also appears proportionately high. Because these highways are the location from which the vast majority of viewers experience the California desert, this potential effect is of concern to staff. Viewed in the cumulative context of the Southern California desert region as a whole, the potential visual impacts of renewable energy projects are thus considered to be cumulatively considerable, potentially significant and unmitigable.

Overall Conclusion – Cumulative Impacts

The anticipated operational visual impacts of the RSEP in combination with past and foreseeable future projects in the local viewshed of Rice Valley and of SR 62 in the project vicinity are considered potentially significant and unmitigable, particularly to motorists on SR 62, and to visitors to the area's many wilderness areas and Joshua Tree National Park. Anticipated cumulative operational impacts of past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable, potentially significant and unmitigable considering the substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape.

Visual Resources Table 1 - Comparison of Visual Resources Impacts

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COMPLIANCE WITH LORS

**VISUAL RESOURCES Table 2
Project Compliance with Laws, Ordinances, Regulations, and Standards (LORS)**

LORS Source	LORS Policy and Strategy Descriptions	Consistency Determination	Basis of Determination
Federal			
BLM			
The California Desert Conservation Area(CDCA) Plan	Multiple-Use Class M (Moderate Use) is based upon a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.	YES	The federal land that the RESP would occupy is designated as Multiple Use Class M in the CDCA Plan. The CDCA Plan indicates that solar electric generation plants may be allowed in Class M areas after NEPA requirements are met.
State			
Department of Transportation			
California Scenic Highway Program and System (California Streets and Highways Code, Division 1, Chapter 2, Article 2.5, Section 260 et seq.)	Protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways.	NO	The RSEP solar receiver tower would be a substantial visual intrusion in the otherwise natural landscape viewed from State Route 62. The more pristine the natural landscape and the less affected by intrusions, the more likely an eligible highway that is nominated for designation will qualify as scenic. The RESP could jeopardize the potential for State Route 62 to be designated as a State Scenic Highway
Local			
Riverside County			
Riverside County General Plan (2008), Land Use Element Policy LU 6.4	Retain and enhance the integrity of existing residential, employment, agricultural, and open space areas by protecting	NO	The RSEP solar receiver tower would be a visually dominant and highly intrusive

	them from encroachment of land uses that would result in impacts from noise, noxious fumes, glare, shadowing, and traffic.		structure in an otherwise mostly natural landscape. The brightness of the solar receiver atop the tower would attract attention.
Riverside County General Plan, Land Use Element Policy LU 8.1	Provide for permanent preservation of open space lands that contain important natural resources, hazards, water features, watercourses, and scenic and recreational values.	YES	The Riverside County General Plan does not specifically identify the RSEP site as containing important scenic values.
Riverside County General Plan, Land Use Element Policy LU 13.1	Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public.	NO	The landscape setting of the RSEP scenic vistas of desert and distant mountains. The RSEP would be a visually dominant and highly intrusive feature of industrial character in the otherwise predominantly natural landscape.
Riverside County General Plan, Land Use Element Policy LU 13.3	Ensure that the design and appearance of new landscaping, structures, equipment, signs, or grading within Designated and Eligible State and County scenic highway corridors are compatible with the surrounding scenic setting or environment.	NO	The RSEP solar receiver tower would be a substantial visual intrusion in the otherwise natural landscape viewed from State Route 62 and is not compatible with the scenic values of the surrounding setting. The RSEP could jeopardize the potential for State Route 62 to be designated as a State Scenic Highway
Riverside County General Plan, Land Use Element Policy LU 13.4	Maintain at least a 50-foot setback from the edge of the right-of-way for new development adjacent to Designated and Eligible State and County Scenic Highways.	YES	The project would be set back a minimum of 50 feet from SR 62.
Riverside County General Plan, Land Use Element Policy LU 13.5	Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground.	NO	According to the AFC, power for construction of the project will come from extending an existing overhead 12-kV distribution line west along the south shoulder of State Route 62 about 1 mile into the RSEP site.

			<p>The proposed generation tie-line would be visible from State Route 62.</p> <p>Under the SR 62/Rice Valley Road Generation Tie Line Alternative, the tie-line would be sited adjacent to the immediate foreground of State Route 62.</p>
Riverside County General Plan, Land Use Element Policy LU 13.7	Require that the size, height, and type of on-premise signs visible from Designated and Eligible State and County Scenic Highways be the minimum necessary for identification. The design, materials, color, and location of the signs shall blend with the environment, utilizing natural materials where possible.	YES	Signage for the RSEP would be the minimum necessary for identification and would be designed to blend with the environment.
Riverside County General Plan, Land Use Element Policy LU 13.8	Avoid the blocking of public views by solid walls.	YES	The RSEP does not include solid walls that would block public views.
Riverside County General Plan, Land Use Element Policy LU 24.8	Require that industrial development be designed to consider their surroundings and visually enhance, not degrade, the character of the surrounding area.	NO	The landscape setting of the RESP has a mostly natural character. The RESP would be a visually dominant and highly intrusive feature that would degrade the scenic qualities of its surroundings.
Riverside County General Plan, Circulation Element Policy LU 19.1	Preserve scenic routes that have exceptional or unique visual features in accordance with Caltrans Scenic Highways Plan.	NO	The RSEP would represent a substantial visual intrusion into the otherwise natural landscape viewed from State Route 62. The high level of scenic intactness of this portion of the eligible scenic highway makes its view corridor exceptional. The RSEP could jeopardize the potential for State Route 62 to be designated as a State Scenic Highway
Riverside County	Identify and conserve the skylines,	NO	The RSEP would be a

General Plan, Multipurpose Open Space Element Policy LU 21.1	view corridors, and outstanding scenic vistas within Riverside County.		visually dominant and highly intrusive feature in a highly intact, scenic natural landscape. The project would dominate a large proportion of views of the Rice Valley as seen from SR 62.
Riverside County General Plan, Multipurpose Open Space Element Policy LU 22.1	Design developments within designated scenic highway corridors to balance the objectives of maintaining scenic resources with accommodating compatible land uses.	N/A	SR 62 is not a designated scenic highway. However, the RSEP has the potential to jeopardize designation of this eligible state scenic highway.
Riverside County General Plan, Multipurpose Open Space Element Policy LU 22.4	Impose conditions on development within scenic highway corridors requiring dedication of scenic easements consistent with the Scenic Highways Plan, when it is necessary to preserve unique or special visual features.	N/A	SR 62 is not a designated scenic highway. However, if SR 62 were to be nominated by the County for State scenic highway status, due to the physical nature of the RSEP site and surrounding area it would not be possible to establish a scenic easement that would effectively avoid the visual impact of the project on the highway corridor.
Riverside County General Plan, Multipurpose Open Space Element Policy LU 22.5	Utilize contour grading and slope rounding to gradually transition graded road slopes into a natural configuration consistent with the topography of the areas within scenic highway corridors.	YES	The RSEP site is primarily flat. Substantial grading would not be required in order to construct or operate the project.
Riverside County Ordinance 348 Land Use Ordinance Section 15.2 a	One-family residences shall not exceed 40 feet in height. No other building or structure shall exceed 50 feet in height, unless a greater height is approved pursuant to Section 18.34 of this ordinance. In no event, however, shall a building exceed 75 feet in height or any other structure exceed 105 feet in height, unless a variance is approved pursuant to Section 18.27 of this ordinance.	NO	The RSEP solar receiver tower would be 653 feet in height, six times higher than the maximum allowed without a variance.

San Bernardino County			
San Bernardino County General Plan (2007), Open Space Element Goal OS 5.	The County will maintain and enhance the visual character of scenic routes in the County.	NO	SR 62 in the project viewshed is a designated County scenic route under Policy OS 5.3, as well as an eligible state scenic highway. The project would not maintain or enhance the visual character of the route's visual corridor.
Policy OS 5.2	Development along scenic corridors will be required to demonstrate through visual analysis that proposed improvements are compatible with the scenic qualities present.	NO	The present visual analysis concludes that the proposed project is not compatible with the scenic qualities present in the corridor.
Policy OS 5.3	<p>The County desires to retain the scenic character of visually important roadways throughout the County. A "scenic route" is a roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County. Therefore, the County designates the following routes as scenic highways and applies all applicable policies to development on these routes (see Figures 2-4A through 2-4C of the Circulation and Infrastructure Background Report):</p> <p>DESERT REGION:</p> <p>p. State Route 62 (Twentynine Palms Highway) . . . from the Riverside County line northeast to state line.</p>	NO	<p>The proposed project would introduce the bright glare of the solar receiver into the view of the Rice Valley as seen from SR 62.</p> <p>The preponderance of SR 62 within the project viewshed would lie in the San Bernardino County portion of the highway.</p>

NOTEWORTHY PUBLIC BENEFITS

No noteworthy public benefits in the area of visual resources were identified.

MITIGATION MEASURES/PROPOSED CONDITIONS OF CERTIFICATION/APPROVAL

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce significant adverse impacts to less than significant level and to conform with LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for U.S. Bureau of Land Management (BLM's) and Western Area Power Administration's (Western's) analysis that can be considered in their Records of Decision.

SURFACE TREATMENT OF NON-MIRROR PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat all non-mirror surfaces of the outermost row or rows (as needed) of heliostats in the northern 180-degree circumference of the mirror field; and all other project structures and buildings visible to the public such that: a) their colors minimize visual intrusion and contrast by blending with their existing visual background: in the case of lower buildings and structures, bajadas and mountain slopes as seen from the highway; in the case of foreground generation tie line towers, the valley floor; in the case of the solar tower, the sky; b) colors and finishes of all components, including mirror support structures, tie line poles and conductors, do not create glare or specular reflection; and c) their colors and finishes are consistent with local policies and ordinances. The generation tie line conductors and arms shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive. This measure shall include coloring of security fencing with vinyl or other non-reflective coating to blend visually to the greatest feasible extent with the background soil.

The project owner shall submit for CPM review and approval, a specific Surface Treatment Plan that will satisfy these requirements. The treatment plan shall include:

- A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;
- B. A list of each major project structure, building, tank, pipe, mirror support, and wall; the generation tie line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;
- C. One set of color brochures or color chips showing each proposed color and finish;
- D. A specific schedule for completion of the treatment; and

E. A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by the CPM. Subsequent modifications to the treatment plan are prohibited without CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture, the project owner shall submit the proposed treatment plan to the CPM for review and approval and simultaneously to Riverside County for review and comment. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a plan with the specified revision(s) for review and approval by the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to the CPM for review and approval.

Prior to the start of commercial operation, the project owner shall notify the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit to each one set of electronic color photographs from the same key observation points identified in (d) above. The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a) the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.

TEMPORARY AND PERMANENT EXTERIOR LIGHTING

VIS-2 To the extent feasible and consistent with safety and security considerations, the project owner shall design and install all temporary and permanent exterior lighting so that:

- A lighting does not cause excessive reflected glare
- B lighting does not illuminate the nighttime sky either directly or indirectly
- C mounting heights of all lighting fixtures will not allow light to fall on the mirror surfaces of the solar thermal power generation reflector systems in any night time position
- D illumination of the project and its immediate vicinity is minimized as to times of use and extent
- E lighting on the solar receiver tower shall be the minimum needed to satisfy safety and security concerns.

Permanent night lighting shall comply with all applicable standards, best practices and regulations including specifically, the following Illuminating

Engineering Society documents for Lighting Zone 1 per CEC-400-2008-017-CMF-Rev I:

- RP-33-99 Lighting for Exterior Environments
- DG-13-99 Outdoor Lighting
- TM-10-00 Addressing Obtrusive Light (Urban Sky Glow and Light Trespass) in Conjunction with Roadway Lighting
- TM-15-07 Luminaire Classification System for Outdoor Luminaires

Verification: At least 90 days prior to ordering any exterior lighting, the project owner shall contact the CPM to show compliance with all of the above requirements. This shall include, but not be limited to, final lighting plans, fixture and control schedules, fixture and control cut sheets and specifications, a photometric plan showing vertical and horizontal footcandles at all property lines to a height of 20 feet, and the proposed time clock schedule or occupancy sensor programming.

Prior to construction and prior to commercial operation, the project owner shall notify the CPM that the installation of the temporary and permanent lighting has been completed and is ready for inspection. If after inspection the CPM notifies the project owner that modifications to the lighting are needed, within 90 days after receiving the notification the project owner shall implement the modifications and notify the CPM when the modifications are completed and ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide the CPM with a complaint resolution form as specified in the Compliance General Conditions, including a proposal to resolve the complaint, and a schedule for implementation of the proposed resolution. The project owner shall notify the CPM within 48 hours after completing the resolution of the complaint. A copy of the complaint resolution form report shall be submitted to the CPM within 30 days and included in the Annual Report.

CONSTRUCTION AREA BUFFER ZONE, SCREENING AND RESTORATION.

VIS-3 To address potential impacts to motorists on SR 62 during and after the period of project construction, all construction laydown, administration, parking and other construction-related facilities shall be setback from SR-62 a minimum of 250 feet, or greater where feasible. The soil surface and vegetation of the set-back area south of the highway shall remain undisturbed to the maximum extent feasible, except to accommodate the minimum practical number of access drive-ways, or to enhance existing native vegetation. All construction-related areas shall be screened from the highway by 8'-tall opaque screening of tan or brown color to blend with the surrounding soil surface to the extent feasible.

All construction-related lighting shall be shielded, downwardly directed, with all direct lighting limited to within the project site.

Following completion of construction, the project owner shall provide a re-vegetation plan describing how the staging site will be restored, and the buffer zone area enhanced, following construction. The plan shall call for beginning of restoration of the site within the shortest feasible time following completion of construction. Under the plan, all disturbed areas shall be graded to conform to surrounding natural contours, and re-vegetated with locally native species.

Verification: At least 90 days prior to start of construction, the project owner shall present to BLM's Authorized Officer and the CPM a revised staging area site plan including a set-back from SR-62 of at least 250 feet. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM. The project owner shall not begin construction until receiving CPM approval of the revised plan.

At least 60 days prior to start of operation, the project owner shall present to the CPM a restoration and revegetation plan for the staging and buffer areas. If the CPM determines that the plan requires revision, the project owner shall provide to the CPM a revised plan for review and approval by the CPM. The project owner shall not begin operation until receiving CPM approval of the revised plan.

CONCLUSIONS

BLM, Western and staff have analyzed visual resource-related information pertaining to the proposed RSEP. With respect to CEQA, staff concludes that the proposed project, with all staff-recommended conditions of certification, would still have significant and unavoidable adverse direct and cumulative visual impacts. With respect to CEQA, staff concludes that the proposed project, after implementing all staff-recommended conditions of certification, would still have significant and unavoidable adverse direct and cumulative visual impacts from several Key Observation Points including:

- Highway SR-62 to background distances of 5 miles or more, due particularly to solar receiver brightness, as well as high visual contrast and incompatibility of character of mirror arrays seen at foreground and middle-ground distances; and
- Portions of the Turtle Mountain Wilderness Area at distances of roughly 5 miles or under due to the combination of mirror-field visibility, mirror-field glare, and solar receiver glare.

Staff has recommended **Traffic and Transportation** Conditions of Certification **TRANS-6**, Heliostat Positioning Plan, and **TRANS-7**, Power Tower Monitoring Plan, to ensure that potential glare from the project is minimized to the maximum extent possible and does not pose a health and safety risk. However, staff concludes that with these measures glare from the project, particularly from the solar receiver, would remain a bright, intrusive source of sub-hazardous nuisance glare to viewers on Highway SR 62 and in other locations to background distances within a range of 5 miles or more.

Impacts of the Reduced Acreage Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. However, the

degree and extent of those impacts would be somewhat less than those of the Proposed Project.

Impacts of the North of Desert Center Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. Though affecting a less pristine viewshed than the proposed project, this alternative would also strongly affect a substantial number of nearby residents.

Impacts of the SR 62/Rice Valley Road Generation Tie Line Alternative would have the same significant unavoidable visual impacts as the proposed project, and in addition would substantially increase those impacts by introducing a new line into 4.5 miles of the immediate visual foreground of SR 62.

The anticipated visual impacts of the Proposed Project, Reduced Acreage, North of Desert Center and SR 62/Rice Valley Road Generation Tie Line Alternatives, in combination with past and foreseeable future local projects in their local vicinity, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and potentially significant.

Along SR 62, there are four proposed solar energy projects including RSEP that would result in a substantial man-made visual intrusion into a majority of the remaining visually intact and scenic portions of SR 62, potentially rendering it ineligible for designation as a State scenic highway. These four projects would affect over 50 miles of the most scenically intact portions of that highway, altering it from a natural, scenically intact desert landscape into one characterized by the strong visual influence of these industrial facilities. In addition, cumulative night light pollution impacts in the project area could become cumulatively considerable. Therefore, within the local viewshed of Rice Valley and of SR 62 in the project vicinity, the anticipated operational visual impacts of the RSEP in combination with past and foreseeable future projects are considered potentially significant and unmitigable, particularly to motorists on SR 62, and to visitors to the area's many wilderness areas and Joshua Tree National Park.

Within the southern California desert, anticipated cumulative operational impacts of past and foreseeable future region-wide projects are considered cumulatively considerable, potentially significant and unmitigable considering the substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape.

All action alternatives studied, with staff-recommended conditions of certification, would not conform with a number of applicable local Laws, Ordinances, Regulations and Standards (LORS) of San Bernardino and Riverside Counties pertaining to preservation of scenic resources and scenic highway view corridors, as described under the Compliance with LORS section of this analysis.

REFERENCES

Argonne National Laboratories (ANL), 2010. Solar Energy Development Programmatic EIS Information Center. Web Site: <http://solareis.anl.gov/eis>

CH2MHill 2010a – CH2M Hill/D. Davy (tn 55813). Applicant's Response to CEC Staff Data Requests 1 to 168, dated 3/08/10. Submitted to CEC/J. Kessler on 3/09/10. County of San Bernardino, 2007. General Plan

County of Riverside, 2008. General Plan

International Dark Sky Association (IDSA), 2010. Organization web site, <http://www.darksky.org>

SR 2009a – Solar Reserve/ T. Georgis (tn: 53723). Application for Certification. Dated 10/13/09. Submitted to CEC/Docket Unit on 10/21/09.

USDOI, 2002. Northern and Eastern Colorado Plan Amendment

USDOI, 1980 as amended (1999). California Desert Conservation Area Plan.

RICE SOLAR FIGURES KEY

Figure	Source	Title	
1	WK	Existing Landscape Setting (Photos)	
2	AFC Fig 5.13-1	Project Setting, Key Observation Points (KOPs) and Solar Receiver Tower Viewshed	
3	Data Response #157	Heliostat Field Viewshed	
4a and b	AFC 5.13-6	KOP 1	
5a and b	AFC 5.13-7	KOP 2	
6a and b	AFC 5.13-8	KOP 3	
7a and b	Data Response #157-2	KOP 4	
8a and b	WK REVISED -7-9-10	KOP 5A and KOP 5B	
9	AFC 2.2-1	Project Layout	
10	AFC 2.2-3A	Project Elevation	
11	(Rice Figure 12 DR 156)	Heliostats	
12	AFC 3.1-4	Typical Generation Tie Line Tower	

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APPENDIX VR-1

STAFF'S VISUAL RESOURCES EVALUATION METHODOLOGY

Staff evaluates the visual characteristics of the existing physical setting, the proposed project, the circumstances affecting the viewer, and the degree of visual change that a proposed project may introduce using the elements generally accepted criteria for determining substantial environment impact significance identified below.

ELEMENTS OF THE METHODOLOGY

Key Observation Points

Staff evaluates the existing visible physical environmental setting from a fixed vantage point, called a *key observation point* (KOP) that provides a view of the visual change introduced by the proposed project to the view from that KOP. The view as seen from the KOP is referred to as the *viewshed*. Staff uses a KOP¹ to represent a location(s) from which to conduct detailed analyses of the proposed project and to obtain existing condition photographs and prepare photo simulations. KOPs are selected to be representative of the most critical viewshed locations from which the project would be seen. Because it is not feasible to analyze all the views in which a proposed project would be seen, it is necessary to select a KOP that would most clearly display the visual effects of the proposed project. A KOP may also represent primary viewer groups that would potentially be affected by the project. In addition to KOP photo(s), staff reviews landscape character photos that help provide a visual overview of a project site, its vicinity, and the selected KOP area, as appropriate. Prior to application submittal, staff participates in the selection of appropriate KOP(s) for the analysis.

LORS Consistency

Energy Commission staff considers federal, state, and local laws, ordinances, regulations, and standards (LORS) relevant to aesthetics or protection and preservation of visual sensitive resources. Conflicts with such LORS can constitute significant visual impacts. For example, visual staff examines land use planning documents, such as a local government's General Plan, Specific Plan, and zoning ordinances applicable to the project site and surrounding area to gain insight as to the type of land uses intended for the area, and the guidelines given for aesthetics, or protection and preservation of visual sensitive resources.

California Environmental Quality Act Guidelines

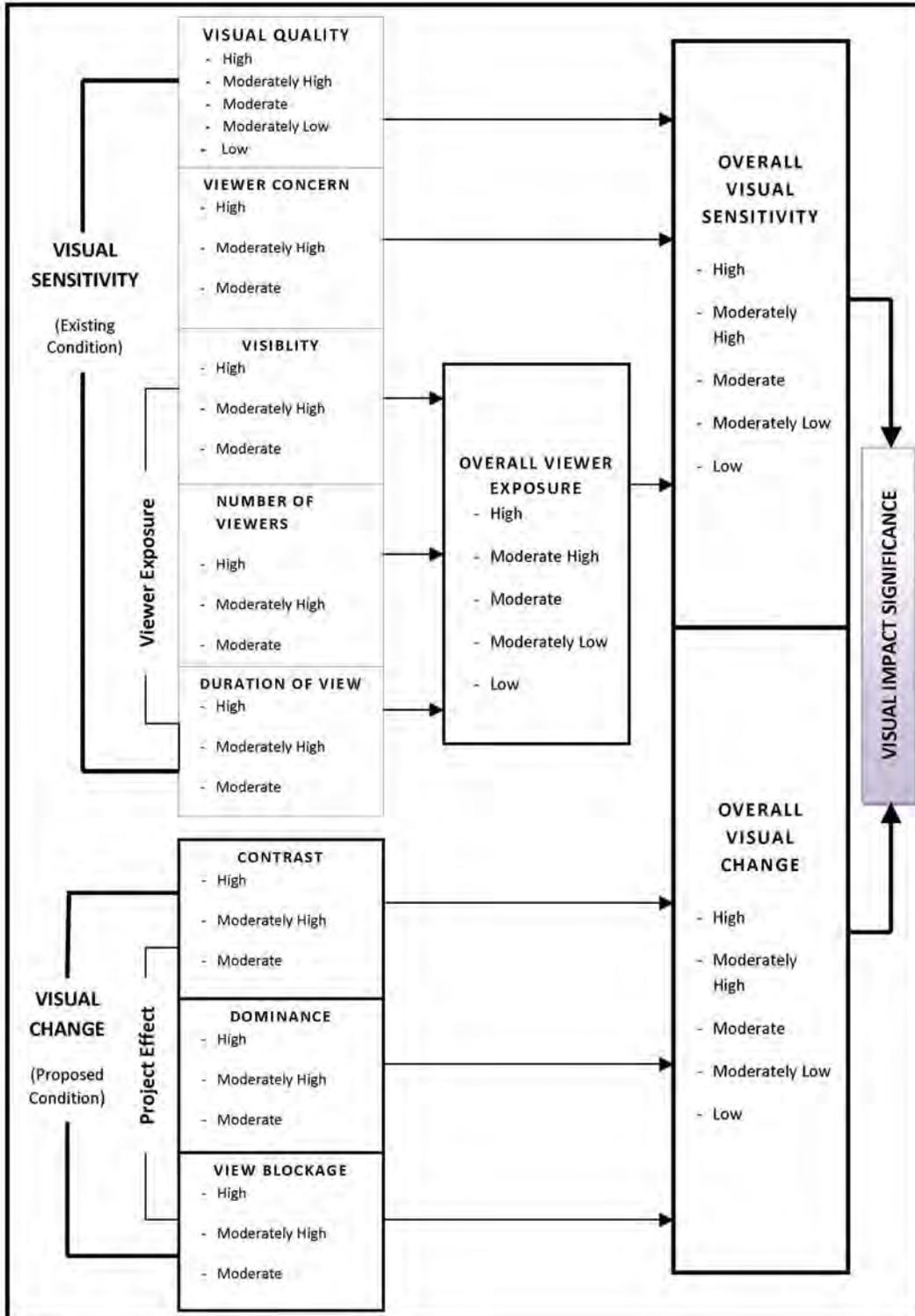
The CEQA Guidelines define a "significant effect on the environment" to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including . . . objects of historic or aesthetic significance" (California Code of Regulations, Title 14, section 15382).

¹The use of KOPs or similar view locations is common in visual resource analysis. The U.S. Bureau of Land Management (USDI BLM 1986a, 1986b, 1984) and the U.S. Forest Service (USDA Forest Service 1995) use such an approach.

Appendix G Environmental Checklist Form of the CEQA Guidelines, under “Aesthetics,” lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

- A. Would the project have a substantial adverse effect on a scenic vista?
- B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Staff answers each of the four checklist questions for the proposed project, including any related facility such as a transmission line or gas pipeline, for both construction and operation phases.



Staff Visual Assessment Methodology

VISUAL RESOURCES - FIGURE 1

Rice Solar Energy Project - Existing Landscape Setting (Photos)



a. View from SR 62 looking south over site, to Rice Valley, Big Maria Mountains



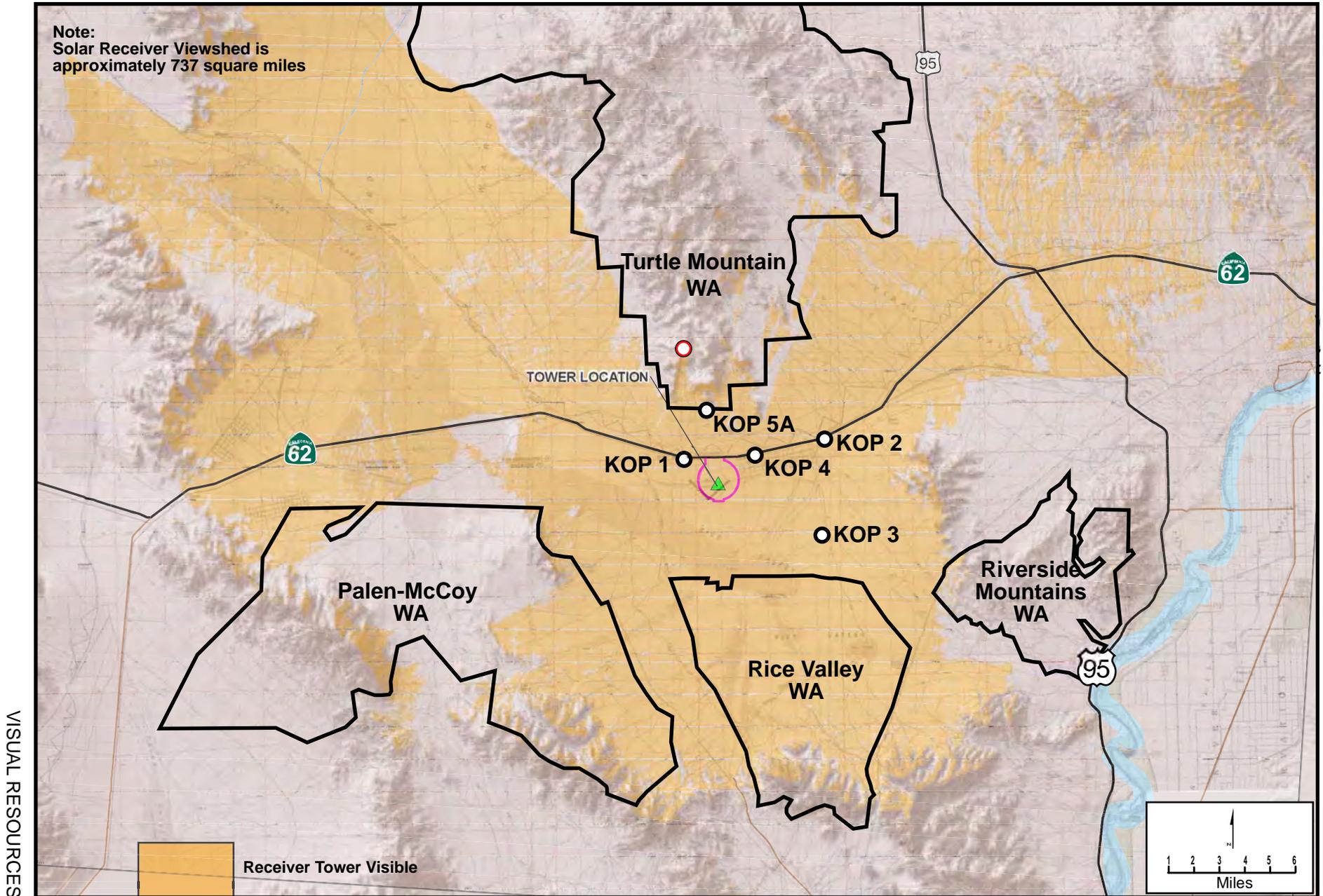
b. View north from SR 62: ATSF rail line and rock graffiti; Colorado Aqueduct; Turtle Mountains



c. View south from SR 62 over abandoned Town of Rice

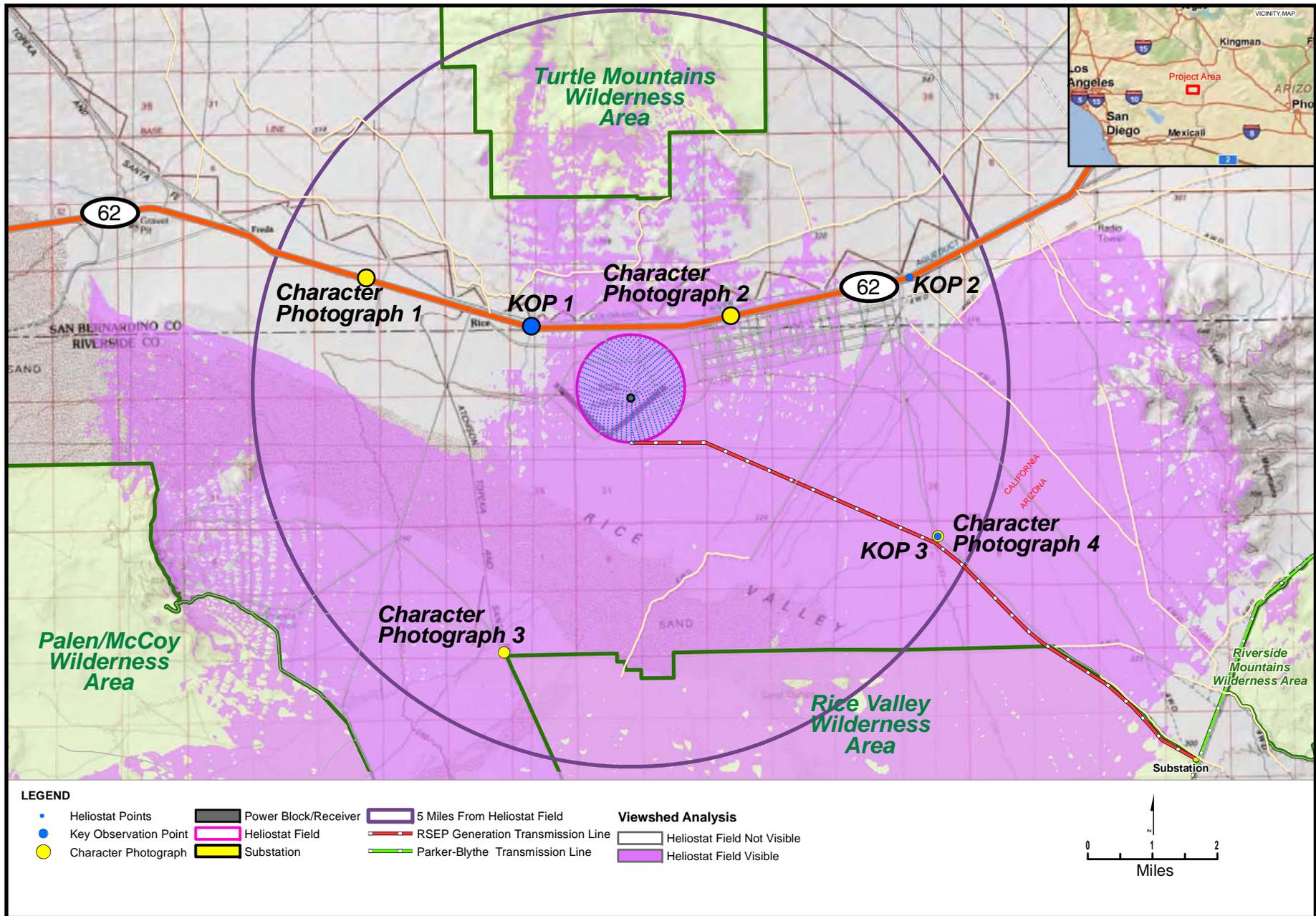
VISUAL RESOURCES - FIGURE 2

Rice Solar Energy Project - Project Setting, Key Observation Points and Solar Receiver Tower Viewshed



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 3
 Rice Solar Energy Project - Heliostat Field Viewshed



VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 4A and 4B
Rice Solar Energy Project - KOP 1 - Eastbound State Route 62

KOP 1 - Existing view from eastbound State Route 62, looking southeast toward Rice Valley and the Rice Solar Energy Project



KOP 1 - Simulated view from eastbound State Route 62, looking southeast with Rice Valley and the Rice Solar Energy Project in the view



VISUAL RESOURCES - FIGURE 5A and 5B
Rice Solar Energy Project - KOP 2 - Westbound State Route 62

KOP 2 - Existing view from westbound State Route 62, looking southwest toward Rice Valley and the Rice Solar Energy Project



KOP 2 - Simulated view from westbound State Route 62, looking southwest with Rice Valley and the Rice Solar Energy Project in the view



VISUAL RESOURCES - FIGURE 6A and 6B

Rice Solar Energy Project - KOP 3 - Northbound Rice Road/Rice Valley Wilderness Area

KOP 3 - Existing view from the intersection of the transmission line and an off-highway vehicle road, looking northwest toward the Rice Solar Energy Project



KOP 3 - Simulated view from the intersection of the transmission line and an off-highway vehicle road, looking northwest with the transmission line and the Rice Solar Energy Project in the view



VISUAL RESOURCES - FIGURE 7A and 7B
Rice Solar Energy Project - KOP 4 - Westbound State Route 62

Character Photo 2



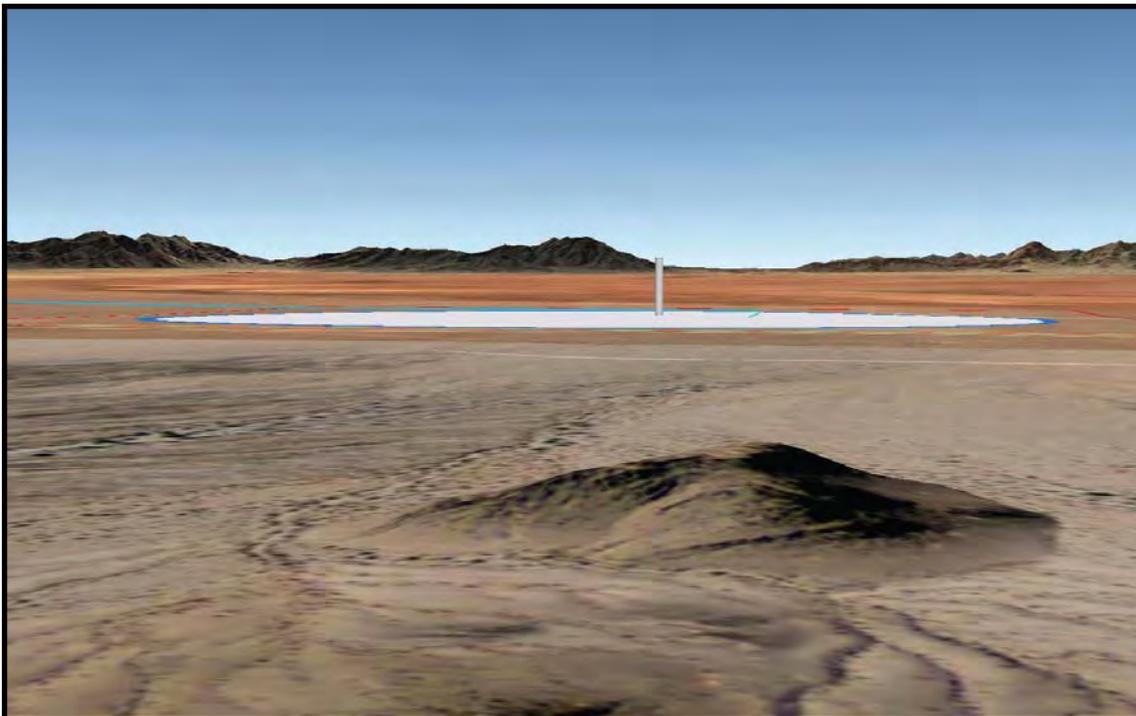
Simulation from Character Photo 2



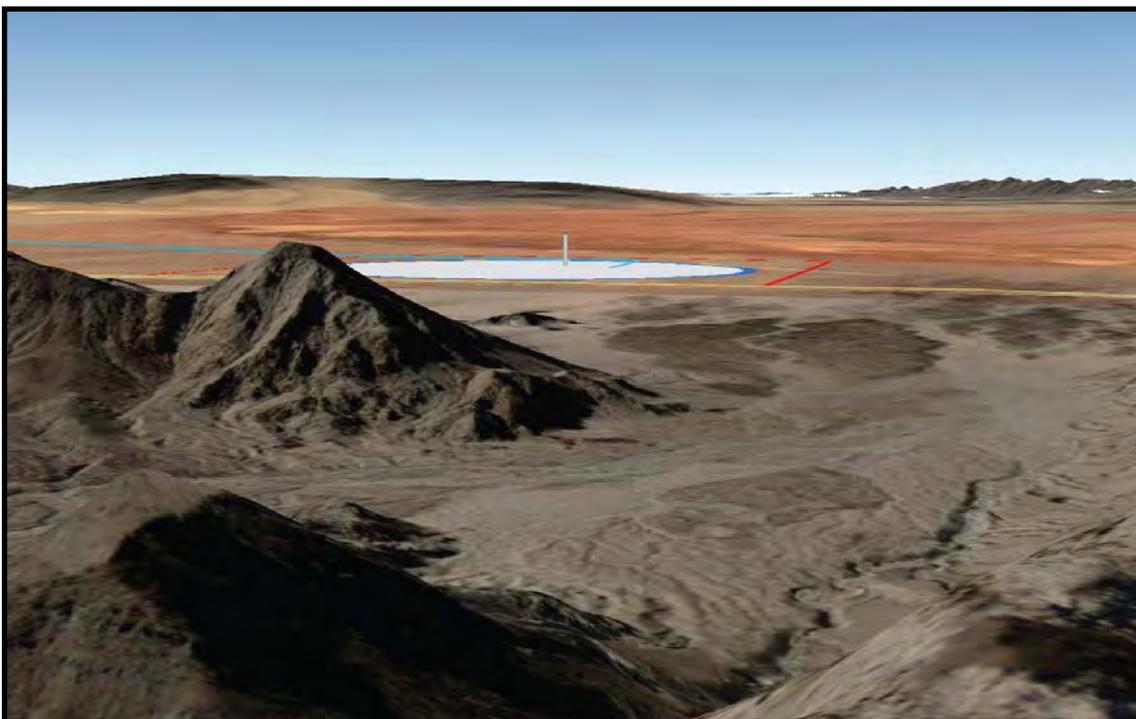
VISUAL RESOURCES - FIGURE 8A and 8B

Rice Solar Energy Project - KOP 5 - Views from Turtle Mountain Wilderness Area

KOP 9A – Turtle Mountains WA (2 miles)

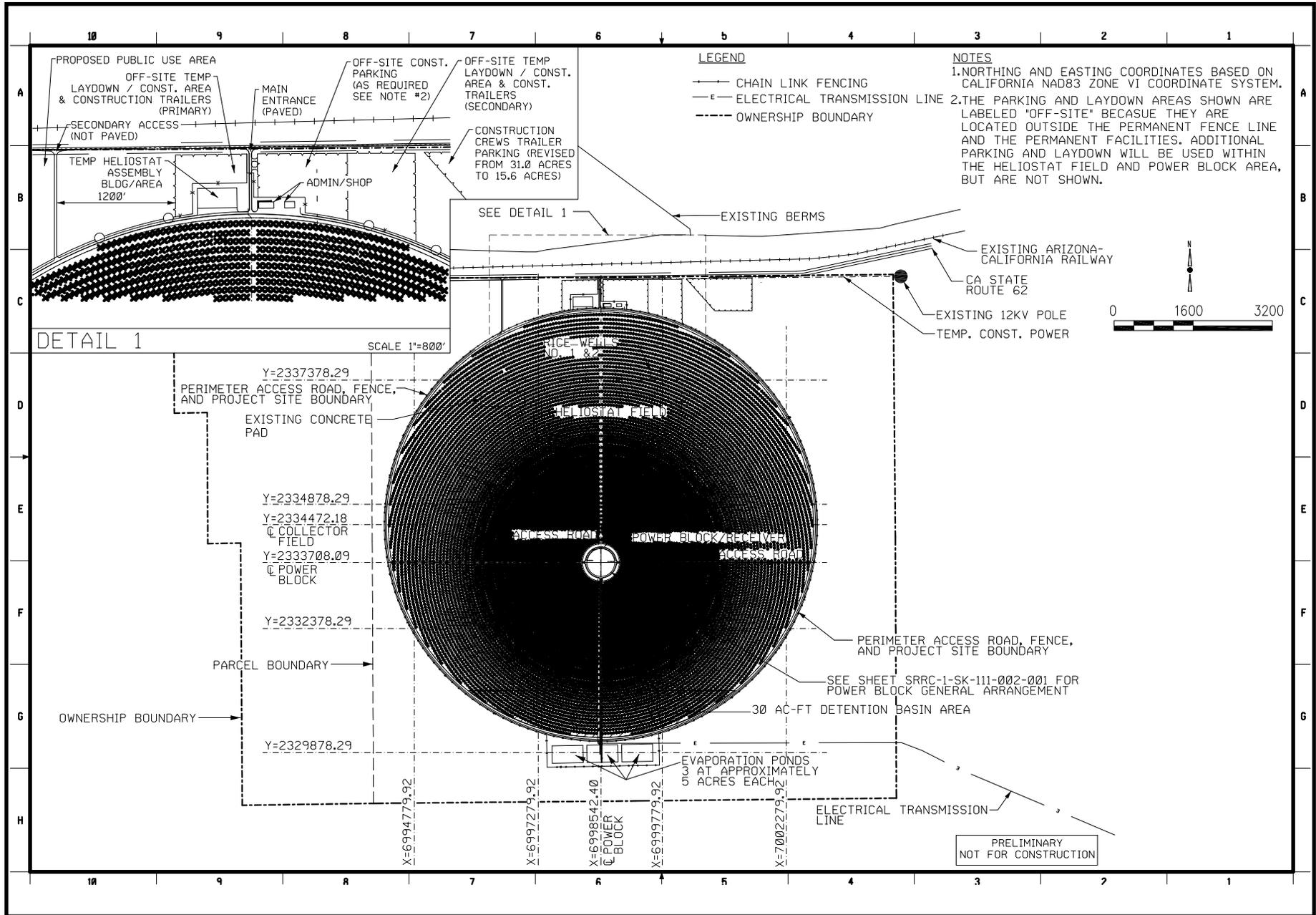


KOP 9B – Turtle Mountains WA (4.8 miles)



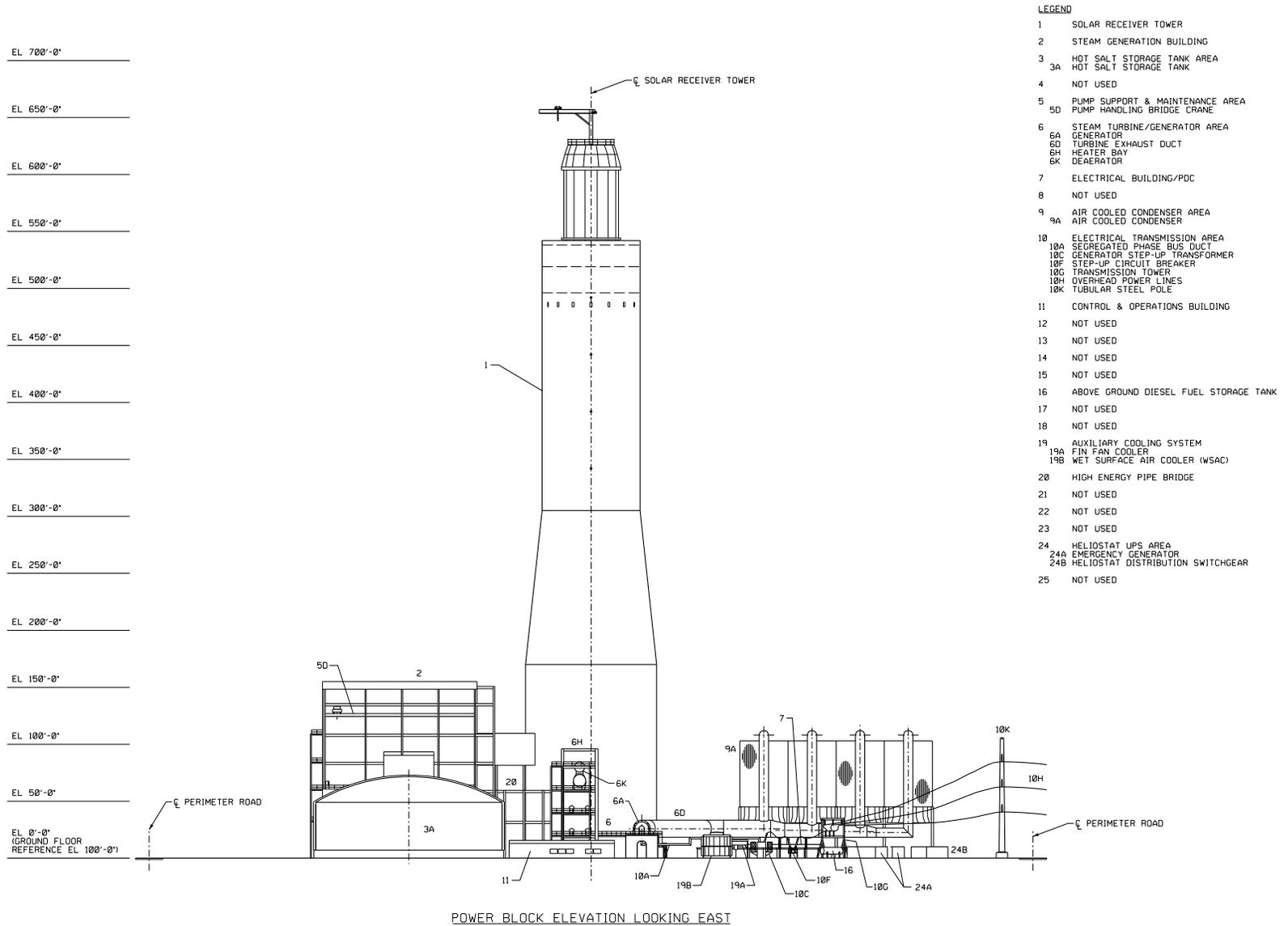
VISUAL RESOURCES - FIGURE 9

Rice Solar Energy Project - Project Layout



VISUAL RESOURCES - FIGURE 10

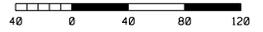
Rice Solar Energy Project - Project Elevation



- LEGEND**
- 1 SOLAR RECEIVER TOWER
 - 2 STEAM GENERATION BUILDING
 - 3 HOT SALT STORAGE TANK AREA
 - 3A HOT SALT STORAGE TANK
 - 4 NOT USED
 - 5 PUMP SUPPORT & MAINTENANCE AREA
 - 5D PUMP HANDLING BRIDGE CRANE
 - 6 STEAM TURBINE/GENERATOR AREA
 - 6A GENERATOR
 - 6D TURBINE EXHAUST DUCT
 - 6H HEATER BAY
 - 6K DEGENERATOR
 - 7 ELECTRICAL BUILDING/PDC
 - 8 NOT USED
 - 9 AIR COOLED CONDENSER AREA
 - 9A AIR COOLED CONDENSER
 - 10 ELECTRICAL TRANSMISSION AREA
 - 10A SEGREGATED PHASE BUS DUCT
 - 10C GENERATOR STEP-UP TRANSFORMER
 - 10F STEP-UP CIRCUIT BREAKER
 - 10G TRANSMISSION TOWER
 - 10H OVERHEAD POWER LINES
 - 10K TUBULAR STEEL POLE
 - 11 CONTROL & OPERATIONS BUILDING
 - 12 NOT USED
 - 13 NOT USED
 - 14 NOT USED
 - 15 NOT USED
 - 16 ABOVE GROUND DIESEL FUEL STORAGE TANK
 - 17 NOT USED
 - 18 NOT USED
 - 19 AUXILIARY COOLING SYSTEM
 - 19A FIN FAN COOLER
 - 19B WET SURFACE AIR COOLER (WSAC)
 - 20 HIGH ENERGY PIPE BRIDGE
 - 21 NOT USED
 - 22 NOT USED
 - 23 NOT USED
 - 24 HELIOSTAT UPS AREA
 - 24A EMERGENCY GENERATOR
 - 24B HELIOSTAT DISTRIBUTION SWITCHGEAR
 - 25 NOT USED

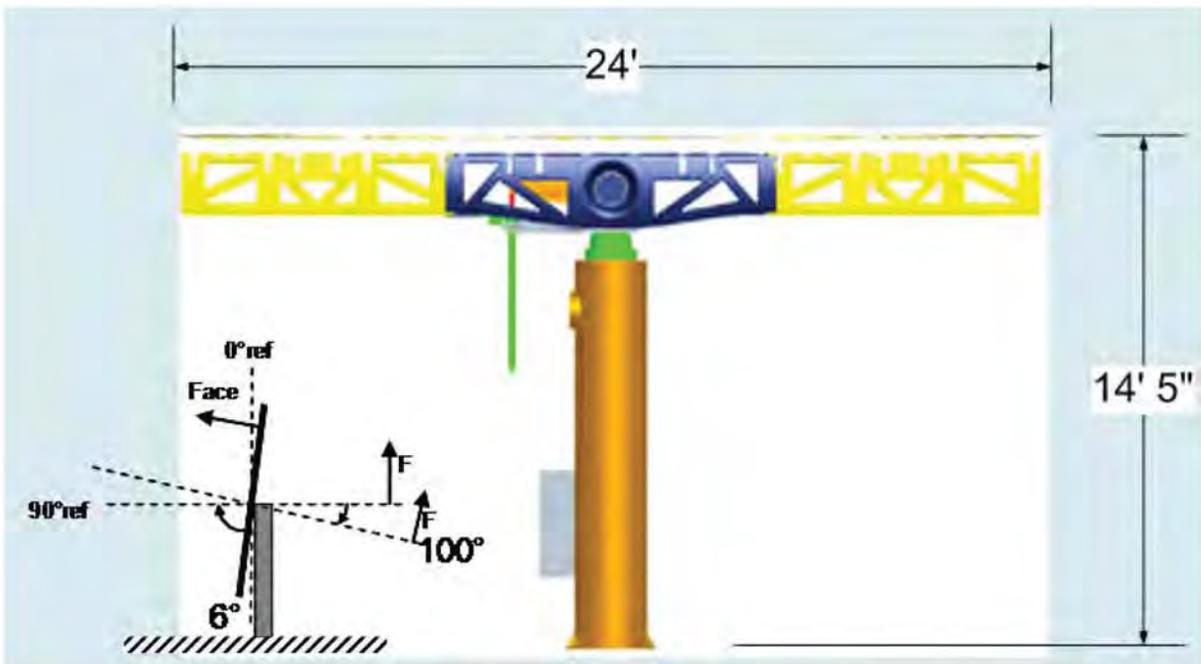
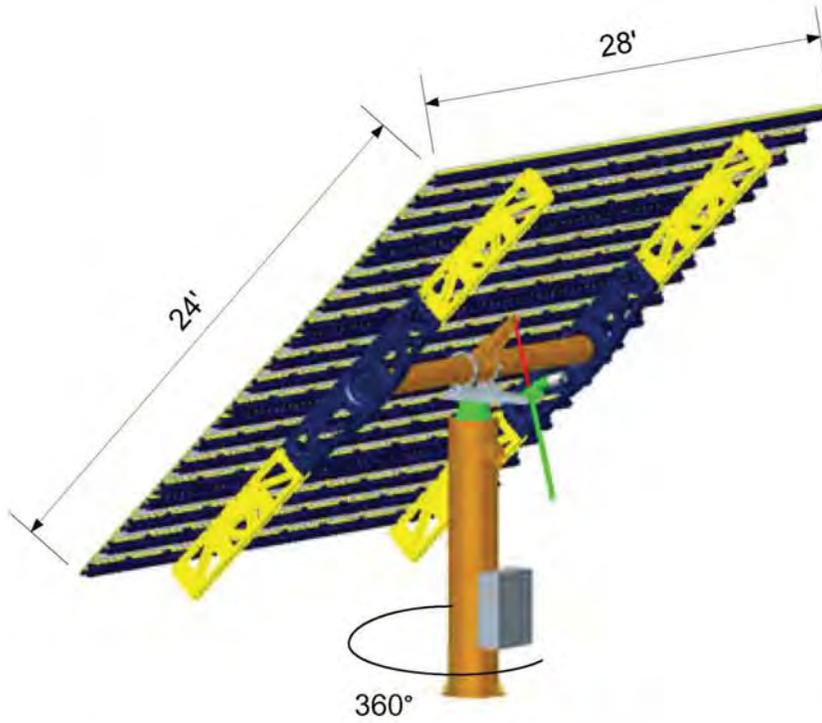
NOTES:

1. FOR POWER BLOCK PLAN SEE DRAWING SRRC-1-SK-111-002-002.
2. FOR ALL OTHER NOTES, REFERENCES AND STANDARD ACRONYMS SEE DRAWING SRRC-1-SK-111-002-002.



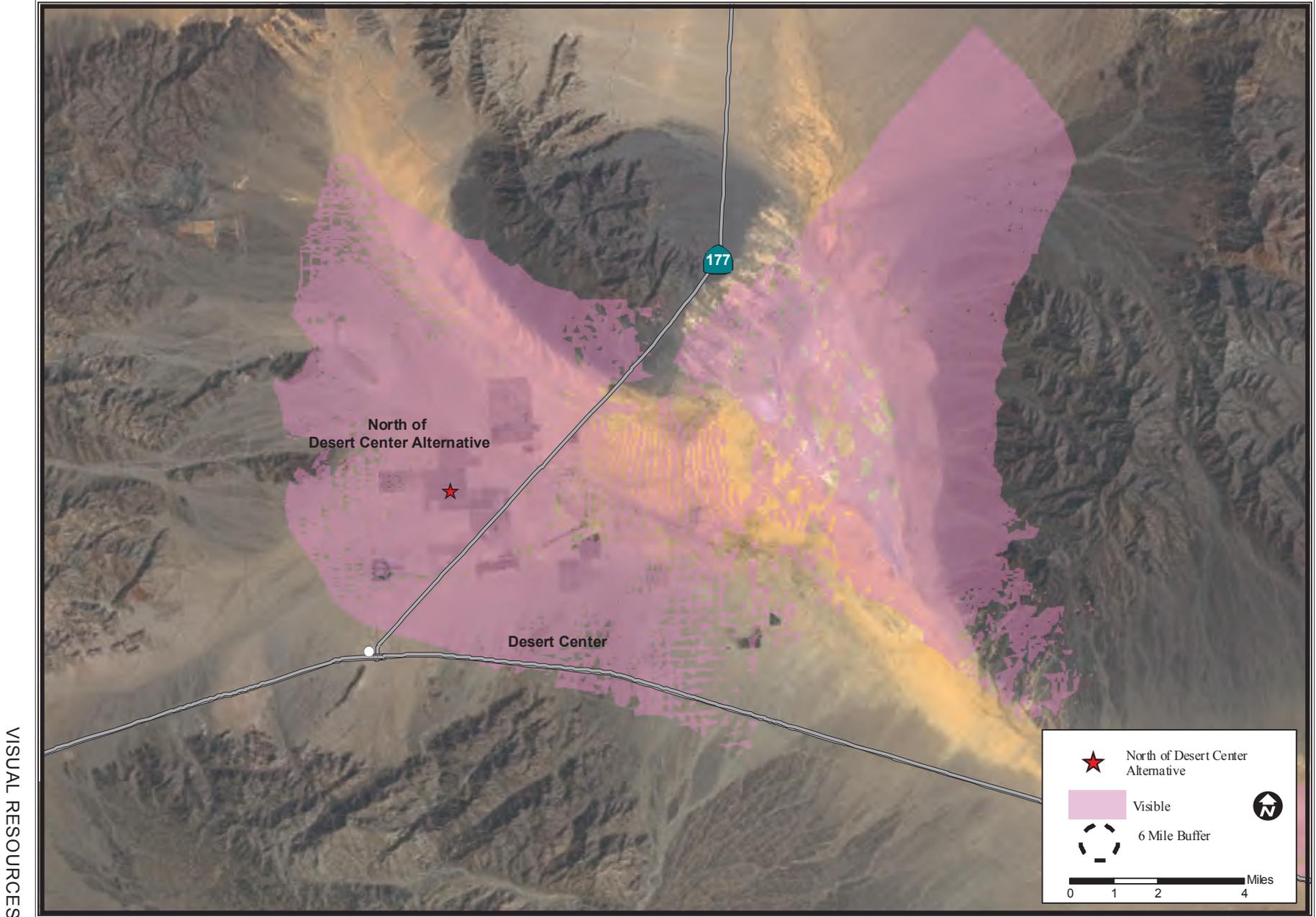
VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 11
Rice Solar Energy Project - Heliostats



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION
SOURCE: William Kanemoto (Rice Figure 12 DR 156)

VISUAL RESOURCES - FIGURE 13
Rice Solar Power Project - North of Desert Center Alternative



WASTE MANAGEMENT

Testimony of Ellen Townsend-Hough

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that with the adoption of the recommended Conditions of Certification **WASTE-1** through **WASTE-8**, management of the waste generated during construction, operation and closure/decommissioning of the proposed Rice Solar Energy Project (RSEP) would not generate a significant impact.

There is sufficient landfill capacity for wastes generated during RSEP construction and operation, RSEP would properly handle, treat and dispose of any existing site contamination, and the project would be consistent with the applicable waste management laws, ordinances, regulations, and standards (LORS) if the measures recommended in staff's conditions of certification are implemented,. These Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as staff's recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of waste management-related impacts to less than significant and for the project to conform to all applicable LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision.

In evaluating the RSEP, Reduced Acreage Alternative, North of Desert Center Alternative, SR62/Rice Valley Road Generation Tie Line Alternative, and No Project/No Action Alternative, the agencies consider compliance with California Environmental Quality Act guidelines (Appendix G: Environmental Checklist Section XVI-Utilities and Service Systems) and applicable waste management laws, ordinances, regulations, and standards. With implementation of the recommended conditions of certification, staff concludes that no significant direct, indirect or cumulative waste management impacts would result from construction, operation and closure/decommissioning from either the proposed project or the alternatives with respect to CEQA.

INTRODUCTION

This section presents an analysis of issues associated with wastes generated from the proposed construction and operation of the RSEP. The technical scope of this analysis encompasses solid and liquid wastes existing on site and wastes that would likely be generated during facility construction and operation. Management and discharge of wastewater is addressed in the **SOIL AND WATER RESOURCES** section of this document. Additional information related to waste management may also be covered in

the **WORKER SAFETY & FIRE PROTECTION** and **HAZARDOUS MATERIALS MANAGEMENT** sections of this document.

The agencies have established the following objectives in conducting this waste management analysis. These objectives would ensure that:

- the management of project wastes would be in compliance with all applicable LORS; Compliance with LORS ensures that existing site contamination and wastes generated during the construction and operation of the proposed project would be managed in an environmentally safe manner.
- the disposal of project wastes would not result in significant adverse impacts to existing waste disposal facilities; and
- upon project completion, the site is managed in such a way that project wastes and waste constituents would not pose a significant risk to humans or the environment.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

In accordance with California Environmental Quality Act (CEQA) guidelines (Appendix G: Environmental Checklist Section XVI – Utilities and Service Systems), staff evaluated the potential significance of project wastes in terms of landfill capacity and LORS compliance. The following federal, state, and local environmental laws, ordinances, regulations, and standards (LORS) have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment, and absent any unusual circumstances, compliance would be sufficient to ensure that no significant impacts would occur as a result of project waste management.

**Waste Management Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable Law	Description
<p>Federal</p> <p>Title 42, United States Code (U.S.C.), §6901, et seq.</p> <p>Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)</p>	<p>The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions.</p> <p>RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing:</p> <ul style="list-style-type: none"> • Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • Waste labeling practices and use of appropriate containers; • Use of a manifest when transporting wastes; • Submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and

Applicable Law	Description
	<ul style="list-style-type: none"> • Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. <p>RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills.</p> <p>RCRA is administered at the federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.</p>
<p>Title 42, U.S.C., §9601, et seq.</p> <p>Comprehensive Environmental Response, Compensation and Liability Act</p>	<p>The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as <i>Superfund</i>, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment. Among other things, the statute addresses:</p> <ul style="list-style-type: none"> • Reporting requirements for releases of hazardous substances; • Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields; • Liability of persons responsible for releases of hazardous substances or waste; and • Requirements for property owners/potential buyers to conduct “all appropriate inquiries” into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy CERCLA “all appropriate inquiries” requirements.
<p>Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes</p>	<p>These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes.</p> <ul style="list-style-type: none"> • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). <p>U.S. EPA implements the regulations at the federal level. However, California is an RCRA-authorized state, so most of the solid and hazardous waste regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.</p>
<p>Title 49, CFR, Parts 172 and 173.</p> <p>Hazardous Materials Regulations</p>	<p>These regulations address the United States Department of Transportation (DOT) established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with</p>

Applicable Law	Description
	Title 40, CFR, section 262.20.
Federal CWA, 33 USC § 1251 <i>et seq.</i>	The Clean Water Act controls discharge of wastewater to the surface waters of the U.S.
Title 40 CFR Section 112	<p>This establishes procedures, methods, equipment, and other requirements to prevent the discharge of oil from non-transportation-related onshore and offshore facilities into or upon the navigable waters of the United States or adjoining shorelines, or into or upon the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974.</p> <p>Subpart B - The Spill Prevention, Control and Countermeasures (SPCC) Plan includes procedures, methods, and equipment at the facility to prevent discharges of petroleum from reaching navigable waters.</p>
State	
<p>California Health and Safety Code (HSC), Chapter 6.5, §25100, <i>et seq.</i></p> <p>Hazardous Waste Control Act of 1972, as amended</p>	<p>This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements.</p> <p>The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.</p>
<p>Title 22, California Code of Regulations (CCR), Division 4.5.</p> <p>Environmental Health Standards for the Management of Hazardous Waste</p>	<p>These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers; prepare manifests before transporting the waste off site; and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters.</p> <p>The standards addressed by Title 22, CCR include:</p> <ul style="list-style-type: none"> • Identification and Listing of Hazardous Waste (Chapter 11, §66261.1, <i>et seq.</i>). • Standards Applicable to Generator of Hazardous Waste (Chapter 12, §66262.10, <i>et seq.</i>). • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §66263.10, <i>et seq.</i>). • Standards for Universal Waste Management (Chapter 23, §66273.1, <i>et seq.</i>). • Standards for the Management of Used Oil (Chapter 29, §66279.1, <i>et seq.</i>). • Requirements for Units and Facilities Deemed to Have a Permit

Applicable Law	Description
	<p>by Rule (Chapter 45, §67450.1, et seq.).</p> <p>The Title 22 regulations are established and enforced at the state level by DTSC. Some generator and waste treatment standards are also enforced at the local level by CUPAs.</p>
<p>HSC, Chapter 6.11 §§25404 – 25404.9</p> <p>Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)</p>	<p>The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below.</p> <ul style="list-style-type: none"> • Aboveground Petroleum Storage Act requirements for Spill Prevention, Control, and Countermeasure (SPCC) Plans. • Hazardous Materials Release and Response Plans and Inventories (Business Plans). • California Accidental Release Prevention (CalARP) Program. • Hazardous Materials Management Plan / Hazardous Materials Inventory Statements. • Hazardous Waste Generator / Tiered Permitting Program. • Underground Storage Tank Program. <p>The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as CUPAs. The DTSC's Calexico Field Office is the CUPA for the RSEP.</p> <p>Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program.</p>
<p>Title 27, CCR, Division 1, Subdivision 4, Chapter 1, §15100, et seq.</p> <p>Unified Hazardous Waste and Hazardous Materials Management Regulatory Program</p>	<p>While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses.</p> <ul style="list-style-type: none"> • Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). • Article 10 – Business Reporting to CUPAs (§§15600–15620).
<p>Public Resources Code, Division 30, §40000, et seq.</p> <p>California Integrated Waste Management Act of 1989</p>	<p>The California Integrated Waste Management Act (CIWMA) establishes mandates and standards for management of solid waste in California. The law addresses solid waste landfill diversion requirements; establishes the preferred waste management hierarchy (source reduction first, then recycling and reuse, and treatment and disposal last); sets standards for design and construction of municipal landfills; and addresses programs for county waste management plans and local implementation of solid waste requirements.</p>

Applicable Law	Description
<p>Title 14, CCR, Division 7, §17200, et seq.</p> <p>California Integrated Waste Management Board</p>	<p>These regulations implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions.</p> <ul style="list-style-type: none"> • Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. • Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. • Chapter 7 – Special Waste Standards. • Chapter 8 – Used Oil Recycling Program. • Chapter 8.2 – Electronic Waste Recovery and Recycling.
<p>HSC, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq.</p> <p>Hazardous Waste Source Reduction and Management Review Act of 1989</p>	<p>This law was enacted to expand the state's hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (approximately 26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a 4-year cycle, with a summary progress report due to DTSC every fourth year.</p>
<p>Title 22, CCR, §67100.1 et seq.</p> <p>Hazardous Waste Source Reduction and Management Review</p>	<p>These regulations further clarify and implement the provisions of the Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.</p>
<p>Title 23, CCR Division 3, Chapters 16 and 18</p>	<p>These regulations relate to hazardous material storage and petroleum UST cleanup, as well as hazardous waste generator permitting, handling, and storage. The DTSC Riverside County CUPA is responsible for local enforcement.</p>
Local	
<p>County of Riverside General Plan, Safety Element: Policy S 6.1</p>	<p>Describes the County's policies and siting criteria identified in the County of Riverside Hazardous Waste Management Plan including coordination of hazardous waste facility responsibilities on a regional basis through the Southern California Hazardous Waste Management Authority</p>
<p>Riverside County Code Title 8 Chapters 8.60, 8.84, and 8.132, Health and Safety</p>	<p>Establishes requirements for the use, generation, storage, and disposal of hazardous and non-hazardous materials and wastes within the County.</p>

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

Proposed Project

The proposed RSEP site is situated on 1,410 acres of privately owned land located in eastern Riverside County, California (SR 2009a, page ES-1). The project is bordered to the north by Highway 62 at marker 109 followed by Arizona and California (ARZC) railroad tracks, the Colorado River Aqueduct, along with several dikes and siphons. East and south of the site is vacant land. There is vacant land, ARZC railroad tracks, and a paved road located to the west of the project site (SR 2009a, Phase I ESA). The project site is made up of four parcels; the assessor's parcel numbers are 801-070-003, 801-070-004, 801-070-005, 801-070-0006 (SR 2009a, page 1-7).

The Project is located in Rice Valley, in the Sonoran Desert. The area is comprised of relatively stable sheets of sand held in place by perennial vegetation. The Rice Valley is part of a massive sand sheet that extends from Cadiz Valley through Ward Valley, representing a part of one of the largest dune systems in the California Desert. The Project site is relatively flat and generally slopes from north to south with an elevation of approximately 820 feet above mean sea level. The project site is located in an area historically used for military training during World War II. The project site would be located on the former Rice Army Airfield which served as a camp and training center for the Air Corps, infantry and artillery divisions of the Army, and was part of the Desert Training Center/California-Arizona Maneuver Area. After the war, the airfield was privately operated until it was abandoned during the 1950's.

The 150 Megawatt (MW) project would use concentrating solar power technology, with a central receiver tower and an integrated thermal storage system. The RSEP's technology generates power from sunlight by focusing energy from a field of sun-tracking mirrors called heliostats on to a central receiver. A heat-transfer fluid heated in the receiver is used to generate steam, which, in turn, is used in a conventional steam turbine-generator to produce electricity. Liquid salt is the heat-transfer fluid. The salt has superior heat-transfer and energy-storage capabilities. The energy-storage capability, or thermal storage, allows the system to continue to generate electricity during cloudy weather or at night. Within the project area will be an administration building, a heliostat field with power block and evaporation ponds. The features and facilities associated with the proposed project include but are not limited to:

- A circular arrangement of 17,500 tracking heliostats, each 24 feet tall by 28 feet wide, concentrating the sun's energy onto a tower-mounted receiver on a 1,410-acre project site;
- A 540-foot tall concrete central tower, which includes a maintenance crane and a 100-foot receiver situated on top the tower;
- A liquid salt storage system which includes hot and cold salt storage tanks;
- A 150- MW (net) steam turbine generator system;
- Two on-site water wells for heliostat washing, steam cycle makeup and other process uses;

- Three five-acre lined evaporation ponds;
- Two emergency diesel generators and associated equipment for emergency backup power; and
- Transmission line and associated equipment.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This waste management analysis addresses:

- a) existing project site conditions and the potential for contamination associated with prior activities on or near the project site; and
- b) the impacts from the generation and management of wastes during project construction and operation.

Existing Project Site Conditions and Potential for Contamination

For any site in California proposed for the construction of a power plant, the applicant must provide documentation of the nature of any potential or existing releases of hazardous substances or contamination at the site. If potential or existing releases or contamination at the site are identified, the significance of the releases or contamination would be determined by site-specific factors, including, but not limited to: the amount and concentration of contaminants or contamination; the proposed use of the area where the contaminants/contamination is found; and any potential pathways for workers, the public, or sensitive species or environmental areas to be exposed to the contaminants. Any unmitigated contamination or releases of hazardous substances that pose a risk to human health or environmental receptors would be considered significant by Energy Commission staff.

As a first step in documenting existing site conditions, the Energy Commission's power plant site certification regulations require that a Phase I Environmental Site Assessment (ESA) be prepared¹ and submitted as part of an Application for Certification (AFC). The Phase I ESA is conducted to identify any conditions indicative of releases and threatened releases of hazardous substances at the site and to identify any areas known to be contaminated (or a source of contamination) on or near the site.

In general, the Phase I ESA uses a qualified environmental professional to conduct inquiries into past uses and ownership of the property, research hazardous substance releases and hazardous waste disposal at the site and within a certain distance of the site, and visually inspect the property, making observations about the potential for contamination and possible areas of concern. After conducting all necessary file reviews, interviews, and site observations, the environmental professional then provides findings about the environmental conditions at the site. In addition, since the Phase I ESA does not include sampling or testing, the environmental professional may give an opinion about the potential need for any additional investigation. Additional investigation may be needed, for example, if there were significant gaps in the information available

¹ Title 20, California Code of Regulations, section 1704(c) and Appendix B, section (g)(12)(A). Note that the Phase I ESA must be prepared according to American Society for Testing and Materials protocol or an equivalent method agreed upon by the applicant and the agencies.

about the site, an ongoing release is suspected, or to confirm an existing environmental condition.

If additional investigation is needed to identify the extent of possible contamination, a Phase II ESA may be required. The Phase II ESA usually includes sampling and testing of potentially contaminated media to verify the level of contamination and the potential for remediation at the site.

In conducting its assessment of a proposed project, the agencies will review the project's Phase I ESA and work with the appropriate oversight agencies, as necessary, to determine if additional site characterization work is needed and if any mitigation is necessary at the site to ensure protection of human health and the environment from any identified hazardous substance releases or contamination.

A Phase I ESA, dated September 24, 2009, was prepared by Terracon in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs (SR 2009a, Appendix 5.14B). The ESA did not identify any Recognized Environmental Conditions (REC) in connection with historic or current site operations. A REC is the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicated an existing release, past release, or a material threat of a release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property. However, the Phase I ESA did identify a number of potential areas of concern related to possible soil contamination. In follow-up to the Phase I ESA, Terracon completed a Limited Site Investigation, dated July 29, 2009, which includes the chemical analysis of forty-four soil samples. The results indicated that there were no contaminants that would pose a health, and/or safety risk to RSEP personnel working at the project site (SR 2009a, Appendix 5.14B).

DIRECT/INDIRECT IMPACTS AND MITIGATION

Existing Site Conditions

The project site is located immediately south of State Route 62, near mile marker 109, Riverside County, California 92239. The 1,410 acre project site is located within an approximately 3,300 acre tract of privately owned land. The site was historically used as a military airfield and training camp (Rice Army Airfield) in the 1940's, and as a public, civilian airport facility (Rice Airfield) until the 1950s. The site is vacant although remnant features from the former airfield remain. The remaining site features include two runways and associated apron hardstands and taxiways, building foundations, paved roads and pathways and associated litter (SR 2009a, Appendix 5.14B).

A Phase I ESA, dated September 24, 2009, was prepared by the Terracon for the applicant. The Phase I ESA was completed in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs (SR 2009a, Appendix 5.14B). The ESA did not identify any Recognized Environmental Conditions (RECs) in connection with historic site operations or current activity. A REC is the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicated an existing release, past release, or a material threat of a

release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property.

Terracon performed a Limited Site Investigation which identified areas of potential environmental concern. Terracon's site reconnaissance identified concrete pads, remnants of structural foundations, exposed subsurface piping, apparent drainage, sumps, rock-filled pits, discolored soil (apparent burn areas), various areas of debris and a large soil mound. Samples were collected and analyzed at several locations along the runways, in the burned debris piles, also in the rock pits, aprons and tie-down areas. The chemical analysis results did not indicate that the soils beneath these areas were impacted with high concentrations of hazardous substances associated with the historic activities at the site.

No RECs were identified within the one-mile radius search of offsite areas. However, the project area was within General Patton's World War II (WWII) Desert Training Center, California-Arizona Maneuver Area region (DTC/CAMA) (1942 to 1944) which surrounds the project area and was considered a suitable location for training troops that would be deployed in the North Africa Campaign. The DTC/CAMA was part of a large area in southern California, southern Nevada, and western Arizona. After two years in operation and the training of one million troops, the desert training camps were closed in 1944. There is a soil mound located east of the eastern runway (See Waste Management Figure 1), that may have been used as a firing butt for aircraft to test guns prior to planes taking off. Also, 4.7 miles of the proposed RSEP generator tie line route and proposed interconnection substation site lie within the DTC/CAMA Rice Valley Sand Dunes Formerly Used Defense Site (FUDS) -Training Area. The Training Area was used for a variety of training purposes some of which utilized munitions and explosives and/or munitions constituents (See Waste Management Figure 1) (SR 2009a, page 5.14-3 and Appendix 5.14B).

Staff recommends Conditions of Certification **WASTE-1** and **WASTE-2** to address any soil contamination contingency that may be encountered during project construction. **WASTE-1** would require that an experienced and qualified Professional Engineer or Professional Geologist be available for consultation in the event contaminated soil is encountered. If contaminated soil is identified, **WASTE-2** would require that the Professional Engineer or Professional Geologist inspect the site, determine what is required to characterize the nature and extent of contamination, and provide a report to the Compliance Project Manager (CPM), BLM Authorized Officer (AO), and DTSC with findings and recommended actions including remediation if necessary.

Proposed Project

Proposed Project - Construction Impacts and Mitigation

Site preparation and construction of the proposed solar project and its associated facilities would last approximately 30 months and generate both non-hazardous and hazardous wastes in solid and liquid forms (SR2009a, ES-5). Before construction can begin, the project owner would be required to develop and implement a Construction Waste Management Plan per proposed Condition of Certification **WASTE-3** to ensure that the waste will be properly handled and temporarily stored when on-site and when transported off-site either recycled when possible or properly disposed. In addition, to

ensure site workers are properly trained to recognize, avoid, and report unexploded ordnance (UXO), proposed Condition of Certification **WASTE-4** would require the project owner to develop a UXO identification training and reporting procedures program. The UXO training program should include the identification of trained UXO ordnance experts that are available to complete removal of UXO and supplemental geophysical surveys to search for additional or buried ordnance.

Non-Hazardous Wastes

Construction activities, as outlined in **Waste Management Table 2**, would generate an estimated 350 cubic yards of non-hazardous solid wastes, consisting of scrap wood, steel, glass, plastic, scrap metal, and paper. Of these items, recyclable materials would be separated and removed to the extent reasonably possible, and transported to recycling facilities. Non-recyclable solid materials (insulation, other plastics, food waste, roofing materials, vinyl flooring and base, carpeting, paint containers, packing materials, etc.) would be disposed of at a Class III landfill (SR 2009a, Table 5.14-1).

**Waste Management Table 2
Waste Generated during Construction**

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Scrap wood, steel, glass, plastic, paper, calcium silicate insulation, mineral wool insulation	Construction of the facility	Normal refuse	120 tons	Nonhazardous	Recycle and/or dispose of in a Class II or III landfill.
Scrap metals	Construction of facility	Parts, containers	22.5	Nonhazardous	Recycle and/or dispose of in a Class III landfill.
Empty hazardous material containers	Construction of facility	Drums, containers, totes	60 containers	Hazardous and nonhazardous solids	Containers < 5 gallons will be disposed of as normal refuse, Containers >5 gallons will be

					returned to vendors for recycling or reconditioning.
Spent welding materials	Construction of facility	Solid	0.6 ton	Hazardous	Disposal at a Class I landfill.
Scrap bags (salt delivery)	Means of delivery of salt	Woven nylon	35,000 bags, or 10 tons	Nonhazardous	Recycle and/or dispose of in a Class III landfill
Waste oil filters	Construction equipment and vehicles	Solids	125 lb per month	Nonhazardous	Recycle at a permitted treatment, storage, and disposal facility.
Used and waste lube oil	Steam turbine lube oil flushes and equipment vehicles	Hydrocarbons	7,500 gallons (life of project construction)	Hazardous	Recycle at a permitted TSDF.
Oily rags, oil sorbent excluding lube oil flushes	Cleanup of small spills	Hydrocarbons	1,900 lb during construction	Hazardous	Recycle or dispose of at a permitted TSDF.
Waste oil	Equipment, vehicles	Hydrocarbons	2,000 gallons	Non-RCRA hazardous liquid	Dispose of at a permitted TSDF.
Solvents, paint, adhesives	Construction of facility	Varies	110 lb per month	Hazardous	Recycle at a permitted TSDF.
Spent lead-acid	Equipment and trucks	Heavy metals	6 batteries per year	Hazardous	Store no more than 10 batteries

batteries					(up to 1-year) – recycle offsite.
Spent alkaline batteries	Equipment	Metals	30 batteries per month	Universal Waste solids	Recycle or dispose of offsite at a Universal Waste Destination Facility.
Steam turbine cleaning waste	Pre-boiler piping	Corrosive cleaning chemicals	125 gallons before plant startup	Hazardous or nonhazardous liquid	Dispose of at a permitted TSDF.
Sanitary waste	Portable toilet holding tanks	Sewage sludge	Approx. 125 gallons per day	Nonhazardous Liquid	Remove by contracted sanitary service.
Fluorescent, mercury vapor lamps	Lighting	Metals and polychlorinated biphenyls (PCB)	60 lb per year	Universal Waste solids	Recycle or dispose offsite at a universal waste destination facility.
Passivating and chemical cleaning fluid waste	Pipe cleaning and flushing	Varies	125,000 to 250,000 gallons (life of project construction)	Hazardous or non hazardous liquid	Sample and characterize -if clean, dispose of in sanitary sewer; otherwise, manage appropriately offsite.
Hydrotest water	Testing equipment and piping integrity	Water	6,000,000 gallons (life of project construction)	Hazardous or non hazardous liquid	Sample and characterize -if clean, discharge to the surrounding

			n)		area; otherwise, manage appropriately offsite.
Stormwater	Rainfall	Water	5,200,000 gallons per year	Non hazardous liquid	Discharge to surrounding land.
NOx emission control scrubbing solution purge	Four-stage chemical scrubber	Solution varying concentration of salts	740 gallons per hour (17,760 gallons per day)	Non hazardous liquid	Treated for pH and accumulated in an onsite holding tanks for shipment offsite.

Source: RSEP AFC Table 5.14-1

Non-hazardous liquid wastes would be generated during construction, and would include equipment washdown water, emission control scrubbing solution purge, storm water runoff and sanitary waste. Storm water runoff would be managed in accordance with appropriate LORS (SR 2009a, Table 5.14-2). Sanitary wastes would be pumped to tanker trucks by licensed contractors for transport to a sanitary wastewater treatment plant. Please see the **SOIL AND WATER RESOURCES** section of this document for more information on the management of project wastewater.

Hazardous Wastes

During construction, anticipated hazardous wastes include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Estimated amounts are 60 empty containers, 7,500 gallons of oils, solvents, and adhesives (every 90 days), and 36 batteries (per year). Empty hazardous material containers would be returned to the vendor or disposed of at a hazardous waste facility; solvents, used oils, paint, oily rags, and adhesives would be recycled or disposed of at a hazardous waste facility; and spent batteries would be transported to a recycling facility (SR 2009a, Table 5.14-1).

The generation of hazardous waste requires a unique hazardous waste generator identification number to identify and document the source of hazardous waste, and assure responsibility of the waste generator for proper handling, storage, transportation and disposal. The hazardous waste generator number is determined based on site location; therefore, both the construction contractor and the project owner/operator could be considered the generator of hazardous wastes at the site. The project owner would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction, pursuant to proposed Condition of Certification

WASTE-5. This would ensure compliance with California Code of Regulation Title 22, Division 4.5.

Hazardous waste would be collected in hazardous waste accumulation containers and stored in a laydown area, warehouse/shop area, or storage tank on equipment skids for less than 90 days. The accumulated wastes would then be properly manifested, transported, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. Should any construction waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-6** to notify the CPM whenever the owner becomes aware of this action.

The agencies have reviewed the proposed waste management methods described in AFC section 5.14.1.2, and in the responses to data requests. Based on that review, staff concludes that with respect to CEQA, project construction wastes would be managed in accordance with all applicable LORS.

In the event that construction excavation, grading, or trenching activities for the proposed project encounter potentially contaminated soils, specific waste handling, disposal, or other precautions may be necessary pursuant to hazardous waste management LORS. Staff believes that proposed Conditions of Certification **WASTE-1** and **-2** would be adequate to address any soil contamination contingency that may be encountered during construction of the project and would assure compliance with applicable LORS.

Proposed Project - Construction and Demolition (C&D) Waste Diversion and Mitigation

The Integrated Waste Management Act of 1989 [Assembly Bill (AB) 939, Sher, Chapter 1095, Statutes of 1989] set landfill waste diversion goals of 50% (by 2000) for local jurisdictions. To meet this goal, many jurisdictions require applicants for construction and demolition projects to submit a reuse/recycling plan for at least 50% of C&D materials prior to the issuance of a building or demolition permit. While the proposed project is not responsible to a local jurisdiction (Riverside County does not have a construction and demolition waste diversion ordinance), staff encourages the applicant to meet the 50% waste diversion goal as specified in Condition of Certification **WASTE-3** for development and implementation of a Construction Waste Management Plan.

Proposed Project - Operation Impacts and Mitigation

The proposed RSEP would generate both non-hazardous and hazardous wastes in solid and liquid forms under normal operating conditions. **Waste Management Table 3** gives a summary of the anticipated operation waste streams, estimated waste volumes and generation frequency, and proposed management methods.

**Waste Management Table 3
Wastes Generated during Operations**

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Lubricating oil	Small leaks and spills from the steam turbine lubricating oil system and routine maintenance of the steam turbine	Hydrocarbons	200 gallons	Hazardous	Recycled by certified oil recycler
Lubricating oil filters	Steam turbine lubricating oil system	Paper, metal and hydrocarbons	950 lb per year	Hazardous	Recycled by certified oil recycler
Solvents, paint, adhesives	Operation of facility	Varies	110 lb per month	Hazardous	Recycled by certified oil recycler
Clarifier solids slurry	Water treatment process	Moist filter cake sludge	25 lb per day	Expected to be nonhazardous, but will be tested	Appropriate landfill
Oily rags	Maintenance, wipe down of equipment, etc.	Hydrocarbons, cloth	600 lb per year (500 rags per year)	Hazardous	Recycled by certified oil recycler
Oil sorbents	Cleanup of small spills	Hydrocarbons	375 lbs per year	Hazardous	Recycled or disposed of by certified oil recycler
Sewage solids and liquids	Sanitary waste from buildings	Sewage sludge and grey water	Approx. 400 gallons per day	Nonhazardous	Solids trucked off site, as needed to treatment facility by cleaning of septic tank, grey water to leach field.

Source: RSEP AFC Table 5.14-2 page 5.14-7

Before operations can begin, the project owner would be required to develop and implement an Operations Waste Management Plan as required by proposed Condition of Certification **WASTE-7**. This would ensure that an accurate record is maintained of the project's waste storage, generation, and disposal; and that compliance with waste management regulations is maintained during operation.

Non-Hazardous Solid Wastes

Non-hazardous solid wastes generated during project operations would consist of glass, paper, wood, plastic, cardboard, deactivated equipment and parts, defective or broken electrical materials, empty non-hazardous containers, and other miscellaneous solid wastes. The project would generate approximately 10 cubic yards per year of non-hazardous waste, (the estimate does not include sewage) (SR 2009a, Section 5.14.1.2.2). Such wastes would be recycled to the greatest extent possible, and the remainder would be removed on a regular basis for disposal in a Class III landfill. Non-hazardous oily rags (one 55-gallon drum per month) would be laundered at an authorized recycle facility. Sanitary wastewater would be treated with an onsite septic system, and sludge would be contained onsite and transported to an off-site disposal facility as needed.

Non-Hazardous Liquid Wastes

Non-hazardous liquid wastes (storm water runoff) would be generated during facility operation and are discussed in the **SOIL AND WATER RESOURCES** section of this document.

Hazardous Wastes

The project owner/operator would be considered the generator of hazardous wastes at the site during facility operations. Therefore, the project owner's unique hazardous waste generator identification number, obtained prior to construction in accordance with proposed Condition of Certification **WASTE-5**, would be retained and used for managing and disposing of hazardous waste generated during facility operation.

Hazardous wastes that may be generated during routine project operation include oily absorbent and spent oil filters, and used hydraulic fluid (SR 2009a, p. 5.14-8). In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or cleanup materials that may also require management and disposal as hazardous waste. Proper hazardous material handling and good housekeeping practices would help keep spill wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, staff proposes Condition of Certification **WASTE-8**, requiring the project owner/operator to document, clean up, and properly manage and dispose of wastes from any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on project hazardous materials spill reporting, containment, and control; and countermeasures plan provisions for the project, are provided in the **HAZARDOUS MATERIALS MANAGEMENT** section of this document.

The amount of hazardous wastes generated during operation of the RSEP would be minor, with source reduction and recycling of wastes implemented whenever possible.

The hazardous wastes would be temporarily stored on site, transported off site by licensed hazardous waste haulers, and recycled or disposed of at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste (Title 22, CCR, §66262.10 et seq.). Should any operations waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **WASTE-6** to notify the CPM when advised of any such action.

Proposed Project - Closure and Decommissioning Impacts and Mitigation

The closure or decommissioning of the RSEP would produce both hazardous and non-hazardous solid and liquid waste. The project's General Compliance Conditions of Certification, including the Compliance Monitoring and Closure Plan (Compliance Plan), are required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in compliance with public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission. Required elements of a facility's closure would be outlined in a Facility Closure Plan as specified in Conditions of Certification **Compliance-12, -13** and **-14**. To ensure adequate review of a planned project closure, the project owner shall submit a proposed Facility Closure Plan to the Energy Commission for review and approval at least 12 months (or other period of time agreed to by the CPM) prior to commencement of closure activities. The Facility Closure Plan will document non-hazardous and hazardous waste management practices, including: the inventory, management, and disposal of hazardous materials and wastes, and permanent disposal of permitted hazardous materials and waste storage units.

The handling and management of waste generated by the RSEP would follow the hierarchical approach of source reduction, recycling, treatment, and disposal, as specified in California Public Resources Code Sections 40051 and 40196. The first priority of the project owner will be to use materials that reduce the waste that is generated. The next level of waste management will involve reusing or recycling wastes. For wastes that cannot be recycled, treatment will be used, if possible, to make the waste nonhazardous. Finally, waste that cannot be reused, recycled or treated would be transported off-site to a permitted treatment, storage, or disposal facility. As discussed below, staff expects that there will be adequate landfill capacity available to dispose of both non-hazardous and hazardous waste from the closure or decommissioning of the proposed project. Conditions of Certification **WASTE-4** through **-6** and **-8** would continue to apply to the RSEP during closure or decommissioning of the project. In addition, the applicant would be required to address waste disposal associated with project demolition as part of its Facility Closure Plan in conformance with all applicable LORS.

Proposed Project - Impact on Existing Waste Disposal Facilities

Non-Hazardous Solid Wastes

Construction and operation of the proposed project would respectively generate approximately 350 cubic yards and 10 cubic yards per year of nonhazardous solid waste (wood, paper/cardboard, glass, plastic, insulation, and concrete), respectively.

The waste would be stored onsite for less than 30 days, and then recycled or disposed of in a Class III landfill.

Desert Center and Blythe Sanitary Landfill are two solid waste disposal facilities located in Riverside County that could potentially take the non-hazardous construction and operation wastes generated by the RSEP (SR 2009a, Table 5.14-3). The remaining combined capacity of the Desert Center and Blythe Sanitary Landfills are currently over 2.3 million cubic yards. The total amount of non-hazardous solid waste generated from project construction is estimated to be 349 cubic yards, and the total amount from lifetime operations is estimated to be 274 cubic yards (for 30 years). The total non-recyclable solid waste would consume much less than 1% of the available landfill capacity. Staff expects that there will be adequate landfill capacity available to dispose of both non-hazardous and hazardous waste from the closure or decommissioning of the proposed project. Conditions of Certification **WASTE-5** through **-8** would continue to apply to RSEP during closure or decommissioning of the project. The agencies believe that disposal of the solid wastes generated by the RSEP can occur without substantially impacting the capacity or remaining life of any of these facilities.

Hazardous Wastes

Hazardous wastes generated during construction and operation would be recycled to the extent possible and practical. Those wastes that cannot be recycled would be transported off site to a permitted treatment, storage, or disposal facility. As calculated from waste streams presented in **Waste Management Tables 2** and **3** (SR 2009a, Tables 5.14-1 and 5.14-2), staff calculated that approximately 47 cubic yards of recyclable and non-recyclable hazardous waste would be generated over the 30 month construction period. Approximately 127 cubic yards of hazardous non-recyclable waste would be generated over the 30-year operating lifetime.

Two hazardous waste (Class I) disposal facilities are currently accepting waste and could be used to manage RSEP hazardous wastes: the Clean Harbors Buttonwillow Landfill in Kern County and the Chemical Waste Management Kettleman Hills Landfill in Kings County. The Kettleman Hills facility also accepts Class II and Class III wastes. In total, there is a combined excess of 10 million cubic yards of remaining hazardous waste disposal capacity at these landfills, with at least 30 years remaining in their operating lifetimes (SR 2009a, Section 5.14.2.3.2). In addition, the Kettleman Hills facility is in the process of permitting an additional 4.6 to 4.9 million cubic yards of disposal capacity (Waste Management 2009), and the Buttonwillow facility has 30 years to reach its capacity at its current disposal rate (SR 2009a, Section 5.14.2.3.2). Thus hazardous wastes from the RSEP requiring off-site disposal would not substantially impact the remaining capacity of either Class I waste facility.

CEQA LEVEL OF SIGNIFICANCE

Absent any unusual circumstances, staff considers project compliance with LORS and staff's proposed conditions of certification to be sufficient to ensure that no significant impacts (per guidelines in CEQA Appendix G: Environmental Checklist Section XVI – Utilities and Service systems) would occur as a result of project waste management activities.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller in area than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property on which the proposed project would be located. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field, plus the evaporation pond and administration areas, would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe #2 transmission line, would be the same as the proposed project. The generation output would be reduced by approximately 2 MW.

The Reduced Acreage Alternative is evaluated in this SA/DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise, and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

Under the Reduced Acreage Alternative, the agencies would approve a facility with a 7.2% heliostat field area reduction.

SETTING AND EXISTING CONDITIONS

The setting for the Reduced Acreage Alternative is the same as for the proposed project except that the heliostat field would occupy 1,270 acres within the 1,370-acre footprint of the proposed project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The Reduce Acreage Alternative would generate similar types of hazardous and non-hazardous wastes from construction, operation and closure/decommissioning of the project. However, the quantities of waste could be proportionately reduced by approximately 7% related to the heliostat field. Wastes associated with the power block and facilities other than the solar field would not substantially change compared to the proposed project. The amount of non-hazardous and hazardous solid wastes generated under a Reduced Acreage Alternative that would require landfill/treatment over the life of the project would not substantially change compared to the proposed project. Similar to the proposed project, wastes requiring off-site disposal would not significantly impact the remaining capacity of off-site disposal facilities. Disposal methods would remain the same as for the proposed project and the same Conditions of Certification (**WASTE-1** through **-8** and **COMPLIANCE-12** through **-14** related to facility closure) would apply.

CEQA LEVEL OF SIGNIFICANCE

Similar to the proposed project, staff considers that with respect to CEQA, project compliance with LORS and staff's proposed conditions of certification to be sufficient to ensure that no significant adverse impacts would occur as a result of waste management activities associated with the Reduced Acreage Alternative.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It would be located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land, with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

The Desert Center Alternative is evaluated in this SA/DEIS because it would reduce impacts to cultural resources; the RSEP is located on the historic Rice Army Airfield. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

SETTING AND EXISTING CONDITIONS

Environmental Setting. Two leaking underground fuel tank sites were identified south of the North of Desert Center Alternative, at the intersection of I-10 and Rice Road (SR 177) (Envirostor 2010). Additionally, as with the proposed RSEP site, the North of Desert Center Alternative region was used as part of General Patton's Desert Training Camps during World War II. Because the North of Desert Center Alternative site is located on previously farmed land, unexploded ordinances are unlikely on the majority of the alternative site. However, because the site was previously used for agriculture, it is possible that the site has been contaminated by agriculture residues.

As discussed in this **WASTE MANAGEMENT** section of this SA/DEIS, preparation and construction of the proposed solar project and its associated facilities would last approximately 2.5 years (30 months) and generate non-hazardous, universal, and hazardous wastes in solid and liquid forms. Construction activities would generate an estimated 349 cubic yards of non-hazardous solid wastes, consisting of scrap wood, concrete, steel, glass, plastic, paper, insulating materials, aluminum, and food waste. For all construction waste, recyclable materials would be separated and removed to recycling facilities; non-recyclable materials would be disposed of at a Class III landfill. Non-hazardous liquid wastes would be generated during construction, and would include storm water runoff, sanitary waste, dust suppression drainage, and equipment wash water.

During construction, anticipated hazardous waste includes empty hazardous material containers; solvents, used oil, paint, and oily rags; heat exchanger cleaning waste (chelant-type solution); and flushing and cleaning wash water (SR 2009a, Table 5.14-1). The hazardous wastes would be transferred to a Class I landfill that accepts hazardous wastes.

The proposed project would generate non-hazardous, universal, and hazardous wastes in solid and liquid forms under normal operating conditions. **Waste Management Table 3** gives a summary of the anticipated operation waste streams, estimated waste volumes and generation frequency, and proposed management methods.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Environmental Impacts. Both nonhazardous and hazardous wastes would be created by the construction of the project at the North of Desert Center Alternative site in similar quantities as at the proposed site and would be disposed of at the same facilities as for the proposed project. The applicant would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction and would be required to comply with staff-proposed conditions of certification similar to those identified for the proposed site. The project at either the RSEP site or the North of Desert Center Alternative site would produce minimal maintenance and plant wastes.

All nonhazardous wastes would be recycled to the extent possible, and nonrecyclable wastes would be regularly transported off site to a local solid waste disposal facility. Generation plant wastes include oily rags, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, and other miscellaneous solid wastes, including the typical refuse generated by workers. All construction and operation activities would need to be conducted in compliance with regulations pertaining to the appropriate management of wastes.

Comparison to Proposed Project. The environmental impacts of waste disposal at the Desert Center Alternative site would be similar to those at the proposed RSEP site.

CEQA LEVEL OF SIGNIFICANCE

Similar to the proposed project, staff considers that with respect to CEQA, project compliance with LORS and staff's proposed conditions of certification to be sufficient to ensure that no significant adverse impacts would occur as a result of waste management activities associated with the North of Desert Center alternative.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western's 161-kV/230-kV Parker-Blythe Transmission Line #2 at the same location as the proposed project southeast of the RSEP. This alternative generation tie line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side

of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

1. The SR 62/Rice Valley Road Generation Tie Line Alternative is evaluated in this SA/DEIS because it would avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise, and would avoid the creation of a new 4.6 mile vehicle access route between RSEP and the proposed junction of the new generation tie line access road with the existing Rice Valley road.

SETTING AND EXISTING CONDITIONS

Environmental Impacts. Both nonhazardous and hazardous wastes would be created by the construction of SR 62/Rice Valley Road Transmission Line Alternative in similar quantities as at the proposed site and would be disposed of at the same facilities as for the proposed project. The applicant would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction and would be required to comply with staff's proposed conditions of certification similar to those identified for the proposed site.

All nonhazardous wastes would be recycled to the extent possible, and nonrecyclable wastes would be regularly transported off site to a local solid waste disposal facility. Generation plant wastes include oily rags, broken and rusted metal and machine parts, defective or broken electrical materials, empty containers, and other miscellaneous solid wastes, including the typical refuse generated by workers. All construction and operation activities would need to be conducted in compliance with regulations pertaining to the appropriate management of wastes.

Comparison to Proposed Project. The environmental impacts of waste disposal for the SR 62/Rice Valley Road Generation Tie Line Alternative would be similar to those at the proposed RSEP site.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

As discussed in this **WASTE MANAGEMENT** section of this SA/DEIS, preparation and construction of the proposed solar project and its associated facilities would last approximately 2.5 years (30 months) and generate non-hazardous, universal, and hazardous wastes in solid and liquid forms. Construction activities would generate an estimated 349 cubic yards of non-hazardous solid wastes, consisting of scrap wood, concrete, steel, glass, plastic, paper, insulating materials, aluminum, and food waste. For all construction waste, recyclable materials would be separated and removed to recycling facilities; non-recyclable materials would be disposed of at a Class III landfill. Non-hazardous liquid wastes would be generated during construction, and would include storm water runoff, sanitary waste, dust suppression drainage, and equipment wash water.

During construction, anticipated hazardous waste would include empty hazardous material containers; solvents, used oil, paint, and oily rags; heat exchanger cleaning waste (chelant-type solution); and flushing and cleaning wash water (SR 2009a, Table 5.14-1). The hazardous wastes would be transferred to a Class I landfill that accepts hazardous wastes.

The proposed project would generate non-hazardous, universal, and hazardous wastes in solid and liquid forms under normal operating conditions. **Waste Management Table 3** gives a summary of the anticipated operation waste streams, estimated waste volumes and generation frequency, and proposed management methods.

CEQA LEVEL OF SIGNIFICANCE

Similar to the proposed project, staff considers that with respect to CEQA, project compliance with LORS and staff's proposed conditions of certification to be sufficient to ensure that no significant adverse impacts would occur as a result of waste management associated with the SR 62/Rice Valley Road Generation Tie Line alternative.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No California Desert Conservation Area (CDCA) land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the generation tie line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no new wastes would be generated. This No Project/No Action Alternative would not result in impacts to waste management at this location. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental

effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130). NEPA states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR §1508.7).

There is the potential for substantial future development in eastern Riverside County and throughout the southern California desert region. Analysis of cumulative impacts is based on data provided in the following maps and tables (see **CUMULATIVE SCENARIO**):

- Cumulative Impacts Figure 1, Renewable Energy Applications in California Desert District;
- Cumulative Impacts Figure 2, Existing and Future/Foreseeable Projects;
- Cumulative Impacts Table 1A, Renewable Energy Projects in the California Desert District
- Cumulative Impacts Table 1B, Renewable Energy Projects on State and Private Lands
- Cumulative Impacts Table 2, Existing Projects in Rice Valley area and Eastern Riverside Eastern Riverside County; and
- Cumulative Impacts Table 3, Future Foreseeable Projects in Rice Valley area and Eastern Riverside Eastern Riverside County.

The analysis in this section first defines the geographic area over which cumulative impacts related to waste management could occur. The cumulative impact analysis itself describes the potential for cumulative impacts to occur as a result of implementation of the proposed project along with the listed local and regional projects.

GEOGRAPHIC EXTENT

The geographic extent for the analysis of the cumulative impacts associated with the RSEP project is Riverside County, the location of the closest large Class III landfills. This geographic scope is appropriate because waste disposal facilities in Riverside County are the ones most likely to be used for disposal of waste generated by the RSEP Project considering regulatory acceptability and transport costs.

Existing Cumulative Conditions

Cumulative impacts could occur within Riverside County if the RSEP is implemented in combination with other local or regional projects. Cumulative impacts could also occur as a result of development of some of the many proposed solar and wind development projects that have been or are expected to be under consideration by the BLM and the Energy Commission in the near future. Many of these projects are located within the California Desert Conservation Area, as well as on BLM land in Nevada and Arizona.

Future Foreseeable Projects

The RSEP Project would generate non-hazardous solid waste that would add to the total waste generated in Riverside County. Non-hazardous solid waste generated by all

of the past, present, and reasonably foreseeable projects presented in Cumulative Impacts Table 2 and Cumulative Impacts Table 3 would also be disposed of within Riverside County. Most of the reasonably foreseeable projects identified in Cumulative Impacts Table 3 would generate smaller volumes of non-hazardous waste than the RSEP Project because wind and photovoltaic projects would not generate wastes associated with construction and operation of a power block.

Foreseeable Projects in the Project Area

Staff used a value of 100 cubic yards/MW as a rough guide for determining total volume of non-hazardous solid wastes that could result from implementation of all the projects listed in the two tables, the majority of which are renewable energy facilities, and particularly solar facilities. The value is based on the 150-MW RSEP project total lifetime value of 23,000 cubic yards of non-hazardous solid waste, factoring in the lesser amounts of waste likely to be generated by solar photovoltaic projects. Similar to the proposed projects, these quantities do not include closure or decommissioning wastes; disposal at landfills with adequate capacity would be a condition in facility closure plans. The approximately 450,000 cubic yards generated from projects listed in **Cumulative Impacts Table 3** compares to be less than 1% of the almost 200,000,000 cubic yards of Class III landfill capacity available to these generators as identified in AFC Table 5.16-4 (Solar Millennium 2009a, page 5.16-10, 11). Based on this information, the agencies conclude that the non-hazardous waste generated by the RSEP Project would not contribute substantially to diminishing Class III landfill capacity in Riverside County

As stated above, the non-recyclable component of the 60 cubic yards of total lifetime hazardous waste from the RSEP project would not impact the capacity or remaining life of the Class I waste facilities. Using a similar conversion factor as that noted above, the agencies estimated that approximately 16,000 cubic yards of lifetime hazardous waste would be generated by the projects listed in Cumulative Impacts Table 3. This compares to be less than 1% of the almost 10,000,000 cubic yards of Class I landfill capacity available to these generators, as identified in AFC (RSEP 2009a, page 5.14-11). Based on this information, staff concludes that hazardous waste generated by the RSEP Project would not contribute substantially to diminishing available Class I landfill capacity.

Foreseeable Renewable Projects in the California Desert

Implementation of the multiple solar and wind projects proposed to be developed in the California Desert, and other planned non-energy projects, would result in an increase in generation of hazardous and non-hazardous solid and liquid wastes and would add to the total quantity of wastes generated throughout the desert. However, project wastes would be recycled wherever practical and sufficient capacity is available throughout the area, especially with the addition of the Mesquite Regional Landfill with a capacity of 600 million tons that is scheduled to be fully operational in 2011/2012 (Mesquite Regional Landfill 2010). Therefore, impacts of the RSEP project, when combined with impacts of the future solar, wind and other development projects that are currently proposed within the California desert would not contribute substantially to diminishing regional landfill capacity.

Cumulative Impact Conclusion

Impacts of the RSEP project would combine with impacts of past, present, and reasonably foreseeable projects to result in a contribution to local and regional cumulative impacts related to waste management.

The amount of non-hazardous and hazardous wastes generated during construction, operation and closure/decommissioning of the RSEP project would add to the total quantity of hazardous and non-hazardous waste generated in Riverside County. However, sufficient capacity is available at treatment and disposal facilities to handle the volumes of wastes that would be generated by the project as well as past, present and reasonably foreseeable projects. Therefore, staff concludes that with respect to CEQA, the waste generated by the RSEP project would not result in significant adverse cumulative waste management impacts, either locally or regionally.

COMPLIANCE WITH LORS

With respect to CEQA, staff concludes that with adoption of staff's proposed Conditions of Certification, the proposed RSEP would comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during both facility construction and operation. The applicant is required to recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes.

Because hazardous wastes would be produced during both project construction and operation, the RSEP would be required to obtain a hazardous waste generator identification number from U.S. EPA. The RSEP would also be required to properly store, package, and label all hazardous wastes; use only approved transporters; prepare hazardous waste manifests; keep detailed records; and appropriately train employees in accordance with state and federal hazardous waste management requirements.

NOTEWORTHY PUBLIC BENEFITS

Staff has not identified any noteworthy public benefits associated with Waste Management.

PROPOSED MITIGATION MEASURES/CONDITIONS OF CERTIFICATION

The following Mitigation Measures/Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as staff's recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of waste management-related impacts to less than significant and for the project to conform to all applicable LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision.

WASTE-1 The project owner shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available during site characterization (if needed), demolition, excavation, and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil and impact public health, safety and the environment.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

WASTE-2 If potentially contaminated soil is identified during site characterization, demolition, excavation or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control or Regional Water Quality Control Board, the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, significant remediation may be required, the project owner shall contact the CPM, and representatives of the Department of Toxic Substances Control or Regional Water Quality Control Board, for guidance and possible oversight.

Verification: The project owner shall submit any reports filed by the professional engineer or professional geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-3 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to the CPM for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

- A description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications; and
- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans. The applicant shall strive to achieve at least a 50% reduction of waste

construction and demolition materials by reuse and recycling to meet landfill waste diversion goals consistent with the Integrated Waste Management Act of 1989.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-4 The project owner shall prepare Unexploded Ordnance (UXO) Identification, Training and Reporting Plan to properly train all site workers in the recognition, avoidance and reporting of military waste debris and ordnance. The project owner shall submit the plan to the CPM and AO for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

- A description of the training program outline and materials, and the qualifications of the trainers; and
- Identification of available trained experts that will respond to notification of discovery of any ordnance (unexploded or not); and
- A work plan to recover and remove discovered ordnance, and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near surface or buried ordnance in all proposed land disturbance areas.
- The project owner shall provide documentation of the plan and provide survey results to the CPM.

Verification: The project owner shall submit the UXO Identification, Training and Reporting Plan to the CPM for approval no less than 60 days prior to the initiation of construction activities at the site. The results of geophysical surveys shall be submitted to the CPM within 30 days of completion of the surveys.

WASTE-5 The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency (USEPA) prior to generating any hazardous waste during project construction and operations.

Verification: The project owner shall keep a copy of the identification number on file at the project site and provide documentation of the hazardous waste generation and notification and receipt of the number to the CPM in the next scheduled Monthly Compliance Report after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to USEPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM and AO in the next scheduled compliance report.

WASTE-6 Upon notification of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed against the project itself, or against any waste hauler or disposal facility or

treatment operator with which the owner contracts, and describe how the violation will be corrected.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the way project-related wastes are managed.

WASTE-7 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the proposed project and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- A detailed description of how facility wastes will be managed, and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed of upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-8 The project owner shall ensure that all accidental spills or unauthorized releases of hazardous substances, hazardous materials, and hazardous waste are documented and remediated, and that wastes generated from

accidental spills and unauthorized releases are properly managed and disposed of in accordance with all applicable federal, state, and local requirements.

The project owner shall document management of all accidental spills and unauthorized releases of hazardous substances, hazardous materials, and hazardous wastes that occur on the project property or related linear facilities. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; how release was managed and material cleaned up; amount of contaminated soil and/or cleanup wastes generated; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release.

Verification: A copy of the accidental spill or unauthorized release documentation shall be provided to the CPM within 30 days of the date the release was discovered.

CONCLUSIONS

Consistent with the three main objectives of staff's waste management analysis (as noted in the Introduction section of this analysis), staff provides the following conclusions:

After review of the applicant's proposed waste management procedures, staff concludes that project wastes would be managed in compliance with all applicable waste management LORS. Staff notes that construction, demolition, and operation wastes would be characterized and managed as either hazardous or non-hazardous waste. All non-hazardous wastes would be recycled to the extent feasible, and nonrecyclable wastes would be collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be stored onsite in accordance with accumulation time, and then properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies.

However, to help ensure and facilitate ongoing project compliance with LORS, staff proposes Conditions of Certification **WASTE-1** through **-8**. These conditions would require the project owner to do all of the following:

- Ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight (**WASTE-1** and **-2**).
- Prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation (**WASTE-3** and **-7**).

- Ensure the project site is investigated and remediated for any unexploded ordnance that may pose a risk to construction personnel or the environment (**WASTE-4**).
- Obtain a hazardous waste generator identification number (**WASTE-5**).
- Report any waste management-related LORS enforcement actions and how violations will be corrected (**WASTE-6**).
- Ensure that all spills or releases of hazardous substances are reported and cleaned-up in accordance with all applicable federal, state, and local requirements (**WASTE-8**).

The existing available capacity for the Class III landfills that may be used to manage nonhazardous project wastes exceeds 3.73 million cubic yards, with another 600 million cubic yards of capacity expected in the future with full operation of the Mesquite Regional Landfill. The total amount of non-hazardous wastes generated from construction, demolition and operation of the RSEP would consume much less than 1% of the projected landfill capacity. Therefore, disposal of project generated non-hazardous wastes would have a less than significant impact on Class III landfill capacity.

In addition, the two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of RSEP have a combined remaining capacity in excess of 16 million cubic yards, with another 4.6 to 4.9 million cubic yards of proposed capacity. The total amount of hazardous wastes generated by the RSEP would be less than significant in relation to the remaining permitted capacity. Therefore, impacts from disposal of RSEP generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

Staff concludes that management of the waste generated during construction and operation of the RSEP would not result in any significant adverse impacts, and would comply with applicable LORS, if the waste management practices and mitigation measures proposed in the RSEP AFC and staff's proposed conditions of certification are implemented.

REFERENCES

CEC 2010b - California Energy Commission/J. Kessler (tn 55395). Data Request Set 1 (#'s 1-168), Dated 2/16/10. Submitted to Solar Reserve/J. Benoit on 2/16/10.

CH2MHill 2010a – CH2M Hill/D. Davy (tn 55813). Applicant's Response to CEC Staff Data Requests 1 to 168, dated 3/08/10. Submitted to CEC/J. Kessler on 3/09/10.

CH2MHill 2010b – CH2M Hill/ D. Davy (tn 55924). Applicant's Response to CEC Staff Data Requests 130, 139 to 141, 143 to 144, dated 3/16/10. Submitted to CEC/J. Kessler on 3/16/10.

CH2MHill 2010d – CH2M Hill/ D. Davy (tn 56161). Applicant's Response to CEC Workshop Queries 9 & 10 – Gen. Tie Alignment & Reduce Acreage Alternatives, dated 4/7/10. Submitted to CEC/J. Kessler on 4/7/10.

SR 2009a – Solar Reserve/ T. Georgis (tn: 53723). Application for Certification. Dated 10/13/09. Submitted to CEC/Docket Unit on 10/21/09.

SR 2009b – Solar Reserve/ T. Georgis (tn: 54204). Applicant's Data Adequacy Supplement. Dated 11/19/09. Submitted to CEC/Docket Unit on 11/20/09.

Solar Millennium 2009a – Solar Millennium (tn: 52939). Application for Certification Vol 1 & 2, dated 8/24/2009.

WORKER SAFETY AND FIRE PROTECTION

Testimony of Geoff Lesh, PE, Alvin Greenberg, PhD. and Rick Tyler

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that if the applicant for the proposed RSEP project provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program, as required by Conditions of Certification **WORKER SAFETY-1** and **-2** and fulfils the requirements of Conditions of Certification **WORKER SAFETY-3** through **-11** the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards.

The proposed conditions of certification provide assurance that the Construction Safety and Health Program and the Operations and Maintenance Safety and Health Program proposed by the applicant would be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable laws, ordinances, regulations, and standards.

The agencies have considered the position of the Riverside County Fire Department (RCFD) and all relevant information as well as past experience at other solar power plants in California, and staff has determined with respect to CEQA that the project would cause a significant direct and cumulative impact on local fire protection services and the public which is served by RCFD. Therefore, staff is proposing mitigation to reduce these impacts to less than significant by requiring payment to the RCFD for capital and operations and maintenance support as apportioned among other solar energy developers in addition to the requirement to provide onsite emergency medical services and transport during construction and operations (see proposed Conditions of Certification **WORKER SAFETY-7**, **-8**, **-10** and **-11**).

These Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as staff's recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of worker safety- and fire protection-related impacts to less than significant and for the project to conform to all applicable LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision.

INTRODUCTION

The proposed action evaluated within this Staff Assessment-Draft Environmental Impact Statement (SA-DEIS) is the construction and operation of the Rice Solar Electric Project (RSEP, referred to herein as the Project), a proposed solar-thermal electricity generation facility located on private lands in northern Riverside County, California.

Worker safety and fire protection are regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this SA-DEIS is to assess the worker safety and fire protection measures proposed by the RSEP and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable Law	Description
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of “[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources” (29 USC § 651).
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California’s plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Title 8 California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 Cal Code Regs. section 3, et seq.	This section incorporates the current addition of the International Building Code.
Health and Safety Code section 25500, et seq.	This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
Riverside County Ordinance 457	Adopts specific building, mechanical, plumbing, and electrical codes from sources such as the California Building Standards Commission with county-specific modifications.
Riverside County Ordinance 787	Adopts the 2007 edition of the California Fire Code and portions of the 2007 edition of the California Building Code with county-specific modifications.
Riverside County Ordinance 615	Establishes requirements for the use, generation, storage and disposal of hazardous materials within the County.
Riverside County Dept. of Environmental Health, Hazardous Materials Releases	Adopts State requirements and guidelines to govern hazardous materials release response plans and inventories.
Chapter 22 of the 2007 California Fire Code	This section of the CFC addresses requirement for Motor Fuel-Dispensing Facilities and Repair Garages. It has been adopted by Riverside County and will apply to the fuel depot at the site.
NFPA 30a	This is the NFPA code for Motor Fuel Dispensing Facilities and Repair Garages (2008Edition) and is the industry standard for fuel depots.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Two issues are assessed in Worker Safety and Fire Protection:

1. The potential for impacts on the safety of workers during demolition, construction, and operations activities, and
2. Fire prevention/protection, emergency medical services (EMS) and response, and hazardous materials (hazmat) spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by the California Department of Occupational Safety and Health (Cal/OSHA) regulations. If all LORS are followed, workers will be adequately protected. Thus, the standard for the agencies' review and determination of significant impacts on workers is whether or not the applicant has demonstrated adequate knowledge about and dedication to implementing all pertinent and relevant Cal/OSHA standards.

Regarding fire prevention matters, the agencies review and evaluate the on-site fire-fighting systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, the agencies identify and recommend additional measures. The agencies review and evaluate the local fire department capabilities and response time in each area and interviews the local fire officials to determine whether they feel adequately trained, manned, and equipped to respond to the actual and potential needs of a power plant. The agencies then determine if the presence of the power plant would cause a significant impact on a local fire department. If it does, the agencies will identify and recommend that the applicant mitigate this impact by providing increased resources to the fire department.

The agencies have also established a procedure for use when a local fire department has identified either a significant incremental project impact to the local agency or a significant incremental cumulative impact to a local agency. The agencies first conduct an initial review of the fire department's position and either agree or disagree with the fire department's determination that a significant impact would exist if the proposed power plant were built and operated. A process then starts whereby the project applicant can either accept the determination made by the agencies or refute the determination by providing a Fire Needs Assessment and a Risk Assessment. The Fire Needs Assessment would address fire response and equipment/staffing/location needs while the Risk Assessment would be used to establish that while an impact to the fire department might indeed exist, the risk (chance) of that impact occurring and causing injury or death may or may not be less than significant.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The RSEP is within a larger, privately owned holding that is 3,324 acres in size. Within the project parcel will be the administration buildings area, heliostat field with power block, and evaporation pond areas, (collectively, the project site or facility site) totaling 1,410 acres, that will be surrounded by a security fence. Areas outside the facility site but within the project parcel will not be fenced or developed or disturbed as part of the RSEP. The site is primarily on previously disturbed private land (RSEP 2009a, AFC pg. ES-4). Existing use adjacent to the proposed project site consists of undeveloped open space uses to the east, south, and west. Along the northern boundary of the site, State Route 62, the California Aqueduct, and the Arizona-California Railroad run parallel to the site (RSEP 2009a, AFC Section 5.7.2.1).

The two closest Riverside County Fire Department (RCFD) stations that would respond to an incident at the proposed project, located on the former Rice Army Airfield in Rice, CA are Station # 49, located at 43880 Lake Tamarisk, Desert Center, CA. and Station # 43 located at 140 West Barnard Street, Blythe, CA. Riverside County Fire Station # 49 is located approximately 70 miles from the project site and the second Riverside County Fire Station (# 43) is located approximately 75 miles from the proposed site. From the above listed fire stations, the response time for engine # 49 is approximately 1 hour and forty-five minutes after dispatch. The second unit, engine # 43 will respond to the project area in approximately two hours. Riverside County Fire Department Fire Stations are staffed full-time, 24 hours/7 days a week, with a minimum 3 person crew, including paramedics, operating a "Type-1" structural fire fighting apparatus. Each member of the engine company is a certified Emergency Medical Technician and certified to the level of Hazardous Materials First Responder Operational (Riverside 2010e)

The applicant has stated that in accordance with emergency response procedures specified in the Hazardous Materials Business Plan (HMBP), designated personnel will be trained as members of a plant hazardous material response team, and team members will receive the first responder and hazardous material technical training to be developed in the HMBP, including training in appropriate methods to mitigate and control accidental spills. In the event of a chemical emergency, plant personnel will defer to the Riverside County Department of Environmental Health, Hazardous Materials Management Division (RCDEH HMMD). (RSEP 2009a, Section 5.5.4.2.1). In the event of a hazardous materials incident, The Riverside County Fire Department Hazardous Materials Response Team will respond to the project area. The Hazardous Materials Response Team # 81 is located at 37955 Washington Street in Palm Desert, CA, approximately 100 miles from the project site. The estimated response time is approximately 2 hours. (Riverside 2010b).

Staff concludes that with respect to CEQA and given the remote location, the hazardous material response time is acceptable, and that the Riverside County Hazmat Team is adequately trained and equipped to respond to an emergency at RSEP. The remote location lengthens the response time but, at the same time, reduces the risk of off-site consequences to the public. More detailed discussion and analysis of hazardous

materials use and storage at the proposed RSEP project can be found in the Hazardous Materials Management section of this SA-DEIS.

ASSESSMENT OF DIRECT AND INDIRECT IMPACTS AND DISCUSSION OF MITIGATION

Worker Safety

Industrial environments are potentially dangerous during construction and operation of facilities. Workers at the proposed RSEP would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. It is important for the RSEP to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

Safety and Health Programs would be prepared by the applicant to minimize worker hazards during construction and operation. The agencies use the phrase “Safety and Health Program” to refer to the measures that would be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

Workers at the RSEP would be exposed to hazards typical of construction and operation of a solar thermal electric power generating facility.

Construction Safety Orders are published at Title 8 California Code of Regulations sections 1502, et seq. These requirements are promulgated by Cal/OSHA and would be applicable to the construction phase of the project. The Construction Safety and Health Program would include the following:

- Construction Injury and Illness Prevention Program (8 Cal Code Regs. § 1509)
- Construction Fire Prevention Plan (8 Cal Code Regs. § 1920)
- Personal Protective Equipment Program (8 Cal Code Regs. §§ 1514 — 1522)
- Emergency Action Program and Plan

Additional programs under General Industry Safety Orders (8 Cal Code Regs. §§ 3200 to 6184), Electrical Safety Orders (8 Cal Code Regs. §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 Cal Code Regs. §§ 450 to 544) would include:

- Electrical Safety Program
- Motor Vehicle and Heavy Equipment Safety Program
- Forklift Operation Program
- Excavation/Trenching Program
- Fall Protection Program

- Scaffolding/Ladder Safety Program
- Articulating Boom Platforms Program
- Crane and Material Handling Program
- Housekeeping and Material Handling and Storage Program
- Respiratory Protection Program
- Employee Exposure Monitoring Program
- Hand and Portable Power Tool Safety Program
- Hearing Conservation Program
- Back Injury Prevention Program
- Ergonomics Program
- Heat and Cold Stress Monitoring and Control Program
- Hazard Communication Program
- Lock Out/Tag Out Safety Program
- Pressure Vessel and Pipeline Safety Program
- Solar Components Safe Handling Program

The Application for Certification (AFC) includes adequate outlines of the above programs (RSEP 2009a, Section 5.16.2.2.1 and Table 5.16-3). Prior to the start of construction of RSEP, detailed programs and plans would be provided to the California Energy Commission Compliance Project Manager (CPM) and to the RCFD pursuant to the Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations at RSEP, the Operations and Maintenance Safety and Health Program would be prepared. This operational safety program would include the following programs and plans:

- Injury and Illness Prevention Program (8 Cal Code Regs. § 3203)
- Fire Protection and Prevention Program (8 Cal Code Regs. § 3221)
- Personal Protective Equipment Program (8 Cal Code Regs. §§ 3401 to 3411)
- Emergency Action Plan (8 Cal Code Regs. § 3220)

In addition, the requirements under General Industry Safety Orders (8 Cal Code Regs. §§ 3200 to 6184), Electrical Safety Orders (8 Cal Code Regs. §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 Cal Code Regs. §§ 450 to 544) would be applicable to the project. Written safety programs for RSEP, which the applicant would develop, would ensure compliance with the above-mentioned requirements.

The AFC includes adequate outlines of the Injury and Illness Prevention Program, Emergency Action Plan, Fire Prevention Program, and Personal Protective Equipment

Program (RSEP 2009a, Section 5.16.2 and Table 5.16-4). Prior to operation of RSEP, all detailed programs and plans would be provided to the CPM and RCFD pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

As mentioned above, the applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. Both safety and health programs would be comprised of six more specific programs and would require major items detailed in the following paragraphs.

Injury and Illness Prevention Program

The IIPP would include the following components as presented in the AFC (RSEP 2009a, Section 5.16.2.3):

- identity of person(s) with authority and responsibility for implementing the program;
- safety and health policy of the plan;
- definition of work rules and safe work practices for construction activities;
- system for ensuring that employees comply with safe and healthy work practices;
- system for facilitating employer-employee communications;
- procedures for identifying and evaluating workplace hazards and developing necessary program(s);
- methods for correcting unhealthy/unsafe conditions in a timely manner;
- safety procedures; and
- training and instruction.

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (8 Cal Code Regs. § 3221). The AFC outlines a proposed Fire Prevention Plan which is acceptable to staff with respect to CEQA (RSEP 2009a, Section 5.16.2.3). The plan would accomplish the following:

- determine general program requirements (scope, purpose, and applicability);
- determine potential fire hazards;
- develop good housekeeping practices and proper handling and materials storage;
- determine potential ignition sources and control measures for these sources;
- determine persons responsible for equipment and system maintenance;
- locate portable and fixed fire-fighting equipment in suitable areas;
- establish and determine training and instruction requirements; and
- define recordkeeping requirements.

Staff proposes that the applicant submit a final Fire Prevention Plan to the RCFD for review and comment and to the CPM for review and approval to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **-2**.

Personal Protective Equipment Program

California regulations require Personal Protective Equipment (PPE) and first aid supplies whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 Cal Code Regs. §§ 3380 to 3400). The RSEP operational environment would require PPE.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and would carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee must be provided with the following information pertaining to the protective clothing and equipment:

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations; and
- when and how to replace the protective clothing and equipment.

The PPE Program ensures that employers comply with the applicable requirements for PPE and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (8 Cal Code Regs. § 3220). The AFC contains a satisfactory outline for an emergency action plan (RSEP 2009a, Section 5.16.2.3).

The emergency action plan would accomplish the following:

- establish scope, purpose, and applicability;
- identify roles and responsibilities;
- determine emergency incident response training;
- develop emergency response protocols;
- specify evacuation protocols;
- define post emergency response protocols; and
- determine notification and incident reporting.

Written Safety Program

In addition to the specific plans listed above, additional LORS called *safe work practices* apply to the project. Both the Construction and the Operations Safety Programs would address safe work practices under a variety of programs. The components of these

programs include, but are not limited to, the programs found under the heading “Construction Safety and Health Program” in this Worker Safety and Fire Protection section.

Safety Training Programs

Employees would be trained in the safe work practices described in the above-referenced safety programs.

Additional Safety Issues

The applicant has indicated that workers will be adequately trained and protected, but has not included precautions against exposure to herbicides. Therefore, to ensure that workers are indeed protected, the agencies have identified and staff has proposed additional requirements to proposed Conditions of Certification **WORKER SAFETY-1** and **-2**. These requirements consist of the following provision:

- The development and implementation of Best Management Practices (BMP) for the storage and application of herbicides used to control weeds beneath and around the solar heliostats.

A BMP requiring proper herbicide storage and application will mitigate potential risks to workers from exposure to herbicides and reduce the chance that herbicides will contaminate either surface water or groundwater. The agencies have identified and staff recommends that a BMP follow either the guidelines established by the U.S. EPA (EPA 1993), or more recent guidelines established by the State of California or U.S. EPA.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by the National Institute for Occupational Safety and Health (NIOSH):

- More than 7 million persons work in the construction industry, representing 6 percent of the labor force. Approximately 1.5 million of these workers are self-employed.
- Of approximately 600,000 construction companies, 90 percent employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers were killed on the job each year—more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6 percent) between 1980 and 1993.
- Construction injuries account for 15 percent of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of solar power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. That this standard practice has reduced and/or eliminated hazards has been evident in the audits the agencies recently conducted of power plants under construction. The federal Occupational Safety and Health Administration (OSHA) has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors in four areas:

- to improve their safety and health performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections;
- to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and
- to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term *Competent Person* is used in many OSHA and Cal/OSHA standards, documents, and directives. A Competent Person is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, the agencies have identified and staff proposes Condition of Certification **WORKER SAFETY-3**, which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of solar power plants.

Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. The findings of the staff audits include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;

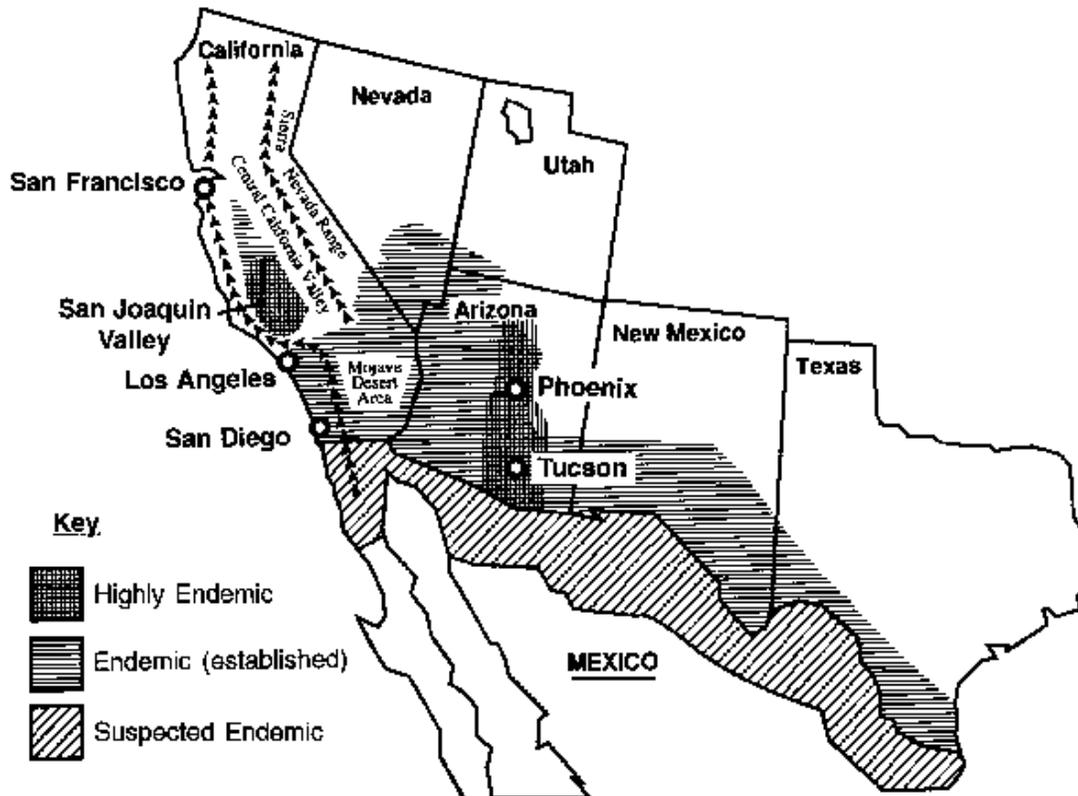
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hotwork;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- construction of an unsafe aqueous ammonia unloading pad;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility but too close to the perimeter fence; and
- lack of adequate employee- or contractor-written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand-over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner, yet reporting to the Chief Building Official (CBO) and CPM, will serve as an “extra set of eyes” to ensure that safety procedures and practices are fully implemented at all power plants certified by the Energy Commission. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged it in questions about the team’s findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

Valley Fever (Coccidioidomycosis)

Coccidioidomycosis or "Valley Fever" (VF) is primarily encountered in southwestern states, particularly in Arizona and California. It is caused by inhaling the spores of the fungus *Coccidioides immitis*, which are released from the soil during soil disturbance (e.g., during construction activities) or wind erosion. The disease usually affects the lungs and can have potentially severe consequences, especially in at-risk individuals such as the elderly, pregnant women, and people with compromised immune systems. Trenching, excavation, and construction workers are often the most exposed population. Treatment usually includes rest and antifungal medications. No effective vaccine currently exists for Valley Fever. VF is endemic to the San Joaquin Valley in California, which presumably gave this disease its common name. In California, the highest VF rates are recorded in Kern, Kings, and Tulare Counties, followed by Fresno and San Luis Obispo Counties. LA County, San Diego County, San Bernardino County, and Riverside County also have reported VF cases although much fewer.

Worker Safety and Fire Protection Figure 1
The geographic distribution of coccidioidomycosis*



*Source: CDC 2006, Figure 2

A 2004 CDC report found that the number of reported cases of coccidioidomycosis in the US increased by 32 percent during 2003-2004, with the majority of these cases occurring in California and Arizona. The report attributed these increases to changes in land use, demographics, and climate in endemic areas, although certain cases might be attributable to increased physician awareness and testing (CDC 2006). According to the CDC Morbidity and Mortality Weekly Report of February 2009, incidences of valley fever have increased steadily in Arizona and California in the past decade. Cases of coccidioidomycosis averaged about 2.5 per 100,000 population annually from 1995 to 2000 and increased to 8.0 per 100,000 population between 2000 and 2006 (incident rates tripled). In 2007 there was a slight drop in cases, but the rate was still the highest it has been since 1995. The report identified Kern County as having the highest incidence rates (150.0 cases per 100,000 population), and non-Hispanic blacks having the highest hospitalization rates (7.5 per 100,000 population). In addition, between the years 2000 and 2006, the number of valley fever related hospitalizations climbed from 1.8 to 4.3 per 100,000 population (611 cases in 2000 to 1,587 cases in 2006) and then decreased to 1,368 cases in 2007 (3.6 per 100,000 population). Overall in California, during 2000-2007, a total of 752 (8.7 percent) of the 8,657 persons hospitalized for coccidioidomycosis died (CDC 2009).

A 2007 study published in the Emerging Infectious Diseases journal of the Center for Disease Control and Prevention (CDC), found the frequency of hospitalization for coccidioidomycosis in the entire state of California to be 3.7 per 100,000 residents per year for the period between 1997 and 2002 (see Table 2 below). There were 417 deaths from VF in California in those years, resulting in a mortality rate of 2.1 per 1 million California residents annually.

Worker Safety and Fire Protection Table 2
Hospitalizations for coccidioidomycosis, California, 1997–2002*

Category	Total hospitalizations	Total person- yrs (× 10 ⁶)	Frequency of hospitalization**	Frequency of hospitalization for coccidioidal meningitis**
Total	7,457	203.0	3.67	0.657
Year				
1997	1,269	32.5	3.90	0.706
1998	1,144	32.9	3.50	0.706
1999	1,167	33.4	3.5	0.61
2000	1,100	34.0	3.23	0.62
2001	1,291	34.7	3.7	0.58
2002	1,486	35.3	4.2	0.71
Highest incidence counties				
Kern	1,700	3.97	42.8	
Tulare	479	2.21	21.7	
Kings	133	0.77	17.4	
SLO	170	1.48	11.5	

*Source: Flaherman 2007 **Per 100,000 residents per year

Riverside County has approximately 50 cases of VF per year (population is roughly 2 million) while nearby San Diego County has about 120 cases per year (population roughly 3 million). In comparison, an average of over 1,000 cases have been reported annually in Kern County during the last five years. Cases of VF in Riverside County have remained steady in the past several years, fluctuating only slightly between 48 and 55 cases per year. Nine deaths related to VF have been reported in Riverside County between 2005 and 2008 (Williams 2009). A rate of 50 cases per year per 2,000,000 persons corresponds to a risk of about 25 in one million and a rate of 2.5 cases per 100,000 persons, which is lower than the average rate for the entire state of California (~3.6 cases per 100,000 residents). Data received from the Riverside County Department of Public Health indicates that the crude VF rate in Riverside County between 1999 and 2006 has been even lower, about 15 per 100,000 residents. The region near which the RSEP project would be located (generally between Blythe and Dessert Center) has recorded five or fewer cases between 1999 and 2006 (RCDPH 2007).

Worker Safety and Fire Protection Table 3 Valley Fever rates in Riverside County

County of Riverside

Reported Cases: Coccidioidomycosis (Valley Fever)

Years 1999 – 2006

By Zip Code of Residence*

ZIP	PO_NAME	8 Year Total	8 Year Estimated Crude Aggregate Rate (per 10,000)
92236	Coachella	5	1.7
92225	Blythe	5	2.8
92883	Corona	5	2.6
92591	Temecula	5	1.5
92201	Indio	6	1.0
92505	Riverside	6	1.4
92544	Hemet	7	1.6
92530	Lake Elsinore	7	1.4
92506	Riverside	7	1.5
92879	Corona	8	1.6
92507	Riverside	10	1.9
92583	San Jacinto	10	4.0
92570	Perris	11	2.5
92220	Banning	12	3.8
92586	Sun City	12	6.2
92509	Riverside	13	1.8
92504	Riverside	21	4.0
92503	Riverside	32	4.1
TOTAL	ALL COUNTY	280	1.5

* only zip codes for which more than 4 cases were recorded during the 8-year period are included

Source: DHS: AVSS CMR reporting

Compiled:

Riverside County Department of Public Health

Epidemiology and Program Evaluation

Kevin Meconis, Epidemiologist

11/19/2007

A 1996 paper that tried to explain the sudden increase in Coccidioidomycosis cases that began in the early 90s found that the San Joaquin Valley in California has the largest population of *C. immitis*, which is found to be distributed unevenly in the soil and seems to be concentrated around animal burrows and ancient Indian burial sites. It is usually found 4 to 12 inches below the surface of the soil. The paper also reported that incidences of coccidioidomycosis vary with the seasons; with highest rates in late summer and early fall when the soil is dry and the crops are harvested. Dust storms are frequently followed by outbreaks of coccidioidomycosis (Kirkland 1996). A modeling attempt to establish the relationship between fluctuations in VF incident rates and weather conditions in Kern County found that there is only a weak connection between weather and VF cases (weather patterns correlate with up to 4 percent of outbreaks). The study concluded that the factors that cause fluctuations in VF cases are not weather-related but rather biological and anthropogenic (i.e. human activities, primarily construction on previously undisturbed soil) (Talamantes 2007).

During correspondence with Dr. Michael MacLean of the Kings County Health Department, he noted that according to his experience and of those who study VF, it is very hard to find the fungus in soil that was previously farmed and irrigated, which greatly reduces the risk of infection resulting from disturbance of farmed lands. This does not apply to previously undisturbed lands where excavation, grading, and construction may correlate with increases in VF cases. Dr. MacLean feels that with the current state of knowledge, we can only speculate on the causes and trends influencing VF cases and he does not feel that construction activities are necessarily the cause of VF outbreaks (KCEHS 2009).

Valley Fever is spread through the air. If soil containing the fungus is disturbed by construction, natural disasters, or wind, the fungal spores get into the air where people can breathe in the spores. The disease is not spread from person to person. Occupational or recreational exposure to dust is an important consideration. Agricultural workers, construction workers, or others (such as archeologists) who dig in the soil in the disease-endemic area of the Central Valley are at the highest risk for the disease (CDC 2006; CDHS 2010). The risk for disseminated coccidioidomycosis is much higher among some ethnic groups, particularly African-Americans and Filipinos. In these ethnic groups, the risk for disseminated coccidioidomycosis is tenfold that of the general population (CDC 2006).

Worker Safety and Fire Protection Table 4 Disease Forms of Valley Fever

CATEGORIES	NOTES
Asymptomatic	<ul style="list-style-type: none"> • Occurs in about 50 percent of patients
Acute Symptomatic	<ul style="list-style-type: none"> • Pulmonary syndrome that combines cough, chest pain, shortness of breath, fever, and fatigue. • Diffuse pneumonia affects immunosuppressed individuals • Skin manifestations include fine papular rash, erythema nodosum, and erythema multiforme • Occasional migratory arthralgias and fever
Chronic Pulmonary	<ul style="list-style-type: none"> • Affects between 5 percent to 10 percent of infected individuals • Usually presents as pulmonary nodules or peripheral thin-walled cavities
Extrapulmonary/Disseminated Varieties	
Chronic skin disease	<ul style="list-style-type: none"> • Keratotic and verrucose ulcers or subcutaneous fluctuant abscesses
Joints / Bones	<ul style="list-style-type: none"> • Severe synovitis and effusion that may affect knees, wrists, feet, ankles, and/or pelvis • Lytic lesions commonly affecting the axial skeleton
Meningeal Disease	<ul style="list-style-type: none"> • The most feared complication • Presenting with classic meningeal symptoms and signs • Hydrocephalus is a frequent complication
Others	<ul style="list-style-type: none"> • May affect virtually any organ, including thyroid, GI tract, adrenal glands, genitourinary tract, pericardium, peritoneum

Given the available scientific and medical literature on Valley Fever, it is difficult for the agencies to assess the potential for VF to impact workers during construction and operation of the proposed RSEP with a reasonable degree of certainty. To minimize potential exposure of workers and also the public to coccidioidomycosis during soil excavation and grading, extensive wetting of the soil prior to and during construction activities should be employed and dust masks should be worn at certain times during these activities. The dust (PM10) control measures found in the Air Quality section of this SA-DEIS should be strictly adhered to in order to adequately reduce the risk of contracting VF to less than significant. Towards that, the agencies have identified and staff proposes Condition of Certification **WORKER SAFETY-9** which would require that the dust control measures found in proposed Conditions **AQ-SC3** and **AQ-SC4** be supplemented with additional requirements including implementing methods equivalent to the requirements of Rule 402 of the Kern County Air Pollution Control District (as amended Nov. 3, 2004).

In addition, because the site of the proposed RSEP was used in the past for military training exercises, to ensure site workers are properly trained to recognize, avoid, and report any unexploded ordnance (UXO), the agencies have identified and staff also recommends adoption of the proposed Condition of Certification **WASTE-4** in the Waste Management Section of this SA-DEIS which would require the project owner to develop a UXO identification training and reporting procedures program. The UXO training program should include the identification of trained UXO ordnance experts that are available to complete removal of UXO and supplemental geophysical surveys to search for additional or buried ordnance.

Fire Hazards

During construction and operation of the proposed RSEP project, there is the potential for both small fires and major structural fires. Electrical sparks, combustion of fuel oil, hydraulic fluid, mineral oil, insulating fluid at the power plant switchyard or flammable liquids, explosions, and over-heated equipment, may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Compliance with all LORS and the proposed COCs would be adequate to assure protection from all fire hazards.

The agencies reviewed the information provided in the AFC and reviewed correspondence from a representative of the RCFD to determine if available fire protection services and equipment would adequately protect workers and to determine the project's impact on fire protection services in the area. The project will rely on both on-site fire protection systems and local fire protection services. The on-site fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the RCFD (Riverside 2010b, Riverside 2010e, RSEP 2009a, Section 2.3.1.1.2).

Construction

During construction, the permanent fire protection systems proposed for the RSEP would be installed as soon as practical; until then portable fire extinguishers would be placed throughout the site at appropriate intervals and periodically maintained. Safety

procedures and training would be implemented according to the guidelines of the Construction Fire Protection and Prevention Plan.

The applicant has also indicated that it intends to construct and operate an above-ground fuel depot for motor vehicles on the site. The fuel depot will contain a maximum of 10,000 gallons of diesel fuel (RSEP 2009a, Section 5.5.4.1).

The fire protection measures that are required by code for the fuel depot and dispensing facility include:

- Chapter 22 of the 2007 California Fire Code: Motor Fuel-Dispensing Facilities and Repair Garages (formally adopted by Riverside County)
- NFPA 30a: Code for Motor Fuel Dispensing Facilities and Repair Garages (2008 Edition)

Applicable sections of the 2007 California Fire Code (CFC) and NFPA 30a are very similar; however NFPA 30a contains more details for fuel tank design specifications and other requirements. The requirements listed in these codes include the materials to be used to construct fuel tanks, location of dispensing devices, spacing from other structures, fencing, physical protective barriers, shut-off valves, emergency relief venting, secondary containment, vapor and liquid detection systems with alarms, and other general design requirements.

NFPA 30a requires the following:

7.3.5 Fixed Fire Protection.

7.3.5.1 For an unattended, self-serve, motor fuel dispensing facility, additional fire protection shall be provided where required by the *authority having jurisdiction. (italics added)*

7.3.5.2 Where required, an automatic fire suppression system shall be installed in accordance with the appropriate NFPA standard, manufacturers' instructions, and the listing requirements of the systems.

9.2.5 Basic Fire Control.

9.2.5.1 Sources of Ignition. Smoking materials, including matches and lighters, shall not be used within 6m (20 ft) of areas used for fueling, servicing fuel systems.

9.2.5.2 Fire Extinguishers. Each motor fuel dispensing facility or repair garage shall be provided with fire extinguishers installed, inspected, and maintained as required by NFPA 10, *Standard for Portable Fire Extinguishers*. Extinguishers for outside motor fuel dispensing areas shall be provided according to the extra (high) hazard requirements for Class B hazards, except that the maximum travel distance to an 80 B:C extinguisher shall be permitted to be 30.48m (100 feet).

9.2.5.3 Fire Suppression Systems. Where required, automatic fire suppression systems shall be installed in accordance with appropriate NFPA standard, manufacturer's instructions, and the listing requirements of the systems.

The authority having jurisdiction is the Energy Commission and the RCFD, which will review and comment on the fire detection and suppression plans for the fuel depot before it is built and operated.

The only fire protection measure explicitly listed in the California Fire Code is a requirement for fire extinguishers to be located within 75 feet of the fuel dispensing equipment. Neither the CFC nor the Riverside County code requires sprinkler systems for fuel dispensing facilities. Section 2203.2 of the CFC requires an approved, clearly identified and readily accessible emergency disconnect switch at an approved location to stop the transfer of fuel to the fuel dispensers in the event of a fuel spill or other emergency. Section 2205.3 requires spill control to prevent liquids spilled during dispensing operations from flowing into buildings and section 2206.5 requires that above-ground tanks be provided with secondary containment in the form of drainage control or placement of berms or dikes. The applicant has proposed to install secondary containment.

The agencies have assessed the proposed fuel depot and have determined that the applicant intends to meet all codes and standards in their operations of the fuel depot. Proposed Condition of Certification **WORKER SAFETY-1** would require that the RCFD review and the CPM review and approve the fire protection systems for the fuel depot.

Regarding the need for emergency response during construction and the impacts on the RCFD, please see the discussion below.

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the 2007 California Fire Code, all applicable recommended NFPA standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements, with the exception of providing a secondary access point for emergency response vehicles. The California Fire Code (24 CCR Part 9, chapter 5, section 503.1.2) requires that access to the site be reviewed and approved by the fire department. All power plants licensed by the Energy Commission have more than one access point to the power plant site. This is sound fire safety procedure and allows for fire department vehicles and personnel to access the site should the main gate be blocked. The RCFD stated that a second point of access and a second access road for emergency responders is required for this site (Riverside 2010e).

The revised site layout for RSEP shows both a primary and secondary access roads from State Route SR-62 (CH2MHill 2010y). The AFC does not discuss a secondary access gate through the perimeter fence. The agencies find that a second gate is necessary to ensure fire department access for emergency response. If the main access gate is blocked for whatever reason, the RSEP project would essentially be

isolated. This access gate can be restricted to emergency use only and, if possible, the gate should be equipped with a system for remote keyless entry. Therefore, in order to comply with the requirements of LORS and with the RCFD, the agencies have identified and staff proposes a Condition of Certification **WORKER SAFETY-6** that would require the project owner to identify and provide a second access gate at the site, accessible via the secondary access road, for emergency vehicles. This second access gate would be equipped with a remote system, keypad, or other method acceptable to the RCFD, for fire department personnel to open the gate.

Fire suppression elements in the proposed plant would include both fixed and portable fire extinguishing systems. The fire water would be supplied from two on-site wells and stored in one 840,000 gallon water storage tank with a dedicated fire protection supply of 360,000 gallons. Two sets of fire pumps, each consisting of one electric and one diesel-fueled backup firewater pump would ensure water supply to two fire protection water loops and an electric jockey pump would maintain pressure in the system (RSEP 2009a, Sections 2.2.5 and 2.2.10).

Fire hydrants would be installed throughout the site per California Fire Code requirements and a sprinkler deluge system would be installed in areas of risk including each unit's transformer. A sprinkler system would be installed at the steam turbine generator and in administrative buildings. In addition to the fixed fire protection system, appropriate class of service portable extinguishers and fire hydrants/hose stations would be located throughout the facility at code-approved intervals.

The fire protection system must have fire detection sensors and monitoring equipment that would trigger alarms and automatically actuate the suppression systems. Staff has determined that these systems will ensure adequate fire protection.

The applicant would be required by Conditions of Certification **WORKER SAFETY-1** and **-2** to provide the final construction and operations Fire Protection and Prevention Programs to staff and to the RCFD prior to construction and operation of the project to confirm the adequacy of the proposed fire protection measures.

RCFD Impacts

In two letters from the RCFD (Riverside 2010b and 2010e), Captain Neuman of the RCFD has stated that the RSEP would have an impact on RCFD's ability to respond to fire, hazmat, and EMS emergencies at the RSEP. He also stated that the proposed RSEP, in addition to the three solar projects proposed for the Interstate-10 corridor (Blythe, Genesis, and Palen), would have a cumulative adverse impact on the RCFD's ability to provide an acceptable level of service. The RCFD based its analysis on their categories of industrial facilities, the type and level of service needed for projects in each category, the appropriate response times needed for each category, and the level of response required for the RSEP.

The RCFD determined that, due to the remote location of the RSEP and the other three solar power plants, the response time from the RCFD's existing facilities would be inadequate. Although the initial response time for a fire would be approximately one-hour and 45 minutes from Station # 49 and approximately two hours from Station # 43,

both those stations would only be able to send out one engine each with three firefighters each (Riverside 2010e). This is because each station must leave at least one engine in reserve at all times and the minimum number of fire fighters on-duty at all times is three at each station. If an emergency response due to a confirmed fire is required, RCFD Standard Operating Procedures call for at least six engines to be dispatched, with three fire fighters on each engine and one battalion chief for a total of 19 fire fighters on the scene. The other engines would have to be dispatched from more remote fire stations. There is also the standard procedure of “back-fill” at the stations that are responding to an emergency to maintain response capability from those stations. Rather than leave the territory unprotected, the RCFD will try to move equipment and personnel to the vacated stations. The long travel times to the RSEP project (approximately 4 hours round trip), prolong the durations during which back filling of responding stations would be required, potentially impacting response capability at other fire stations.

The agencies have considered the position of the RCFD and all relevant information as well as past experience at existing solar power plants that are similar to, but smaller than, the proposed project. Staff reviewed the records of emergency responses of the San Bernardino County Fire Department (SBCFD) to the only three thermal solar power plants in the state. These are the Solar Electric Generating Station (SEGS) 1 & 2 in Daggett (operating since 1984), SEGS 3-7 at Kramer Junction (1989), and SEGS 8 & 9 at Harper Dry Lake (1989). Staff also reviewed what records were immediately available at the three solar plants. All sources stated that their records were incomplete and not comprehensive. Staff wishes to caution that since the number of thermal solar power plants is so few and their operating history so short, any conclusion as to accident incident rates is meaningless from a statistical perspective. Simply put, the data set is not robust enough to draw any conclusions about their safety records. Nevertheless, this information is provided for illustrative purposes.

Three types of fire department responses to the solar power plants were surveyed:

1. Plan reviews
2. Hazmat and fire inspections
3. Emergency Response including medical, fire, rescue, and hazardous materials incidents

Regarding visits to the sites for plan review during the years the plant was operating, the SBCFD made four visits to the Kramer Junction facility and one visit to the Harper Lake facility.

Regarding site visits for inspections, reviews, enforcement activities, and follow ups, the SBCFD made 10 inspections to Daggett since 2008, totaling 24 hours of time, 48 visits to Kramer Junction since 2003, totaling 128 hours of time, and 29 visits to Harper Lake since 2004, totaling 105 hours of time.

Regarding emergency response including fire, rescue, medical and hazardous materials incidents, approximately 30 incidents occurred since 1998 that required the SBCFD

(and other fire stations through mutual aid agreements) to respond to the three solar power plant sites. These include fires, fire alarm activations, injuries, medical emergencies, hazardous materials spills, complaints/calls from the public, and false alarms. However, the available records did not include documentation of a major fire at the SEGS 8 facility in January of 1990 that required a large part of the regional resources from four different fire districts including the San Bernardino County, Edwards Air Force Base, California Department of Forestry and Fire Protection (CDF), and the Kern County Fire Departments. This fire is the largest incident that has occurred at a solar thermal plant in California and demonstrates the magnitude of fire department resources that can be required to respond to a fire at a large thermal solar facility.

According to the Daggett solar plant records, only three incidents in the life of the plant required emergency services:

1. Feb 25, 1999: A heat transfer fluid (HTF) fire occurred in the HTF tanks. This was a major fire and the fire department allowed the fire to burn itself out over two days. There were no injuries, but extensive damage occurred.
2. Feb 28, 2000: An employee had a suspected heart attack (which was actually caused by drinking a whole bottle of hot sauce), and an ambulance responded from the fire department.
3. May 15-17, 2010: An HTF spill of about 60 gallons occurred in the solar field. The facility personnel cleaned it up on May 15 and reported it to San Bernardino County on the next business day, May 17. When receiving the report the dispatcher misunderstood the report and sent out a 911 call indicating a spill is in progress. The whole fire department showed up on scene.

According to information received from the Kramer Junction plant, the following incidents required fire department response:

1. August 2002 for an unknown hazmat incident.
2. In 2007 when 30,000 gallons of HTF spilled.
3. In Feb. 2009 when a flex hose failure and a vapor cloud ignited. According to Kramer Junction plant officials, the fire department was not needed as plant staff had the situation under control. A concerned citizen had made a 911 call.

According to information received from the Harper Lake plant, only the January 1990 fire required fire department response.

To summarize, relying on sparse data received from the SBCFD for only the past 10 years and not including the 1990 SEGS 8 fire, the department responded to about 30 incidents and emergencies at the nine solar units (at three locations) , including two fires and two hazardous materials spills. During the same period the SBCFD conducted approximately 90 inspections and visits for enforcement actions/plan reviews, totaling about 260 hours of personnel time. The incident rate, therefore, for all three power plants would be 30 in 12 years or 2.5 emergency calls per year or 0.83 emergencies per solar plant per year.

The RCFD is the Authority Having Jurisdiction to the proposed RSEP solar power plant and will provide the initial response. The RCFD currently does not have a mutual aid agreement with any other fire department in the county. Although RCFD does have a mutual aid agreement with the San Bernardino County Fire Department, mutual aid is utilized when an incident is likely to exceed, or has exceeded, the ability of a responsible entity to control the event. The basic assumptions are that the local governmental entity has taken all actions within its capabilities necessary to mitigate a potential or on-going disaster, and has reasonably exhausted local resources before requesting outside assistance through the California Fire Service and Rescue Emergency Mutual Aid System (Riverside 2010b).

As described above, the standard fire department responses for fires and for hazmat spills include response of six engines and at least three fire fighters on each engine. To fight a fire inside a structure, the RCFD must adhere to standard operating procedures and Cal/OSHA regulations that require “two men in”, “two men out”. Thus, a response of three fire fighters from one station would not allow fire fighters to attack a fire from within a structure or conduct a rescue. Confined space and collapsed trench rescues would also be problematic with only three fire fighters. Therefore, no matter what size the fire or how many workers are initially in need of rescue, the RCFD would dispatch engines from at least three fire stations so that at a minimum, nine firefighters are sent to the scene. Even if mutual aid was available, the RCFD would still have to respond to an emergency at the RSEP site because it is the Authority Having Jurisdiction. The agencies also note that budgetary shortfalls that will impact fire services are common today and Riverside County is no exception.

Additionally, it is very important to note that the RSEP power plant (along with the other solar power plants) will be located in an extremely harsh desert environment. The ability of a fire fighter to perform duties while wearing a turn-out coat, heavy boots, and a respirator (self contained breathing apparatus) is limited under the best of circumstances. If conducting a rescue or fighting a fire that necessitates use of a respirator, the high-temperatures of the desert, which often exceed 115 degrees Fahrenheit (°F), severely limit a fire fighter’s ability to perform the duties to 15 minutes at a time. This severe time restriction necessitates the mobilization of more fire fighters to respond to the emergency.

The agencies have considered the position of the RCFD and all relevant information as well as past experience at existing solar power plants that are similar to the proposed project. The proposed facility would be located in an area that is currently served by the RCFD. The fire, hazmat, and EMS needs at the proposed plant are real and would pose significant added demands on local fire protection and emergency medical services. Staff concurs with the assessment of the RCFD and has determined that the RSEP would cause a significant direct and cumulative impact on the local fire department with respect to CEQA.

Furthermore, emergency response would be needed during construction when construction worker crew sizes are large, sometimes approaching several hundred workers. The fact that a fuel depot will be on-site also speaks to the need for emergency response capability.

Proposed Mitigation

Certain tax exemptions for solar power plants reduce the tax revenues going to counties and local agencies that would normally be used to provide the resulting expansion in fire and emergency medical services needed to cover them. Thus, the potential exists with such solar power plants to cause impacts on public safety as a result of drawdown of local agency resources that provide needed services, such as fire and EMS response to protect the public during emergencies.

Regarding potential mitigation, Captain Neuman felt that, in general, the impacts could be mitigated at least in part to a level of insignificance if the developers of all four currently- proposed solar projects participate in the “Development Impact Fee Programs” adopted by the Riverside County Board of Supervisors. In personal communications via telephone (February 10, 2010), staff discussed these impacts and the potential for mitigation with Captain Neuman and Mr. Ross of the Riverside County Planning Department.

The applicant has provided an assessment of emergency medical services (not fire and rescue) in which it proposes mitigations of the impacts resulting from construction and operation of RSEP on the RCFD (Pacific 2010). These mitigations propose that the applicant will provide the following:

1. during any construction activities, an onsite EMT-P (paramedic) along with the appropriate equipment and supplies;
2. during any construction activities, a Basic Life Support Ambulance onsite for use during a medical emergency event;
3. during ongoing power plant operations, a minimum of one staff member onsite per shift that has Advanced First Aid Level training along with the appropriate equipment and supplies; and,
4. during construction and operation of the RSEP, a contract with an air medical service to respond to a service request from on onsite EMT-P.

Staff evaluated the potential and likely demands on the RCFD with the above proposed mitigations provided by the applicant. Staff believes that there would be an intrinsically lower fire risk at RSEP resulting from its use of non-flammable molten salt, rather than a flammable organic heat transfer fluid (HTF) as is proposed for the other three solar-thermal power plants proposed for Riverside County (Blythe, Genesis, and Palen). Additionally, the design of the RSEP solar field, being made up of solar heliostats (mirrors) and having no piping arrays carrying HTF will greatly reduce the potential for fire, EMS, and Hazmat service calls to RCFD. Without HTF storage tanks and solar field piping arrays, staff believes that the potential for a large conflagration does not exist at RSEP. Hence, the potential for an event requiring a large enough response from RCFD to cause a significant drawdown of RCFD resources or to significantly impact service levels to the rest of the county would be extremely unlikely.

Staff therefore believes that the potential for calls by RSEP would be fewer for fire, EMS, and Hazmat than for the other three solar-thermal power plant proposed for

Riverside County. Hence, staff proposes mitigation for RSEP at a reduced level compared to the other solar thermal power plants.

Staff has reviewed the cost figures of the proposed fire station presented by the RCFD and finds the costs to be reasonable and consistent with the costs per square foot for building a fire station, for a new fire engine, and for fire fighter salaries and benefits. In regards to the allocation of costs between the four thermal solar power plants proposed at this time in Riverside County, staff found that allocating 1/4 of the total costs of locating and staffing a new fire station was reasonable and fair. Staff based its recommendation, in part, on the Emergency Response Matrix that staff developed to help determine impacts.

After the applicant proposed training and maintaining paramedics on-site during construction and operations, staff adjusted its matrix which then showed Rice project rated a score of 2.0 as compared to the proposed Palen project (4.45), the proposed Blythe project (2.5) and the proposed Genesis project (3.0). The Rice project score is 17 percent of the sum of all the scores. Staff contends that the extreme remoteness of the Rice project and the difficulty of fire and rescue emergency response crews arriving at the project site in a timely manner from existing fire stations adds to the need for new resources and thus adds to the Rice project's allocation. Staff also bases its determination, in part, on its professional experience and judgment.

Therefore, staff is proposing Conditions of Certification **WORKER SAFETY- 7** and **-8** that requires the RSEP applicant to accomplish one of the following:

1. Reach an agreement, either individually or in conjunction with a power generation industry association or group that negotiates on behalf of its members located within the jurisdiction of the RCFD to negotiate payment for their project-related shares of capital and operating costs to build and operate new fire protection/response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire protection services; OR
2. Fund a portion of the county fire department capital improvements in the amount of \$570,000 and to make an annual payment of \$250,000 to fund operating and maintenance costs to mitigate both its individual impact on the fire department and its share of a cumulative impact on the fire department; OR
3. The Project Owner shall fund a Fire Needs Assessment and Risk Assessment conducted by an independent contractor who shall be selected and approved by the CEC Compliance Project Manager (CPM) and fulfill all mitigation identified in the independent fire needs assessment and a risk assessment. The Fire Needs Assessment would address emergency response and equipment/staffing/location needs while the Risk Assessment would be used to establish the risk (chances) of significant impacts occurring.

Staff is proposing that the other three solar projects proposed for Riverside County also make payments, although at higher amounts due to their higher fire risks. The \$570,000 for capital improvements is less than one-quarter of the amount estimated by the RCFD needed to fund a new fire station along Interstate-10 near the Ford Dry Lake Road interchange and one new fire engine. The yearly payment of \$250,000 is staff's

determination of RSEP's pro-rated share, based on expected service request needs, of the estimated amount needed to fund operations and maintenance (O&M) for the station and the salaries of three fire fighters.

The agencies understand that an allocation of staff-determined amounts to each project may not be the only approach. To address this, the agencies have also identified and staff is proposing that the project owner be given the option to form and join a power generation industry association or group. This association or group would provide an opportunity for membership to power plants located within the jurisdiction of the RCFD to negotiate payment for their project-related shares of capital and operating costs to build and operate new fire protection/response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire protection services. The association would be able to raise funds, negotiate payment for emergency response services with the RCFD, audit County and Fire department fire protection/emergency response expenditures to ensure that funds go towards emergency response needs, and develop and implement an appropriate fee structure for its members. The fee structure could include the partial re-payment of funds initially provided by its members upon the joining of new members, and includes consideration of individual project characteristics (e.g., size, technology chemical usage, or project location relative to infrastructure).

Also, as a tool to assist any efforts directed at creating a power industry association, staff developed an Emergency Response Matrix (see Appendix A) that the agencies, the fire departments, and project owners may use to assess the level of emergency response needed. This analytical tool has a weighting scheme for the various categories of fire department response but does utilize professional judgment in the assignment of the "score" to the categories. Staff has tested this methodology on existing and planned solar power plants and finds it to be useful but cautions against using it as the sole basis for determining need or for allocating financial responsibility for direct individual or cumulative impacts.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of Emergency Medical Services (EMS) response to natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants might have on local emergency services. Staff concluded that incidents at gas-fired power plants that require EMS response are infrequent and represent an insignificant impact on the local fire departments, except for instances where response times are high or a rural fire department has mostly volunteer fire-fighting staff. While RSEP might be expected to have an average number of calls, response times from the three nearest RCFD responding stations are greater than one hour. For year 2009, more than 50 percent of emergency service request calls to those three stations, were for emergency medical services (Pacific 2010, Table 5-2).

To reduce the number of potential calls and resulting impacts to RCFD for Emergency Medical Services (EMS) during both construction and operation of RSEP, staff proposes Conditions of Certification **WORKER SAFETY-10** and **-11** which adopt, with modification, the proposed mitigation measures described in Applicant's submitted Fire

Needs Assessment (Pacific 2010). Staff believes that implementation of these conditions will shorten the crucial time-to-treatment and reduce the time-to-hospital for injured workers, while at the same time reducing potential demands on and impacts to RCFD resources, benefitting both workers and the community. Staff notes that worker commuting and goods and equipment transport by truck to RSEP over state routes SR-62, SR-177, and US-95 during construction and operations would contribute to increased calls for fire and EMS response, and contribute to the cumulative impact to RCFD.

Due to its remote location, potential calls for technical rescue resulting from worker accidents at RSEP during construction and operations remain a factor for impact to RCFD. An impact reduction (with associated reduction in proposed mitigation) could be realized if the project owner were to establish its own certified technical rescue capability, available on all shifts, capable of handling potential rescue scenarios at RSEP. The potential need for technical rescue is a factor used in the Emergency Response Decision Matrix (see Appendix A). Applicant has not proposed and staff's proposed mitigation does not require that there would be such an onsite rescue team.

Additionally, staff has determined that the potential for both work-related and non-work-related heart attacks exists at power plants. In fact, staff's research on the frequency of EMS response to gas-fired power plants shows that many of the responses for cardiac emergencies involved non-work-related incidences, including those involving visitors. The need for prompt response within a few minutes is well documented in the medical literature. The agencies believe that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. This fact is also well documented and serves as the basis for many private and public locations (e.g., airports, factories, government buildings) maintaining on-site cardiac defibrillation devices. Therefore, staff concludes that, with the advent of modern cost-effective cardiac defibrillation devices, it is proper in a power plant environment to maintain such a device on site in order to treat cardiac arrhythmias resulting from industrial accidents or other non-work related causes.

The agencies have identified and staff proposes Condition of Certification **WORKER SAFETY-5**, which would require that a portable AED be located on site, that all power plant employees on site during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use.

Closure and Decommissioning Impacts and Mitigation

A closure of the proposed RSEP (either temporary or permanent) would follow a Facility Closure Plan prepared by the applicant and designed to minimize public health and environmental impacts. Decommissioning procedures would be consistent with all applicable LORS (RSEP 2009a, Section 2.4). The agencies expect that impacts from the closure and decommissioning process would represent a fraction of the impacts associated with the construction or operation of the proposed RSEP. Therefore based on the agencies' analysis for the construction and operation phases of this project, staff

concludes that hazardous materials-related impacts from closure and decommissioning of the RSEP would be insignificant with respect to CEQA.

CEQA LEVEL OF SIGNIFICANCE

With respect to CEQA, staff concludes that based on its analysis of Worker Safety and Fire Protection impacts from the proposed RSEP that impacts would be below a level of significance if the proposed mitigation required in the proposed Conditions of Certification is implemented.

Reduced Acreage Alternative

The Reduced Acreage Alternative would be 7.2% smaller in area than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,410 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe No. 2 transmission line would be the same as the proposed project. The project's nominal 150 megawatts (MW) generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker Blythe No. 2 161 kilovolt (kV) transmission line.

The Reduced Acreage Alternative is evaluated in this SA-DEIS because it would eliminate about 100 acres of the proposed project footprint, reducing impacts to ephemeral washes, the loss of land considered habitat for the state and federally listed threatened desert tortoise and impacts to the historic Rice airfield. The Reduced Acreage Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment. A limited acreage alternative was suggested in scoping comments.

Under the Reduced Acreage Alternative, the agencies would approve a facility with a 148 MW capacity, and not the 150 MW project that is proposed.

SETTING AND EXISTING CONDITIONS

The setting for the Reduced Acreage Alternative is the same as for the proposed project except that the heliostat field would occupy 1,270 acres within the 1,410-acre footprint of the proposed project.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Construction of the Reduced Acreage Alternative is likely to require fewer employees which would potentially reduce impacts in the area of Worker Safety and Fire

Protection. However, the reduced impacts in the area of Worker Safety and Fire Protection would be minor, and staff has determined that with respect to CEQA the project as proposed would have less than significant impacts in the area of Worker Safety and Fire Protection if staff's proposed Conditions of Certification are adopted. Therefore the Reduced Acreage Alternative is not preferable over the project as proposed.

CEQA LEVEL OF SIGNIFICANCE

The CEQA level of significance for Worker Safety and Fire Protection would not change with the Reduced Acreage Alternative, as both the project as proposed and the Reduced Acreage Alternative would have impacts below the level of significance. The same conditions of certification would be required for the Reduced Acreage Alternative and the project as proposed.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 2**.

The Desert Center Alternative is evaluated in this SA-DEIS because it would reduce impacts to cultural resources; the RSEP is located on the historic Rice Army Airfield. The North of Desert Center Alternative would allow the applicant to contribute clean, renewable energy to help meet the State's energy goals, while minimizing impacts to the desert environment.

SETTING AND EXISTING CONDITIONS

The topography of the North of Desert Center Alternative site is essentially flat, as are the immediately surrounding areas. Sensitive receptors are present within the North of Desert Center Alternative and a residential community is located south of the southwest corner of the North of Desert Center Alternative site.

Access to the North of Desert Center Alternative would likely be via Interstate 10 to the Rice Road (SR 177) exit. At Rice Road, transport would turn northeast for approximately two miles through primarily rural residential land.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Construction of the North of Desert Center alternative may have reduced impacts in the area of fire protection due to the closer proximity to an existing fire station that would exist with this alternative. However, the reduced impacts in the area of Worker Safety

and Fire Protection would be minor, and staff has determined with respect to CEQA that the project as proposed would have less than significant impacts in the area of Worker Safety and Fire Protection if staff's proposed Conditions of Certification are adopted. Therefore the Reduced Acreage Alternative is not preferable over the project as proposed.

CEQA LEVEL OF SIGNIFICANCE

The CEQA level of significance for Worker Safety and Fire Protection would not change with the North of Desert Center Alternative, as both the project as proposed and the North of Desert Center Alternative would have impacts below the level of significance. The same conditions of certification would be required for the North of Desert Center Alternative and the project as proposed.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe No. 2 transmission line at the same location as the proposed project generation tie line. This alternative generation tie line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The tie-in would then turn north inside the RSEP property boundary and run along the RSEP's circular perimeter road to the north and northwest. At the north end of the heliostat field, the route would traverse the construction laydown area on previously disturbed land over a distance of approximately 500 feet to the southern side of State Route 62. The route would follow State Route 62 approximately 3.8 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.1 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe No. 2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

The SR 62/Rice Valley Road Generation Tie Line Alternative is evaluated in this SA-DEIS because it would:

1. Avoid the permanent loss of 13.4 acres of foraging and cover habitat for plant and animal species, including the state and federally listed threatened desert tortoise.
2. Avoid the creation of a new 4.6 mile vehicle access route between the proposed solar facility and the proposed junction of the new generation tie line access road with the existing Rice Valley road.

SETTING AND EXISTING CONDITIONS

The setting for the SR 62/Rice Valley Road Generation Tie Line Alternative is the same as for the proposed project except for the rerouting of the transmission lines within the heliostat field.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Because the amounts and location and size of project would remain the same as for the proposed RSEP project, the impacts and mitigations would also remain the same.

Staff concludes that based on its analysis of impacts associated with Worker Safety and Fire Protection for the SR 62/Rice Valley Road Generation Tie Line Alternative, that impacts would be minor for the duration of the project. With respect to CEQA, impacts would be less than significant if staff's proposed Conditions of Certification are adopted similar to those identified for the proposed project.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No California Desert Conservation Area (CDCA) land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; the federal Bureau of Land Management (BLM) would not approve the generation tie line right-of-way application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker-Blythe No. 2 Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no RCFD services would be required and no impacts related to the use of RCFD services would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACTS

The agencies considered the potential for impacts due to construction and operation of the proposed RSEP with other existing or foreseeable nearby facilities as listed in the **Cumulative Scenario** section. Fire protection and emergency services demands caused by routine and emergency incidents at the proposed RSEP would continue for the expected 30-year life of the project but would not cause a substantial adverse effect on local emergency services if staff's Conditions of Certification are adopted. Cumulative impacts would be less than significant with respect to CEQA.

COMPLIANCE WITH LORS

Staff concludes that construction and operation of the RSEP project with staff's proposed mitigation/Conditions of Certification would be in compliance with all

applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of worker safety and fire protection.

NOTEWORTHY PUBLIC BENEFITS

The prorated funding by the applicant for the construction and staffing of a new fire station in the county is a noteworthy public benefit in the area of Worker Safety/Fire Protection.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as staff's recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of worker safety- and fire protection-related impacts to less than significant and for the project to conform to all applicable LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision.

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Injury and Illness Prevention Program;
- a Construction Heat Stress Protection Plan that implements and expands on existing Cal OSHA regulations as found in 8 CCR 3395;
- a Construction Emergency Action Plan; and
- a Construction Fire Prevention Plan that includes the above-ground fuel depot.
- The Personal Protective Equipment Program, the Exposure Monitoring Program, the Injury and Illness Prevention Program, and the Heat Stress Protection Plan shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable safety orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Riverside County Fire Department for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- an Operation Injury and Illness Prevention Plan;
- an Operation Heat Stress Protection Plan that implements and expands on existing Cal OSHA regulations (8 CCR 3395);
- a Best Management Practices (BMP) for the storage and application of herbicides;
- an Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Prevention Plan that includes the fuel depot should the project owner elect to maintain and operate the fuel depot during operations (8 Cal Code Regs. § 3221); and
- Personal Protective Equipment Program (8 Cal Code Regs, §§ 3401—3411).

The Operation Injury and Illness Prevention Plan, Heat Stress Protection Plan, BMP for Herbicides, and Personal Protective Equipment, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable safety orders. The Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the Riverside County Fire Department for review and comment.

Verification: At least 30 days prior to commercial operation, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;
- assure that all construction and commissioning workers and supervisors receive adequate safety training;
- complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and
- assure that all the plans identified in Conditions of Certification Worker Safety-1 and -2 are implemented.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health; and
- report of accidents and injuries that occurred during the month.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement CSS shall be submitted to the CPM within one business day.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification Worker Safety-3, implements all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 60 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in its use and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees shall be trained in its use. The training program shall be submitted to the CPM for review and approval.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 The project owner shall:
provide a second access gate for emergency personnel to enter the site. This secondary access gate shall be at least one-quarter mile from the main gate,

and provide a second access road that comes to the site. This road shall be at a minimum an all-weather gravel road, at least 20 feet wide, and with culverts to direct flow under the road at any wash the road may cross.

- a. maintain the main access road and the second road and provide a plan for implementation.

Plans for the secondary access gate, the method of gate operation, gravel road, and to maintain the roads shall be submitted to the Riverside County Fire Department for review and comment and to the CPM for review and approval.

Verification: At least sixty (60) days prior to the start of site mobilization, the project owner shall submit to the Riverside County Fire Department and the CPM preliminary plans showing the location of a second access gate to the site, a description of how the gate will be opened by the fire department, and a description and map showing the location, dimensions, and composition of the main road, and the gravel road to the second gate. At least thirty (30) days prior to the start of site mobilization, the project owner shall submit final plans plus the road maintenance plan to the CPM for review and approval. The final plan submittal shall also include a letter containing comments from the Riverside County Fire Department or a statement that no comments were received.

WORKER SAFETY-7 The project owner shall either:

- (1) Reach an agreement, either individually or in conjunction with a power generation industry association or group that negotiates on behalf of its members, with the Riverside County Fire Department (RCFD) regarding funding of its project-related share of capital and operating costs to build and operate new fire protection/emergency response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire protection/emergency response services within the jurisdiction.

or

- (2) Shall fund its share of the RCFD capital costs in the amount of \$570,000 and provide an annual payment of \$250,000 to the RCFD for the support of new fire department staff, operations, and maintenance commencing with the start of construction and continuing annually thereafter on the anniversary of the payment until the final date of power plant decommissioning.

or

- (3) The Project Owner shall fund a Fire Needs Assessment and Risk Assessment conducted by an independent contractor who shall be selected and approved by the Energy Commission Compliance Project Manager (CPM) and fulfill all mitigation identified in the independent fire needs assessment and a risk assessment. The Fire Needs Assessment would address emergency response and equipment/staffing/location needs while the Risk Assessment would be used to establish the risk (chances) of significant impacts occurring.

Should the applicant pursue option (3), above, the Fire Needs Assessment and Risk Assessment shall evaluate the following:

- (a) Potential for impacts on the RCFD and the project allocated costs of new and/or enhanced fire protection/emergency response services (which shall include services for inspections, permitting, fire response, hazardous materials spill/leak response, rescue, and emergency medical services) necessary to mitigation of such impacts;
- (b) The risk of impact on the local population that could result from potential unmitigated impacts on local fire protection and emergency services (i.e. “drawdown” of emergency response resources);
- (c) The extent that the project’s exemption from local taxes will impact local fire protection and emergency response services; and
- (d) Recommendation of an amount of funding that should be provided to mitigate any identified significant impacts on local fire protection and emergency response services.

Compliance Protocols for the Fire Needs Assessment and Risk Assessment shall be as follows:

- (a) The Fire Needs Assessment and Risk Assessment shall be conducted by an independent consultant(s) selected and approved by the CPM;
- (b) The Fire Needs Assessment and Risk Assessment shall be fully funded by the project owner. The independent consultant(s) preparing the Fire Needs Assessment and Risk Assessment shall work directly for the Energy Commission;
- (c) The project owner shall provide the protocols for conducting the independent fire needs assessment for review and comment by the RCFD and review and approval by the CPM prior to the independent consultant’s commencement of the fire needs assessment;
- (d) The CPM shall be copied in any correspondence including emails or letters and included in any conversations between the project owner and consultant; and
- (e) The CPM shall verify that the Fire Needs Assessment and Risk Assessment are prepared consistent with the approved fire needs assessment protocols and a risk assessment protocols.

Verification: At least thirty (30) days prior to the start of site mobilization, the project owner shall provide to the CPM:

- (1) A copy of the individual agreement with the RCFD or, if the owner joins a power generation industry association, a copy of the group’s bylaws and a copy of the group’s agreement with the RCFD; and evidence in each January Monthly Compliance Report that the project owner is in full compliance with the terms of such bylaws and/or agreement.

or

(2) Documentation that the amount of \$570,000 has been paid to the RCFD, documentation that the first annual payment of \$250,000 has been made, and shall also provide evidence in each January Monthly Compliance Report during construction and the Annual Compliance Report during operation that subsequent annual payments have been made.

or

(3) A protocol, scope and schedule of work for the independent Fire Needs Assessment and Risk Assessment and the qualifications of proposed contractor(s) for review and approval by the CPM; a copy of the completed Fire Needs Assessment and Risk Assessment showing the precise amount the project owner shall pay for mitigation; and documentation that the amount has been paid.

Annually thereafter, the owner shall provide the CPM with verification of funding to the Riverside County Fire Department for required fire protection services mitigation pursuant to the agreement with the Fire Department or the CPM approved independent fire needs assessment.

WORKER SAFETY-8 In the event that the project owner does not reach an agreement with Riverside County Fire Department pursuant to **WORKER SAFETY-7**, the project owner shall provide a \$820,000 payment to Riverside County Fire Department prior to the start of construction and reach an agreement under **WORKER SAFETY-7** within a year of site mobilization. This funding shall off-set any initial funding required by **WORKER SAFETY-7** above, until the funds are exhausted or an agreement is reached under **WORKER SAFETY-7**. This offset will be based on a full accounting by the Riverside County Fire Department regarding the use of these funds.

Verification: At least 30 days prior to site mobilization, if project owner has not reached an agreement with the Riverside Fire Department pursuant to **WORKER SAFETY-7**, the project owner shall provide documentation of the payment described above to the Energy Commission CPM. The Energy Commission CPM shall adjust the payments initially required by **WORKER SAFETY-7** based upon the accounting provided by the Riverside County Fire Department.

WORKER SAFETY-9 The project owner shall develop and implement an enhanced Dust Control Plan that includes the requirements described in **AQ-SC3** and additionally requires:

- a) site worker use of dust masks (NIOSH N-95 or better) whenever visible dust is present;
- b) implementation of methods equivalent to Rule 402 of the Kern County Air Pollution Control District (as amended Nov. 3, 2004); and
- c) implementation of enhanced dust control methods (increased frequency of watering, use of dust suppression chemicals, etc. consistent with AQ-SC4) immediately whenever visible dust comes from or onto the site or when

PM10 measurements obtained when implementing ii (above) exceed 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Verification: At least 60 days prior to the commencement of site mobilization, the enhanced Dust Control Plan shall be provided to the CPM for review and approval.

WORKER SAFETY-10 During any construction activities, the project owner shall provide onsite:

- a) an EMT-P (Paramedic) who is certified by Riverside Emergency Services (REMS) along with the appropriate equipment and supplies;
- b) a Advanced Life Support Ambulance with a California certified driver for use during medical emergency events; and
- c) a contract with an air medical service to respond to a request from an onsite EMT-P.

Verification: At least 30 days prior to the commencement of site mobilization, the project owner shall be provide to the CPM for review and approval:

- a) the name and contact information for the EMT-P. The contact information of any replacement EMT-P shall be submitted to the CPM within one business day, and provide evidence in each Monthly Compliance Report during commercial operation; and
- b) a letter to the CPM confirming that the Basic Life Support Ambulance is available and will be onsite during any construction activities and provide evidence in each January Monthly Compliance Report during construction; and
- c) proof of its contract for air medical service to the CPM for review and approval and provide evidence in each January Monthly Compliance Report during construction.

WORKER SAFETY-11 Beginning with commercial operation, the project owner shall provide onsite:

- a) an EMT-P who is certified by Riverside Emergency Services (REMS) along with the appropriate equipment and supplies; and
- b) a contract with an air medical service to respond to a request from an onsite EMT-P.

Verification: At least 30 days prior to the commencement of commercial operation, the project owner shall be provide to the CPM for review and approval:

- a) the name and contact information for the EMT-P(s) to be working on each shift. The contact information of any replacement EMT-P shall be submitted to the CPM within one business day, and provide evidence in each Monthly Compliance Report during commercial operation; and
- b) annually thereafter in the Annual Compliance Report, proof of its contract for air medical service to the CPM for review and approval.

CONCLUSIONS

Staff concludes that if the proposed RSEP project owner provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Certification **WORKER SAFETY-1** and **-2** and fulfills the requirements of Conditions of Certification **WORKER SAFETY-3** through **-11**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and fire protection and comply with applicable LORS. Staff also concludes that the operation of this power plant would have a significant individual and cumulative impact on the RCFD and has proposed Conditions of Certification **WORKER SAFETY-7**, **-8**, **-10** and **-11** as mitigation that would reduce this impact to a level of insignificance. Alternatives considered in this SA-DEIS would not avoid worker safety and fire protection adverse impacts except for the No Project/No Action Alternative, which would not accomplish the project objectives. With implementation of the proposed Conditions of Certification, worker safety and fire protection impacts would be mitigated to less than significant for all alternatives including the proposed project.

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Appendix A

Staff's Emergency Response Matrix

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Staff's Emergency Response Matrix
Estimated Values for Riverside County

A. Response Criteria	points	weighting factor	Rice Solar Energy Project
1. Inspections		0.10	
a. minimal need	1		
b. average need	3		3
c. significant need	5		
		<i>Net --></i>	0.3
2. Fire		0.50	
A. Quantity liquid fuel or hydrogen gas stored on-site		0.20	
a. <1,000 gal or <1000 lbs hydrogen gas	1		
b. >1000 and <100,000 gal or <10,000 lbs hydrogen gas	2		2
c. >100,000 gal or >10,000 lbs hydrogen gas	5		
		<i>Net --></i>	0.4
B. Fire/Explosion off-site consequences		0.30	
a. Limited to site	1		1
b. Potential for smoke and/or fire and/or minor blast effects off-site	2		
c. Potential for major fire/blast structure damage and/or injuries/fatalities off-site and/or major hwy disruption/closure	5		
		<i>Net --></i>	0.30
3. HazMat		0.10	
A. Proximity to sensitive receptors		0.05	
a. no sig quant of hazmats or no potential for off-site impacts within 1/2 mile	1	0.05	1
b. <5 receptors within 1/2 mile	2	0.10	
c. 5-10 receptors within 1/2 mile	3	0.15	
d. >10 within 1/2 mile	4	0.20	
e. impacts major highway/interstate	5	0.25	
		<i>Net --></i>	0.05
B. Hazmat response time		0.05	
a. <30 minutes	1		1
b. 30 - 60 minutes	3		(low hazmats)
c. >60 minutes	5		
		<i>Net --></i>	0.05
4. Rescue		0.15	
a. fully certified rescue team onsite	1		
b. <30 minutes	2		
c. 30 - 60 minutes	3		
d. >60 minutes	5		5
		<i>Net --></i>	0.75
5. EMS		0.15	
EMS response time		0.15	
a. in-house EMT or <5 minutes response time	1		1
b. 5 - 10 minute response time	2		
c. >10 and <15 minute response time	3		
d. >15 and <30 minute response time	4		
e. >30 minute response time	5		
		<i>Net --></i>	0.15
Sum weighting factors		1.00	
TOTAL SCORE		=====	2.00
LOW Priority: additional resources and mitigation may be needed.	0.1 - 1.5		
MEDIUM Priority: additional resources and mitigation needed.	1.5 - 2.5		
HIGH Priority: very significant need for additional resources and mitigation.	2.5 - 3.5		
VERY HIGH Priority: urgent need for additional resources and mitigation.	>3.5		

GEOLOGY, PALEONTOLOGY, AND MINERALS

Testimony of Dal Hunter, Ph.D., C.E.G.

SUMMARY OF CONCLUSIONS

The proposed Rice Solar Energy Project site is located in a region known as the eastern Mojave aseismic area in the east-central Mojave Desert Geomorphic Province in northern Riverside County, south-central California. Because of its geologic setting, the site could be subject to relatively moderate levels of earthquake-related ground shaking. The effects of potential ground shaking would need to be mitigated, to the extent practical, through structural designs required by the California Building Code (CBC 2007) and the project geotechnical report. The CBC (2007) requires that structures be designed to resist seismic stresses from ground acceleration and, to a lesser extent, liquefaction. A preliminary geotechnical investigation has been performed and presents standard engineering design recommendations for mitigation of seismic shaking and site soil conditions.

There are no known viable geologic or mineralogical resources at the proposed RSEP site. Regionally, paleontological resources have been documented within older Quaternary alluvium which is believed to underlie the younger Quaternary alluvium exposed on site surface. Potential impacts to paleontologic resources would be mitigated through worker training and monitoring by qualified paleontologists, as required by Conditions of Certification, **PAL-1** through **PAL-7**.

The project site and portions of the proposed linear facilities are located on private land. Approximately 9 miles of the 10-mile long generation tie line would be located on public land under the jurisdiction of the United States Bureau of Land Management. The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). With respect to CEQA, staff concludes that the potential is low for significant adverse impacts to the proposed project from geological hazards during its design life and to potential geological, mineralogical, and paleontological resources from the construction, operation, and closure of the proposed project. It is staff's opinion that the proposed Rice Solar Energy Project facility could be designed and constructed in accordance with all applicable laws, ordinances, regulations, and standards (LORS) and in a manner that both protects environmental quality and assures public safety. Conditions of certification referred to herein meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of impacts to less than significant and for the project to conform with all applicable LORS. The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act (NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision. Implementation and enforcement of the proposed conditions of certification should result in less than significant impacts to geology and paleontology.

INTRODUCTION

In this section, the agencies discuss the potential impacts of geologic hazards on the proposed RSEP site as well as the project's potential impacts on geologic, mineralogic, and paleontologic resources. Staff's objective is to ensure that there will be no consequential adverse impacts to significant geological and paleontological resources during the project construction, operation, and closure and that operation of the plant will not expose occupants to high-probability geologic hazards. A brief geological and paleontological overview is provided. The section concludes with Western's and BLM's identified, and staff's proposed, monitoring and mitigation measures for geologic hazards and geologic, mineralogic, and paleontologic resources, with proposed conditions of certification.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The CEQA Guidelines, Appendix G, provide a checklist of questions that lead agencies typically address.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether or not the project would expose persons or structures to geological hazards.
- Sections (X) (a) and (b) concern the project's effects on mineral resources.

The California Building Standards Code (CBSC) and CBC (2007) provide geotechnical and geological investigation and design guidelines, which engineers must follow when designing a facility. As a result, the criteria used to assess the significance of a geological hazard include evaluating each hazard's potential impact on the design and construction of the proposed facility. Geological hazards include faulting and seismicity, volcanic eruptions, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, and seiches. Of these, dynamic compaction, hydrocompaction, subsidence, and expansive soils are geotechnical engineering issues but are not normally associated with concerns for public safety.

The agencies have reviewed geological and mineral resource maps for the surrounding area, as well as site-specific information provided by the applicant, to determine if any geological and mineralogical resources exist in the area and to determine if operations could adversely affect such geological and mineralogical resources.

To evaluate whether the proposed project and alternatives would generate a potentially significant impact as defined by CEQA on mineral resources, the staff evaluated them against checklist questions posed in the 2006 CEQA Guidelines, Appendix G, Environmental Checklist established for Mineral Resources. These questions are:

- A. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state?

- B. Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Under NEPA, the impact of the proposed project and alternatives on mineral resources would be considered significant if they would directly or indirectly interfere with active mining claims or operations, or would result in reducing or eliminating the availability of important mineral resources. The agencies' evaluation of the significance of the impact of the proposed project on mineral resources includes an assessment of the context and intensity of the impacts, as defined in the NEPA implementing regulations 40 CFR Part 1508.27.

Staff reviewed existing paleontological information and requested records searches from the Natural History Museum of Los Angeles County (LACM) and the University of California Museum of Paleontology at Berkeley (UCMP) for the site area. Site-specific information generated by the applicant for the proposed RSEP project was also reviewed. All research was conducted in accordance with accepted assessment protocol (SVP 1995) to determine whether any known paleontological resources exist in the general area. If present or likely to be present, conditions of certification which outline required procedures to mitigate impacts to potential resources are proposed as part of the project's approval.

The Antiquities Act of 1906 (16 United States Code [USC]) requires that objects of antiquity be taken into consideration for federal projects and the California Environmental Quality Act, Appendix G, also requires the consideration of paleontological resources. The Paleontological Resources Preservation Act of 2009 requires the Secretaries of the United States Department of the Interior and Agriculture to manage and protect paleontological resources on Federal land using scientific principles and expertise. The potential for discovery of significant paleontological resources or the impact of surface disturbing activities to such resources is assessed using the Potential Fossil Yield Classification (PFYC) system contained within BLM Instruction Memorandum No. 2009-011. This system includes three conditions (Condition 1 [areas known to contain vertebrate fossils]; Condition 2 [areas with exposures of geological units or settings that have high potential to contain vertebrate fossils]; and Condition 3 [areas that are very unlikely to produce vertebrate fossils]). The PFYC classes range from Class 5 (very high) to Class 1 (very low).

The proposed conditions of certification allow Western, BLM's Authorized Officer, and the Energy Commission's compliance project manager (CPM) to the extent they are applicable for each agency, and the applicant to adopt a compliance monitoring scheme ensuring compliance with laws, ordinances, regulations, and standards (LORS) applicable to geological hazards and the protection of geological, mineralogical, and paleontological resources.

Based on the information below, it is the agencies' opinion that the potential for substantial adverse impacts to the project from geological hazards, and to potential geological, mineralogical, and paleontological resources from the proposed project, is low, and that they would be less than significant with respect to CEQA.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The LORS are listed in the application for certification (AFC) (SR 2009a). The following briefly describes the current LORS for both geologic hazards and resources and mineralogic and paleontologic resources.

**Geology, Paleontology and Minerals Table 1
Laws, Ordinances, Regulations, and Standards (LORS)**

<u>Applicable Law</u>	<u>Description</u>
Federal	
Antiquities Act of 1906 (16 United States Code [USC], 431-433)	The proposed RSEP facility site would be partially on private land and partially on land currently administered by the BLM. Although there is no specific mention of natural or paleontological resources in the Act itself, or in the Act's uniform rules and regulations (Title 43 Part 3, Code of Federal Regulations [43 CFR Part 3], 'objects of antiquity' has been interpreted to include fossils by the Federal Highways Act of 1956, the National Park Service (NPS), the BLM, the Forest Service (USFS), and other Federal agencies.
National Environmental Policy Act (NEPA) of 1970 (42 USC 4321, et. seq.)	Established the Council on Environmental Quality (CEQ), which is charged with preserving 'important historic, cultural, and natural aspects of our national heritage'.
Federal Land Policy and Management Act (FLPMA) of 1976 (43 USC 1701-1784)	Authorizes the BLM to manage public lands to protect the quality scientific, scenic, historical, archeological, and other values, and to develop 'regulations and plans for the protection of public land areas of critical environmental concern', which include 'important historic, cultural or scenic values'. Also charged with the protection of 'life and safety from natural hazards'.
Paleontological Resources Preservation Act (PRPA) (Public Law [PL] 111-011)	Authorizes Departments of Interior and Agriculture Secretaries to manage the protection of paleontological resources on Federal lands.
National Historic Preservation Act of 1966 (NHPA) (16 USC 470)	Establishes policies for the 'preservation of the prehistoric and historic resources of the United States', under the direction of the Secretary of the Interior and the BLM.
General Mining Law of 1872	Declares all valuable mineral deposits in lands belonging to the United States to be free and open to exploration and purchase.
Mineral Leasing Act of 1920	Authorizes the leasing of coal, oil & gas, phosphate, sodium and oil shale from public lands in return for payment of a royalty rate on production.
Materials Act of July 31, 1947	Authorizes the sale of certain materials from the public lands including sand, stone, gravel, and common clay.

<u>Applicable Law</u>	<u>Description</u>
National Environmental Policy Act (NEPA) of 1970 (42 USC 4321, et. seq.)	Established the Council on Environmental Quality (CEQ), which is charged with preserving 'important historic, cultural, and natural aspects of our national heritage'.
<u>State</u>	
California Building Code (CBC), 2007	The CBC (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control).
Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code (PRC), Section 2621–2630	Mitigates against surface fault rupture of known active faults beneath occupied structures. Requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. Portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones. The proposed site layout places occupied structures outside of the 50-foot setback zone.
The Seismic Hazards Mapping Act, PRC Section 2690–2699	Areas subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches.
PRC, Chapter 1.7, Sections 5097.5 and 30244	Regulates removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.
Warren-Alquist Act, PRC, Sections 25527 and 25550.5(i)	The Warren-Alquist Act requires the Energy Commission to “give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites...” With respect to paleontologic resources, the Energy Commission relies on guidelines from the Society for Vertebrate Paleontology, indicated below.
California Environmental Quality Act (CEQA), PRC sections 15000 et seq., Appendix G	Mandates that public and private entities identify the potential impacts on the environment during proposed activities. Appendix G outlines the requirements for compliance with CEQA and provides a definition of significant impacts on a fossil site.
Society for Vertebrate Paleontology (SVP), 1995	The “Measures for Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources: Standard Procedures” is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 by the SVP, a national organization of professional scientists.
<u>Local</u>	

Applicable Law	Description
Riverside County General Plan 2000, Safety Element	Adopts the Uniform Building Code (UBC) (1997), which provides design criteria for buildings and excavations. The UBC is superseded by the CBC (2007). Requires mitigation measures for geologic hazards, including seismic shaking, surface rupture (adopts APEFZ Act), liquefaction, unstable soils and slopes, and flooding.
Riverside County General Plan 2000, Multipurpose Open Space Element	Provides for 'preservation of cultural, historical, archaeological, paleontologic, geologic and educational resources'. Also provides a map showing paleontologic sensitivity in the county.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The proposed RSEP would be constructed on 1,410 acres approximately 32 miles west of Parker, Arizona in Riverside County, California. The site is immediately south of the boundary between Riverside and San Bernardino Counties. State Route 62, Atchison, Topeka, and Santa Fe railroad tracks, and the Colorado River Aqueduct are also located immediately north of the property. With the exception of part of the proposed project transmission line corridor, the property is located entirely on privately owned land, a portion of which was first developed as Rice Army Airfield during World War II.

The proposed RSEP would be a primary power generating facility capable of producing 150 megawatts (MW) of electricity via a sun-tracking heliostat and central receiver tower array. Power would be generated by up to 17,500 sun-tracking mirrors which would be supported on individual metal pipe or drilled pier foundations. Each heliostat assembly consists of a 24-foot by 28-foot mirror that automatically focuses sunlight onto a central receiver tower. The central receiver tower contains a liquid salt circulation and storage system capable of storing approximately 4.4 million gallons of liquid sodium nitrate and potassium nitrate salt mixture. When the heliostat array is focusing sunlight on the receiver tower the liquid (salt) mixture is circulated through 14 focal points on the tower until it reaches its optimum operating temperature of 1,050 degrees Fahrenheit. The superheated salt mixture is then pumped into a hot salt storage tank. Hot salt is drawn from the tank and circulated through a heat exchanger to generate steam which is used to drive the steam turbine electrical generating system.

Supporting facilities for the proposed RSEP plant would include an air-cooled condenser for exhaust steam, operations and administration building, a maintenance building, and a new 230-kilovolt (kV) switchyard. Water for the project would be provided by two on-site water supply wells and a raw water storage tank with a capacity of approximately 840,000 gallons. The raw water would be demineralized by reverse-osmosis and electrodeionization prior to its use for steam generation and for washing the heliostat mirrors. Brines and waste water from the demineralization process would be disposed in three evaporation ponds.

Off-site ancillary facilities associated with the proposed RSEP plant would include a 10-mile-long 161/230-kV electrical transmission line connecting the new substation to the existing Western Area Power Administration Parker-Blythe No. 2 transmission line east of the site (SR 2009a).

The proposed site is located in the east-central portion of the Mojave Desert physiographic province in Southern California. The Mojave Desert is a broad interior region of isolated mountain ranges which separate vast expanses of desert plains and interior drainage basins. The Mojave Desert occupies approximately 25,000 square miles in southeastern California and portions of Nevada, Utah, and Arizona. In California, its overall topography is dominated by southeast to northwest-trending faulting with a secondary east to west-trending alignment which is correlateable to Transverse Range faulting.

More locally, the proposed RSEP site is located near the western edge of a structural belt correlatable to the southern extension of the Walker Lane Fault Zone. This northwest-trending, approximately 60-mile-wide structural zone is referred to as the Mojave-Sonoran Belt and is marked by abrupt termination of north and northeast trending mountain ranges and basins to the east of the zone and transition to northwest-trending strike-slip faulting to the west of the zone. The area was extensively faulted in the Early to Middle Miocene by thrusting along the Whipple Mountain detachment fault which resulted in up to 25 miles of northeast extensional transport of the upper detachment plate. The area is notable for its relative lack of seismicity and faulting since the end of the Miocene (approximately three million years [m.y.]) (Carr 1991).

Rice Valley lies at the southern end of the Turtle Mountains near the western edge of terrain dominated by Whipple Mountains detachment faulting. Included within the Turtle Mountains complex are the Stepladder Mountains, which are a northern extension of the Turtle Mountains, the Mopah Range which lies on the southeast flank of the Turtle Mountains, and the Arica Mountains which are a small but geologically similar bedrock outcrop southwest of the Turtle Mountains and southwest of the proposed RSEP project. The Mopah Range is composed of Tertiary volcanic rocks whereas the Stepladder, Turtle, and Arica Mountains expose Precambrian through Tertiary metamorphic, crystalline volcanic and sedimentary sequences which are offset against each other along high angle north to northwest-trending east-dipping normal faults related to movement across the underlying detachment fault (Howard, et al. 1982). The stratigraphic and structural record of the Turtle Mountains presents a long complex geologic history beginning with Early Proterozoic sedimentation and volcanism followed by plutonism and high-grade regional metamorphism. The Middle Proterozoic saw more plutonism and dike emplacement followed by a long period of geologic stability during the Paleozoic and much of the Early to Mid-Mesozoic. Another period of pluton and dike intrusion during the Cretaceous was followed by geologic stability until the Early to Middle Miocene when local and regional volcanism, shallow plutonic intrusion, and extensive detachment and normal faulting occurred (Howard, et al. 1988). The area has undergone relatively little tectonic activity since the Middle Miocene.

Surface cover at the site consists of Quaternary and Tertiary alluvium and fan conglomerate deposits composed of sediments washed down from the Turtle Mountains to the north.

Fluvial deposits of the Colorado River and estuarine deposits of the Bouse Formation may be present beneath the site. Overall the site slopes south toward the local topographic low at the center of Rice Valley.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This section considers two types of impacts. The first is geological hazards, which could impact the proper functioning of the proposed facility and create life/safety concerns. The second is the potential impacts the proposed facility could have on existing geological, mineralogical, and paleontological resources in the area.

Direct/Indirect Impacts and Mitigation

The CBSC and CBC (2007) provide geotechnical and geological investigation and design guidelines, which engineers must follow when designing a facility. As a result, the criteria used to assess the significance of a geologic hazard include evaluating each hazard's potential impact on the design and construction of the proposed facility. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, and seiches.

The CEQA Guidelines, Appendix G, provide a checklist of questions that lead agencies typically address.

- Section (V) (c) includes guidelines that determine if a project will either directly or indirectly destroy a unique paleontological resource or site or a unique geological feature.
- Sections (VI) (a), (b), (c), (d), and (e) focus on whether or not the project would expose persons or structures to geologic hazards.
- Sections (X) (a) and (b) concern the project's effects on mineral resources.

Staff has reviewed geologic and mineral resource maps for the surrounding area, as well as site-specific information provided by the applicant, to determine if geologic and mineralogic resources exist in the area and to determine if operations could adversely affect geologic and mineralogic resources.

Staff reviewed existing paleontologic information provided by Riverside County and a records search provided by the LACM. Site-specific information generated by the applicant for the project was also reviewed. All research was conducted in accordance with accepted assessment protocol (SVP 1995) to determine whether any known paleontologic resources exist in the general area. If present or likely to be present, conditions of certification which outline required procedures to mitigate impacts to potential resources, are proposed as part of the project's approval.

Although the proposed site is located in a region known as the Eastern Mojave Aseismic Area, ground shaking represents the main geologic hazard at this site. This potential hazard can be effectively mitigated through facility design by incorporating recommendations contained in the project geotechnical report. Proposed Conditions of Certification **GEN-1**, **GEN-5**, and **CIVIL-1** in the **Facility Design** section should also mitigate these impacts to a less than significant level.

The proposed RSEP site is not located within an established Mineral Resource Zone (MRZ) and no economically viable mineral deposits are known to be present at the site.

Near-surface geology beneath the site consists primarily of Quaternary alluvium and conglomerate overlying Quaternary older alluvium with minor outcrops of Tertiary volcanic rocks (CDMG 1964). Staff reviewed correspondence from the LACM (McLeod, 2009), the Riverside County Land Information System website, and the project paleontological resources technical report (CH2MHill 2009) for information regarding known fossil localities and stratigraphic unit sensitivity within the project area. The LACM has no recorded fossil localities within or near the project area and ancillary facilities. Fossil collection sites which include pocket mouse, horse, and camel, are found in Quaternary older alluvium which forms a portion of the subsurface stratigraphy beneath Rice Valley. However, the fossil collection sites for this formation are located some 30 miles to the southwest in the area of Ford Dry Lake and the Eagle and Coxcomb Mountains (McLeod 2009).

Staff considers the probability for significant paleontological resources to be encountered during proposed site construction activities to be low in Holocene age deposits on most of the proposed RSEP site surface. However, mass grading, deep foundation excavation and utility trenching may penetrate underlying Pleistocene age soils at undetermined depths. Overall, the potential for exposure of paleontological resources would be considered as high, until determined otherwise by a qualified professional paleontologist. Low and high paleontological sensitivity roughly corresponds to PFYC Condition 3, Class 1 or 2 and Condition 2, Class 4a and 4b, respectively (USDI 2007). This assessment is based on SVP (1995) criteria and the paleontological report appended to the AFC (SR 2009a). Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate paleontological resource impacts, as discussed above, to less than significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a paleontological resource specialist [PRS]).

The proposed conditions of certification allow the BLM Authorized Office, the Energy Commission's CPM, and the applicant to adopt a compliance monitoring scheme ensuring compliance with LORS applicable to geological hazards and the protection of geological, mineralogical, and paleontological resources.

Based on the information below, it is staff's opinion that the potential for significant adverse, direct or indirect impacts to the project, from geological hazards, and to potential geological, mineralogical, and paleontological resources, from the proposed project, is low.

Geological Hazards

The AFC provides documentation of potential geologic hazards at the proposed RSEP site, including limited site-specific subsurface information (SR 2009a). Review of the AFC, coupled with staff's independent research, indicates that the potential for geologic hazards to impact the proposed plant site during its practical design life is low if recommendations for mitigation of seismic shaking are followed. Geologic hazards related to seismic shaking are addressed in the project AFC and the preliminary

geotechnical report per CBC (2007) requirements (SR 2009a).

Staff's independent research included the review of available geologic maps, reports, and related data of the RSEP site. Geological information was available from the California Geological Survey (CGS), California Division of Mines and Geology (CDMG, now know as CGS), the U.S. Geological Survey (USGS), the American Geophysical Union, the Geologic Society of America, the South Coast Geological Society, and other organizations.

Faulting and Seismicity

Energy Commission staff reviewed numerous CDMG and USGS publications as well as informational websites in order to gather data on the location, recency, and type of faulting in the proposed project area. Type A and B faults within 100 miles of the proposed RSEP site are listed in **Geology, Paleontology and Minerals Table 2**. Type A faults have slip-rates of ≥ 5 mm per year and are capable of producing an earthquake of magnitude 7.0 or greater. Type B faults have slip-rates of 2 to 5 mm per year and are capable of producing an earthquake of magnitude 6.5 to 7.0. The fault type, potential magnitude, and distance from the site are summarized in **Geology, Paleontology and Minerals Table 2**. Because of the large size of the site the distances to faults are measured from the approximate proposed receiver tower location within the site. Other Type C and otherwise undifferentiated faults which are more than 20 miles from the proposed site are not discussed here because they are unlikely to undergo movement or generate seismicity which could affect the project.

**Geology, Paleontology and Minerals Table 2
Active Faults Relative to the Proposed Rice Solar Energy Site**

<u>Fault Name</u>	<u>Distance From Site (miles)</u>	<u>Maximum Earthquake Magnitude (Mw)</u>	<u>Estimated Peak Site Acceleration (g)</u>	<u>Movement and Strike</u>	<u>Slip Rate mm/yr</u>	<u>Fault Type</u>
Pinto Mountain	64.7	7.2	0.070	Left-Lateral Strike Slip (Northwest)	2.5	B
Pisgah-Bullion Mtn. - Mesquite Lake	68.4	7.3	0.071	Right-Lateral Strike Slip (Northwest)	0.6	B
San Andreas – Whole M-1a	71.2	8.0	0.099	Right-Lateral Strike Slip (Northwest)	34.0	A
San Andreas – San Bernardino – Coachella M-2b	71.2	7.7	0.085	Right-Lateral Strike Slip (Northwest)	25.0	A
San Andreas – Coachella M-1c-5	71.2	7.2	0.065	Right-Lateral Strike Slip (Northwest)	25.0	A
Brawley Seismic Zone	71.2	6.4	0.043	Right-Lateral Strike Slip (Northwest)	25.0	B
Elmore Ranch	75.1	6.6	0.046	Left-Lateral Strike Slip (Northwest)	1.0	B

Fault Name	Distance From Site (miles)	Maximum Earthquake Magnitude (Mw)	Estimated Peak Site Acceleration (g)	Movement and Strike	Slip Rate mm/yr	Fault Type
Emerson South – Copper Mtn.	78.4	7.0	0.054	Right-Lateral Strike Slip (Northwest)	0.6	B
Calico - Hidalgo	85.4	7.3	0.060	Right-Lateral Strike Slip (Northwest)	0.6	B
Eureka Peak	87.7	6.4	0.036	Right-Lateral Strike Slip (Northwest)	0.6	B
Imperial	90.4	7.0	0.049	Right-Lateral Strike Slip (Northwest)	20.0	A
Burnt Mountain	90.6	6.5	0.037	Right-Lateral Strike Slip (Northwest)	0.6	B
Landers	92.5	7.3	0.056	Right-Lateral Strike Slip (Northwest)	0.6	B
San Jacinto - Anza	93.1	7.2	0.053	Right-Lateral Strike Slip (Northwest)	12.0	A
Superstition Hills	93.3	6.6	0.038	Right-Lateral Strike Slip (Northwest)	4.0	A
Johnson Valley (Northern)	95.7	6.7	0.040	Right-Lateral Strike Slip (Northwest)	0.6	B
San Andreas – San Bernardino M-1	95.7	7.5	0.061	Right-Lateral Strike Slip (Northwest)	12.0	A
Superstition Mountain	95.8	6.6	0.038	Right-Lateral Strike Slip (Northwest)	5.0	A
San Jacinto - Borrego	98.3	6.6	0.037	Right-Lateral Strike Slip (Northwest)	4.0	A
San Jacinto – Coyote Creek	99.0	6.6	0.037	Right-Lateral Strike Slip (Northwest)	4.0	A
Northern Frontal Fault Zone (Eastern)	99.4	6.7	0.047	Reverse (West)	0.5	B

In addition to the Type A and B faults, the County of Riverside indicates an unnamed fault which has potential to cause ground shaking at the proposed RSEP site is located beneath Rice Valley immediately south and southwest of the site. The unnamed fault is shown as two or more closely spaced northwest-trending parallel right lateral strike slip faults which are concealed by alluvium along most of their length. Immediately south of the proposed site the fault(s) offsets the low angle northeast dipping structure of the Whipple Mountain detachment fault. Age of the most recent movement on the unnamed fault has not been investigated however recent (Holocene) alluvium does not appear to exhibit any offset. cursory study of the unnamed fault suggests the most recent movement is likely greater than one million years (Carr 1991).

The Whipple Mountain detachment fault is a regional low angle fault system of probable tectonic origin (Carr 1991). The detachment was active in the proposed project area during the Early to Mid-Miocene (approximately 18 to 13 m.y. before present) and was probably responsible for some amount of offset throughout the entire Mojave-Sonoran structural belt. The Whipple Mountain detachment fault was active for approximately 5 m.y., resulting in up to approximately 25 miles of northeast extensional transport of the upper detachment plate. The lack of offset in younger Tertiary formations, notably the 13 m.y. old Osborne Wash fan conglomerate, suggests regional extension ended in the Mid-Miocene concurrently with the onset of northwestward movement along the San Andreas Fault west of the proposed site (Carr 1991). The low frequency of Pliocene and near absence of Pleistocene faulting in the Mojave-Sonoran structural belt make the region unique given its proximity to areas of intense recent faulting and frequent seismicity; most notably the Eastern California Shear Zone (ECSZ) and the Salton

Trough; and indicates a low probability of intense ground shaking in the proposed project area.

Twenty-one Type A and B faults and fault segments were identified within 100 miles of the potential site (**Geology, Paleontology and Minerals Table 2**). Of these, the Pinto Mountain fault is closest at about 65 miles west of the site. However, due to its high frequency of seismic activity, shaking at the site, if it occurs, is likely to be the result of movement of the San Andreas fault system approximately 71 miles west of the proposed site.

Although the proposed RSEP site lies within an area of greatly subdued seismic activity. The ECSZ, which dominates faulting and seismicity in the eastern Mojave Desert province, is present approximately 20 miles to the southwest of the site. Evidence of Holocene movement has been found on nearly every major fault in the ECSZ (Trieman et al. 2002). Therefore, the effects of strong ground shaking would need to be mitigated through structural designs required by the California Building Code (CBC 2007) and the project geotechnical report. The CBC (2007) requires that structures be designed to resist seismic stresses from ground acceleration and, to a lesser extent, liquefaction. A preliminary geotechnical investigation has been performed and presents standard engineering design recommendations for mitigation of seismic shaking and site soil conditions (Terracon 2009). Based on the apparent soil profile beneath the proposed RSEP site, the site soil class is assumed to be seismic Class D. The estimated peak horizontal ground acceleration for the power plant is 0.14 times the acceleration of gravity (0.14g) for bedrock acceleration based on 2% probability of exceedence in 50 years under 2007 CBC criteria. For a Class D site, the soils profile amplifies the potential peak acceleration of the ground surface to 1.94g (USGS 2008a).

Liquefaction

Liquefaction is a condition in which a saturated cohesionless soil may lose shear strength because of sudden increase in pore water pressure caused by an earthquake. However, the potential for liquefaction of strata deeper than approximately 40 feet below surface is considered negligible due to the increased confining pressure and because geologic strata at this depth are generally too compact to liquefy. The reported deep ground water table (greater than 300 feet) would indicate no potential for liquefaction. Soil characteristics reported in the project-specific geotechnical report (Terracon 2009) indicate strata beneath the site are also generally too dense to liquefy. Liquefaction potential on the RSEP site was addressed in the project geotechnical report per CBC (2007) and proposed Condition of Certification **GEN-1** requirements.

Lateral Spreading

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope—that is, a nearby steep hillside or deeply eroded stream bank, etc.—but can also occur on gentle slopes such as are present at the project site. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. Because the RSEP site is not subject to significant liquefaction, there is no potential for lateral spreading at the site surface during seismic events.

Dynamic Compaction

Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase in soil density). The decrease in volume can result in settlement of overlying structural improvements. Site specific geotechnical investigation indicates the alluvial deposits in the site subsurface are generally too dense to allow significant dynamic compaction (Terracon 2009).

Hydrocompaction

Hydrocompaction (also known as hydro-collapse) is generally limited to young soils that were deposited rapidly in a saturated state, most commonly by a flashflood. The soils dry quickly, leaving an unconsolidated, low density deposit with a high percentage of voids. Foundations built on these types of compressible materials can settle excessively, particularly when landscaping irrigation dissolves the weak cementation that is preventing the immediate collapse of the soil structure. Site specific geotechnical investigation indicates the subsurface alluvial deposits which underlie the site are generally too dense to experience significant hydrocompaction (Terracon 2009).

Subsidence

Local subsidence or settlement may occur when areas containing compressible soils are subjected to foundation or fill loads. Site-specific geotechnical investigation indicates the alluvial deposits which underlie the site are generally at a medium-dense to very dense consistency and therefore are considered unlikely to subside excessively under normal foundation loading.

Regional ground subsidence is typically caused by petroleum or ground water withdrawal that increases the effective unit weight of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. No petroleum or natural gas withdrawals are taking place in the site vicinity and ground water pumping for day-to-day site operations would be low and unlikely to cause localized subsidence. The Riverside County Land Information System indicates the site could be subject to subsidence due to regional ground water withdrawal (Riverside County 2009). However, subsidence caused by regional ground water withdrawal would probably only occur on a regional scale. Negative impacts to the project due to localized subsidence from tectonism or from petroleum, natural gas, or future ground water production are considered very unlikely.

Expansive Soils

Soil expansion occurs when clay-rich soils with an affinity for water exist in place at a moisture content below their plastic limit. The addition of moisture from irrigation, precipitation, capillary tension, water line breaks, etc. causes the clay soils to absorb water molecules into their structure, which in turn causes an increase in the overall volume of the soil. This increase in volume can produce excessive movement (heave) of overlying structural improvements. The preliminary geotechnical report indicates the proposed site is underlain by poorly to well cemented sand and gravel beds with lesser amounts of silt (Terracon 2009).

The alluvial soils which form most of the site subsurface are not considered to be expansive.

Landslides

The proposed site slopes gently to the south at a gradient of approximately 2%. Due to the low site gradient and the absence of topographically high ground in the site vicinity the potential for landslide impacts to the site is considered to be negligible.

Flooding

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Map #06065C0575G, 2008), the site of the proposed facility is not within the 100-year floodplain. In addition, because the proposed site is topographically elevated above terrain to the south and west, it is Staff's opinion that the potential for flooding at the site is limited to infrequent high volume (flashflood) events which may occur due to heavy rainfall in the adjacent Turtle Mountains. Flash flooding, if it occurs, will primarily affect the established, entrenched drainages which cross the site from approximately north to south, and it is considered unlikely that significant overbank flow would occur. Therefore the potential for catastrophic flooding at the proposed RSEP site is considered to be low.

Tsunamis and Seiches

The proposed RSEP project and associated linear facilities are not located near any significant surface water bodies and therefore the potential for impacts due to tsunamis and seiches is considered to be negligible.

Volcanic Hazards

The proposed RSEP site is located approximately 65 miles southeast of vents associated with the Amboy Crater volcanic field, which is approximately 33 miles southeast of the Lavic Lake volcanic field. Collectively the two volcanic fields are referred to as the Amboy Crater – Lavic Lake volcanic hazard area (VHA) because of their geologic similarities in rock type, volcanic deposits, and age of eruption. Amboy Crater is an approximately 27-square-mile area within the Mojave Desert comprised of Holocene age dacitic to basaltic flows and pyroclastic rocks. The combined Amboy Crater – Lavic Lake VHA has been designated by the USGS as an area subject to lava flows and tephra deposits associated with basalt or basaltic andesite vents (Miller 1989). The Amboy Crater – Lavic Lake VHA is also considered to be subject to future formation of cinder cones, volcanic ash falls, and phreatic explosions. The recurrence interval for eruptions has not been determined, but is likely to be in the range of 1,000 years or more.

The proposed RSEP site is also located approximately 75 miles northeast of dome complexes associated with the Salton Buttes VHA. Salton Buttes is a relatively small area at the southern end of the Salton Sea within the Colorado Desert comprised of Late Pleistocene age rhyolitic flows and pyroclastic rocks. Five rhyolitic domes formed from four volcanic vents approximately 16,000 years ago. The Salton Buttes VHA has been designated by the USGS as an area subject to explosive and extrusive rhyolitic eruptions (Miller 1989). The recurrence interval for eruptions has not been determined.

Because the proposed RSEP site is not located within a designated volcanic hazard area, staff considers the likelihood of significant impacts to the project resulting from volcanic activity would be low. Eruptive activity would likely be limited to ashfall which would have a minor, short-lived affect on the project.

Due to the distance of the site from known Holocene volcanic areas and the likely long recurrence intervals between eruptions the potential for volcanic eruptions to cause long term or catastrophic damage to the RSEP project is considered low.

Geological, Mineralogical, and Paleontological Resources

Geological and Mineralogical Resources

Energy Commission staff has reviewed applicable geologic maps, reports, and on-line resources for this area (Blake 2006; CDMG 1990; CDMG 1994; CDMG 1998; CDMG 1999; CDMG 2003; CGS 2002a and b; CGS 2007; Jennings and Saucedo 2002; SCEC 2006; USGS 2003; USGS 2008a and b). The proposed RSEP site is not located within an established Mineral Resource Zone (MRZ) and no economically viable mineral deposits are known to be present (Kohler 2006). Several operating and closed mines and mineral prospects are present within five miles of the proposed project boundaries. These have produced a number of industrial minerals, primarily manganese, borates, clay, and talc. No active mines are known to have existed within the proposed project boundaries (USGS 2008b).

Mineral resource potential of the Turtle Mountains Wilderness Study Area have been assessed by remote sensing, field reconnaissance, and laboratory techniques. This study indicates mineralization within the Turtle Mountains occurred prior to and during Miocene time. Six areas in the south-central and northwestern portions of the study area are thought to have high resource potential, two areas are thought to have moderate resource potential, and one area in the southwest corner of the study area, closest to the proposed RSEP site, is regarded as having low potential for low grade but possibly large tonnage gold, silver, copper, lead, zinc, molybdenum, and tungsten production (Howard et al. 1988). There is a possibility that these lode deposits, if they exist, could extend southward within bedrock beneath the proposed site. However, until the existence and structural orientation of an ore body is proven, the probability of the presence of economically recoverable mineral reserves beneath the property is considered to be very low.

Paleontological Resources

Energy Commission staff reviewed the paleontological resources assessment in Section 5.8 and Appendix 5.8A of the AFC (SR 2009a). Staff has also reviewed paleontological literature and records searches conducted by the Natural History Museum of Los Angeles County (McLeod 2009). These studies indicate the Quaternary alluvium, fanglomerate, and volcanic rocks within and near the proposed project site contain few fossils. Fossil collection sites within older Quaternary alluvium similar to that which underlies the site are located some 30 miles to the southwest in the area of Ford Dry Lake and the Eagle and Coxcomb Mountains (McLeod 2009).

Therefore older Quaternary alluvium which underlies the site at unknown depth may contain significant fossil vertebrates.

Based on recorded fossil finds and the age of the sediments which may be encountered during construction, the paleontological resource sensitivity of undisturbed Quaternary alluvium and lacustrine sediments varies from low at shallow depths to high at deeper depths. The depth to Pleistocene age sediments beneath Holocene deposits at the proposed site is unknown. Staff concludes that all sedimentary units below a depth of 1.5 feet of the ground surface, where Holocene age sediments are mapped, should initially be treated as highly sensitive. After monitoring of grading and trenching activities during proposed construction of the site, a qualified professional paleontologist may determine the appropriate depth above which the coarse grained soils are Holocene in age, have a low sensitivity, and low potential for adverse impacts on paleontological resources (PFYC Condition 3, Class 1 or 2).

Drilled shaft foundations may be one method to support the sun tracking heliostats. It must be recognized that fossils in auger cuttings from installation of drilled shaft foundations would be severely disturbed and also out of geological context. Given the small area of disturbance, even for numerous drilled shafts, the likelihood of encountering a significant fossil deposit during drilling of small diameter auger holes would seem low.

This assessment is based on SVP criteria, the paleontological report appended to the AFC (RSE 2009), and the independent paleontological assessment of McLeod (2009). Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate paleontological resource impacts, as discussed above, to less than significant levels. These conditions essentially require a worker education program in conjunction with the monitoring of earthwork activities by a qualified professional paleontologist (a PRS).

The proposed conditions of certification allow the BLM Authorized Office, Energy Commission's CPM, and the applicant to adopt a compliance monitoring scheme ensuring compliance with LORS applicable to geologic hazards and the protection of geologic, mineralogic, and paleontologic resources.

Construction Impacts and Mitigation

The design-level geotechnical investigation, required for the project by the CBC (2007) and proposed Condition of Certification **GEN-1** should provide standard engineering design recommendations for mitigation of earthquake ground shaking and excessive settlement (see **Proposed Conditions of Certification, Facility Design**).

As noted above, no viable geological or mineralogical resources are known to exist in the vicinity of the proposed RSEP site. Construction of the proposed project will include grading, foundation excavation, and utility trenching. Based on the soils profile, SVP assessment criteria, and recorded fossil localities within 30 miles of the proposed site, staff considers the probability of encountering paleontological resources to be negligible in the upper 1.5 feet of most of the site. Sediments below 1.5 feet should be treated as highly sensitive (PFYC Condition 2, Class 4a, 4b).

Proposed Conditions of Certification **PAL-1** to **PAL-7** are designed to mitigate any

paleontological resource impacts, as discussed above, to a less than significant level. Essentially, Conditions of Certification **PAL-1 to PAL-7** require a worker education program in conjunction with monitoring of earthwork activities by qualified professional paleontologists (PRS). Earthwork is halted any time potential fossils are recognized by either the paleontologist or the worker. When properly implemented, the conditions of certification yield a net gain to the science of paleontology since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. A paleontological resource specialist is retained, for the project by the applicant, to produce a monitoring and mitigation plan, conduct the worker training, and provide the monitoring. During the monitoring, the PRS can and often does petition the Energy Commission for a change in the monitoring protocol. Most commonly, this is a request for lesser monitoring after sufficient monitoring has been performed to ascertain that there is little chance of finding significant fossils. In other cases, the PRS can propose increased monitoring due to unexpected fossil discoveries or in response to repeated out-of-compliance incidents by the earthwork contractor.

Based upon the literature and archives search, field surveys, and compliance documentation for the RSEP project, the applicant has proposed monitoring and mitigation measures to be followed during the construction of the project. Energy Commission staff believes that the facility can be designed and constructed to minimize the effect of geologic hazards and impacts to potential paleontological resources at the site during project design life.

Operation Impacts and Mitigation

Operation of the proposed new solar energy generating facility should not have any adverse impact on geologic, mineralogic, or paleontologic resources.

Project Closure and Decommissioning

The future decommissioning and closure of the project should not negatively affect geological, mineralogical, or paleontological resources since the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of the project.

CEQA LEVEL OF SIGNIFICANCE

CEQA guidelines strive to assure projects on public lands will not:

- Block access to a geological or mineralogical resource, a source of industrial minerals, or construction aggregates.
- Damage, destroy or block access to a natural geological feature with aesthetic and/or scientific value.
- Damage, destroy, or block access to a significant paleontological resource (primarily but not always, vertebrate fossils).
- Increase or initiate regional ground subsidence through extraction of ground water, petroleum, or natural gas.
- Build structures that would be dangerous to workers or the general public as the result of natural geological hazards of the site.

Independent research conducted by CEC staff geologists verifies that there are no known geological or mineralogical resources or unusual geological features near or within the boundary of the proposed RSEP site. The CEQA level of significance from these areas of concern is “no impact.” Since major ground water withdrawal is not anticipated and regional subsidence is not a known geological hazard in this area, CEC staff concludes that ground water withdrawal for this project would result in an impact of “less than significant.”

All structures on this site must be constructed to the standards of the current California Building Code (CBC 2007), as specified in proposed Condition of Certification **GEN-1** under **Facility Design**. The building code standards are based on both theoretical design and observation of component failures over many years. The intent of the building code is to minimize the risk to human life from natural hazards, including those inherent in the geological environment (earthquake-related, landslides, tsunamis/seiches, volcanic eruptions) and those from other sources, primarily high wind loading. Implementation of these design standards, per **GEN-1**, should result in geological hazards being “less than significant with mitigation” (mitigation being proper design for the site-specific hazards).

Energy Commission staff concludes that the RSEP site is situated in a geological environment with some potential to encounter significant paleontological resources, particularly in deeper excavations required for the large structures. Potential impacts to paleontological resources, within the proposed project, can be mitigated to a (CEQA) less than significant level by adopting and enforcing the proposed Conditions of Certification **PAL-1** through **PAL-7**.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western’s Parker-Blythe transmission line would be the same as the proposed project. The project’s nominal 150 megawatts (MW) generation output would be reduced by approximately 2 MW.

SETTING AND EXISTING CONDITIONS

This alternative is located entirely within the boundaries of the proposed project and thus the setting would essentially be the same.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The 148 MW facility under this Alternative would create no additional impacts and would lower the potential to encounter fossils by virtue of a reduced construction footprint.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. An existing SCE 161-kV transmission line traverses the alternative site and would need to be re-routed with the project boundaries. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

SETTING AND EXISTING CONDITIONS

The North of Desert Center Alternative is located near the southwestern edge of the Chuckwalla Valley near the Chuckwalla Mountains to the south. Geologic units underlain by the alternative site are recent dune sand (Qs), recent alluvium (Qal), and nonmarine sedimentary deposits (Qc and Qco). The alternative transmission line route is primarily underlain by young alluvium with interfingering pockets of older fan deposits (Qc and Qco).

The North of Desert Center Alternative is located in an area of low seismic activity. No active faults cross the alignment or are located in the vicinity. The estimated peak horizontal acceleration for this alternative route is less than 0.2 g; therefore, this area should not experience unusually strong ground shaking. The lack of strong ground shaking and deep ground water elevations preclude liquefaction-related phenomena. This alternative is located on flat to gently sloping alluvial fans and alluvial plains that are not susceptible to landslides (CPUC 2006).

One mineral resource site is located approximately one mile south of the alternative site, a talc-soapstone surface mining operation that is no longer in operation. No other mineral resources are identified in the area (CPUC 2006).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Minimal seismic ground shaking is expected at this alternative site because it is not located within a seismically active area and is not on a known fault line. The severity and frequency of ground shaking associated with earthquake activity at the North of Desert Center Alternative site is expected to be similar to that of the proposed site. As such, similar design criteria would be required for the North of Desert Center Alternative site in accordance with a design-level geotechnical report and California Building Code (2007) standards. Adequate design parameters for the facility would need to be determined through a site-specific evaluation by a Certified Engineering Geologist or Geotechnical Engineer. Impacts due to seismic hazards and soil conditions, such as

subsidence, would be addressed by compliance with the requirements and design standards of the CBC. The potential for liquefaction in this area is very low due to anticipated depth to ground water. Additionally, as the site has been previously used for agriculture and irrigated in most areas, loose deposits of soils are unlikely as the project site has already been subject to long-term wetting. Therefore, the potential for both hydrocompaction, dynamic compaction, and excessive foundation-induced subsidence is low and manageable.

The paleontological sensitivity and potential to encounter significant paleontological resources at this alternative site and the RSEP site is similar. As stated in the **Geology, Paleontology, and Minerals** section, construction of the proposed project will include grading, foundation excavation, utility trenching, and possibly drilled shafts. There exists the possibility of paleontological resources below the tilled zone at the alternative site and along the transmission line alignment. In general, fossil resource potential is limited to the older alluvial fan deposits and non-marine sedimentary deposits. These units are expected to underlie both the proposed alternate plant site and the possible transmission line alignment at unknown depth. As with the proposed project site, the proposed conditions of certification are designed to mitigate any paleontological resource impacts to a less-than-significant level.

The North of Desert Center Alternative site is subject to a similar risk of geologic hazards as the proposed project site. Although not expected, strong ground shaking could be effectively mitigated through facility design. The potential to encounter geologic resources and significant paleontological resources at the alternative site is similar to the RSEP site. The conditions of certification provided in the **Geology, Paleontology and Minerals** section would be applicable to the North of Desert Center Alternative site.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe No. 2 transmission line at the same location as the proposed project generation tie line. This alternative generation tie line would exit the proposed solar facility at the northeast corner and follow State Route 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.0 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe No. 2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

SETTING AND EXISTING CONDITIONS

The SR62/Rice Valley Road Generation Tie Line Alternative traverses younger alluvial fan deposits in the Chuckwalla Valley similar to those at the proposed RSEP site. These deposits are presumed to be underlain, at unknown depth, by older alluvial fan deposits. The alignment is located in an area of relatively low seismic activity with no active faults and minimal potential for landslides, liquefaction, and dynamic compaction (Riverside County 2008). Some potential for hydrocompaction may be present in the youngest alluvial fans (flashflood deposits) but transmission line tower foundations normally

penetrate deep enough so as not to be affected and the towers can tolerate considerable settlement anyway. The alignment does not cross any known mineral resources (Riverside County 2009).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Depending on the number and weight of the conductors, transmission towers can be supported by direct embedment into a drilled excavation, multiple drilled shafts, or a single drilled shaft. Sometimes guy lines with buried plate anchors are required for lateral support. In all cases, transmission towers are fairly tolerant of normal geologic hazards. The electrical utility companies use specialized (proprietary) design methods (Electrical Power Research Institute [EPRI]) for transmission towers since they are not buildings and therefore not strictly governed by building codes. Ground disturbance at each tower site is relatively minimal and occurs typically on 500- to 1,000-foot-centers.

Minimal seismic ground shaking is expected at this alternative alignment because it is not located within a seismically active area and does not cross a known fault line. The severity and frequency of ground shaking associated with earthquake activity along the alignment is expected to be similar to that of the proposed site. As such, similar design criteria would be required for the site in accordance with a design-level geotechnical report, the CBC (2007) where applicable, and EPRI. Adequate design parameters for the facility would need to be determined through a site-specific evaluation by a Certified Engineering Geologist or Geotechnical Engineer. Impacts due to seismic hazards and soil conditions, such as subsidence, would be addressed by compliance with the requirements and design standards of EPRI. The potential for liquefaction in this area is very low due to anticipated depth to ground water.

The paleontological sensitivity and potential to encounter significant paleontological resources at this alternative transmission line alignment and the proposed RSEP site are similar. Construction of the alternate generation tie line would include subsurface drilling and possibly trenching so that there exists the potential of paleontological resources below the younger alluvial deposits. In general, fossil resource potential is limited to the older alluvial fan deposits and non-marine sedimentary deposits. These units are expected to underlie both the proposed plant site and the alternate generation tie line alignment at unknown depth.

The SR 62/Rice Valley Road Generation Tie Line Alternative is subject to a similar risk of geologic hazards as the proposed project site. Although not expected, strong ground shaking could be effectively mitigated through facility design. The potential to encounter geologic resources and significant paleontological resources at the alternative site is similar to the RSEP site. The conditions of certification provided in the **Geology, Paleontology and Minerals** section would be applicable the SR 62/Rice Valley Road Generation Tie Line Alternative. As for the proposed project site, the proposed conditions of certification are designed to mitigate any paleontological resource impacts to a less-than-significant level.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the impacts from the proposed project would occur and none of the benefits of the proposed project would occur. The primary benefit from project construction would be a limited potential to discover, properly collect, preserve, and study fossils exposed by excavations. The primary impact would be a very limited potential to encounter and damage or destroy fossil materials with improper or inadequate monitoring at project excavations. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

COMPARISON OF ALTERNATIVES AND PROPOSED PROJECT

**Geology, Paleontology and Minerals Table 3
Comparison of Proposed Project and Alternatives**

Impact	Proposed Project (150 MW)	Reduced Acreage Alternative (148 MW)	North of Desert Center Alternative (150 MW)	No Project/No Action
No. of Acres	1,410	1,270	2,643	0
Geological Hazards	Ground Shaking – Less than significant with mitigation	Ground Shaking – Less than significant with mitigation	Ground Shaking – Less than significant with mitigation	Not Applicable (N/A)
Geological Resources	None identified – No impact	None identified – No impact	None identified – No impact	N/A
Mineralogical Resources	None identified – No impact	None identified – No impact	None identified – No impact	N/A
Paleontological Resources	Possible high sensitivity at depth – No impact with mitigation	Possible high sensitivity with depth – No impact with mitigation	Possible high sensitivity with depth – No impact with mitigation	N/A

CUMULATIVE IMPACTS

The **Cumulative Scenario** section, provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on **Cumulative Figures 1 and 2** and in **Cumulative Tables 1A and 1B**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the immediate project area, as shown on **Cumulative Impacts Figure 3, Existing and Future/Foreseeable Projects in the Ridgecrest Area, and Cumulative Tables 2 and 3**. **Table 2** presents existing projects in this area and **Table 3** presents future foreseeable projects in the project. Both tables indicate project name and project type, its location and its status.

These projects are defined within a geographic area that has been identified by the CEC and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects described in the **Cumulative Scenario** section have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this SA/Draft EIS.

GEOGRAPHIC SCOPE OF ANALYSIS

The geographic area considered for cumulative impacts on geology and paleontology is the east-central region of the Mojave Desert. The potential impacts are limited to those involving paleontological resources since no geological or mineralogical resources have been identified within the boundaries of the proposed project or its possible alternatives. There are no geological hazards with potential cumulative effects, other than regional subsidence from oil, gas, or ground water withdrawal. On-site wells will provide water for the project but pumping quantities should not be sufficient to induce local or regional subsidence.

EFFECTS OF PAST AND PRESENT PROJECTS

Any previously completed project involving subsurface excavation without paleontological monitoring might already have had a detrimental effect on paleontological resources in the area defined above under **Geographic Scope of Analysis**. Given the general scarcity of fossils, even within known fossil bearing strata, the possibility of prior damage is real but modest, unknown, and unavoidable, after the fact.

EFFECTS OF REASONABLY FORESEEABLE FUTURE PROJECTS

Foreseeable Projects in the Project Area

Many future foreseeable projects identified in **Cumulative Tables 2 and 3 (Cumulative Scenario Section)** are located within the east-central area of the Mojave Desert. Such projects could include ground disturbance to sufficient depth to encounter potential fossil-bearing strata. All projects on BLM land would be subject to paleontological monitoring and mitigation during construction. When properly implemented and enforced, these safeguards would provide adequate protection of paleontological resources, reducing potential impacts to a (CEQA) less than significant level.

Foreseeable Renewable Projects in the California Desert

As shown in the **Cumulative Scenario Section, Cumulative Scenario Table 1A**, the Palm Springs, California field office of the BLM is aware of 15 solar energy and 7 wind energy potential projects totaling 191,017 acres of land under their jurisdiction. All energy projects on BLM land would be subject to paleontological monitoring and mitigation during construction. When properly implemented and enforced, these safeguards would provide adequate protection of paleontological resources, reducing potential impacts to a (CEQA) less than significant level.

In addition to potential renewable energy projects on BLM land, a large number of renewable energy projects are proposed for the Basin and Range, Mojave and Colorado Desert regions of Southern California on State and private lands. These projects are summarized in **Table 1B** and **Table 3** of the **Cumulative Scenario** section. Of the numerous possible renewable energy projects within the geographic scope of this analysis, the following, by virtue of size and location, have the greatest potential to have an affect cumulative with RSEP on paleontological resources:

- Ward Valley-Leopold Solar Thermal Power Plant (8,000 acres)
- Clean Air Solar II Wind Farm (13,004 acres)
- Clean Air Solar III Wind Farm (21,688)
- Cadiz Lake Solar Geothermal Power Plant (35,639 acres)
- McCoy Solar Through Project (20,600 acres)
- Big Maria Solar Voltair Project (22,717 acres)

These projects would be subject to CEC and/or NEPA/CEQA environmental review which would include requirements for construction monitoring and mitigation of potential paleontological resources. When properly implemented and enforced, these safeguards should provide adequate protection of paleontological resources, reducing potential impacts to a (CEQA) less than significant level.

Contribution of the Rice Solar Energy Project to Cumulative Impacts

Construction

Construction of the project would require localized excavation over a very large area. Because the project area lies predominantly within geological units with high paleontological sensitivity near surface and increasing potential sensitivity with depth, the deeper excavations could, potentially, damage paleontological resources. Any damage could be cumulative to damage from other projects within the same geological formations. Implementation and enforcement of a properly designed Paleontological Resource Monitoring and Mitigation Plan (PRMMP) at this RSEP site should result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found, to be recovered, identified, studied, and preserved. Cumulative impacts from RSEP, in consideration with other nearby similar projects, should therefore be either neutral (no fossils encountered) or positive (fossils encountered, preserved, and identified).

Operation

The operation of the RSEP would not present additional risk to geological resources (none identified) or paleontological resources. Once ground disturbing activity is complete plant operation has no real potential to further affect paleontological resources. Therefore, routine plant operation would not increase potential cumulative affects on paleontological resources. The longer the plant operates, however, the more likely it is to be damaged by geological hazards, primarily earthquake-related ground shaking. Construction and operation of the plant does not increase the potential of geological hazards at the site, just their potential to damage civil improvements.

Decommissioning

The decommissioning of the Rice Solar Project is expected to result in no adverse impacts related to geology or paleontology. Any potential impact to geological resources (none identified) or paleontological resources would have occurred and been mitigated during the ground disturbing phase of project construction.

OVERALL CONCLUSION

Paleontological resources have been documented in the general area of the project. As the value of paleontological resources is associated with their discovery within a specific geological host unit, the potential impacts to paleontological resources due to construction activities will be mitigated as required by proposed Conditions of Certification **PAL-1** through **PAL-7**. Implementation of these conditions should result in a net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved. Cumulative impacts, in consideration with other nearby similar projects, should be either neutral (no fossils encountered) or positive (fossils encountered, preserved, and identified).

Based on the above discussion, staff believes that the potential for significant adverse cumulative impacts to the proposed project from geological hazards during the project's design life is negligible and that the potential for impacts to geological, mineralogical, and paleontological resources is low.

The proposed conditions of certification allow the BLM Authorized Office and the Energy Commission CPM and the applicant to adopt a compliance monitoring scheme ensuring compliance with applicable LORS for geological hazards and geological, mineralogical, and paleontological resources.

COMPLIANCE WITH LORS

Federal, state, or local/county LORS applicable to this project or alternatives other than the No Action alternative, were detailed in **Geology, Paleontology and Minerals Table 1**. Staff anticipates that the project will comply with applicable LORS.

NOTEWORTHY PUBLIC BENEFITS

The science of paleontology is advanced by the discovery, study and curation of new fossils. These fossils can be significant if they represent a new species demonstrate known species in a new location and/or if they include structures of similar specimens that had not previously been found preserved in similar specimens. Most fossil discoveries are the result of excavations, either purposeful in known or suspected fossil localities or as the result of excavations made during earthwork for civil improvements or mineral extraction. Proper monitoring of excavations at the proposed RSEP facility, in accordance with an approved Paleontological Monitoring and Mitigation Plan, could result in fossil discoveries which would enhance our understanding of the prehistoric climate, geology, and geographic setting of the region for the benefit of current and future generations.

PROPOSED CONDITIONS OF CERTIFICATION

General conditions of certification with respect to engineering geology are proposed under Conditions of Certification **GEN-1, GEN-5, and CIVIL-1** in the **FACILITY DESIGN** section. Proposed paleontological conditions of certification follow. It is staff's opinion that the likelihood of encountering paleontologic resources is moderate at the plant site.

PAL-1 The project owner shall provide the CPM with the resume and qualifications of its PRS for review and approval. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain CPM approval of the replacement PRS. The project owner shall keep resumes on file for qualified paleontological resource monitors (PRMs). If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM.

The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required

paleontological resource tasks.

As determined by the CPM, the PRS shall meet the minimum qualifications for a vertebrate paleontologist as described in the SVP guidelines of 1995. The experience of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree;
2. Ability to recognize and collect fossils in the field;
3. Local geological and biostratigraphic expertise;
4. Proficiency in identifying vertebrate and invertebrate fossils; and
5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors to monitor as he or she deems necessary on the project. Paleontologic resource monitors shall have the equivalent of the following qualifications:

- BS or BA degree in geology or paleontology and one year of experience monitoring in California; or
- AS or AA in geology, paleontology, or biology and four years' experience monitoring in California; or
- Enrollment in upper division classes pursuing a degree in the fields of geology or paleontology and two years of monitoring experience in California.

Verification: (1) At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work.

(2) At least 20 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated monitors for the project, stating that the identified monitors meet the minimum qualifications for paleontological resource monitoring required by the condition. If additional monitors are obtained during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM no later than one week prior to the monitor's beginning on-site duties.

(3) Prior to the termination or release of a PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide to the PRS and the CPM, for approval, maps and drawings showing the footprint of the power plant, construction lay-down areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and plan and profile drawings for

the utility lines would be acceptable for this purpose. The plan drawings should show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the project or its linear facilities changes, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

Verification: (1) At least 30 days prior to the start of ground disturbance, the project owner shall provide the maps and drawings to the PRS and CPM.

(2) If there are changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

(3) If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within 5 days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares, and the project owner submits to the CPM for review and approval, a PRMMP to identify general and specific measures to minimize potential impacts to significant paleontological resources. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, and sampling activities and may be modified with CPM approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the guidelines of the SVP (1995) and shall include, but not be limited, to the following:

1. Assurance that the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, fieldwork, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation will be performed according to PRMMP procedures;
2. Identification of the person(s) expected to assist with each of the tasks identified within the PRMMP and the conditions of certification;

3. A thorough discussion of the anticipated geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units;
4. An explanation of why, how, and how much sampling is expected to take place and in what units. Include descriptions of different sampling procedures that shall be used for fine-grained and coarse-grained units;
5. A discussion of the locations of where the monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling;
6. A discussion of procedures to be followed in the event of a significant fossil discovery, halting construction, resuming construction, and how notifications will be performed;
7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
8. Procedures for inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources;
9. Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution; and
10. A copy of the paleontological conditions of certification.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly CPM-approved training for the following workers: project managers, construction supervisors, foremen, and general workers involved with or who operate ground-disturbing equipment or tools. Workers shall not excavate in sensitive units prior to receiving CPM-approved worker training. Worker training shall consist of an initial in-person PRS training during the project kick off for those mentioned above. Following initial training, a CPM-approved video or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to CPM approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the CPM.

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontologic sensitivity;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

Verification: (1) At least 30 days prior to ground disturbance, the project owner shall submit the proposed WEAP, including the brochure, with the set of reporting procedures for workers to follow.

(2) At least 30 days prior to ground disturbance, the project owner shall submit the script and final video to the CPM for approval if the project owner is planning to use a video for interim training.

(3) If the owner requests an alternate paleontological trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct training prior to CPM authorization.

(4) In the monthly compliance report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained and the trainer or type of training (in-person or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

PAL-5 The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially

fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.
2. The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.
3. The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources conditions of certification. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the conditions of certification.
4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours, or Monday morning in the case of a weekend event, where construction has been halted because of a paleontological find.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities placed in the monthly compliance reports. The summary will include the name(s) of PRS or PRM(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. A final section of the report will address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the CPM. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 10 days in advance of any proposed changes in monitoring different from the plan identified in the PRMMP. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-6 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during project construction.

Verification: The project owner shall maintain in his/her compliance file copies of signed contracts or agreements with the designated PRS and other qualified research specialists. The project owner shall maintain these files for a period of three years after project completion and approval of the CPM-approved paleontological resource report (see Condition of Certification **PAL-7**). The project owner shall be responsible for paying any curation fees charged by the museum for fossils collected and curated as a result of paleontological mitigation. A copy of the letter of transmittal submitting the fossils to the curating institution shall be provided to the CPM.

PAL-7 The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submit it to the CPM for review and approval.

The report shall include, but is not limited to, a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM.

Certification of Completion Worker Environmental Awareness Program Rice Solar Energy Project (08-AFC-10)

This is to certify these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on cultural, paleontological, and biological resources for all personnel (that is, construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
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Cultural Trainer: _____ Signature: _____ Date: ___/___/___

PaleoTrainer: _____ Signature: _____ Date: ___/___/___

Biological Trainer: _____ Signature: _____ Date: ___/___/___

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ENGINEERING ASSESSMENT

FACILITY DESIGN

Testimony of Erin Bright

SUMMARY OF CONCLUSIONS

The California Energy Commission staff (staff) concludes that the design, construction, and eventual closure of the project and its linear facilities would likely comply with applicable engineering laws, ordinances, regulations and standards. The proposed conditions of certification, below, would ensure compliance with these laws, ordinances, regulations and standards.

INTRODUCTION

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the Rice Solar Energy Project (RSEP). The purpose of this analysis is to:

- Verify that the laws, ordinances, regulations and standards (LORS) that apply to the engineering design and construction of the project have been identified;
- Verify that both the project and its ancillary facilities are sufficiently described, including proposed design criteria and analysis methods, in order to provide reasonable assurance that the project will be designed and constructed in accordance with all applicable engineering LORS, in a manner that also ensures the public health and safety;
- Determine whether special design features should be considered during final design to address conditions unique to the site which could influence public health and safety; and
- Describe the design review and construction inspection process and establish the conditions of certification used to monitor and ensure compliance with the engineering LORS, in addition to any special design requirements.

Subjects discussed in this analysis include:

- Identification of the engineering LORS that apply to facility design;
- Evaluation of the applicant's proposed design criteria, including identification of criteria essential to public health and safety;
- Proposed modifications and additions to the application for certification (AFC) necessary for compliance with applicable engineering LORS; and
- Conditions of certification proposed by staff to ensure that the project will be designed and constructed to ensure public health and safety and comply with all applicable engineering LORS.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Lists of LORS applicable to each engineering discipline (civil, structural, mechanical, and electrical) are described in the AFC (SR2009a, Appendices 2C). Key LORS are listed in **Facility Design Table 1**, below:

FACILITY DESIGN Table 1
Key Engineering Laws, Ordinances, Regulations and Standards (LORS)

Applicable LORS	Description
Federal	Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards
State	2007 (or the latest edition in effect) California Building Standards Code (CBSC) (also known as Title 24, California Code of Regulations)
Local	Riverside County regulations and ordinances
General	American National Standards Institute (ANSI) American Society of Mechanical Engineers (ASME) American Welding Society (AWS) American Society for Testing and Materials (ASTM)

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The Rice Solar Energy Project (RSEP) would be built on an approximately 1,410-acre site located in Riverside County. The project site lies in an area of low seismic activity. For more information about the site's seismic setting, please see the **Geology and Paleontology** section of this document. Also, for more information on the site and its related project description, please see the **Project Description** section of this document. Additional engineering design details are contained in the AFC, Appendix 2C (SR2009a).

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The purpose of this analysis is to ensure that the project would be built to applicable engineering codes and ensure public health and life safety. This analysis further verifies that applicable engineering LORS have been identified and that the project and its ancillary facilities have been described in adequate detail. It also evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. These conditions allow both the California Energy Commission (Energy Commission) compliance project manager (CPM) and the applicant to adopt a compliance monitoring scheme that will verify compliance with these LORS.

SITE PREPARATION AND DEVELOPMENT

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access, in addition to the criteria for designing and constructing linear support facilities such as natural gas and electric transmission interconnections. The applicant proposes the use of accepted industry standards (see SR2009a Appendix 2C, for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that this project, including its linear facilities, would most likely comply with all applicable site preparation LORS, and proposes conditions of certification (see below and the **Geology and Paleontology** section of this document) to ensure that compliance.

MAJOR STRUCTURES, SYSTEMS, AND EQUIPMENT

Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. See condition of certification (**GEN-2**), below.

The RSEP shall be designed and constructed to the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and other applicable codes and standards in effect when the design and construction of the project actually begin. If the initial designs are submitted to the chief building official (CBO) for review and approval after the update to the 2007 CBSC takes effect, the 2007 CBSC provisions shall be replaced with the updated provisions.

In order to ensure that structures are analyzed according to their appropriate lateral force procedure, staff has included condition of certification **STRUC-1**, below, which, in part, requires the project CBO's review and approval of the owner's proposed lateral force procedures before construction begins.

Major structures as defined above, also include enclosures, tanks, pipes, gas lines, waterlines, septic systems, grading, and are required to comply with the engineering codes adopted by the State of California. Exempt work is listed under Section 105.2 in Appendix Chapter 1 of the CBC.

PROJECT QUALITY PROCEDURES

The project's AFC (SR2009a, AFC § 2.3.2.5) describes a quality program intended to inspire confidence that its systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with all appropriate power plant technical codes and standards. Compliance with design requirements will be verified through specific inspections and audits. Implementation of this quality assurance/quality

control (QA/QC) program will ensure that the RSEP is actually designed, procured, fabricated, and installed as described in this analysis.

COMPLIANCE MONITORING

Under Section 104.2 of the CBC, the CBO is authorized and directed to enforce all provisions of the CBC. The Energy Commission itself serves as the building official, and has the responsibility to enforce the code, for all of the energy facilities it certifies. In addition, the Energy Commission has the power to interpret the CBC and adopt and enforce both rules and supplemental regulations that clarify application of the CBC's provisions.

The Energy Commission's design review and construction inspection process conforms to CBC requirements and ensures that all facility design conditions of certification are met. As provided by Section 104.2.2 of the CBC, the Energy Commission appoints experts to perform design review and construction inspections and act as delegate CBOs on behalf of the Energy Commission. These delegates typically include the local building official and/or independent consultants hired to provide technical expertise that is not provided by the local official alone. The applicant, through permit fees provided by the CBC, pays the cost of these reviews and inspections. While building permits in addition to Energy Commission certification are not required for this project, the applicant pays in lieu of CBC permit fees to cover the costs of these reviews and inspections.

Engineering and compliance staff will invite Riverside County or a third-party engineering consultant to act as CBO for this project. When an entity has been assigned CBO duties, Energy Commission staff will complete a memorandum of understanding (MOU) with that entity to outline both its roles and responsibilities and those of its subcontractors and delegates.

Staff has developed proposed conditions of certification to ensure public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities, and qualifications of the engineers who will design and build the proposed project (conditions of certification **GEN-1** through **GEN-8**). These engineers must be registered in California and sign and stamp every submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that every element of the project's construction (subject to CBO review and approval) be approved by the CBO before it is performed. Items exempt from this requirement are listed in Section 105.2 of Appendix Chapter 1 of the CBC. They also require that qualified special inspectors perform or oversee special inspections required by all applicable LORS.

The Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities on a case by case basis. The Energy Commission and the CBO also have the authority to interpret and accept alternate methods of construction and alternate materials.

CEQA LEVEL OF SIGNIFICANCE

As described in the **INTRODUCTION** above, the Facility Design section addresses LORS consistency and provides the agencies a vehicle for verifying compliance with these LORS during construction and operation of power generating facilities. This section is not intended to address environmental impacts under either CEQA or NEPA.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2 percent smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The project's nominal 150 megawatts (MW) generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker Blythe #2 161 kilovolt (kV) transmission line. Under the Reduced Acreage Alternative, the agencies would approve a facility with a 7.2 percent heliostat field reduction and with a 148 MW capacity compared to the 150 MW project that is proposed.

Assessment of Impacts and Discussion of Mitigation

The Facility Design section is not intended to address environmental impacts under either CEQA or NEPA.

NORTH DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

Assessment of Impacts and Discussion of Mitigation

The Facility Design section is not intended to address environmental impacts under either CEQA or NEPA.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe #2 transmission line at the same location as the proposed project generation tie line. This alternative generation tie line would exit the proposed solar facility at the northeast corner and follow State Route 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.0 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

Assessment of Impacts and Discussion of Mitigation

The Facility Design section is not intended to address environmental impacts under either CEQA or NEPA.

No Project / No Action Alternative

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed RSEP would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

The Facility Design section is not intended to address environmental impacts under either CEQA or NEPA.

CUMULATIVE IMPACT ANALYSIS

The Facility Design section is not intended to address environmental impacts under either CEQA or NEPA.

COMPLIANCE WITH LORS

A detailed discussion of the proposed project's compliance with LORS applicable to facility design is provided above in the subsection Assessment of Impacts and Discussion of Mitigation.

NOTEWORTHY PUBLIC BENEFITS

Staff has not identified any noteworthy public benefits associated with this Facility Design section.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2007 (or the latest edition in effect when initial project engineering designs are submitted for review) California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering LORS in effect at the time initial design plans are submitted to the CBO for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving, demolition, repair, or maintenance of the completed facility. All transmission facilities (lines, switchyards, switching stations and substations) are covered in the conditions of certification in the **Transmission System Engineering** section of this document.

In the event that the initial engineering designs are submitted to the CBO when the successor to the 2007 CBSC is in effect, the 2007 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

Then project owner shall submit plans, calculations and other related documents that have been specifically developed for the RSEP project

Verification: Five (5) days prior to requesting the issuance of the certificate of occupancy, the project owner shall submit to the CPM and the CBO a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the Energy Commission's decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the certificate of occupancy within 30 days of receipt from the CBO.

Once the certificate of occupancy has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires CBO approval for compliance with the above codes. The CPM will then determine if the CBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for CBO review, the project owner shall furnish the CPM and the CBO with a schedule of facility design submittals, and master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures, systems, and equipment. Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. The schedule shall contain the planned date of each submittal to the CBO. To facilitate audits by Energy Commission staff, the project owner shall provide specific packages to the CPM upon request. In addition to the design submittals referenced above, plans and calculations for all construction work shall be submitted to the CBO for approval.

Verification: At least 60 days (or a project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO and to the CPM the schedule, and the master drawings and master specifications list of documents to be submitted to the CBO for review and approval. These documents shall be the pertinent design documents for the major structures, systems, and equipment defined above in Condition of Certification **GEN-2**. Major structures and equipment shall be added to or deleted from the list only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report.

GEN-3 The project owner shall make payments to the CBO for design review, plan checks, and construction inspections, based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. These fees may be

based on hourly rates or the valuation of the facilities reviewed, or may be otherwise agreed upon by the project owner and the CBO. A copy of the contract between the owner and the CBO shall be submitted to the CPM for review and approval by staff.

Verification: The project owner shall make the required payments to the CBO in accordance with the agreement between the project owner and the CBO. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next monthly compliance report indicating that applicable fees have been paid. The CBO shall inform the CPM if the project owner has not met its obligations as specified in the agreement between the project owner and the CBO for payments related to CBO services.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California-registered architect, or a structural or civil engineer, as the resident engineer (RE) in charge of the project. All transmission facilities (lines, switchyards, switching stations, and substations) are addressed in the conditions of certification in the **Transmission System Engineering** section of this document.

The RE shall be aware of construction activities at the project site at all times. However, he/she is not required to be physically present at the job site as long as the construction work is being performed as delegated below. The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical, plumbing, and electrical portions of the project, respectively. A registered civil engineer may be delegated responsibility for civil engineering aspects of the project such as grading, storm water pollution prevention practices (SWPPP), storm water management practices (SWMP), drainage, erosion, sedimentation control programs (DESCP) and similar aspects of civil engineering. A project may be divided into parts, provided that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The RE or his/her delegate shall:

1. Monitor progress of construction work requiring CBO design review and inspection to ensure compliance with LORS;
2. Ensure that construction of all facilities subject to CBO design review and inspection conforms in every material respect to applicable LORS, these conditions of certification, approved plans, and specifications;
3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;
4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;

5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to CBO-approved plans and specifications.

The resident engineer (or his delegate) must be located at the project site, or be available at the project site within a reasonable period of time, during any hours in which construction takes place.

The RE shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the resume and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code section 6704 et seq., and sections 6730, 6731 and 6736 require state registration to practice as a civil engineer or structural engineer in California). All transmission facilities (lines, switchyards, switching stations, and substations) are handled in the conditions of certification in the **Transmission System Engineering** section of this document.

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is

responsible for a particular segment of the project (for example, proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit, to the CBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned responsible engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;
2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the CBO. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads and sanitary sewer systems; and
3. Provide consultation to the RE during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.
4. Review, implement and monitor storm water pollution prevention practices (SWPPP).
5. Review, implement and monitor storm water management practices (SWMP).
6. Review, implement and monitor drainage, erosion, sedimentation control programs (DESCP).
7. Review, implement and monitor all other civil engineering (earthwork) aspects of the project.

- B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:
1. Review all the engineering geology reports;
 2. Prepare the foundation investigations, geotechnical, or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement or collapse when saturated under load;
 3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and
 4. Recommend field changes to the civil engineer and RE.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations.

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and
2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;
2. Provide consultation to the RE during design and construction of the project;
3. Monitor construction progress to ensure compliance with engineering LORS;
4. Evaluate and recommend necessary changes in design; and
5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform to all

of the mechanical engineering design requirements set forth in the Energy Commission's decision.

F. The electrical engineer shall:

1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer and engineering geologist assigned to the project.

At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of construction, the project owner shall submit to the CBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the CBO's approvals of the responsible engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the resume and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, including prefabricated assemblies, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the applicable edition of the CBC. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A certified welding inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Inspect the work assigned for conformance with the approved design drawings and specifications;

3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the CBO and the CPM for corrective action; and
4. Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or project owner- and CBO-approved alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next monthly compliance report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the CBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next monthly compliance report. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain CBO's approval.

GEN-8 The project owner shall obtain the CBO's final approval of all completed work that has undergone CBO design review and approval. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the CBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site or at another accessible location during the operating life of the project. Electronic copies of the approved plans, specifications, calculations, and marked-up as-builts shall be provided to the CBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, in the next monthly compliance report, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing the final

approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner shall provide to the CBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" (Adobe) files, with restricted (password-protected) printing privileges, on archive quality compact discs.

CIVIL-1 The project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. An storm water pollution prevention plan (SWPPP);
4. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
5. Soils, geotechnical, or foundation investigations reports required by the CBC.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the CBO based on these new conditions. The project owner shall obtain approval from the CBO before resuming earthwork and construction in the affected area.

Verification: The project owner shall notify the CPM within 24 hours, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the CBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the CBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the CBC. All plant site-grading operations, for which a grading permit is required, shall be subject to inspection by the CBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be

reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report, with copies to the CBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following monthly compliance report.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the CBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within his/her area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or project owner- and CBO-approved alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the CBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes, along with a copy of the transmittal letter to the CPM. The project owner shall submit a copy of the CBO's approval to the CPM in the next monthly compliance report.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit plans, calculations and other supporting documentation to the CBO for design review and acceptance for all project structures and equipment identified in the CBO-approved master drawing and master specifications list. The design plans and calculations shall include the lateral force procedures and details as well as vertical calculations.

Construction of any structure or component shall not begin until the CBO has approved the lateral force procedures to be employed in designing that structure or component.

The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;
2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications;

3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation;
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer; and
5. Submit to the CBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS.

Verification: At least 60 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of construction of any structure or component listed in the CBO-approved master drawing and master specifications list, the project owner shall submit to the CBO the above final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the CBO the required number of sets of the following documents related to work that has undergone CBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
5. Reports covering other structural activities requiring special inspections shall be in accordance with the CBC.

Verification: If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the CBO, with a copy of the

transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

STRUC-3 The project owner shall submit to the CBO design changes to the final plans required by the CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the CBO prior notice of the intended filing.

Verification: On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the monthly compliance report, when the CBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the CBC shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or project owner- and CBO-approved alternate time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the CBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO approvals of plan checks to the CPM in the following monthly compliance report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the monthly compliance report following completion of any inspection.

MECH-1 The project owner shall submit, for CBO design review and approval, the proposed final design, specifications and calculations for each plant major piping and plumbing system listed in the CBO-approved master drawing and master specifications list. The submittal shall also include the applicable QA/QC procedures. Upon completion of construction of any such major piping or plumbing system, the project owner shall request the CBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major piping and plumbing systems, subject to CBO design review and approval, and submit a signed statement to the CBO when the proposed piping and plumbing systems have been designed, fabricated, and installed in accordance with all of the applicable

laws, ordinances, regulations and industry standards, which may include, but are not limited to:

- American National Standards Institute (ANSI) B31.1 (Power Piping Code);
- ANSI B31.2 (Fuel Gas Piping Code);
- ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
- ANSI B31.8 (Gas Transmission and Distribution Piping Code);
- Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
- Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems);
- Title 24, California Code of Regulations, Part 2 (California Building Code); and
- Riverside County codes.

The CBO may deputize inspectors to carry out the functions of the code enforcement agency.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of any increment of major piping or plumbing construction listed in the CBO-approved master drawing and master specifications list, the project owner shall submit to the CBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's inspection approvals.

MECH-2 For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of that installation.

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated, and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and

2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications, and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for design review and approval, the above listed documents, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall transmit to the CPM, in the monthly compliance report following completion of any inspection, a copy of the transmittal letter conveying the CBO's and/or Cal-OSHA inspection approvals.

MECH-3 The project owner shall submit to the CBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC) or refrigeration system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of that construction. The final plans, specifications and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with the applicable LORS.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 480 Volts or higher (see a representative list, below), with the exception of underground duct work and any physical layout drawings and drawings not related to code compliance and life safety, the project owner shall submit, for CBO design review and approval, the proposed final design, specifications, and calculations. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. All transmission facilities (lines, switchyards, switching stations, and

substations) are handled in conditions of certification in the **Transmission System Engineering** section of this document.

A. Final plant design plans shall include:

1. one-line diagrams for the 13.8 kV, 4.16 kV and 480 V systems; and
2. system grounding drawings.

B. Final plant calculations must establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 480 V systems;
6. system grounding requirements; and
7. lighting energy calculations.

C. The following activities shall be reported to the CPM in the monthly compliance report:

1. Receipt or delay of major electrical equipment;
2. Testing or energization of major electrical equipment; and
3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission decision.

Verification: At least 30 days (or project owner- and CBO-approved alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for design review and approval the above listed documents. The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and shall send the CPM a copy of the transmittal letter in the next monthly compliance report.

CONCLUSIONS AND RECOMMENDATIONS

1. The laws, ordinances, regulations and standards (LORS) identified in the AFC and supporting documents directly apply to the project.

2. Staff has evaluated the proposed engineering LORS, design criteria, and design methods in the record, and concludes that the design, construction, and eventual closure of the project will likely comply with applicable engineering LORS.
3. The proposed conditions of certification will ensure that RSEP is designed and constructed in accordance with applicable engineering LORS. This will be accomplished through design review, plan checking, and field inspections that will be performed by the CBO or other Energy Commission delegate. Staff will audit the CBO to ensure satisfactory performance.
4. Though future conditions that could affect decommissioning are largely unknown at this time, it can reasonably be concluded that if, the project owner submits a decommissioning plan as required in the **General Conditions** portion of this document prior to decommissioning, decommissioning procedures will comply with all applicable engineering LORS.

Energy Commission staff recommends that:

1. The proposed conditions of certification be adopted to ensure that the project is designed and constructed in a manner that protects the public health and safety and complies with all applicable engineering LORS;
2. The project be designed and built to the 2007 CBSC (or successor standards, if in effect when initial project engineering designs are submitted for review) and other applicable codes adopted by the State of California; and
3. The CBO reviews the final designs, checks plans, and performs field inspections during construction. Energy Commission staff shall audit and monitor the CBO to ensure satisfactory performance.

REFERENCES

SR2009a – Solar Reserve/ T. Georgis (tn: 53723). Application for Certification. Dated 10/13/09. Submitted to CEC/Docket Unit on 10/21/09.

Power Plant Efficiency

Testimony of Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The Rice Solar Energy Project (RSEP), if constructed and operated as proposed, would use solar energy to generate most of its capacity. Insignificant amounts of fossil fuel, in the form of propane, would be used only for initial salt melting. The project's expected overall annual energy production rate is approximately 450,000 MW hours (MWh), all of which would be produced using a renewable resource, the sunlight.

The project would decrease reliance on fossil fuel, and would increase reliance on renewable energy resources. It would not create significant adverse effects on fossil fuel energy supplies or resources, would not require additional sources of energy supply, and would not consume fossil fuel energy in a wasteful or inefficient manner. No efficiency standards apply to this project. Energy Commission staff therefore concludes that this project would present no significant adverse impacts on fossil fuel energy resources.

The Rice Solar Power Project, if constructed and operated as proposed, would occupy approximately nine acres per MW of power output.

INTRODUCTION

The RSEP, if constructed and operated as proposed, would generate 150 megawatts (MW) (nominal net output) of electricity. Rice Solar would be a solar thermal power plant in Riverside County, California. The project would use the concentrating solar thermal technology, consisting of a large circular field of heliostats (mirrors) that reflect the sun's energy onto a central receiver tower to produce electrical power using a steam turbine generator fed from solar steam generators. The land that would be occupied by this project for power generation and power plant operation would be approximately a 1,410-acre site. Liquid salt would be used as the heat transfer fluid; it would be circulated through the receiver to collect the sun's heat.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Presently, there are no laws, ordinances, regulations or standards (LORS) that apply to power plant efficiency.

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

CEQA METHODOLOGY AND THRESHOLD

CEQA guidelines state that the environmental analysis "...shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Title 14 CCR §15126.4[a][1]).

Appendix F of the guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce the wasteful, inefficient, and unnecessary consumption of energy (Title 14, CCR §15000 et seq., Appendix F).

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient, and unnecessary consumption of fuel or energy.

METHOD FOR DETERMINING EFFICIENCY

Fossil fuel use efficiency

One of the responsibilities of the California Energy Commission (Energy Commission) is to make findings on whether the energy use by a power plant, including the proposed Rice Solar project, would result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that Rice Solar's energy consumption creates a significant adverse impact, it must further determine if feasible mitigation measures could eliminate or minimize that impact. In this analysis, staff addresses the inefficient and unnecessary consumption of energy.

In order to develop the Energy Commission's findings, this analysis will:

- examine whether the facility would likely present any adverse impacts upon energy resources;
- examine whether these adverse impacts are significant; and if so,
- examine whether feasible mitigation measures or alternatives could eliminate those adverse impacts or reduce them to a level of insignificance.

Solar land use efficiency

Solar thermal power plants typically consume much less fossil fuel (usually in the form of natural gas) than other types of thermal power plants. Therefore, common measures of power plant efficiency such as those described above are less meaningful. Solar power plants do occupy vast tracts of land, so, the focus for these types of facilities shifts from fuel efficiency to land use efficiency. To analyze the land use efficiency of a solar facility staff utilizes the following approach.

Solar thermal power plants convert the sun's energy into electricity in three basic steps:

- Mirrors and/or collectors capture the sun's rays.

- This solar energy is converted into heat.
- This heat is converted into electricity, typically in a heat engine such as a steam turbine generator or a Stirling Engine-powered generator.

The effectiveness of each of these steps depends on the specific technology employed; the product of these three steps determines the power plant's overall solar efficiency. The greater the project's solar efficiency, the less land the plant must occupy to produce a given power output.

The most significant environmental impacts caused by solar power plants result from occupying large expanses of land. The extent of these impacts is likely in direct proportion to the number of acres affected. For this reason, staff will evaluate the land use efficiency of proposed solar power plant projects. This efficiency will be expressed in terms of power produced, or MW per acre, and in terms of energy produced, or MW-hours per acre-year. Specifically:

- Power-based solar land use efficiency is calculated by dividing the maximum net power output in MW by the total number of acres impacted by the power plant, including roads and electrical switchyards and substations.
- Energy-based solar land use efficiency is calculated by dividing the annual net electrical energy production in MW-hours per year by the total number of acres impacted by the power plant. Since different solar technologies consume differing quantities of natural gas for morning warm-up, cloudy weather output leveling and heat transfer fluid freeze protection (and some consume no gas at all), this effect is accounted for. Specifically, gas consumption is backed out by reducing the plant's net energy output by the amount of energy that could have been produced by consuming the project's annual gas consumption in a modern combined cycle power plant. (See **Efficiency Appendix A**, immediately following.) This reduced energy output is then divided by acres impacted.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

The applicant proposes to build and operate Rice Solar, a solar thermal power plant producing a total of 150 MW (nominal net output) and employing the concentrating solar thermal technology. The project would consist of one power plant unit comprised of arrays of mirrors, a central receiver tower, solar steam generator heat exchangers, a steam turbine generator, and an air cooled condenser (SR 2009a, AFC §§ 1.0, 2.1).

The project's power cycle would be based on a steam cycle (also known as the Rankine cycle) (SR 2009a, AFC § 2.2.2). The solar steam generator heat exchangers would receive heated heat transfer fluid from the solar thermal equipment, comprised of arrays of mirrors that reflect energy from the sun to a central solar receiver tower. The heated heat transfer fluid would be used to generate steam in the solar steam generator heat exchangers. This steam would then expand through the steam turbine generators to produce electrical power.

Liquid salt would be used as the heat transfer fluid. Liquid salt has inherent thermal energy storage properties, has greater heat retention capacity and can operate at far higher operating temperatures than alternatives such as synthetic oil.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Project Energy Requirements and Energy Use Efficiency

Rice Solar would consume no fossil fuel for power generation and would use insignificant amounts of propane for initial salt melting.

The applicant estimates an average overall steam cycle efficiency of 38.7 percent for Rice Solar (SR 2009b, § 1.0). There are currently no legal or industry standards for measuring the efficiency of solar thermal power plants (CEC 2008d). Therefore, staff compares the steam cycle efficiency of Rice Solar to the average efficiency of the typical modern steam turbines currently available in the market. The efficiency figures for these turbines range from 35 percent to 40 percent. The project's thermal efficiency of 38.7 percent is comparable to this industry figure.

Therefore, staff considers the impact of the project's fuel consumption on energy supplies and energy efficiency to be less than significant.

Adverse Effects on Energy Supplies and Resources

The applicant has described its sources of propane for the project (SR 2009a, AFC § 2.2.4 and § 4.0). Propane is normally created as a by-product of petroleum refining and from natural gas production. Petroleum products and natural gas (with California's access to natural gas resources from the Rocky Mountains, Canada and the southwest) represent considerable energy resources in California. Propane supplies in California amount to approximately 630 million gallons per year from refineries alone. This is only about 60 percent of California's total propane supply. Only small amounts of propane would be consumed by the project. Therefore, it appears highly unlikely that the project would create a substantial increase in fossil fuel demand.

Additional Energy Supply Requirements

There appears to be no real likelihood that RSEP would require the development of additional energy supply capacity (see above in **Adverse Effects on Energy Supplies and Resources**).

Compliance with Energy Standards

No standards apply to the efficiency of Rice Solar or other non-cogeneration projects.

Alternatives to Reduce Wasteful, Inefficient, and Unnecessary Energy Consumption

Staff typically evaluates the project alternatives to determine if alternatives exist that could reduce the project's fuel use. The evaluation of alternatives to the project (that could reduce wasteful, inefficient, or unnecessary energy consumption) requires the examination of the project's energy consumption.

Efficiency of Alternatives to the Project

Please see the project alternatives discussed below.

Alternative Generating Technologies

Alternative generating technologies for RSEP are considered in the AFC (SR 2009a, AFC § 6.7) and in the Alternatives section of this SA/DEIS. For purposes of this analysis, natural gas, oil, coal, nuclear, geothermal, biomass, hydroelectric, wind, solar photovoltaic and other solar thermal technologies were all considered. Because this project would consume no fossil fuel for power production, staff believes that the Rice Solar project would not constitute a significant adverse impact on fossil fuel energy resources compared to feasible alternatives.

The solar insolation falling on the earth's surface can be regarded as an energy resource. Since this energy is inexhaustible, its consumption does not present the concerns inherent in fossil fuel consumption. What is of concern, however, is the extent of land area required to capture this solar energy and convert it to electricity. Setting aside hundreds or thousands of acres of land for solar power generation removes it from alternative uses.

To assess the Rice Solar's land use efficiency staff proposes to compare the land use efficiency of the solar projects currently before the Commission to the Rice Solar. This comparison will help determine a range of viable efficiencies and where the Rice Solar falls.

There are currently several solar power plant projects that have progressed significantly through the Energy Commission siting process. These projects' power and energy output, and the extent of the land occupied by them, are summarized in **Efficiency Table 1**, below. The solar land use efficiency for a typical natural gas-fired combined cycle power plant is shown only for comparison.

Rice Solar would produce power at the rate of 150 MW net, and would generate energy at the rate of 450,000 MW-hours net per year, while occupying 1,400 acres (SR 2009a, AFC §§ 2.0, 2.1, 2.2.1).

Staff calculates power-based land use efficiency thus:

Power-based efficiency: $150 \text{ MW} \div 1,400 \text{ acres} = 0.11 \text{ MW/acre}$ or **9.0 acres/MW**

Staff calculates energy-based land use efficiency thus:

Energy-based efficiency: $450,000 \text{ MWh/year} \div 1,400 \text{ acres} = 321 \text{ MWh/acre-year}$

As seen in **Efficiency Table 1**, RSEP, employing the power tower technology, is slightly less efficient in use of land than the Beacon Solar, Ridgecrest Solar, Blythe Solar, and Palen Solar projects, which use the linear parabolic trough technology. Rice Solar is as efficient in use of land as the Ivanpah SEGS project, which employs the same technology, and the Calico Solar and the SES Solar Two projects, which use the Stirling Engine technology.

Alternatives to Reduce Solar Land Use Impacts

Building and operating a natural gas-fired combined cycle power plant would yield much greater land use efficiency than any solar power plant; see **Efficiency Table 1**.

However, this would not achieve the basic project objective, to generate electricity from the renewable energy of the sun and would not further the state's renewable energy development and green-house gas reduction goals.

Building a solar power plant employing a different technology, such as the linear parabolic trough technology, would slightly increase the solar land use efficiency of Rice Solar.

Efficiency Table 1 — Solar Land Use Efficiency

Project	Generating Capacity (MW net)	Annual Energy Production (MWh net)	Annual Fuel Consumption (MMBtu LHV)	Footprint (Acres)	Land Use Efficiency (Power-Based) (MW/acre)	Land Use Efficiency (Energy – Based) (MWh/acre-year)	
						Total	Solar Only ¹
Rice Solar (09-AFC-10)	150	450,000	0	1,400	0.11	321	321
Calico Solar (08-AFC-13)	850	1,840,000	0	8,230	0.10	224	224
Beacon Solar (08-AFC-2)	250	600,000	36,000	1,240	0.20	484	480
Ivanpah SEGS (07-AFC-5)	400	960,000	432,432	3,744	0.11	256	238
Abengoa Solar (09-AFC-5)	250	630,000	94,280	1,420	0.18	444	434
Blythe Solar (09-AFC-6)	1000	2,100,000	207,839	5,950	0.17	353	348
Palen Solar (09-AFC-7)	500	1,000,000	103,919	2,970	0.17	337	332
Genesis Solar (09-AFC-8)	250	600,000	60,000	1,800	0.14	333	329
Ridgecrest Solar (09-AFC-9)	250	500,000	51,960	1,440	0.17	347	342
San Joaquin Solar Hybrid (08-AFC-12)	106	774,000	5,899,500	640	0.17	1209	415
Avenal Energy (08-AFC-1) ²	600	3,023,388	24,792,786	25	24.0	120,936	N/A

¹ Net energy output is reduced by natural gas-fired combined cycle proxy energy output; see **Efficiency Appendix A**.

² Example natural gas-fired combined cycle plant.

Alternative Heat Rejection System

The applicant proposes to employ a dry cooling system (air-cooled condensers) as the means for rejecting power cycle heat from the steam turbine (SR 2009a, AFC §§ 1.0, 2.2.2.6). An alternative heat rejection system would utilize evaporative cooling towers.

The local climate in the project area is characterized by high temperatures and low relative humidity (low wet-bulb temperature). In low temperatures and high relative humidity (low dry-bulb temperature), the air-cooled condenser performs relatively efficiently compared to the evaporative tower. However, at the project area (low wet-bulb temperature and high dry-bulb temperature) the air-cooled condenser performance is relatively poor compared to that of an evaporative cooling tower. Furthermore, the performance of the heat rejection system affects the performance of the steam turbine, impacting turbine efficiency. However, to conserve water in the project site's desert environment, the applicant proposes to employ dry cooling for steam condensation, and minimal water would be used for cooling the turbine-generator lubricating oil system. Even though evaporative cooling could offer greater efficiency, staff believes the applicant's selection of dry cooling is a reasonable tradeoff as it would prevent potentially significant environmental impacts that could result from consumption of the large quantities of water required by wet cooling (see **Soil and Water Resources** section of this document).

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2 percent smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The project's nominal 150 megawatts (MW) generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker Blythe #2 161 kilovolt (kV) transmission line. Under the Reduced Acreage Alternative, the agencies would approve a facility with a 7.2 percent heliostat field reduction and with a 148 MW capacity compared to the 150 MW project that is proposed.

Setting and Existing Conditions

The setting for the Reduced Acreage Alternative is the same as for the proposed project with the exception of the changes addressed above.

Assessment of Impacts and Discussion of Mitigation

The reduction in power output would not affect the consumption of fossil fuel; as with the original project, the fossil fuel impact would be insignificant as no fossil fuel is needed to produce power. The land-use efficiency would not substantially change because the size of the land to be occupied by the facility (power block and solar field) and the power output would be reduced proportionally.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3**.

Setting and Existing Conditions

The setting and existing conditions at the North of Desert Center Alternative site as related to Power Plant Efficiency would be similar to the proposed project.

Assessment of Impacts and Discussion of Mitigation

The power output would be the same as the proposed project and would likely result in the same amounts of fossil fuel to be consumed for the initial salt melting; as with the original project, the fossil fuel impact would be insignificant. The land-use efficiency would not change because likely both, the size of the land to be occupied by the facility (power block and solar field) and the power output would be the same.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe #2 transmission line at the same location as the proposed project generation tie line. This alternative generation tie line would exit the proposed solar facility at the northeast corner and follow State Route 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.0

miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4**.

Setting and Existing Conditions

This transmission line alternative's setting and existing conditions are irrelevant to Power Plant Efficiency.

Assessment of Impacts and Discussion of Mitigation

This alternative would not impact Power Plant Efficiency.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed RSEP would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the impacts related to Power Plant Efficiency from the proposed project would occur and none of the benefits of the proposed project related to Power Plant Efficiency would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CUMULATIVE IMPACT ANALYSIS

While there are other solar and wind power projects proposed in the vicinity of RSEP, there are no nearby power plant projects or other projects consuming large amounts of fossil fuel that hold the potential for cumulative energy consumption impacts when aggregated with the project. The amount of fuel to be consumed by RSEP would be insignificant compared to the considerable resources of fossil fuel, including propane, in California.

Staff believes that the construction and operation of the project would not create indirect impacts (in the form of additional fuel consumption) that would not have otherwise occurred without this project. Because Rice Solar would consume no fossil fuel for power generation, it should compete favorably in the California power market and replace fossil fuel burning power plants. The project would therefore cause a positive impact on the cumulative amount of fossil fuel consumed for power generation.

COMPLIANCE WITH LORS

No federal, state, or local/county laws, ordinances, regulations, and standards (LORS) apply to the efficiency of this project.

NOTEWORTHY PUBLIC BENEFITS

Rice Solar would employ an advanced solar thermal technology. Solar energy is renewable and unlimited. The project would have a less than significant adverse impact on nonrenewable energy resources. Consequently, the project would help in reducing California's dependence on fossil fuel-fired power plants.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

No conditions of certification are proposed.

CONCLUSIONS

Fossil fuel energy use

Rice Solar, if constructed and operated as proposed, would use solar energy to generate all of its capacity, consuming no fossil fuel for power production. The project would decrease reliance on fossil fuel, and would increase reliance on renewable energy resources. It would not create significant adverse effects on energy supplies or resources, would not require additional sources of energy supply, and would not consume energy in a wasteful or inefficient manner. No energy standards apply to this project. Staff therefore concludes that this project would present no significant adverse impacts on energy resources.

No cumulative impacts on energy resources are likely. Facility closure would not likely present significant impacts on electric system efficiency.

Land use

Rice Solar, if constructed and operated as proposed, would occupy approximately nine acres per MW of power output, a figure higher than that of some other solar power technologies. Employing a less land-intensive solar technology, such as the concentrated parabolic trough technology would slightly reduce this figure.

REFERENCES

CEC 2008d – Report of Conversation between Steve Baker (CEC staff, Power Plant Siting Division) and Golam Kibrya (CEC staff, Energy Resource and Development Division). February 22, 2008.

SR 2009a – Solar Reserve/ T. Georgis (tn: 53723). Application for Certification. Dated 10/13/09. Submitted to CEC/Docket Unit on 10/21/09.

SR 2009b – Solar Reserve/ T. Georgis (tn: 54204). Applicant's Data Adequacy Supplement. Dated 11/19/09. Submitted to CEC/Docket Unit on 11/20/09.

Efficiency Appendix A

Solar Power Plant Efficiency Calculation

Gas-Fired Proxy

In calculating the efficiency of a solar power plant, it is desired to subtract the effect of natural gas burned for morning startup, cloudy weather augmentation and Therminol freeze protection. As a proxy, we will use an average efficiency based on several recent baseload combined cycle power plant projects that have gone through the Energy Commission siting process. Baseload combined cycles were chosen because their intended dispatch most nearly mirrors the intended dispatch of solar plants, that is, operate at full load in a position high on the dispatch authority's loading order.

Below are the list of four of such projects:

Colusa Generating Station (06-AFC-9)

Nominal 660 MW 2-on-1 Combined Cycle with GE Frame 7FA CGTs
Air cooled condenser, evaporative inlet air cooling
Efficiency with duct burners on: 666.3 MW @ 52.5% LHV
Efficiency with duct burners off: 519.4 MW @ 55.3% LHV
Efficiency (average of these two): **53.9% LHV**

San Gabriel Generating Station (07-AFC-2)

Nominal 696 MW 2-on-1 Combined Cycle with Siemens 5000F CGTs
Air cooled condenser, evaporative inlet air cooling
Efficiency with duct burners on: 695.8 MW @ 52.1% LHV
Efficiency with duct burners off: 556.9 MW @ 55.1% LHV
Efficiency (average of these two): **53.6% LHV**

KRCD Community Power Plant (07-AFC-7)

Nominal 565 MW 2-on-1 Combined Cycle with GE or Siemens F-class CGTs
Evaporative cooling, evaporative or fogging inlet air cooling
Efficiency with GE CGTs: 497 MW @ 54.6% LHV
Efficiency with Siemens CGTs: 565 MW @ 56.1% LHV
Efficiency (average of these two): **55.4% LHV**

Avenal Energy (08-AFC-1)

Nominal 600 MW 2-on-1 Combined Cycle with GE Frame 7FA CGTs
Air cooled condenser, inlet air chillers
Efficiency with duct burners on: 600.0 MW @ 50.5% LHV
Efficiency with duct burners off: 506.5 MW @ 53.4% LHV
Efficiency (average of these two): **52.0% LHV**

Average of these four power plants: **53.7% LHV**

POWER PLANT RELIABILITY

Testimony of Shahab Khoshmashrab

SUMMARY OF CONCLUSIONS

The expected equivalent availability factor for the proposed Rice Solar Energy Project (RSEP) is 92-98 percent, which staff believes is achievable (the availability factor of a power plant is the percentage of time it is available to generate power; both planned and unplanned outages subtract from this availability). Based on a review of the proposal, staff concludes that the RSEP would be built and would operate (throughout its intended 30-year life) in a manner consistent with industry norms for reliable operation. No conditions of certification are proposed.

INTRODUCTION

In this analysis, California Energy Commission (Energy Commission) staff addresses the reliability issues of the RSEP to determine if the power plant is likely to be built in accordance with typical industry norms for reliable power generation. Staff uses this norm as a benchmark because it ensures that the resulting project would not be likely to degrade the overall reliability of the electric system it serves (see the “Setting” subsection, below).

The scope of this power plant reliability analysis covers:

- equipment availability;
- plant maintainability;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with typical industry norms for reliable power generation. The expected overall availability factor for Rice Solar ranges between 92-98 percent (SR 2009a, AFC § 2.3.2.1). While this prediction is made by the applicant, staff commonly uses typical industry norms as the benchmark, rather than the applicant’s projection, to evaluate the project’s reliability (see below).

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

Presently, there are no laws, ordinances, regulations or standards (LORS) that establish either power plant reliability criteria or procedures for attaining reliable operation. However, the Energy Commission must make findings as to the manner in which the project is to be designed, sited and operated to ensure safe and reliable operation (Cal. Code Regulations, Title 20, § 1752[c]). Staff takes the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is connected. This is likely the case if the project exhibits reliability at least equal to that of other power plants on that system (see **PROPOSED PROJECT** below).

METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

CEQA METHODOLOGY AND THRESHOLD

This does not apply to power plant reliability.

METHOD FOR DETERMINING RELIABILITY

The Energy Commission must make findings as to how a project is designed, sited, and operated in order to ensure its safe and reliable operation (California Code of Regulations, Title 20, §1752[c]). Staff takes the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is connected. This is likely the case if a project is at least as reliable as other power plants on that system.

The availability factor of a power plant is the percentage of time it is available to generate power; both planned and unplanned outages subtract from this availability. Measures of power plant reliability are based upon both the plant's actual ability to generate power when it is considered to be available and upon starting failures and unplanned (or forced) outages. For practical purposes, reliability can be considered a combination of these two industry measures, making a reliable power plant one that is available when called upon to operate. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs. Achieving this reliability requires adequate levels of equipment availability, plant maintainability with scheduled maintenance outages, fuel and water availability, and resistance to natural hazards. Staff examines these factors for the project and compares them to industry norms. If the factors compare favorably for this project, staff may then conclude that Rice Solar would be as reliable as other power plants on the electric system and would not degrade system reliability.

PROPOSED PROJECT

SETTING AND EXISTING CONDITIONS

In the restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the state's control area operators, such as the California Independent System Operator (California ISO), that purchase, dispatch, and sell electric power throughout the state. Determining how the California ISO and other control area operators would ensure system reliability has been an ongoing effort. Protocols that allow sufficient reliability to be maintained under the competitive market system have been developed and put in place. "Must-run" power purchase agreements and "participating generator" agreements are two mechanisms that have been employed to ensure an adequate supply of reliable power.

The California ISO's mechanisms to ensure adequate power plant reliability apparently were devised under the assumption that the individual power plants that compete to sell power into the system will each exhibit a level of reliability similar to that of power plants of past decades. However, there has been valid cause to believe that, under free market competition, financial pressures on power plant owners to minimize capital

outlays and maintenance expenditures may act to reduce the reliability of many power plants, both existing and newly constructed (McGraw-Hill 1994). It is possible that, if significant numbers of power plants were to exhibit individual reliability sufficiently lower than this historical level, the assumptions used by California ISO to ensure system reliability would prove invalid, with potentially disappointing results. Accordingly, staff has recommended that power plant owners continue to build and operate their projects to the level of reliability to which all in the industry are accustomed.

As part of its plan to provide needed reliability, the applicant proposes to operate the 150-megawatt (MW) (net power output) Rice Solar, a solar thermal power plant facility employing an advanced solar power technology. This project, using renewable solar energy, would provide dependable power to the grid, generally during the hours of peak power consumption by the interconnecting utility(s). This project would help serve the need for renewable energy in California, as all its generated electricity would be produced by a reliable source of energy that is available during the hot summer afternoons, when power is needed most.

The expected availability factor for the project is 92-98 percent.

ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

EQUIPMENT AVAILABILITY

Equipment availability would be ensured by adoption of appropriate quality assurance/quality control (QA/QC) programs during the design, procurement, construction, and operation of the plant and by providing for adequate maintenance and repair of the equipment and systems discussed below.

Quality Control Program

The applicant describes a QA/QC program (SR 2009a, AFC § 2.3.2.5) that is typical of the power industry. Equipment would be purchased from qualified suppliers based on technical and commercial evaluations. Suppliers' personnel, production capability, past performance, QA programs, and quality history would be evaluated. The project owner would perform receipt inspections, test components, and administer independent testing contracts. Staff expects that implementation of this program would result in typical reliability of design and construction. To ensure this implementation, staff has proposed appropriate conditions of certification in the section of this document entitled **Facility Design**.

PLANT MAINTAINABILITY

Equipment Redundancy

The thermal storage technology that the RSEP would employ would allow the project to generate electrical power independent of solar energy capture. While solar energy capture would be able to occur only when the sun is shining, electrical power generation would follow peak demand, typically occurring in late afternoon and evening hours. The peaking nature of generation for the RSEP offers adequate opportunity for maintenance work during the downtime for the generating equipment, and maintenance or repairs to

the solar capture equipment could be done when those elements of the plant are shut down at night. The nature of solar thermal generating technology also provides inherent redundancy; the parallel arrangement of the heliostats would allow for the plant to operate with reduced output if one (or possible several) row(s) of reflectors were to require service or repair. This redundancy would allow service or repair to be done during sunny days when the plant is in operation, if required.

Major plant systems are designed with adequate redundancy to ensure their continued operation if equipment fails (SR 2009a, AFC § 2.3.2.2). Examples of the project's redundant equipment include:

- Two 100 percent boiler feed-water pumps,
- Three 50 percent condensate pumps, and
- Multi-fan Air-cooled Condenser.

Staff believes that this project's proposed equipment redundancy would be sufficient for its reliable operation.

Maintenance Program

Equipment manufacturers provide maintenance recommendations for their products, and the applicant is expected to base the project's maintenance program on those recommendations. Such a program would encompass both preventive and predictive maintenance techniques. Maintenance outages would probably be planned for periods of low electricity demand. Staff expects that the project would be adequately maintained to ensure an acceptable level of reliability.

FUEL AND WATER AVAILABILITY

The long-term availability of fuel and of water for cooling or process use is necessary to ensure the reliability of any power plant. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant could be curtailed, threatening both the power supply and the economic viability of the plant.

Fuel Availability

Rice Solar would consume no fossil fuel for power generation. Only small amounts of propane would be used for the initial salt melting.

The applicant has described its sources of propane for the project (SR 2009a, AFC § 2.2.4). Propane is normally created as a by-product of petroleum refining and from natural gas production. Petroleum products and natural gas (with California's access to natural gas resources from the Rocky Mountains, Canada and the southwest) represent considerable energy resources in California. Propane supplies in California amount to approximately 630 million gallons per year from refineries alone. This is only about 60% of California's total propane supply. Compared to this figure, the amounts of propane needed for Rice Solar is insignificant. Staff believes that there would be adequate propane supply and pipeline capacity to meet the project's needs.

Water Supply Reliability

Rice Solar has proposed to use well water from two onsite wells for domestic and industrial water needs, including steam cycle makeup, mirror washing, service water and fire protection water. The project would be dry cooled, so no water would be required for power plant cooling steam condensation, but minimal water would be used for cooling the turbine-generator lubricating oil system. Staff believes that this source of water supply is a reliable source of water for the project.

POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS

Natural forces can threaten the reliable operation of a power plant. Tsunamis (tidal waves) and seiches (waves in inland bodies of water) are not likely to present hazards for this project, but seismic shaking (earthquakes), flooding and high winds could present credible threats to the project's reliable operation (SR 2009a, AFC §§ 5.4, 5.15.1.3).

Seismic Shaking

The project will be designed and constructed to the latest applicable LORS (SR 2009a, AFC Appendix 2C). Compliance with current seismic design LORS represents an upgrading of performance during seismic shaking compared to older facilities since these LORS have been continually upgraded. Because it would be built to the latest seismic design LORS, this project would likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see the section of this document entitled **Facility Design**. In light of the general historical performance of California power plants and the electrical system in seismic events, staff has no special concerns with the power plant's functional reliability during earthquakes. Also see the **Geology and Paleontology** section of this document.

Flooding

The site lies within an area designated by the Federal Emergency Management Agency as Zone D. Zone D designation is used for areas where there are possible but undetermined flood hazards (SR 2009a, AFC § 5.15.1.3). Project features would be designed and built to provide adequate levels of flood resistance (SR 2009a, AFC Appendix 5.15C). Staff believes there are no special concerns with power plant functional reliability due to flooding, and the site is not within a 100-year floodplain. For further discussion, see **Soil and Water Resources** and **Geology and Paleontology**.

High Winds

High winds are common in the region of the site, which could potentially cause damage to the solar mirrors. Project features would be built to withstand wind loading. Design would be in accordance with applicable LORS, including the latest California Building Code (see the **Facility Design** section of this document). Staff believes there are no special concerns with power plant functional reliability due to wind.

COMPARISON WITH EXISTING FACILITIES

The North American Electric Reliability Corporation (NERC) maintains industry statistics for availability factors (as well as other related reliability data). The NERC regularly polls North American utility companies on their project reliability through its Generating Availability Data System and periodically summarizes and publishes those statistics on the Internet at <<http://www.nerc.com>>. Energy Commission staff typically compares the applicant's claims for reliability to the statistical reliability of similar power plants. Because solar technology is relatively new and the technologies employed so varied, no NERC statistics are available for solar power plants. Staff's typical comparison with other existing facilities thus cannot be accomplished. But, based on experience with power plants and due to the proven solar thermal technology proposed for this project, staff believes that the stated range of availability factor for the project is reasonable and likely achievable.

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2 percent smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The receiver location would remain the same, with the edges of the field contracting towards the center. The heliostat footprint of the Reduced Acreage Alternative is shown in **Alternatives Figure 2**. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be the same as the proposed project. The project's nominal 150 megawatts (MW) generation output would be reduced by approximately 2 MW.

Similar to the proposed project, the Reduced Acreage Alternative would transmit power to the grid through the planned Western substation to be located adjacent to Western's Parker Blythe #2 161 kilovolt (kV) transmission line. Under the Reduced Acreage Alternative, the agencies would approve a facility with a 7.2 percent heliostat field reduction and with a 148 MW capacity compared to the 150 MW project that is proposed.

Setting and Existing Conditions

The setting for the Reduced Acreage Alternative is the same as for the proposed project.

Assessment of Impacts and Discussion of Mitigation

Staff's methods of analysis and conclusions as related to Power Plant Reliability would remain unchanged. This alternative would be built and would operate in a manner consistent with industry norms for reliable operation.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing SCE 161-kV transmission line (from the Blythe-2 substation to the Eagle Mountain-1 substation) that traverses the alternative site would be realigned to roughly follow the site boundary. A new 0.125-mile generation tie line (along Osborne Ave.) and substation would interconnect to the realigned SCE line at the northeast boundary of the site. The boundaries and transmission realignment of the North of Desert Center Alternative are illustrated in **Alternatives Figure 3..**

Setting and Existing Conditions

The plant configuration at the North of Desert Center Alternative site would be similar to the proposed project, which means it would result in similar levels of equipment availability. Plant maintainability, fuel and water availability, and reliability of the plant in relation to natural hazards would each be similar at this alternative site to the proposed project.

Assessment of Impacts and Discussion of Mitigation

Staff's methods of analysis and conclusions as related to Power Plant Reliability would remain unchanged. This alternative would be built and would operate in a manner consistent with industry norms for reliable operation.

SR 62/RICE VALLEY ROAD GENERATION TIE LINE ALTERNATIVE

The SR 62/Rice Valley Road Generation Tie Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe #2 transmission line at the same location as the proposed project generation tie line. This alternative tie line would exit the proposed solar facility at the northeast corner and follow State Route 62 approximately 4.5 miles east to the junction of Rice Valley Road. It would then trend south to follow the unpaved Rice Valley Road for 4.0 miles to its juncture with the applicant's proposed new generation tie line alignment and continue southeast for 5.4 miles along the proposed alignment to Western's Parker-Blythe #2 transmission line. The SR 62/Rice Valley Road Generation Tie Line Alternative route is illustrated in **Alternatives Figure 4.**

Setting and Existing Conditions

This generation tie line alternative's setting and existing conditions are irrelevant to Power Plant Reliability.

Assessment of Impacts and Discussion of Mitigation

This alternative would not impact Power Plant Reliability.

NO PROJECT/NO ACTION ALTERNATIVE

No Project and No Action on Rice Solar Energy Project transmission line application and interconnection request. No CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the benefits of the proposed project related to Power Plant Reliability would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

NOTEWORTHY PUBLIC BENEFITS

This project, if successful, would help serve the need for renewable energy in California, as all of the electricity generated would be produced by a reliable source of energy that is available during the hot summer afternoons and evenings, when power is needed most.

PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

No Conditions of Certification are proposed.

CONCLUSIONS

The expected equivalent availability factor for this project is 92-98 percent, which staff believes is achievable (the availability factor of a power plant is the percentage of time it is available to generate power; both planned and unplanned outages subtract from this availability). Based on a review of the proposal, staff concludes that the Rice Solar Energy Project would be built and would operate (throughout its intended 30-year life) in a manner consistent with industry norms for reliable operation. No conditions of certification are proposed.

REFERENCES

SR 2009a – Solar Reserve/ T. Georgis (tn: 53723). Application for Certification. Dated 10/13/09. Submitted to CEC/Docket Unit on 10/21/09.

TRANSMISSION SYSTEM ENGINEERING

Testimony of Ajoy Guha, P. E. and Mark Hesters

SUMMARY OF CONCLUSIONS

The U.S. Bureau of Land Management (BLM), Western Area Power Administration (Western) and Energy Commission staff (staff), hereafter jointly referred to as agencies, have reviewed the Rice Solar Energy Project (RSEP or proposed project) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The proposed interconnection facilities for the Rice Solar Energy Project (RSEP), including the 161/230 kV project switchyard, the generator 230 kV overhead tie line and its termination at the proposed new Western Rice 230 kV substation would comply with industry standards and good utility practices, and are acceptable to staff according to engineering Laws, Ordinances, Regulations and Standards (LORS).

The Western System Impact Study (SIS) and supplementary studies demonstrate that the addition of the 150 MW RSEP would not cause any adverse impacts on the Western transmission system including the Parker-Davis (P-D) transmission system in the Desert Southwest (DSW) region under 2013 heavy summer and 2013 heavy winter system conditions during normal operation (N-0), and emergency Category B and Category C contingencies. But the studies identify that the project could have impacts on the adjacent Southern California Edison (SCE) and Imperial Irrigation District (IID) transmission systems. The addition of the RSEP would cause a new normal (N-0) and a new Category C contingency overload on the SCE Julian Hinds-Mirage 230 kV line, and a new Category B contingency overload on the IID Drop 4-Pilot Knob 92 kV line. The project would also exacerbate pre-project overloads on the SCE Julian Hinds-Mirage 230 kV line and on six transmission elements in the IID system under certain contingency conditions. Sensitivity studies which included the RSEP and another Western queue project, the proposed 110 MW Quartzsite plant (QP), identified similar impacts in the SCE and IID systems.

Western's Open Access Transmission Tariff requires that their interconnection process for Large Generators like the RSEP be coordinated with transmission owners whose system could be affected by the interconnection of the proposed generator. Western has contacted SCE and IID and solicited comments on the RSEP SIS. SCE and IID have indicated that more review of the SIS is required. Staff believes that Western, SCE and IID in coordination with California Independent System Operator (California ISO) and the Metropolitan Water District (MWD) will be able to come up with a viable plan to mitigate overloads on the SCE and IID systems. The proposed Condition of Certification **TSE-5** in section f) iv requires a plan for the mitigation of overloads in the SCE and IID systems.

The RSEP would meet the requirements and standards of all applicable LORS upon compliance with the recommended Conditions of Certification.

INTRODUCTION

The Transmission System Engineering (TSE) analysis examines whether or not the facilities associated with the proposed interconnection conform to all applicable LORS required for safe and reliable electric power transmission. Staff's analysis evaluates the power plant switchyard, generator tie line, termination and downstream facilities identified by the applicant. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the Energy Commission (California Code of Regulations, title 14, §15378). Therefore, the Energy Commission must identify the system impacts and necessary new or modified transmission facilities downstream of the proposed interconnection that are required for interconnection and represent the "whole of the action." Staff also coordinates with the lead federal agency, Western, and the cooperating federal agency, Bureau of Land Management (BLM) to meet the National Environmental Policy Act (NEPA) environmental requirements.

Energy Commission staff relies on the interconnecting authority for the analysis of impacts on the transmission grid as well as the identification and approval of required new or modified facilities downstream from the proposed interconnection that would be required as mitigation measures. The proposed Rice Solar Energy Project (RSEP) would interconnect to the Western transmission network in the Desert Southwest (DSW) region and requires Western's analysis and approval.

WESTERN'S ROLE

Western is responsible for ensuring electric system reliability in the Western system for interconnection of the proposed generating plant. Western will ensure adequacy and reliability of the proposed generator interconnection to their system according to Western, and applicable national and regional planning and reliability standards. The Western Open Access Transmission Tariff includes the Large Generator Interconnection Process which applies to the interconnection of the RSEP. Western's "General Requirements for Interconnection" provides guidelines and minimum requirements for the interconnection of new generators, and the addition or modification of Western's transmission facilities. Western provides the analysis in their System Impact study (SIS) and Facilities study (FS) based on the expected commercial operation date (COD) of the proposed facility. The studies also identify the facilities and changes in the Western transmission system required for the reliable addition and/or modification of transmission facilities. On satisfactory completion of the FS, Western will proceed for execution of the Facility Construction Agreement (FCA) with the applicant for construction of the facilities and changes required in the Western system required to accommodate the interconnection of the proposed generator. As a Federal agency, Western conducts an environmental review of any action affecting Western's transmission facilities. Western may proceed with execution of the Large Generator Interconnection Agreement (LGIA) with the interconnection customer at the same time as the FCA or, after satisfactory completion of construction and testing of all facilities in conformance with Western's criteria and before energizing the interconnected facilities. Western may provide written and verbal testimony on their findings at the Energy Commission hearings.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

- Western “General Requirements for Interconnection,” September, 1999, provides guidelines, steps and requirements for the interconnection process, and addition or modification to the Western transmission facilities. It provides an overview of the reliability, safety & security, environmental, land acquisition, technical, construction and contractual requirements (Western 1999).
- Western Open Access Transmission Service Tariff (OATT) provides rules and guidelines, procedures and study requirements for system reliability, facilities addition/upgrades & environmental review, and applicable terms and conditions for providing transmission services in the Western grid to a transmission customer. The Tariff also covers cost responsibility, operating arrangements and rates & charges for the transmission services. The Tariff specifies the required LGIP and LGIA to be followed for any large generator interconnection request to the Western grid (Western 2009).
- California Public Utilities Commission (CPUC) General Order 95 (GO-95), “Rules for Overhead Electric Line Construction,” formulates uniform requirements for construction of overhead lines. Compliance with this order ensures adequate service and safety to persons engaged in the construction, maintenance and operation or use of overhead electric lines and to the public in general.
- California Public Utilities Commission (CPUC) General Order 128 (GO-128), “Rules for Construction of Underground Electric Supply and Communications Systems,” formulates uniform requirements and minimum standards to be used for underground supply systems to ensure adequate service and safety to persons engaged in the construction, maintenance and operation or use of underground electric lines and to the public in general.
- The National Electric Safety Code, 2007 provides electrical, mechanical, civil and structural requirements for overhead electric line construction and operation.
- The North American Electric Reliability Corporation (NERC) Reliability Standards define the plans, policies & procedures, methodologies & system models, coordination & responsibilities, and performance criteria for reliable planning, control and operation of the North American Bulk Electric System (BES) over broad spectrum of system conditions and following a wide range of probable disturbances. The Standards cover all aspects of an interconnected BES such as: Transmission system planning & operation, consistent data (steady-state and dynamic) for modeling and simulation, facility ratings methodology and connections, balancing real power, resources & load demand, procedures for voltage control & reactive power, system protection, control, communications & security, nuclear plant interface coordination, emergency operation planning and system restoration plans. The transmission planning standards stipulate periodic system simulations and associated assessments over a planning horizon by the planning authority and transmission planner to ensure that reliable systems are planned with sufficient lead time to meet the system performance requirements and

continue to be modified or upgraded as necessary for operating the network reliably to supply projected customer demands and firm transmission services under normal and forced or maintenance outage system conditions.

For an interconnected bulk electric system, the Table I in the NERC Transmission Planning Standards specifies the system performance requirements during normal system conditions with all facilities in service (pre-contingency) and normal operating procedures in effect under Category A, and during probable and rationale contingencies of a single BES element under Category B and two or more (multiple) BES elements under Category C. The performance limits or impacts for the above Categories A-C are specified for a reliable system as to remain stable, and within applicable normal and emergency facility thermal ratings and system voltage limits as determined and applied by the transmission owner according to the NERC Facility Ratings Standards. Specified system performance limits may vary from no loss of load demand or curtailed generation/firm transfers for insignificant adverse impacts (for Categories A & B) to planned/controlled loss of load demand or curtailed generation/firm transfers (for Category C) without any cascading outages. However, during major extreme disturbances such as loss of multiple 500 kV lines on a common right-of-way with cascading outages or multiple generators with loss of a major load center as stated under Category D in the Table I, some of the interconnected systems may become unstable resulting in widespread black out in islanded areas. The standards require the planning authority to evaluate the risks and consequences for such catastrophic events, and be prepared according to the NERC Emergency Operation Planning Standard and/or to restore the system to normal according to the NERC standard for System Restoration Plans (NERC 2005-10).

- The Western Electric Coordinating Council (WECC) Regional System Performance Criteria is similar to the system performance limits as defined in NERC transmission planning standards. The WECC performance criteria incorporate the Table I of the NERC transmission planning standards and in addition include the WECC Disturbance-Performance Table W-1 which provides standards for transient voltage and frequency limits, and post-transient system voltage variation. Certain aspects of the WECC performance criteria are either more stringent or specific than the NERC standards such as inclusion of contingency event frequencies and additional Category C & D contingencies. Adequate reactive power resources planning criteria for transfer path ratings and post-transient voltage stability are also included. For any past disturbance that actually resulted in cascading outages in the interconnected system, the WECC performance criteria require remedial action so that future occurrences of such event would not result in cascading (WECC 2008).
- California ISO Planning Standards also provide standards and guidelines to ensure the adequacy, security and reliability in the planning of the California ISO grid transmission facilities. The Standards incorporate the current NERC Reliability Planning Standards and WECC Regional System Performance Criteria. However, the California ISO Standards are more stringent or specific than the NERC standards and WECC performance criteria. The Standards include additional Category B disturbance elements and criteria for existing nuclear plant unit's control. The Standards also address new transmission vs. involuntary load interruptions and San Francisco greater bay area generation outage criteria for conducting grid

planning for the bay area. The California ISO Standards apply to the electric systems of all participating transmission owners interconnecting to the California ISO controlled grid. They also apply when there are any impacts to the California ISO grid due to facilities interconnecting to adjacent controlled grids not operated by the California ISO (California ISO 2002a).

PROJECT DESCRIPTION

The RSEP, a concentrated solar power plant, would be located on private property in eastern Riverside County. The proposed RSEP would consist of a steam turbine generator (STG) rated 200 MVA, 18 kV with a nominal net 150 MW output. The STG would be connected through an 8,000-ampere segregated bus duct and an 8,000-ampere 18 kV breaker to the low voltage terminal of a dedicated 118/157/202 MVA, 18/161/230 kV generator step-up (GSU) transformer with a specified impedance of 10% @118 MVA (SR 2009a, AFC, section 2; SR 2009b, Data Adequacy supplement).

SWITCHYARD AND INTERCONNECTION FACILITIES

The 161 kV high voltage terminal of the GSU transformer would be connected to the 161/230 kV switchyard dead-end structure through short overhead 1,272 Kcmil steel-reinforced aluminum conductors (ACSR) conductors and a 2,000-ampere, 230 kV breaker with two associated 2,000-ampere disconnect switches.

The new RSEP 161/230 kV switchyard would be interconnected to the existing Western Parker-Blythe 161/230 kV No. 2 line (currently operating at 161 kV, designed and built to operate at 230 kV) by building an approximately 10-mile long 230 kV single circuit overhead transmission line with 1,272 Kcmil ACSR on 75 to 115-foot high tubular steel poles. The generator tie line will take the direct and shortest southeast route from the RSEP south fence line, first 5.4 miles along a newly built private dirt road to the Rice Valley Road. From this point the line would run another 4.6 miles along public land adjacent to the U. S. Bureau of Land Management (BLM) maintained Rice Valley Road to the interconnection point. The applicant will build, own and operate the RSEP 161/230 kV switchyard and the generator tie line.

The new line would be terminated at a proposed new Western Rice 230 kV substation bus to be located adjacent to Western's Parker-Blythe 230/161 kV No. 2 line through a 2,000-ampere disconnect switch. The new substation would have a 2,000-ampere ring bus configuration with four 2,000-ampere, 230 kV breakers and associated 2,000-ampere disconnect switches. The existing Parker-Blythe 230/161 kV No. 2 line would be looped into the new substation bus through two 2,000-ampere disconnect switches. Western would build, own and operate the proposed new Rice 230 kV substation and the interconnecting facilities within its fence line.

The RSEP switchyard, the proposed new generator tie line and the terminating new substation would be operated at 161-kV until the Western Parker-Blythe 161/230 kV No. 2 line is operated at 230 kV. All construction will be done according to Western's construction standards.

The configuration of the proposed new RSEP 161-kV/230-kV switchyard, the generator 230 kV overhead tie line and its termination at the proposed Western Rice 230 kV substation would comply with industry standards and good utility practices, and is acceptable to staff. Proposed Conditions of Certification TSE 1 to TSE 8 insure that the proposed facilities are designed, built and operated in accordance with good utility practices and applicable LORS.

TRANSMISSION SYSTEM IMPACT ANALYSIS

In accordance with the Western LGIP and “General Requirements for Interconnection”, the SIS and FS are conducted to determine the preferred and alternate interconnection methods to the grid, the downstream transmission system impacts and the mitigation measures needed to ensure system conformance with performance levels required by the Western reliability criteria, NERC Reliability standards, WECC system performance criteria and also California ISO Planning standards. Staff relies on the studies and any review conducted by the responsible agencies to determine the project impacts on the transmission grid and to identify any necessary new downstream facilities or modifications required to bring the transmission network into compliance with applicable reliability standards (NERC 2005-10, WECC 2008, California ISO 2002a).

The SIS and FS analyze the grid with and without the proposed project under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds by which grid reliability is determined. The studies must analyze the impact of the project for the proposed first year of operation and thus are based on a forecast of loads, generation and transmission. Load forecasts are developed by the interconnected utility, and incorporated by Western into their study. Generation forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads or cascading outages), and short circuit duties.

If the studies show that the interconnection of the project causes the grid to be out of compliance with reliability standards, the study will then identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. If the interconnecting utility determines that the only feasible mitigation includes transmission modifications or additions which require CEQA review as part of the “whole of the action,” the Energy Commission must analyze those modifications or additions according to CEQA requirements. Staff also coordinates with federal agencies such as BLM and Western to meet the NEPA requirements.

SCOPE OF SYSTEM IMPACT STUDY (SIS)

The May 14, 2010 SIS was prepared by the Western to evaluate the system impacts of the proposed RSEP on the Western transmission system in the DSW region and was supplemented by additional studies and information dated July 16, 2010 and August 9, 2010 conducted by the Utility System Efficiencies, Inc. (a consulting firm) with the Western base cases. The Western SIS was prepared with and without the RSEP 150

MW generation using the following base cases under critical loading conditions for the transmission system in the Western DSW region:

- An updated WECC 2013 heavy summer base case with addition of four higher queue projects with a total of 1319 MW generation
- An updated WECC 2013 heavy winter base case with addition of total 1319 MW generation of four higher queue projects and with maximum allowable East of the River (EOR) seasonal path flow.

In the base cases generation added from the interconnection queue was balanced by reducing fossil fuel generation in Los Angeles area. The existing 520 MW Blythe generating plant (modeled with only 319 MW generation output in the heavy summer case and 509 MW in the heavy winter case) interconnection was shown switched over from the Western system to the California ISO grid at the Julian Hinds 230 kV substation. In each of the studies, it is expected that generation and critical seasonal power flows were maintained within their limits. The base cases included funded & planned transmission upgrades in the Western system and planned California ISO approved upgrades that would be operational by 2013. The study included analyses for power flow, short circuit and transient stability.

In addition power flow sensitivity studies were performed analyzing the addition of 110 MW project, the Quartzsite Plant (QP, Western queue #2008-G12, COD uncertain), to the above base cases with and without the RSEP generation. The Quartzsite Plant was shown interconnected to the existing Bouse-Kofa 161 kV line in the Western P-D system (CH2MHILL 2010s, Western SIS report dated May 14, 2010).

Power Flow Study Results and Mitigation

The SIS demonstrates that the addition of the 150 MW RSEP generation output would not cause any thermal overloads or voltage violations on the Western P-D system in the DSW region under 2013 heavy summer and 2013 heavy winter system conditions during Category A (N-0) normal operation, and emergency Category B (N-1) and Category C (N-2 or more) contingencies. However, the SIS identified a new normal overload on the SCE system, a new N-1 contingency overload on the Imperial Irrigation District (IID) system and one new N-2 contingency overload on the SCE system that were caused by the addition of the RSEP. In addition a pre-project overload on the SCE system and several pre-project overloads on the IID systems were exacerbated under certain contingency conditions. The power flow study results are shown in Appendices A and B of the Western SIS report and supplementary SIS reports dated August 9, 2010 (CH2MHILL 2010s, Western SIS report dated May 14, 2010).

Below is a summary of power flow results for overloads on the IID and SCE systems under the *worst contingencies* for the RSEP addition:

- During 2013 heavy summer conditions for the Category B outage of the N. Gila-Imperial Valley (IV) 500 kV line, the project causes a new overload on the IID Drop4-Pilot Knob 92 kV line (loading increases from 97 to 101% of the emergency line rating) and increases pre-project overloads on the following IID lines:
 - Knob-Pilot Knob 161 kV line (loading increases from 122 to 130%).

- Pilot Knob 161/92 kV transformer (loading increases from 137 to 142%).
- El Centro swtn.-Pilot Knob 161 kV line 92 (loading increases from 120 to 123%).
- During 2013 heavy winter conditions with all facilities in service (N-0) the project causes a new overload on the SCE Julian Hinds-Mirage 230 kV line (loading increases from 100 to 104% of normal line rating).
- During 2013 heavy winter system conditions, the project exacerbates pre-project overloads on the following IID lines for the N. Gila–IV 500 kV line contingency:
 - Knob-Pilot Knob 161 kV line (loading increases from 120 to 127%).
 - Pilot Knob 161/92 kV transformer (loading increases from 123 to 126%).
 - Imperial Valley-El Centro 230 kV line (loading increases from 128 to 134%).
 - El Centro swtn.-Pilot Knob 161 kV line 92 (loading increases from 132 to 135%).
 - Julian Hinds-Mirage 230 kV line (loading increases from 108 to 113%).
- During 2013 heavy winter system conditions, the project exacerbates pre-project overloads on the following SCE and IID lines for the Category B contingency the outage of the Palo Verde-Colorado River 500 kV line:
 - Julian Hinds-Mirage 230 kV line (loading increases from 127 to 133%).
 - Coachella Valley 161/92 kV transformer (loading increases from 104 to 109%).
 - Dixieland-RTap 92 kV line (loading increases from 111 to 113%).
- During 2013 heavy winter system conditions the project causes a new overload on the Julian Hinds-Mirage 230 kV line (loading increases from 98 to 106%) for the Category C (N-2 or more) outage of the Parker 161 kV bus and also increases the pre-project overload on the same line (loading increases from 102 to 108%) for the Category C outage of the Parker 230 kV South bus.

Sensitivity Power Flow study Results:

The SIS demonstrates that the addition of the 150 MW RSEP generation output along with the queue project, 110 MW QP, would not cause any thermal overloads or voltage violations on the Western Parker system in the DSW region under 2013 heavy summer and 2013 heavy winter system conditions during Category A normal operation, and emergency Category B and Category C contingencies. However, for the addition of the RSEP and QP, the SIS identified a new Category B contingency overload on the SCE system and a new Category B contingency overload on the IID system. In addition a pre-project overload on the SCE system and several pre-project overloads on the IID system are exacerbated under normal and certain contingency conditions. The power flow study results are shown in the Appendices A and B of the Western SIS report and supplementary SIS reports dated August 9, 2010 (CH2MHILL 2010s, Western SIS report dated May 14, 2010).

Below is a summary of the power flow results with the sensitivity cases (after adding the

Quartzsite plant to the base cases with and without the RSEP) for overloads on the IID and SCE systems under the *worst contingencies* for the RSEP addition:

- During 2013 heavy summer conditions for Category B outage of the N. Gila-IV 500 kV line, the project causes a new overload on the IID Drop4-Pilot Knob 92 kV line (loading increases from 100 to 104% of the line emergency rating) and increases pre-project overloads on the following IID lines:
 - Knob-Pilot Knob 161 kV line (loading increases from 127 to 135%).
 - Pilot Knob 161/92 kV transformer (loading increases from 141 to 146%).
 - El Centro swtn.-Pilot Knob 161 kV line 92 (loading increases from 123 to 127%).
- During 2013 heavy summer system conditions, the project causes a new overload on the SCE Julian Hinds-Mirage 230 kV line (loading increases from 96 to 101% of emergency line rating) for Category B contingency of the Palo Verde-Colorado River 500 kV line.
- During 2013 heavy winter conditions with all facilities in service (N-0) the project increases the pre-project overload on the SCE Julian Hinds-Mirage 230 kV line (loading increases from 102 to 107% of normal line rating).
- During 2013 heavy winter system conditions, the project causes a new overload and exacerbates pre-project overloads on the following IID and SCE lines for the N. Gila-IV 500 kV line outage:
 - Drop4-Pilot Knob 92 kV line (loading increases from 98 to 101%).
 - Knob-Pilot Knob 161 kV line (loading increases from 125 to 132%).
 - Pilot Knob 161/92 kV transformer (loading increases from 125 to 129%).
 - Imperial Valley-El Centro 230 kV line (loading increases from 132 to 138%).
 - El Centro-Pilot Knob 161 kV line 92 (loading increases from 135 to 138%).
 - Julian Hinds-Mirage 230 kV line (loading increases from 111 to 116%)
- During 2013 heavy winter system conditions, the project exacerbates pre-project overloads on the following SCE and IID lines for the Category B contingency of the Palo Verde-Colorado River 500 kV line outage:
 - Julian Hinds-Mirage 230 kV line (loading increases from 130 to 135%)
 - Coachella Valley 161/92 kV transformer (loading increases from 107 to 112%).
 - Dixieland-RTap1 92 kV line (loading increases from 113 to 115%).
- During 2013 heavy winter system conditions the project increases pre-project overload on the Julian Hinds-Mirage 230 kV line (loading increases from 105 to 111%) for Category C outage of the Parker 230 kV South bus.

The additional studies provided by Utility System Efficiencies, Inc. dated July 16, 2010 and August 9, 2010 and contributing to these conclusions are pending review and approval by Western. If necessary, these conclusions will be updated following Western's review. Condition of Certification **TSE-5**, part f) i) would require that the project owner provide evidence that it has received Western's approval of the additional studies performed by Utility System Efficiencies, Inc. dated July 16, 2010 and August 9, 2010, or has updated them and received Western's approval of any subsequent studies that may be necessary.

Responses from SCE & IID and Mitigation Plan: Since the power flows studies show a similar pattern of potential overloads in the SCE and IID systems with the addition of the RSEP as well as with addition of both the RSEP and QP generation, it is expected that the mitigation plans would be identical. Western has already contacted SCE and IID with the SIS report and base cases. SCE has so far responded to Western by suggesting modifications to the modeling of Static Var Compensator (SVC) at the Devers substation for load flow and transient & post-transient analyses, requested three additional contingency power flow studies and requested the short circuit study results for SCE buses. SCE also requested to coordinate the SIS reports with California ISO and Metropolitan Water District (MWD) and suggested the following possible ways to mitigate the overload on the Julian Hinds-Mirage 230 kV line after coordination with California ISO:

- Generation curtailment in the Western system.
- Not to schedule power into SCE system from Western system.
- Reconductoring the Julian Hinds-Mirage 230 kV line.

In response to Western contact, IID also indicated that they would review the base cases data for accuracy as well as to determine if the current operating procedures adequately protect their system with the proposed addition of the Rice Solar project.

In accordance with the above exchanges between Western and SCE & IID, and positive responses so far from both SCE and IID indicating their further review, studies and coordination, staff believes a viable mitigation plan which would eliminate the identified overloads in the SCE and IID systems will be developed. The proposed Condition of Certification TSE 5 f) iv), insures that an adequate mitigation plan for the identified potential overloads in the SCE and IID systems will be developed (SCE email dated 8-3-10 to Western, Western email dated 8-8-10 to Solar Reserve).

Short Circuit Study Results

Three line-to-ground faults were simulated with and without the RSEP to determine if any equipment or circuit breakers in Western substations in the project vicinity would be overstressed due to increase in fault currents caused by the addition of the project. The short circuit duty analysis with heavy summer and heavy winter cases included all higher queue projects and the related transmission upgrades.

The RSEP addition would increase the fault duties in the range of 1.3 kA to 1.5 kA at the Parker and Blythe 161 kV substations, but will remain within the fault interrupting capacities of the circuit breakers at both the substations. Hence the RSEP does not

trigger the need for any circuit breaker replacements in the Western P-D system. The short circuit results are shown in Table 14 of Section 5.3 of the SIS report (CH2MHILL 2010s, Western SIS report, page 23). SCE has requested that Western provide the short circuit study results for impacts on the SCE system.

Transient Stability Study Results

Transient stability analysis is performed to determine whether the transmission system would remain stable with the addition of the RSEP. The analysis was performed for the 2013 heavy summer and 2013 heavy winter base cases with simulated faults under selected critical Category B and Category C contingencies in the Western P-D system. The study identifies no transient stability concerns in the transmission system for the addition of the RSEP. The transient stability plots are provided in Appendix F of the SIS report (CH2MHILL 2010s, Western SIS report).

DOWNSTREAM FACILITIES

Besides the proposed interconnection facilities which include the new RSEP 230 kV switchyard, generator overhead tie line and Western Rice 230 kV substation, accommodating the interconnection of the RSEP generation output to the Western P-D system would not involve installation of any new downstream transmission facilities or modification of the existing facilities within Western's transmission system.

CUMULATIVE IMPACTS

The TSE analysis focuses on whether or not a proposed project will meet required codes and standards. At all times the transmission grid must remain in compliance with reliability standards, whether one project or many projects interconnect. For the RSEP interconnection to the Western DSW system, the Western SIS did not identify any potential cumulative impacts on the Western transmission network. Further staff does not expect any cumulative impacts in the Western DSW 161/230 kV network because the existing 520 MW Blythe generating plant interconnection was switched over in the recent past from the Western to the California ISO grid and the other pending interconnection projects in Western DSW region will be located in states of Arizona and Nevada.

ALTERNATIVES

The applicant considered the following alternatives:

REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be 7.2% smaller than the proposed project. It would be located in the same 2,560-acre square-shaped parcel within the larger 3,324-acre ownership property as the proposed project. Although the overall heliostat field distance from the central tower would be reduced, the number of heliostats would remain the same. The heliostat field (plus the evaporation pond and administration areas) would occupy about 1,270 acres instead of the 1,370 acres required for the proposed project. The site layout, 653-foot total height of the solar tower and receiver, and transmission interconnection to Western's Parker-Blythe transmission line would be

the same as the proposed project. The generation output would be reduced by approximately 2 MW.

IMPACTS AND MITIGATION: Compared to 150 MW generation output, such 2 MW minimal reduction in the RSEP generation would not change the transmission capacity of the interconnection facilities (including the switchyard and the generator tie line conductor size), and the potential downstream transmission impacts and mitigation measures required for reliable interconnection of the RSEP.

NORTH OF DESERT CENTER ALTERNATIVE

The North of Desert Center Alternative would be a 150 MW solar thermal facility located on approximately 2,643 acres of land. It is located along Desert Center Rice Road (State Route 177) east of Kaiser Road, north of Oasis Road, and approximately 1.6 miles north of I-10. The North of Desert Center Alternative is primarily private land with smaller sections of BLM land in the eastern portion of the site. It is largely fallow agricultural land. The existing Southern California Edison (SCE) Blythe-2-Eagle Mountain-1 161 kV line is passing through this alternative project site.

IMPACTS AND MITIGATION:A short RSEP generator tie line would terminate to the SCE 161 kV line by building a new SCE substation. The existing 161 kV line would be rerouted around the project site and looped into a new substation. In view of least available capacity in the existing local 161 kV transmission network, it is likely that interconnection of RSEP would involve network upgrades in the transmission system.

SR62/RICE VALLEY ROAD TRANSMISSION LINE ALTERNATIVE

The SR 62/Rice Valley Road Transmission Line Alternative would interconnect to Western Area Power Administration's (Western) 161-kV/230-kV Parker-Blythe No. 2 transmission line at the same location as the proposed project transmission line. This alternative transmission line would exit the power block directly to the east and follow a proposed access road within the heliostat field. The line would exit the RSEP northeast fence line and follow State Route 62 about 3.8 miles east to the junction of Rice valley Road. The line would then turn south and follow the unpaved Rice valley Road south for about 4.1 miles. It would further run southeast for 4.6 miles along public land adjacent to BLM maintained Rice Valley Road according to the proposed preferred alignment to the Western Parker-Blythe line. The alternate line would be about 12.5-mile long.

IMPACTS AND MITIGATION: This alternate route for the generator tie line would be longer than the preferred route. It would involve more construction costs and potentially greater environmental impacts than the preferred route.

NO PROJECT/NO ACTION ALTERNATIVE

Under this alternative, there would be no filing of AFC to the Energy Commission, no interconnection request to any electric utility and no CDCA land use plan amendment.

Under this alternative, the proposed Rice Solar Energy Project would not be approved by the Energy Commission; BLM would not approve the transmission line application and would not amend the CDCA Plan; and Western would not approve the

interconnection request. As a result, no solar energy project would be constructed on the project site, BLM would continue to manage the land encompassing the transmission line consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended, and Western would continue to operate the Parker Blythe Transmission Line under current conditions.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, none of the impacts from the proposed project would occur and none of the benefits of the proposed project would occur. In the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

CONFORMANCE WITH LORS AND CEQA REVIEW

The configuration of the proposed new RSEP 161/230 kV switchyard, the generator overhead tie line and its termination at the proposed new Rice 230 kV substation would be adequate in accordance with industry standards and good utility practices, and is acceptable to staff.

The Western SIS and supplementary studies demonstrate that there would be no adverse impacts on the Western DSW system for the addition of the RSEP. But the studies identify that the project would have some potential overload impacts on the adjacent SCE and IID systems. The addition of the RSEP would cause a new normal (N-0) and a new Category C contingency overload on the SCE Julian Hinds-Mirage 230 kV line, and a new Category B contingency overload on the IID Drop 4-Pilot Knob 92 kV line. In addition the project would also exacerbate pre-project overloads on the SCE Julian Hinds-Mirage 230 kV line and on six transmission elements in the IID system under certain contingency conditions. Sensitivity study results with addition of both the RESEP and QP generation also indicate similar pattern of potential overload impacts in the SCE and IID systems.

Western's recent contacts with SCE and IID for comments on the SIS results have received positive responses from SCE and IID and staff expects that further review, study and coordination will result in acceptable procedures for the mitigation of impacts on adjacent transmission systems. The proposed Condition of Certification TSE 5 f) iv) would, therefore, insure adequate mitigation plan for the identified overloads in the SCE and IID systems.

The MSP would meet the requirements and standards of all applicable LORS upon satisfactory compliance of the Conditions of Certifications.

RESPONSE TO AGENCY AND PUBLIC COMMENTS

No agency or public comments related to the TSE discipline have been received.

CONCLUSIONS AND RECOMMENDATIONS

1. The configuration of the proposed new RSEP 161/230 kV switchyard, the generator 230 kV overhead tie line and its termination at the proposed new Western Rice 230 kV substation would comply with industry standards and good utility practices, and is acceptable to staff according to engineering LORS.
2. The May 14, 2010 SIS performed by Western and supplementary studies demonstrate that the addition of the 150 MW RSEP would not cause any adverse impacts on the Western P-D system in their DSW region under 2013 heavy summer and 2013 heavy winter system conditions during normal operation (N-0) and emergency Category B and Category C contingencies.
3. The SIS identifies that the project would have some potential overload impacts on the adjacent SCE and IID systems. The addition of the RSEP would cause a new normal (N-0) and a new Category C contingency overload on the SCE Julian Hinds-Mirage 230 kV line, and a new Category B contingency overload on the IID Drop 4-Pilot Knob 92 kV line. In addition the project would also exacerbate pre-project overloads on the SCE Julian Hinds-Mirage 230 kV line and on six transmission elements in the IID system under certain contingency conditions. Sensitivity studies with inclusion of both the RSEP and 110 MW Quartzsite plant also indicate no adverse impacts on the Western P-D system, but identifies similar pattern of potential overload impacts on the SCE and IID systems as with the addition of the RSEP.
4. Western's recent contacts with SCE and IID for comments on the SIS results have received positive responses from SCE and IID and identified potential mitigation options as well as the need for further review, studies and coordination. Staff believes that in the foreseeable future Western, SCE and IID in coordination with California ISO and MWD will develop a viable mitigation plan which would eliminate the identified overloads on the SCE and IID systems. The proposed Condition of Certification TSE 5 f) iv) would, therefore, insure adequate mitigation plan for the identified potential overloads in the SCE and IID systems.
5. The RSEP would meet the requirements and standards of all applicable LORS upon compliance with the recommended Conditions of Certification.
6. The RSEP as a solar generation facility would provide clean renewable energy towards meeting state mandates and goals.

CONDITIONS OF CERTIFICATIONS FOR TSE

The following Conditions of Certification meet the Energy Commission's responsibility to comply with the California Environmental Quality Act and serve as recommendations for the Energy Commission to consider in its decision to avoid or reduce the severity of transmission system engineering-related impacts to less than significant and for the project to conform with all applicable transmission system engineering -related laws, ordinances, regulations, and standards (LORS). The identification of relevant and reasonable mitigation measures also conforms to National Environmental Policy Act

(NEPA) requirements for BLM's and Western's analysis that can be considered in their Records of Decision.

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1: Major Equipment List** below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1: Major Equipment List
Breakers
Step-up Transformer
Switchyard
Busses
Surge Arrestors
Disconnects and Wave-traps
Take off facilities
Electrical Control Building
Switchyard Control Building
Transmission Pole/Tower
Insulators and Conductors
Grounding System

TSE-2 Prior to the start of construction the project owner shall assign an electrical engineer and at least one of each of the following to the project:

- A. a civil engineer;
- B. a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering;
- C. a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; or
- D. a mechanical engineer.

(Business and Professions Code Sections 6704 et seq., require state registration to practice as a civil engineer or structural engineer in California.)

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical or civil and design engineer assigned in conformance with Facility Design condition **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer. This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations.

The electrical engineer shall:

1. Be responsible for the electrical design of the power plant switchyard, outlet and termination facilities; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-3 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action (1998 CBC, Chapter 1, Section 108.4, Approval Required; Chapter 17, Section 1701.3, Duties and Responsibilities of the Special Inspector; Appendix Chapter 33, Section 3317.7, Notification of Noncompliance). The discrepancy documentation shall become a controlled document and shall be

submitted to the CBO for review and approval and shall reference this condition of certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action required to obtain the CBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any increment of construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the Monthly Compliance Report:

- a) receipt or delay of major electrical equipment;
- b) testing or energization of major electrical equipment; and
- c) the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

TSE-5 The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations to the CBO as determined by the CBO.

- a) The power plant switchyard and outlet line shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC), Title 8 of the California Code and Regulations (Title 8), Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", California ISO standards, National Electric Code (NEC) and related industry standards.
- b) Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to accommodate full output from the project and to comply with a short-circuit analysis.
- c) Outlet line crossings and line parallels with transmission and distribution

facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

- d) The project conductors shall be sized to accommodate the full output from the project.
- e) Termination facilities shall comply with applicable Western interconnection standards.
- f) The project owner shall provide to the CPM:
 - i) Evidence that the project owner has received Western's approval of the additional power flow studies performed by Utility System Efficiencies, Inc. dated July 16, 2010 and August 9, 2010, including any subsequent studies that may be necessary to satisfy Western;
 - ii) The Special Protection System (SPS) sequencing and timing if applicable,
 - iii) The Facilities study report performed by Western.
 - iv) A mitigation plan for potential overloads in the SCE and IID systems identified in the Western SIS as approved by Western through the process that involves all stakeholders (Western, California ISO, SCE, IID and MWD) and agreed to by the project owner.
 - v) An Operational study report or procedures from Western based on the expected or current RSEP Commercial Operation Date (COD).
 - vi) A copy of the executed LGIA signed by Western and the project owner.

Verification: At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agreed to by the project owner and CBO), the project owner shall submit to the CBO for approval:

- a) Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.
- b) For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"¹ and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", NEC, applicable interconnection standards, and related industry standards.

¹ Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

- c) Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements **TSE-5** a) through f) above.
- d) The Special Protection System (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.
- e) A mitigation plan for potential overloads in the SCE and IID systems identified in the Western SIS as approved by Western through the process that involves all stakeholders (Western, California ISO, SCE, IID and MWD) and as agreed by the project owner.
- f) The Facilities study report performed by Western.
- g) An Operational study report or procedures from Western based on the expected or current RSEP COD.
- h) A copy of the executed LGIA signed by Western and the project owner.

TSE-6 The project owner shall inform the CPM and CBO of any impending changes that may not conform to requirements **TSE-5** a) through f), and have not received CPM and CBO approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CBO and the CPM.

Verification: At least 60 days prior to the construction of transmission facilities, the project owner shall inform the CBO and the CPM of any impending changes that may not conform to requirements of **TSE-5** and request approval to implement such changes.

TSE-7 The project owner shall provide the following Notice to Western prior to synchronizing the facility with the Western DSW Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide Western a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the Western Outage Coordination Department.

Verification: The project owner shall provide copies of the Western letter to the CPM when it is sent to Western one week prior to initial synchronization with the grid. The project owner shall contact the Western Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with Western shall be provided electronically to the CPM one day before synchronizing the facility

with the Western DSW transmission system for the first time.

TSE-8 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, “High Voltage Electric Safety Orders”, applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

- a) “As built” engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, “High Voltage Electric Safety Orders”, and applicable interconnection standards, NEC, related industry standards, and these conditions shall be provided concurrently.
- b) An “as built” engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. “As built” drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the “Compliance Monitoring Plan”.

A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

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DEFINITION OF TERMS

ACSR

Aluminum cable steel reinforced.

AAC

All Aluminum conductor.

Ampacity

Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.

Ampere

The unit of current flowing in a conductor.

Kiloampere

(kA) 1,000 Amperes

Bundled

Two wires, 18 inches apart.

Bus

Conductors that serve as a common connection for two or more circuits.

Conductor

The part of the transmission line (the wire) that carries the current.

Congestion Management

Congestion management is a scheduling protocol, which provides that dispatched generation and transmission loading (imports) would not violate criteria.

Emergency Overload

See Single Contingency. This is also called an L-1.

Kcmil or KCM

Thousand circular mil. A unit of the conductor's cross sectional area, when divided by 1,273, the area in square inches is obtained.

Kilovolt (kV)

A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground. 1,000 Volts.

Kiloampere (kA)

A unit of current flow in a conductor. 1,000 amperes.

Loop

An electrical cul de sac. A transmission configuration that interrupts an existing circuit diverts it to another connection and returns it back to the interrupted circuit, thus forming

a loop or cul de sac.

Megavar

One megavolt ampere reactive.

Megavars

Megavolt Ampere-Reactive. One million Volt-Ampere-Reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.

Megavolt ampere (MVA)

A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.

Megawatt (MW)

A unit of power equivalent to 1,341 horsepower.

Normal Operation/ Normal Overload

When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.

N-1 Condition

See Single Contingency.

Outlet

Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities to the main grid.

Power Flow Analysis

A power flow analysis is a forward looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers and other equipment and system voltage levels.

Reactive Power

Reactive power is generally associated with the reactive nature of inductive loads like motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.

Remedial Action Scheme (RAS)

A remedial action scheme is an automatic control provision, which, for instance, would trip a selected generating unit upon a circuit overload.

SSAC

Steel Supported Aluminum Conductor.

SF6

Sulfur hexafluoride is an insulating medium.

Single Contingency

Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service.

Solid dielectric cable

Copper or aluminum conductors that are insulated by solid polyethylene type insulation and covered by a metallic shield and outer polyethylene jacket.

Switchyard

A power plant switchyard (switchyard) is an integral part of a power plant and is used as an outlet for one or more electric generators.

Thermal rating

See ampacity.

TSE

Transmission System Engineering.

TRV

Transient Recovery Voltage

Tap

A transmission configuration creating an interconnection through a sort single circuit to a small or medium sized load or a generator. The new single circuit line is inserted into an existing circuit by utilizing breakers at existing terminals of the circuit, rather than installing breakers at the interconnection in a new switchyard.

Undercrossing

A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.

Underbuild

A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.

APPENDIX TO TRANSMISSION SYSTEM ENGINEERING RSEP TELECOMMUNICATIONS INTERCONNECTION ACTIONS IMPACT ANALYSIS

Testimony of Suzanne Phinney, D.Env.

INTRODUCTION AND PURPOSE

The Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger and associated facilities. The Energy Commission also has the licensing authority up to the first point of interconnection for transmission facilities. Additionally, under the California Environmental Quality Act (CEQA), the Energy Commission must conduct an environmental review of the “whole of the action,” which may include facilities not licensed by the Energy Commission. Similarly, the Western Area Power Administration (Western) and the Bureau of Land Management (BLM) are conducting an environmental analysis of the RSEP, pursuant to the National Environmental Policy Act (NEPA). NEPA also requires an analysis of “reasonably foreseeable” effects.

Energy Commission staff has prepared this Transmission System Engineering (TSE) Appendix to the Staff Assessment (SA) for the Rice Solar Energy Project (RSEP) to discuss reasonably foreseeable telecommunications interconnection action alternatives. A dual-path telecommunications interconnection between the RSEP and a Western substation would be required for breaker control, protective relaying, metering, and other data and control needs (CH2MHill 2010k). To provide redundancy, two separate paths of communication may be necessary.

The telecommunication pathway from the new RSEP power plant to the new Rice interconnection substation would likely consist of a fiber optic cable that would be incorporated with the 10-mile long overhead generation tie line to the new Rice substation. From the new substation interconnecting the RSEP to Western’s system, telecommunications would be established in one of the following manners via: 1) replacing one of two existing overhead ground wires on the Parker-Blythe #2 transmission line with a fiber optic core overhead ground wire or adding an all-dielectric, self-supporting (ADSS) optical cable extending to either or both of Western’s existing Parker and Blythe substations; 2) microwave (radio-frequency) transmission from either RSEP or the new substation to terminate at either Western’s Blythe, Headgate Rock, or Black Point substations or to an existing telecommunications site at Cunningham Mountain; or 3) power line carrier/broadband-over-Power-Line.

The RSEP applicant has provided an overview of the general construction required for these alternatives. It is a planning level description and site-specific engineering and design documents would be prepared at a later date, following final selection of the preferred telecommunication system. The analysis in TSE Appendix A provides as detailed an analysis as possible with the information available for the project at this time.

The purpose of staff’s analysis is to inform the Energy Commission, interested parties and the general public of the potential environmental and public health effects caused

by the approval of the RSEP. The analysis draws conclusions as to the likelihood that installation of a telecommunications system could be accomplished with no significant environmental impacts, and identifies mitigation measures that could be enacted to ensure that the telecommunications system would not cause significant impacts. The analysis discusses environmental issues that generally reflect the CEQA checklist (Appendix G), but does not include sections specific to power plant operations (Facility Design, Power Plant Efficiency, Power Plant Reliability, and Transmission Line Safety and Nuisance). The construction-related analysis and proposed mitigation measures in those sections of the SA for the RSEP project provide a general understanding of the potential impacts in those areas that could possibly, but not likely, be caused by telecommunication interconnection actions.

CONSTRUCTION METHODS FOR TELECOM ALTERNATIVES

FIBER-OPTIC CABLE ALTERNATIVE

Fiber optic line would likely be utilized on the generation tie line to allow communication between the RSEP and the new Rice interconnection substation. and further, could be used to allow communication between the RSEP and Western's system, through the OPGW on the Parker-Blythe No. 2 transmission line. Under this option, new OPGW or ADSS optical cable would be installed onto the existing Parker-Blythe #2 161-kV transmission line wood H-frame structures in both the north and south directions from the initial point of interconnection for a total of 62 miles (see **TSE Appendix A – Figures 1 and 2**). The Parker-Blythe #2 line extends north from the Blythe substation, then bears northeast between the Rice Valley Wilderness and the Big Maria Mountains Wilderness, then continues northeast along the western boundary of the Riverside Mountains Wilderness, and then follows the Colorado River on uninhabited desert land at a distance of 3 to 5 miles from the river before finally reaching Parker Dam. Additional BLM wilderness areas in the area include the Palen-McCoy Wilderness and the Whipple Mountains Wilderness.

The nearest major towns to the line are Parker, Arizona and Blythe, California. Roads intersecting the line include Midland Road, SR 62 and US 95. SR 62 is eligible for designation as a scenic highway in Riverside and San Bernardino Counties, but it has not been designated as such.

Potential viewers of the project area include travelers along SR 62, which runs east-west along the project's northern boundary. A second group of potential viewers includes recreational viewers traveling to and from off-highway use and wilderness areas on unpaved roads traveling mostly north-south.

One of the two, existing overhead ground wires (OGW) on the line would be replaced with OPGW. As the old OGW is removed, it would be used to pull the new OPGW into place. A manlift truck (multi-axle, rough terrain vehicle with an articulating boom and man-bucket) would first be used to install special hardware allowing installation of the new (OPGW) through each structure. Pulling/tensioning sites (with trucks with spools of cable, tensioners (winches) and other equipment) would be placed about every three miles (to pull out the old OGW, and pull the new OPGW into place. The truck-mounted tensioner would be located at one end and a reel truck and trailer at the other end.

Pulling/splicing/tensioning sites would temporarily disturb an area about 200 feet by 400 feet oriented in line with and centered on the existing right of way. A total of 21 tensioning sites on undisturbed land would be utilized. Vehicles would use the existing maintenance road for all access along the transmission line. Maintenance or reconstruction of the existing access road or use of heavy equipment to tow vehicles in inaccessible areas may be required. Off-road vehicles may be needed to access certain areas (e.g., rugged mountainous portions of the dirt road, drift sands at the valley floor) or helicopters may be required for aerial installation. The vehicles may also need to drive off the dirt roads to set up and pull the OPGW or ADSS optical cable into place; sites used for original construction of the transmission line would be used to the extent possible.

A total of 524 structures would be accessed, including 489 on undeveloped desert land and 35 on abandoned agricultural land. There would be temporary disturbance of an area 50 feet in radius around each of the 489 structures on undeveloped land; a 100-foot radius would be required for splice structures.

At the new substation site, a connection would be made to the fiber optic overhead ground wire at the first line structure within the switchyard (the "Takeoff" Structure) splicing the OPGW to a fiber optic duct cable connecting to the substation via the cable trench. Equipment used would include rubber tired manlifts, rubber-tired spooling trucks, and pickup trucks.

The ADSS optical cable would be installed above ground by one of two methods: 1) ADSS suspended from the existing transmission line structures beneath the existing high-voltage conductors and; 2) ADSS wrapped directly onto one of the existing overhead ground wires. At the time of preparing this SA-DEIS, Western was still evaluating options for the telecommunications between RSEP and Western's substations.

Underground cable buried along a route from the new RSEP substation that parallels/is adjacent to the Parker-Blythe #2 line to the Parker Dam substation or that proceeds from the RSEP site directly to the Parker Dam Substation using SR 62 right-of-way is not considered feasible by Western. Western's Headgate Rock substation is located on the Parker, Arizona side of the Colorado River and a river crossing with buried fiber-optic cable would be impracticable.

MICROWAVE ALTERNATIVE

Under this option, station monitoring and control information would be transmitted to one of Western's existing communications sites via microwave telemetry from a transmitter at the RSEP site or the new substation interconnection site. Either a direct, line-of-sight path to an existing Western microwave site along the Colorado River, an indirect path using an intermediate existing site such as Cunningham Mountain (operated by other entities), or new repeater sites could be utilized. Microwave towers at existing Western substations located near Blythe, CA (Blythe Substation) or Parker, AZ (Headgate Rock Substation) or at Black Point Substation could also be used as is, or heightened, to gain access to Western's system (see **TSE Appendix A – Figure 2**) . An intermediate tower may also be necessary depending on the path chosen and the

height that the transmitting and receiving dishes can be mounted at the terminal ends of the microwave path between RSEP and Western. Under this alternative, fiber optical cable could be buried underground (using simple trenching methods) along the SR 62 ROW to a microwave tower facility.

At the RSEP site, radio-frequency conversion equipment would be co-located within the electrical equipment room located at the 500-foot elevation inside the solar tower. A 6-foot dish could be mounted on the solar receiver tower (subject to detailed engineering) without increasing the overall height of the 653-foot structure, gaining elevation and line-of-sight potential to existing Western sites.

BROADBAND-OVER-POWER LINE (BPL) ALTERNATIVE

Under this option, data would be sent along the high-voltage conductor and would require no additional physical facilities or installation other than signal conditioning equipment at the sending and receiving terminals. A similar but older technology has been used by Western in the past.

ENVIRONMENTAL IMPACTS OF TELECOM ALTERNATIVES

AIR QUALITY

Setting and Existing Conditions

The line traverses both Riverside and San Bernardino Counties and would be within the jurisdiction of the Mojave Desert Air Basin (MDAB). MDAB is an assemblage of mountain ranges interspersed with long broad valleys, with a dry, hot desert climate. Air quality regulations in the MDAB are provided by the Mojave Desert Air Quality Management District (MDAQMD).

Termination of the OPGW or ADSS paths would be at the Parker Dam 161-kV Switchyard and the Blythe Substation, both located in southeastern California. Under the microwave alternatives, existing communications sites would be used in both La Paz and Mohave counties in Arizona or San Bernardino, Riverside and Imperial counties in California. Air quality at locations in La Paz and Mohave counties would be regulated by the Arizona Department of Environmental Quality and air quality conditions would be similar to that on California side of the Colorado River boundary between the two states. Air quality at locations in San Bernardino, Riverside, and Imperial counties would be regulated by the California Air Resources Board. The affected environment is the same as that for the RSEP, described in Section C.1 of the Staff Assessment (SA). No sensitive receptors are expected in areas where telecommunication system alternatives would be constructed.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

The installation of approximately 62 miles of new overhead fiber-optic cable on existing transmission line structures would be located largely within utility rights-of-way along existing dirt roads, although some off-road construction vehicle travel is anticipated. Above-ground cable installation would generate minor amounts of vehicle exhaust emissions. The diesel PM emissions generated from proposed construction equipment

and mobile sources are not anticipated to subject sensitive receptors to adverse levels of diesel PM or other emissions.

Installation of fiber-optic cable would be short-term in duration. Control measures identified in Section C.1 of the SA would reduce equipment and fugitive dust emissions to less than significant levels.

Microwave Alternative

Construction of a new or heightened tower at an existing Western substation and possibly an intermediate repeater site would create short-term emissions from installation equipment and vehicle travel. If communications data is sent to the intermediate repeater site via buried fiber-optic cable, trenching activities within the SR-62 ROW would generate minor levels of fugitive dust. Control measures identified in Section C.1 of the SA would reduce equipment and fugitive dust emissions to less than significant levels.

BPL Alternative

No emissions are expected with the BPL Alternative and no mitigation measures to reduce air quality impacts would be needed.

BIOLOGICAL RESOURCES

Setting and Existing Conditions

The study area for biological resources evaluation includes the area occupied by the existing transmission line ROW and environs, SR 62 ROW, and land where microwave towers may be installed. Habitat types may include Sonoran creosote bush scrub, desert dry wash woodland, floodplain woodland and scrub, agriculture and other disturbed or developed land. These habitat types support a diverse assemblage of native plants and wildlife species, including those recognized as special-status by the U.S. Fish and Wildlife Service, Bureau of Land Management, Arizona Game and Fish Department, and California Department of Fish and Game. In addition, biological resources or sensitive habitats under the jurisdiction of the aforementioned agencies and/or the U.S. Army Corps of Engineers (e.g., wetlands and waters of the U.S. or state) may occur within the telecommunication system project area. The special-status species and biological resources considered in the RSEP SA/DEIS and Western's Environmental Assessment for the Blythe – Headgate Rock 161-kV Transmission Line (Western 2005) may also occur within the telecommunication system project area; surveys conducted for future permitting efforts for the selected telecommunication system alternative may identify additional biological resources.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

Although construction activities would occur in an existing utility ROW, temporary and permanent ground disturbance would occur and the use of construction equipment could result in various direct and indirect impacts to plants, wildlife, and habitat. Rare plant and wildlife surveys would be required to identify the distribution of potentially affected special-status species.

Direct impacts to native vegetation communities and special-status plants could occur

during trenching and grading, or if plants are crushed or otherwise damaged by construction equipment and vehicle or foot traffic. Ground-disturbing activities have the potential to indirectly affect adjacent vegetation communities by facilitating the transport and dispersal of invasive weed propagules, thereby potentially introducing new weeds and exacerbating invasions already present in the project vicinity.

Potential impacts to special-status wildlife include direct mortality from encounters with construction equipment, burrow/nest destruction during equipment staging, entombing adults, eggs, or young, and disruption or harassment. In addition, short and long-term habitat loss, modification, and fragmentation, as well as the potential spread of noxious weeds could decrease local and regional wildlife habitat values.

Direct impacts to potentially jurisdictional waters or other sensitive aquatic habitat could occur from trenching and the concomitant erosion and sedimentation from soil disturbance.

Consultation with resource agencies would be required to identify appropriate impact avoidance, minimization, and mitigation measures and ensure compliance with applicable LORS. Standard best management practices should be implemented to avoid impacts. In addition, it is likely that mitigation measures similar to those proposed in the RSEP SA/DEIS would be required. Although without additional information, it is not possible to determine if impacts could be mitigated below the level of significance. Measures may include, but are not limited to:

- Prepare and implement special-status species impact avoidance/ minimization plans
- Prepare and implement special-status species translocation/relocation plans
- Acquire and/or enhance compensatory habitat
- Restore temporarily disturbed areas
- Designate a lead biologist to be on-site during construction activities to supervise, conduct and coordinate mitigation, monitoring and other biological resource compliance efforts.
- Develop and implement a Worker Environmental Awareness Program to inform and educate workers prior to site mobilization about sensitive biological resources associated with the project.

Microwave Alternative

Construction of a new or heightened tower at an existing Western substation and possibly a new repeater site would result in temporary and permanent ground disturbance. If communications data are sent to the intermediate repeater site via buried fiber-optic cable, temporary disturbance would occur from trenching activities within the SR-62 ROW. Impacts to biological resources and recommended mitigation measures would be similar to those discussed above for the Fiber-optic Cable Alternative.

BPL Alternative

Impacts to biological resources are not anticipated under the BPL Alternative.

CULTURAL RESOURCES

The cultural resources analysis of the telecommunication system alternatives is based on the applicant-provided cultural resource information for the RSEP (CH2MHill 2010e), previous cultural resource surveys of the Parker-Blythe #2 transmission line, and the Cultural Resources Assessment for the RSEP Project.

Setting and Existing Conditions

The study area for cultural resources evaluation includes the area occupied by the existing transmission line ROW and environs, SR 62 ROW, and land where microwave repeaters may be installed.

Regional Setting

The project area includes the Vidal Valley, Rice Valley and Palo Verde Mesa. The Vidal Valley is bounded by the West Riverside and Riverside Mountains on the south, the Turtle Mountains on the west, the Turtle and Whipple Mountains on the north, and the Colorado River on the east. The Rice Valley is bounded by the Big and Little Maria Mountains on the south and the Riverside Mountains on the east. The Palo Verde Mesa is bounded on the north by portions of both the Little and Big Maria Mountains, on the west by the McCoy and Mule Mountains, and on the south by the Palo Verde Mountains.

Humans have inhabited this region for the last 10,000 years, with the population ebbing and flowing primarily in response to several climatic shifts. Within the region, prehistoric sites are clustered around springs, wells, and other obvious important features/resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock shelters with perishable items, rock rings/stone circles, geoglyphs, and cleared areas, a vast network of trails, markers and shrines, and quarry sites.

This region does not appear to be associated clearly with any historic Native American group (Singer 1984, pp. 36-38). However, seven groups - Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma - claim territory nearby or describe this region in their oral history. The trails, rock art, geoglyphs and other prehistoric features are still of religious importance to many of these Native American groups.

The major historical themes for the project area are the establishment transportation routes, mineral exploitation, and military uses. Mineral deposits identified in the region include gold, silver, fluorite, manganese, copper, gypsum, and uranium. Most mining in the region took place in the 1880s and 1890s. Evidence of mining activity in the region primarily takes the form of access roads, pit mines, tailing piles, and refuse. Military uses of the region are primarily associated with Gen. Patton's World War II Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA), which was in operation from 1942 till 1944. The area was chosen by Gen. Patton to prepare troops for the harsh conditions and environment of combat for the North Africa Campaign. At 12,000,000 acres, the DTC/C-AMA was the largest-ever military training center. The remains of the DTC/C-AMA areas consist of rock features, faint roads, structural

features, concertina wire, tank tracks, footprints of runway and landing strips, foxholes and bivouacs, concrete defensive positions, refuse, and trails (Bischoff 2000).

Existing Resources

Recent surveys associated with other nearby solar energy projects currently being evaluated by the Energy Commission suggest that multiple prehistoric and historic sites and isolates occur in the region. In particular staff expects that contributing elements to two recently defined cultural landscapes may be encountered (NPS 1996). The Cultural Resources section of the SA provides a discussion of resources associated with the telecommunications interconnection actions.

Staff has proposed the Prehistoric Trails Network Cultural Landscape (PTNCL), which is a noncontiguous cultural landscape (historic district) that consists of important destinations in the Colorado Desert near Blythe, California, the network of trails that tie them together, and the features and sites associated with the trails. Native American groups in the Mojave and Colorado Deserts accord mythological importance to springs, petroglyph sites, and trail systems. As such, staff considers the resources that make up the PTNCL to be significant under NRHP Criterion A (CRHR Criteria 1), for their ties to important events in American history. These sites are also considered register-eligible under Criterion D/4 for their ability to yield information important in history and prehistory. As both ethnographic and archaeological resources, PTNCL sites are subject to both direct and indirect project impacts. Indirect impacts include the visual degradation of the historical integrity of a resource through the construction of solar projects and their associated downstream improvements.

Staff has also proposed the creation of the Desert Training Center California-Arizona Maneuver Area (DTC/C-AMA) Cultural Landscape (DTCCL), a contiguous cultural landscape (historic district) that incorporates historical archaeological sites associated with General Patton's Desert Training Center (Bischoff 2000). Most property types associated with the DTC/C-AMA exist today as archaeological resources. These sites would be considered primarily eligible under NRHP Criterion D (CRHR Criterion 4) for their ability to yield information important in history. As many contributing elements to both of these landscapes are often considered not to be significant in their own right, staff expects that previously identified cultural resources would need to be re-evaluated.

Assessment of Impacts

Direct Impacts

Fiber-optic Cable Alternative

Direct impacts to cultural resources would potentially occur from ground disturbance during construction. Staff expects ground disturbance associated with the installation of fiber-optic cable on existing transmission towers to be minor and temporary.

Microwave Alternative

Construction of a new tower at the Headgate Rock substation and possibly an intermediate tower in the Rice Valley, and possible trenching for underground cable

installation along SR 62, would result in ground disturbance consisting of site grading, compaction for construction, and excavation for tower footings. This disturbance could significantly impact any cultural resources present. While many of these resources may have been damaged by previous construction, any additional work may result in their complete destruction. However, installation of transmitting and receiving towers would occur within areas already disturbed, such as within the RSEP power block and an existing substation or telecommunications facility. If an intermediate microwave tower was needed, its location could be selected to avoid cultural resources following survey of the general location.

BPL Alternative

No direct impacts to cultural resources would occur under the BPL Alternative.

Indirect Impacts

Indirect impacts to cultural resources can have both physical and cultural or spiritual components. Western and BLM are in charge of consulting with local Native American groups regarding impacts and potential mitigation resulting from construction of the telecommunication system alternative. Previous research suggests that the project area is one of high ethnographic sensitivity. Unidentified Traditional Cultural Properties may be present.

Mitigation

Implementation of the cultural resources conditions of certification proposed in the RSEP SA would reduce direct impacts to cultural resources to less than significant.

- **CUL-1** and **CUL-2** would fund programs to define, document, and nominate to the NRHP two cultural landscapes.
- **CUL-3** and **CUL-4** are administrative conditions regarding the programs.
- **CUL-5** provides for the preparation and implementation of the Cultural Resources Monitoring and Mitigation Plan (CRMMP).
- **CUL-7** and **CUL-8** are treatment conditions for direct impacts to historic-period and prehistoric resources.
- **CUL-9** would provide training of project personnel.
- **CUL-10** and **CUL-11** would provide construction monitoring and cultural resources discovery protocols.
- **CUL-12** provides for the preparation of a final report to analyze, interpret, and document the ultimate results of the project cultural resources management program.

GEOLOGY AND PALEONTOLOGY

Setting and Existing Conditions

The telecommunication system alternatives would be located in the Mojave Desert physiographic province in Southern California. The Mojave Desert is bounded on the north and northwest by the Tehachapi Mountains, on the west by the Garlock fault, on the east by the Colorado River, and on the south and southwest by the San Andreas

Fault. The Mojave Desert is a broad interior region of isolated mountain ranges which separate vast expanses of desert plains and interior drainage basins.

The topography in the Mojave Desert of California is predominately southeast to northwest, and is associated with similarly-oriented faulting. A secondary east to west orientation correlates with structural trends in the Transverse Ranges physiographic province.

The region encompassing the proposed project is characterized by broad alluvial basins of Cenozoic sedimentary and volcanic materials overlying older plutonic and metamorphic rocks. The plutonic and metamorphic rocks are exposed as eroded hills throughout the region. The alluvial basins are up to several thousand feet thick.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

Almost all construction activity associated with fiber-optic cable installation would be within existing ROWs. Construction of the telecommunications facilities would not be expected to disturb significant paleontological resources located within the project area. Indirect impacts to paleontological resources from erosion of features due to channeling of runoff from grading activities for new access roads would also not be expected.

Implementation of the recommended mitigation measures discussed under **Soils and Water Resources** would reduce the amount of erosion that would result from construction (e.g., preparation and implementation of a SWPPP). With implementation of measures and best management practices that would ensure proper re-vegetation, erosion control, drainage, seismic design, among other requirements, impacts from installation of fiber-optic cable would result in a less than significant impact to geology.

Microwave Alternative

Because of the limited area impacted by the construction of a new or heightened tower at one of Western's existing substations and possibly an intermediate repeater site in the Colorado River Valley or Rice Valley, significant impacts to paleontological resources from construction-related ground disturbances are not expected. If communications data is sent to the intermediate tower via buried fiber-optic cable, trenching activities would be within the already disturbed SR-62 ROW, thus reducing impacts.

BPL Alternative

No impacts to geology and paleontology would occur under the BPL alternative.

LAND USE

Setting and Existing Conditions

The telecommunication system alternatives area includes lands managed by the BLM, the Bureau of Indian Affairs/Colorado River Indian Tribes (BIA/CRIT) and private lands. The Parker-Blythe #2 line is within a Department of Energy transmission line corridor. Agricultural land is crossed by the transmission line ROW near its southern terminus near Blythe. The telecommunication system alternatives would conform to the BLM

Yuma Field Office Resource Management Plan (as amended Feb. 1987) and the BLM California Desert Conservation Area Plan (1980).

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

No impacts to existing or planned residential, commercial, or industrial uses would be expected to occur. Because stringing of cable would occur within an existing transmission line corridor, there would be no long-term impacts to areas of existing residential development near Parker and Blythe, and on CRIT lands. Direct impacts to land use as a result of construction activity along roadway ROW would be temporary and minimal. A small number of transmission structures are on abandoned agricultural lands and no impacts to agricultural activity would occur. The temporary nature of construction would limit impacts to recreation. Creation of new access road, if required and the use of existing roads are not expected to change the use of the access roads or increase accessibility of areas for other users. The use and management of existing roads would remain unchanged. Affected BLM lands would remain available for dispersed recreation activities. No indirect or permanent impacts to land use, preservation, and recreation are expected as a result of fiber-optic cable installation. Access to adjacent recreation areas from users is not expected to change because the condition of the roads is expected to remain relatively unchanged.

Microwave Alternative

Land use impacts are not expected from construction of a new or heightened tower at an existing Western substation and possibly an intermediate repeater site in the Colorado River Valley or Rice Valley. Buried cable along SR 62 would also not impact residential development.

BPL Alternative

No impacts to land use would occur under the BPL Alternative.

NOISE AND VIBRATION

Setting and Existing Conditions

The telecommunication system project area is located within the eastern portions of Riverside and San Bernardino Counties in California and in the western boundary of La Paz, Arizona. The area includes primarily remote areas as well as the towns of Parker, Arizona and Blythe, California. Noise regulations in the downstream upgrades area are provided by the respective counties.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

Fiber-optic cable installation would use typical construction equipment, estimated to generate maximum noise levels of short duration not to exceed 90 dBA at 50 feet, or average levels of approximately 80 dBA Leq at 50 feet. At 100 feet, these levels would attenuate below typical levels of significance (75 dBA Leq). Since the potential cable routes would be primarily located in existing utility rights-of-way along existing roadways and transmission lines, off-road construction vehicle travel is anticipated to be minor.

Off-road vehicles may be needed to access certain areas (e.g., rugged mountainous portions of the dirt road, drift sands at the valley floor) or helicopters may be required for aerial installation. These situations would occur in remote areas with no receptors.

Microwave Alternative

Construction of a new tower at the Headgate Rock substation and possibly an intermediate tower in the Rice Valley would create short-term noise levels from installation equipment and vehicle travel. Mitigation measures would not be needed beyond those required by LORS or incorporated within Western's best practices.

BPL Alternative

No emissions are expected with the BPL Alternative and no mitigation measures to reduce noise levels would be needed.

SOCIOECONOMICS

Setting and Existing Conditions

The Town of Parker, Arizona is the northern point of the project area and the City of Blythe is the southern point. Parker's population in 2008 was 3,385 (Arizona Department of Commerce 2010). The town's economy is based primarily on tourism, retail trade and services. The Colorado River provides many water-based recreational activities and makes Parker a destination point for tourists and winter visitors. Parker also serves as the trade and retail center for the CRIT and other small towns in the area. The unemployment rate was 6.8% in 2008.

The City of Blythe is the southern point of the project area. Its population in 2008 was 21,695 (Riverside County 2009). Agriculture is the largest sector of employment in the economy. The second largest is in the service industry - motels, restaurants and campgrounds. Its location near the Colorado River provides recreational opportunities. The two state prisons west of the city (Ironwood and Chuckawalla State Prisons) collectively have approximately 1,914 employees. The unemployment rate was 16.5% in 2009.

The remaining portions of the project area are undeveloped with no residents.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

In comparison to construction of the RSEP, a minimal workforce would be required for construction of any of the telecommunication system alternatives. The telecommunication system construction would not cause a significant adverse impact on population, employment, housing, public finance, local economies, or public services. In addition, because there would be no adverse project-related socioeconomic impacts, minority and low-income populations would not be disproportionately impacted. The anticipated downstream upgrades would slightly benefit the study area in terms of an increase in local expenditures and payrolls during construction. These activities would have a short-term positive effect on the local and regional economy. No impact minimization measures are recommended.

Microwave Alternative

Similar to the fiber-optic cable alternative discussion above, no adverse socioeconomic impacts are expected.

BPL Alternative

No socioeconomic impacts would occur under the BPL Alternative.

SOIL AND WATER RESOURCES

Setting and Existing Conditions

The setting for the telecommunications system options is generally the Vidal Valley, Rice Valley and Palo Verde Mesa. Vidal Valley, in southeastern San Bernardino County, encompasses roughly the northern third of the Parker-Blythe No. 2 161kV line. The Vidal Valley Groundwater Basin is bounded by the non-waterbearing rocks of the West Riverside and Riverside Mountains on the south, the Turtle Mountains on the west, the Turtle and Whipple Mountains on the north, and a diffuse drainage divide on the east. Surface water drains southeastward via the Vidal Wash to the Colorado River.

The Rice Valley generally encompasses the middle third of the 161 kV line. The Valley extends across the Riverside and San Bernardino County line and is bound by the Big and Little Maria Mountains in the south and the Riverside Mountains in the east. The Rice Valley is hydraulically connected to both the Ward Valley to the northwest and the Vidal Valley to the northeast. Surface water runoff from the mountains drains towards the center of the valley, except in the eastern part of the valley, where Big Wash drains to the Colorado River.

The Palo Verde Mesa generally encompasses the southern third of the transmission line. The mesa is bounded on the north by portions of both the Little and Big Maria Mountains, on the west by the McCoy and Mule Mountains, and on the south by the Palo Verde Mountains. Soils tend to be well to excessively drained, coarse grained, sands, gravels and loam with relatively low erosion hazards. The McCoy Wash, its major hydrologic feature, is dry, except during intense but infrequent, short-duration summer storms.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

The fiber-optic line routes would cross several soils types with differing susceptibility to wind and water erosion and compaction. Soil disturbed during cable stringing is more susceptible to erosion and compacted soil can accelerate storm water erosion. New access roads, particularly in the mountainous portion of the line, could also increase erosion. In addition, the proposed fiber-optic line routes would cross numerous ephemeral streams. Vehicles and equipment crossing these ephemeral streams would disturb and compact the soil and potentially cause the loss of stabilizing vegetation.

The **Soil and Water Resources** section of the SA discusses mitigation measures that are designed to avoid and reduce the amount of soil loss due to wind and water erosion.

While soil erosion would be limited as a result of the temporary nature of cable stringing activities, the following general measures would reflect best practices:

- Erosion control measures should be developed and implemented to ensure minimum soil loss and to maintain water quality.
- Measures should be taken to insure that contaminants would not be discharged from the construction site.
- Soils and vegetation disturbance and removal should be limited to the minimum area necessary for access and construction.
- Removed topsoil should be segregated and stockpiled for reuse if practicable.
- All areas disturbed by the construction activity, except for access roads, should be restored to preconstruction conditions.

Microwave Alternative

Construction of a new tower at the Headgate Rock substation, or an intermediate tower in the Rice Valley and possibly trenching along SR 62 would create temporary, minor impacts from soil disturbance and erosion. Mitigation measures as described above and included in the **Soils and Water Resources** section of the SA would further reduce impacts.

BPL Alternative

No impacts to soils and water resources would occur under the BPL alternative.

TRAFFIC & TRANSPORTATION

Setting and Existing Conditions

The telecommunication system alternatives would involve construction along transmission line ROWs (dirt roads) and along SR 62. SR 62 is an undivided two-lane highway in California, but widens to four lanes in downtown Parker, Arizona. SR 177 intersects SR 62 approximately 25 miles southwest of the RSEP site. The portion of SR 62 west of SR 177 is also known as Aqueduct Road. US Route 95 (US 95) connects I-40 and I-10 in the north/south direction and intersects with SR 62 approximately 16 miles east of the RSEP site. The RSEP AFC indicates that, according to traffic counts published in 2008, the average 2009 daily traffic volume on SR 62 near the junction with SR 177 is 2,200 vehicles per day. Trucks comprise approximately 7 to 21% of all traffic (RSEP 2009a).

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

Most cable installation would occur within transmission line ROWs and would not affect local roadways. Some short-term impacts to traffic and transportation could occur in proximity to either the Blythe or Parker Dam substations. Western would be required to coordinate this activity with Riverside and San Bernardino Counties. Construction vehicles would comply with all local, state, and federal LORS.

No significant impacts would be expected with implementation of these measures.

Microwave Alternative

Construction of a microwave tower located at the Headgate Rock substation and potentially an intermediate tower located near Radio Tower Road, southwest of Vidal, would not affect local roadways. A minimal workforce would be needed. If fiber-optic cable is buried within the SR 62 ROW from the RSEP site to the intermediate tower location, then some temporary disturbance adjacent to the roadway could occur. Western would be required to coordinate this activity with Riverside and San Bernardino Counties. Construction vehicles would comply with all local, state, and federal LORS. No significant impacts would be expected with implementation of these measures.

BPL Alternative

No impacts to traffic and transportation would occur under the BPL alternative.

WASTE MANAGEMENT/HAZARDOUS MATERIALS

Setting and Existing Conditions

The fiber-optic lines and related facilities would be routed mostly through undeveloped publicly-owned desert land with relatively few activities that could generate hazardous wastes or contaminated areas. Fiber-optic cable could also be installed within the SR 62 ROW; hazardous waste or contaminated areas would not be expected. The microwave facilities would be constructed on private land (at the Headgate Rock substation) and BLM land (near Radio Tower Road).

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

Waste management activities associated with the telecommunications system alternatives would include the storage, transport, recycling, or disposal of all project waste streams. Waste streams would most likely be limited to solid waste, including excavated soil that could not be backfilled and vegetation from development of new access roads as well as empty cable reels and cut-off pieces of fiber-optic cable. All waste streams are regulated and discharges or disposal of any waste material either requires specific permitting, or disposal at a permitted facility based on the type of waste. Waste streams can be either hazardous or non hazardous, depending on the constituents in the waste stream and the characteristics (e.g., ignitability, reactivity, toxicity, and corrosivity) of the waste. The status of the waste stream determines both the storage options for the material, and the disposal method for the material. Limited quantities of waste materials would be generated by installation of fiber-optic cable.

Solid waste disposal sites are permitted as either Class III facilities, which accept municipal solid waste, or Class I facilities which accept hazardous waste. Within San Bernardino and Riverside Counties, there are existing Class III commercial solid waste disposal facilities which could accommodate the wastes generated by the installation of fiber-optic cable. Best management construction practices and applicable conditions of certification identified in the SA would ensure that impacts from hazardous materials and waste streams are less than significant.

Microwave Alternative

Construction of a larger microwave tower located at one of Western's existing substations near the project and potentially an intermediate repeater site in the

Colorado River Valley or Rice Valley would generate a limited amount of waste. Since excavation of tower footings would require displacement of soil, a Phase 1 Environmental Site Assessment should be conducted prior to earth-moving activities. Additional analysis and avoidance/mitigation measures may be needed based on initial results. No hazardous materials would be expected to be encountered if trenching within SR 62 ROW occurs. Best management construction practices and applicable conditions of certification identified in the SA would ensure that impacts from hazardous materials and waste streams are less than significant.

BPL Alternative

No impacts to traffic and transportation would occur under the BPL alternative.

VISUAL RESOURCES

Setting and Existing Conditions

The telecommunication system alternatives are primarily located within the Colorado Desert, a sub-region of the Sonoran Desert. This region is typified by creosote and bursage scrub land cover, often mixed with yucca and cholla cactus, sandy soil grasslands and, especially farther to the south, ocotillo cactus, ironwood, and palo verde trees. Like other parts of the Basin and Range physiographic province of which it is a part, the area is characterized by periodic low, barren mountain ranges with jagged peaks and sloping alluvial fans or bajadas at their feet, with arid, sparsely vegetated open valleys in between offering expansive, panoramic views. Dark browns and garnets are the dominant mountain hues, although blues and purples prevail as viewing distance increases. In contrast, lighter brown and tan soils dominate the desert floor, sparsely dotted with the grey-green of low-growing creosote bush and golden bursage scrub vegetation. Based on data provided by the applicant for the RSEP site, staff assumes that no BLM VRM classifications have been assigned to the BLM lands comprising the project area.

Visually sensitive areas near the RSEP site footprint and linear corridor include SR 62 which has been designated a Riverside County Scenic Highway and a 143-mile segment of SR 62 (particularly east of Twenty Nine Palms) is eligible for State Scenic Highway designation. There are four BLM wilderness areas (WAs) within 10 miles of the project site: the Rice Valley, Turtle Mountain, Riverside Mountains and Palen/McCoy WAs. These WAs and the BLM land in the region are part of the California Desert Conservation Area (CDCA). The preservation of scenery is a prime objective of the CDC Act, and as such, the BLM attributes high viewer sensitivity to this region. In addition to State Route (SR 62), other existing man-made features within the project viewshed include the Arizona and California Railroad, and the California Aqueduct.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

Construction equipment associated with installation of fiber optic cable could create short-term temporary (1 to 2 days) impacts to viewers along SR 62 and particularly in segments of the existing transmission line that would be visible to Wilderness area visitors. Visual impacts would be minor in comparison to the overall impacts from the RSEP and would be less than significant.

Microwave Alternative

Taller microwave towers at one of Western's substations located near the project would be, by its nature, highly visible since the intent is to have line-of-sight communication with the RSEP directly or via an intermediate repeater site. The substation is located south of recreational land associated with the Colorado River and north of a residential development. A microwave tower at this location would create adverse, long-term scenic impacts to visitors and residents. The tower would exhibit strong vertical form and line contrast, seen against the open sky above the ridgeline of mountains in the distant background to the west and to the undeveloped desert land to the east. Color contrast of the tower and other structures would vary according to lighting conditions but would generally be moderate with appropriate surface color treatment.

Depending on the location selected the proposed repeater site could be visible by motorists traveling along SR 62. The tower would exhibit strong vertical form and line contrast, seen against the open sky above the ridgeline of mountains in the distant background. Color contrast of the tower and other structures would vary according to lighting conditions but would generally be moderate with appropriate surface color treatment. The proposed location appears to be one where several other transmission towers already exist. As such, a new tower would increase the dominance of these strong vertical elements within the immediate field of view, in a setting characterized by flat, horizontal topography. View blockage would be moderate. The receiver tower would intrude into views of the Colorado River Valley and Rice Valley and mountains behind, and penetrate the ridgeline of those mountains from some viewing angles.

Buried cable along SR 62 would have no impact on the highway's potential scenic designation.

Staff concludes that the construction of a microwave tower at the Headgate Rock substation and possibly an intermediate microwave tower in the Rice Valley would result in adverse impacts to existing scenic resource values. However, with the inclusion of the following recommended Conditions of Certification or similar, potential visual impacts would be less than significant:

- VIS 1** Surface Color Treatment of Non-Mirror Structures: to lower color contrast of the proposed transmission poles and blend with the visual background;
- VIS 2** Visual Mitigation and Revegetation: to minimize the visual prominence of the proposed construction to travelers on SR 62;
- VIS 3** Temporary and Permanent Exterior Lighting: low glare, not visible from a distance.

BPL Alternative

No impacts to visual resources would occur under the BPL alternative.

PUBLIC AND WORKER SAFETY

Setting and Existing Conditions

Current public and worker safety concerns are minimal within the Project area. The

Parker-Blythe #2 transmission line is within a designated utility corridor. Public access to the area is limited due to local road conditions, although the public may use some roads in the area for recreation. Underground trenching could occur within the SR 62 ROW; see the **Traffic and Transportation** section for information on vehicle use.

Assessment of Impacts and Discussion of Mitigation

Fiber-optic Cable Alternative

During installation of fiber-optic cable, standard health and safety practices would be conducted in accordance with the Occupational Health and Safety Administration's and Cal/OSHA regulations, policies and procedures and Western's Power System Safety Manual, which would reduce worker safety risks to less than significant levels. Project implementation would not affect any local or regional emergency response plan or evacuation plan. Therefore, no significant impacts to public or worker safety would be anticipated. Compliance with LORS would also protect the public.

Microwave Alternative

Construction of a microwave tower located at the Headgate Rock substation and potentially an intermediate tower in the Rice Valley would be subject to the same LORS as described above. A traffic control plan would likely be required for installation of cable within the SR 62 ROW. Project implementation would be short-term and would not affect emergency response or evacuation plans. No significant impacts to public or worker safety would occur.

BPL Alternative

No impacts to traffic and transportation would occur under the BPL alternative.

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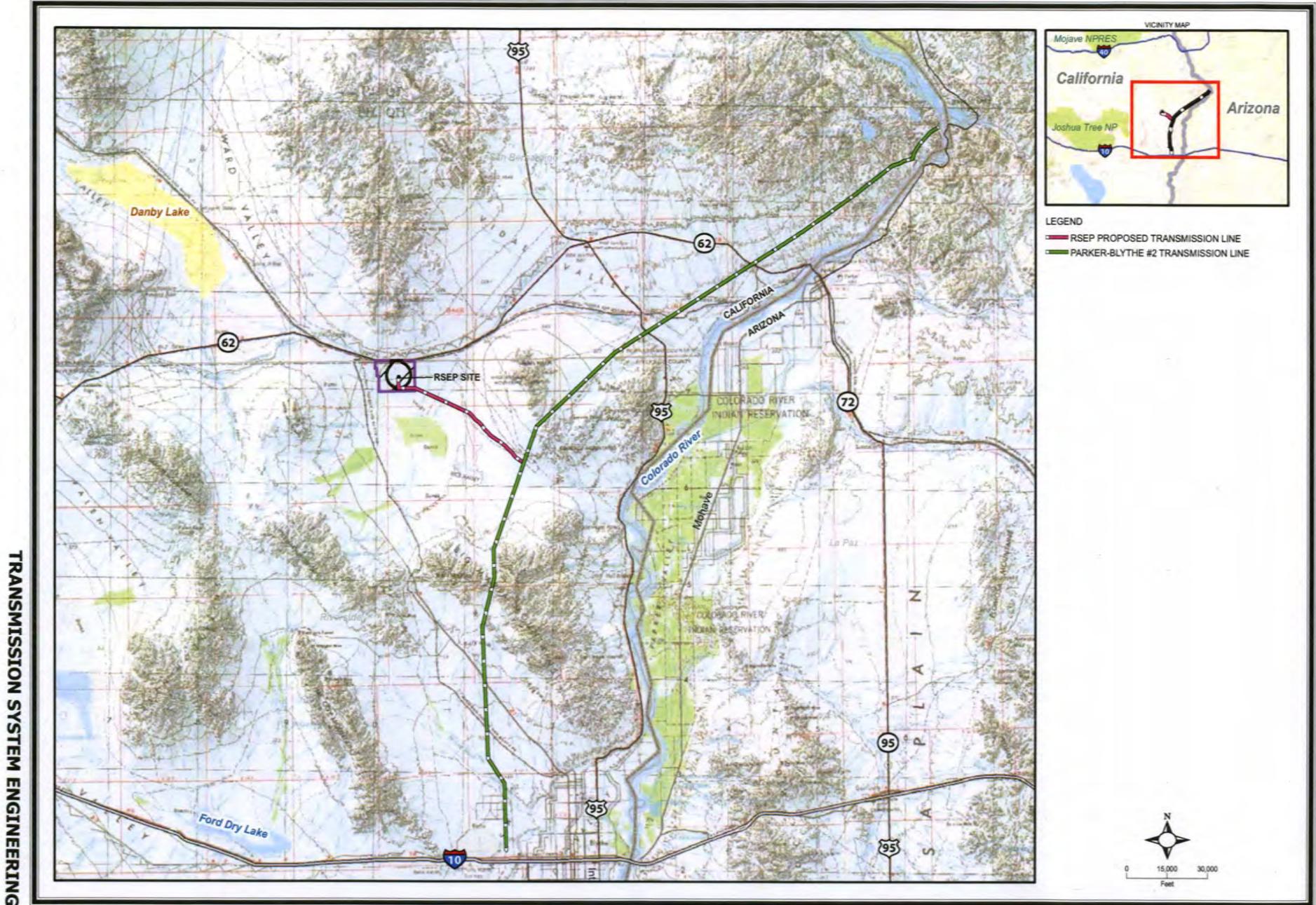
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TRANSMISSION SYSTEM ENGINEERING - APPENDIX A - FIGURE 1

Rice Solar Energy Project - Parker-Blythe #2 Transmission Line

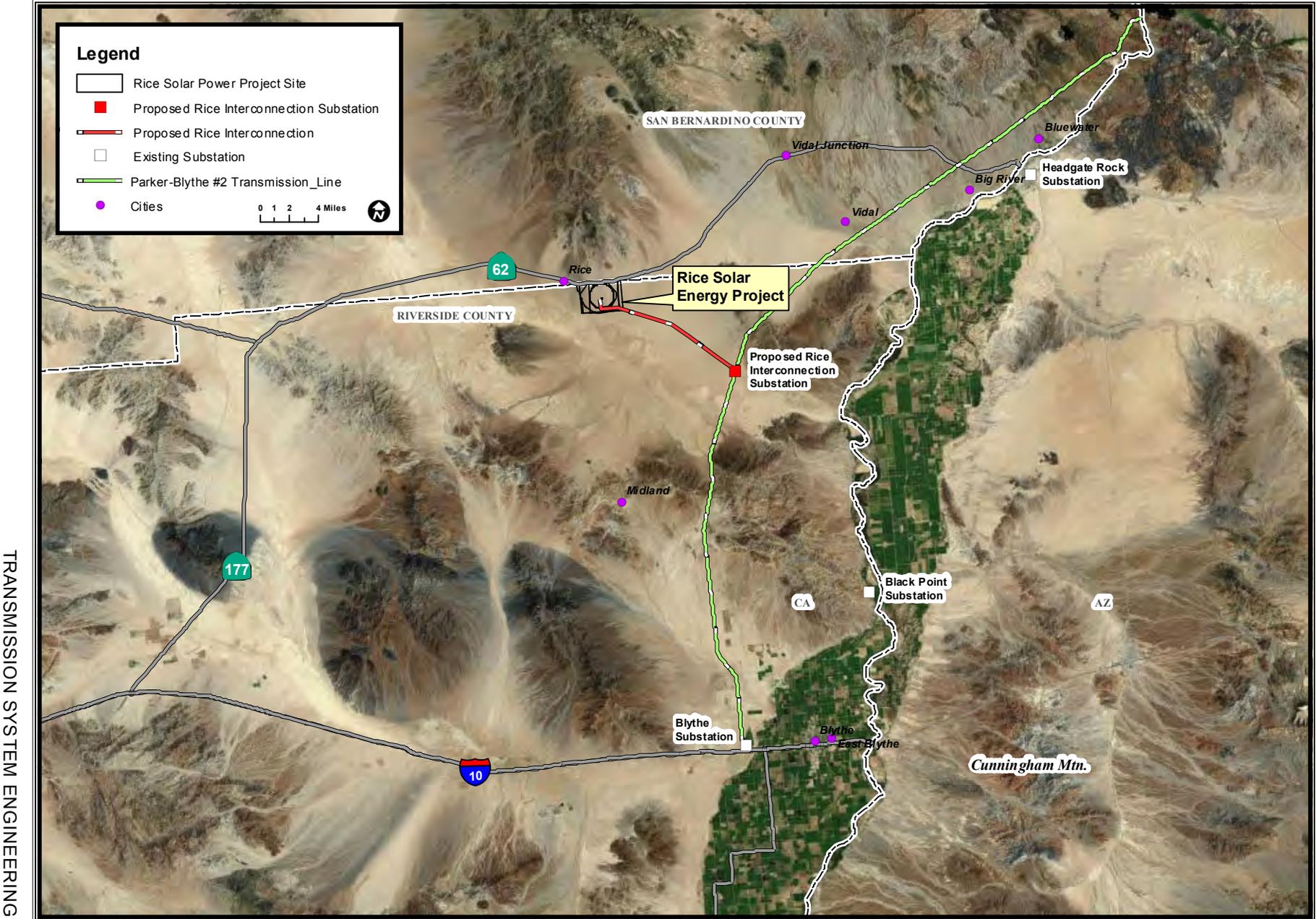


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: CH2MHILL, CALIFORNIA ENERGY COMMISSION

TRANSMISSION SYSTEM ENGINEERING - APPENDIX A FIGURE 2

Rice Solar Power Project - Telecommunications Options



TRANSMISSION SYSTEM ENGINEERING

OTHER CEQA AND NEPA CONSIDERATIONS

Testimony of John Kessler

This section includes discussions of other topics as required by CEQA and/or NEPA, including identification of significant unavoidable adverse impacts, discussion of significant irreversible and irretrievable commitment of resources, and growth-inducing effects.

Significant Unavoidable Adverse Impacts

The environmental impacts of the proposed project are described in the environmental analysis sections of this SA/DEIS. The analysis has identified impacts that are significant, and cannot be reduced to less than significant levels through the application of mitigation measures. Those impacts which have been determined to be significant and unavoidable are summarized below.

Land Use

The proposed Rice Solar Energy Project would be located on land within the California Desert Conservation Area (CDCA), as amended by the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan. The project footprint would include approximately 1,410 acres of privately owned property and 190 acres of "Multiple-Use Class M" (MUC-M) public (federal) lands, managed by the U.S. Bureau of Land Management (BLM), on a 2,560-acre project site. Siting of electrical generation plants on Class M lands requires compliance with federal, state, and local laws and the NEPA environmental review process.

The proposed project would also require BLM approval of an Amendment to the CDCA Plan and issuance of a Right-of-Way (ROW) grant for use of approximately 99 acres: a 10-mile long corridor, 150 feet wide, and a three acre plot for the interconnection substation. The applicant has submitted an initial ROW application with the approximate acreage and alignment, which would be modified to include only the final project footprint prior to issuance.

The proposed project would not:

- Result in the loss or conversion of Farmland or forest land to non-agricultural uses.
- Conflict with or result in a change to any agricultural zoning or existing Williamson Act contracts.
- Conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.
- Directly or indirectly divide an established community.
- Induce substantial population growth in the project area.
- Impact airport operations.

The proposed project would have a less than significant impact on:

- Wilderness and recreation areas.

- Permanent loss of lands within a portion of the proposed project footprint for agriculture, natural resources, and recreation.
- Recreational use of and access to a portion of the proposed project site and surrounding BLM-managed federal lands.
- The historic significance and National Register eligibility of Camp Rice.
- Future land use and development.

The proposed project would have a less than significant impact, with full implementation of the applicable conditions of certification, on:

- Agricultural use (grazing) and access in an established federal rangeland area within the CDCA.
- Consistency with most applicable land use plans, policies, and regulations of an agency with jurisdiction, or that would normally have jurisdiction, over the project.

The proposed project would have the following significant/substantial, unavoidable impacts before considering whether impacts would be mitigated to less than significant with proposed conditions of certification:

- Result in a loss of scenic character when considering both direct and cumulative impacts;
- Result in the loss of a National Register eligible historic resource (Rice Army Airfield).
- Contribute substantially to cumulative land use and visual/scenic character, recreational, biological, and cultural impacts.

The proposed project would have the following significant/substantial, unavoidable impacts :

- Result in a loss of scenic character, both project-specific and cumulative.
- Result in the loss of a historic resource with potential National Register eligibility (Rice Army Airfield) (NEPA).
- Contribute substantially to cumulative loss of visual/scenic character.

The proposed project would not be consistent with the following laws, ordinances, regulations, and standards, even with implementation of proposed conditions of certification:

- Riverside County General Plan Land Use Element policies: LU 6.1, LU 13.1, LU 13.3, LU 20.1, LU 20.2, LU 20.4, LU 30.1. Inconsistency with these General Plan polices are primarily the result of the significant impacts to visual/scenic impacts identified above.
- Riverside County General Plan Multipurpose Open Space Element policy OS 21.1

Visual Resources

The agencies have identified, and staff concludes with respect to CEQA, that the proposed project, after implementing all staff-recommended conditions of certification, would still have significant and unavoidable adverse direct and cumulative visual impacts from several Key Observation Points including:

- Highway SR-62 to background distances of five miles or more, due particularly to solar receiver brightness; and
- portions of the Turtle Mountain Wilderness Area at distances of roughly 5 miles or under due to the combination of mirror-field visibility, mirror-field glare, and solar receiver glare.

Staff has recommended **Traffic and Transportation** Conditions of Certification **TRANS-6**, Heliostat Positioning Plan, and **TRANS-7**, Power Tower Monitoring Plan, to ensure that potential glare from the project is minimized to the maximum extent possible and does not pose a health and safety risk. However, staff concludes that with these measures, glare from the project, particularly from the solar receiver, would remain a bright, intrusive source of sub-hazardous nuisance glare to viewers on Highway SR 62 and in other locations at distances within a range of five miles or more.

Impacts of the Reduced Acreage Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. However, the degree and extent of those impacts would be somewhat less than those of the Proposed Project.

Impacts of the North of Desert Center Alternative, with staff-recommended conditions of certification, would also have significant unavoidable visual impacts. Comparison to the proposed project is mixed. Impacts would be less than those of the Proposed Project due to the more developed and visually compromised setting when compared to that of the Proposed Project. However, the number of residents adversely affected would be substantial, and viewers in the easternmost slopes of Joshua Tree National Park could be affected.

Impacts of the State Route 62/Rice Valley Road Generation Tie Line Alternative would have the same significant unavoidable visual impacts as the proposed project, and in addition would substantially increase those impacts by introducing a new line into the immediate visual foreground of State Route 62 (SR-62).

The anticipated visual impacts of the Proposed Project, Reduced Acreage, North of Desert Center and SR 62/Rice Valley Road Generation Tie Line Alternatives, in combination with past and foreseeable future local projects in their local vicinity, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and significant.

Along SR 62, there are four proposed solar energy projects including RSEP that would result in a substantial man-made visual intrusion into a majority of the remaining visually intact and scenic portions of SR 62, potentially rendering it ineligible for designation as a State scenic highway. These four projects would affect over 50 miles of the most

scenically intact portions of that highway, altering it from a natural, scenically intact desert landscape into one characterized by the strong visual influence of these industrial facilities. In addition, cumulative night light pollution impacts in the project area could become cumulatively considerable. Therefore, within the local viewshed of Rice Valley and of SR 62 in the project vicinity, the anticipated operational visual impacts of the RSEP in combination with past and foreseeable future projects are considered potentially significant and unmitigable, particularly to motorists on SR 62, and to visitors to the area's many wilderness areas and Joshua Tree National Park.

Within the southern California desert, anticipated cumulative operational impacts of past and foreseeable future region-wide projects are considered cumulatively considerable, potentially significant and unmitigable considering the substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape.

All action alternatives studied, with staff-recommended conditions of certification, would not conform with a number of applicable local Laws, Ordinances, Regulations and Standards (LORS) of San Bernardino and Riverside Counties pertaining to preservation of scenic resources and scenic highway view corridors, as described under the Compliance With LORS section of this analysis.

Irreversible and Irretrievable Commitment of Resources

Section 15126.2(c) of CEQA requires that CEQA documentation address significant irreversible changes and irretrievable commitments of resources that would be caused by a proposed project. Similarly, 40 CFR 1502.16 of the NEPA regulations requires a discussion of any irreversible or irretrievable commitments of resources which would be involved in the proposed project.

Implementation of the proposed project would result in the consumption of energy as it relates to the fuel needed for construction-related activities. Large amounts of gasoline, diesel, and jet fuel would be required for project construction. Additionally, construction would require the manufacture of new materials, some of which would not be recyclable at the end of the lifetime of the proposed project. The raw materials and energy required for the production of these materials would also result in an irretrievable commitment of natural resources. Operation of the proposed project would not cause a substantial increase in the consumption or use of non-renewable resources.

Implementation of the proposed project would require the loss of approximately 1,770 acres of vegetation and habitat. The loss of this habitat would be long-term, enduring throughout the proposed 30-year lifespan of the facility. Following decommissioning, restoration would be conducted which would involve removal of structures, restoration of topography, and revegetation, all of which would work towards restoration of the original habitat. However, it is likely that restoration of native vegetation would be slow, and the success uncertain. Therefore, the loss of desert tortoise habitat is assumed to be permanent since restoration of vegetation for which they depend for foraging and other factors affecting the quality of the restored habitat are uncertain.

The majority of access required for construction and operation of the proposed project would utilize existing public access roads and rights-of way from SR 62 onto the project site, before entering private property where RSEP would be located. The proposed project would not significantly affect opportunities for public access on public roads.

Construction and operation of the proposed project would require the use of a limited amount of hazardous materials such as fuel, lubricants, and cleaning solvents. All hazardous materials would be stored, handled, and used in accordance with Best Management Practices and applicable, federal, state, and local regulations, including a construction-phase Stormwater Pollution Prevention Plan (SWPPP) and an operational-phase SWPPP. Assuming appropriate implementation of these plans and practices as are recommended in the conditions of certification, potential degradation of the environment due to accidental spills associated with the proposed project's use of hazardous materials would be less than significant.

Visual impacts would be significant and long-term considering the context and intensity of the project effects in general. The context of the project is one adjacent to an eligible scenic highway (SR 62) and having four BLM wilderness areas within 10 miles of the project site: the Rice Valley, Turtle Mountain, Riverside Mountains and Palen/McCoy Wilderness Areas, and Joshua Tree National Park within the regional vicinity of the project. Intensity of potential effects involves the unique scenic characteristics of the local landscape as indicated by the wilderness designations of portions of the project viewshed; concerns expressed by public commenters to date; and a degree of uncertainty as to the level of discomfort or disability glare from the solar tower receiver; and concern over cumulative visual effects of renewable projects in the Chuckwalla Valley and the southern California Mojave Desert as a whole. The loss of visual quality would be long-term, enduring throughout the proposed 30-year lifespan of the facility. After the end of the project's useful life, it would be decommissioned in accordance with a Facility Closure Plan. The facility would be removed to a depth below grade, original contours restored, and the site revegetated. However, the removal of the existing facility would leave a very prominent visual impact over the entire site due to the strong color contrast created between graded, disturbed soil areas and undisturbed soil areas in the vicinity of the project site. In addition, revegetation of areas in this desert region are difficult and generally of limited success. Thus, visual recovery from land disturbance of closure and decommissioning would likely occur only over a very long period of time.

Growth-Inducing Effects

Section 15126.2(d) of the CEQA Guidelines requires that CEQA documents address the ways in which a proposed project encourages economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Section 1508.8(b) of the NEPA regulations also requires that an EIS discuss growth-inducing impacts of a project. The discussion must address how a proposed project may remove obstacles to growth, or encourage or facilitate other activities that could significantly impact the environment, either individually or cumulatively. Typically, the growth-inducing potential of a proposed project would be considered significant if it fosters growth or a concentration of population above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth impacts could also occur if a project adds

infrastructure or service capacity which could accommodate growth levels which exceed those permitted by local or regional plans and policies.

The proposed project would employ up to 954 construction personnel and 47 operations personnel. Research shows that construction workers would commute as much as two hours each direction from their communities rather than relocate, and operations workers would commute as much as one hour (EPRI 1982). Staff reviewed the socioeconomics data for counties within the one-hour and two-hour commute ranges, which is within the study area and includes Riverside and San Bernardino Counties. **SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE Table 4** indicates that an adequate number of construction workers are available within the study area. In addition, a total of 47 operational workers would account for a negligible amount of the total San Bernardino County and Clark County total labor force. As all workers would reside within the study area, no impacts to existing population levels would occur. Because the number of operational workers required represents such a small portion of the local available labor force, no significant impacts to the study area population or employment base would result from proposed project operation.

As discussed in the Introduction to this SA/DEIS, the primary need for the proposed project is driven by Federal and State requirements regarding the generation of renewable energy. According to the Energy Commission, peak electricity demand within California is projected to increase at a rate of 1.35% per year from 2008 through 2018 (CEC 2007), and therefore, additional generating capacity from new sources will be required. The proposed project is not intended to supply power related to growth for any particular development, either directly or indirectly, and would not result in direct growth-inducing impacts.

GENERAL CONDITIONS INCLUDING COMPLIANCE MONITORING AND CLOSURE PLAN

Testimony: Chris Davis

INTRODUCTION

The project's General Compliance Conditions of Certification, including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with public health and safety, environmental, and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission and specified in the written decision on the Application for Certification or otherwise required by law. The Compliance Plan will be integrated with a U.S. Bureau of Land Management (BLM) Compliance Monitoring Plan (hereafter referred to as the Compliance Plan) to assure compliance with the terms and conditions of any approved Right-of-Way (ROW) grant including the approved Plan of Development (POD).

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions of certification;
- establish requirements for facility closure plans; and
- specify conditions of certification for each technical area containing the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure below a level of significance. Each specific condition of certification also includes a verification provision that describes the method of assuring that the condition has been satisfied.

In addition to meeting the Energy Commission's Conditions of Certification, the project owner will be required to comply with all terms and conditions required by the BLM and the Western Area Power Administration (Western) for the project's transmission line interconnection to the existing Western transmission system. The conditions and terms will be described in the Records of Decision from BLM and Western and in BLM's Right-of-Way grant documents.

DEFINITIONS

The following terms and definitions are used to establish when Conditions of Certification are implemented.

PRE-CONSTRUCTION SITE MOBILIZATION

Site mobilization is limited preconstruction activities at the site to allow for the installation of fencing, construction trailers, construction trailer utilities, and construction trailer parking at the site. Limited ground disturbance, grading, and trenching associated with the above mentioned pre-construction activities is considered part of site mobilization. Walking, driving or parking a passenger vehicle, pickup truck and/or light vehicles is allowable during site mobilization.

CONSTRUCTION

Onsite work to install permanent equipment or structures for any facility.

Ground Disturbance

Construction-related ground disturbance refers to activities that result in the removal of top soil or vegetation at the site beyond site mobilization needs, and for access roads and linear facilities.

Grading, Boring, and Trenching

Construction-related grading, boring, and trenching refers to activities that result in subsurface soil work at the site and for access roads and linear facilities, e.g., alteration of the topographical features such as leveling, removal of hills or high spots, moving of soil from one area to another, and removal of soil.

Notwithstanding the definitions of ground disturbance, grading, boring, and trenching above, construction does **not** include the following:

1. the installation of environmental monitoring equipment;
2. a soil or geological investigation;
3. a topographical survey;
4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility; and
5. any work to provide access to the site for any of the purposes specified in 1, 2, 3, or 4 above.

START OF COMMERCIAL OPERATION

For compliance monitoring purposes, “commercial operation” begins after the completion of start-up and commissioning, when the power plant has reached reliable steady-state production of electricity at the rated capacity. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager.

COMPLIANCE PROJECT MANAGER RESPONSIBILITIES

The Compliance Project Manager (CPM) shall oversee the compliance monitoring and is responsible for:

1. Ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Energy Commission Decision;
2. Resolving complaints;
3. Processing post-certification changes to the conditions of certification, project description (petition to amend), and ownership or operational control (petition for change of ownership) (See instructions for filing petitions);
4. Documenting and tracking compliance filings; and
5. Ensuring that compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies, Energy Commission, and staff when handling disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, the approval will involve all appropriate Energy Commission staff and management. All submittals must include searchable electronic versions (pdf or MS Word files). The CPM may accept and approve, on a case by case basis, compliance submittals that provide sufficient detail to allow construction activities to commence without the submittal containing detailed information on construction activities that will be commenced later in time.

PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings is to assemble both the Energy Commission's and project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification. This is to confirm that all applicable conditions of certification have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

ENERGY COMMISSION RECORD

The Energy Commission shall maintain the following documents and information as a public record, in either the Compliance file or Dockets file, for the life of the project (or other period as required):

1. All documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
2. All monthly and annual compliance reports filed by the project owner;
3. All complaints of noncompliance filed with the Energy Commission; and
4. All petitions for project or condition of certification changes and the resulting staff or Energy Commission action.

PROJECT OWNER RESPONSIBILITIES

The project owner is responsible for ensuring that the compliance conditions of certification and all other conditions of certification that appear in the Commission Decision are satisfied. The compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, conditions of certification, or ownership. Failure to comply with any of the conditions of certification or the compliance conditions may result in reopening of the case and revocation of Energy Commission certification; an administrative fine; or other action as appropriate. A summary of the Compliance Conditions of Certification is included as **Compliance Table 1** at the conclusion of this section.

COMPLIANCE CONDITIONS OF CERTIFICATION

Unrestricted Access (COMPLIANCE-1)

The CPM, responsible Energy Commission staff, and delegated agencies or consultants shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on-site for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

Compliance Record (COMPLIANCE-2)

The project owner shall maintain project files on-site or at an alternative site approved by the CPM for the life of the project, unless a lesser period of time is specified by the conditions of certification. The files shall contain copies of all “as-built” drawings, documents submitted as verification for conditions, and other project-related documents.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

Compliance Verification Submittals (COMPLIANCE-3)

Each condition of certification is followed by a means of verification. The verification describes the Energy Commission’s procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified as necessary by the CPM.

Verification of compliance with the conditions of certification can be accomplished by the following:

1. Monthly and/or annual compliance reports, filed by the project owner or authorized agent, reporting on work done and providing pertinent documentation, as required by the specific conditions of certification;
2. Appropriate letters from delegate agencies verifying compliance;
3. Energy Commission staff audits of project records; and/or
4. Energy Commission staff inspections of work, or other evidence that the requirements are satisfied.

Verification lead times associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.

A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the project by AFC number, the appropriate condition(s) of certification by condition number(s), and a brief description of the subject of the submittal.** The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and CEC submittal number.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All hardcopy submittals shall be addressed as follows:

**Chris Davis, Compliance Project Manager
(09-AFC-10C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814**

Those submittals shall be accompanied by a searchable electronic copy, on a CD or by e-mail, as agreed upon by the CPM.

If the project owner desires Energy Commission staff action by a specific date, that request shall be made in the submittal cover letter and shall include a detailed explanation of the effects on the project if that date is not met.

Pre-Construction Matrix and Tasks Prior to Start of Construction (COMPLIANCE-4)

Prior to commencing construction, a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first. It will be submitted in the same format as the compliance matrix described below.

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Various lead times for submittal of compliance verification documents to the CPM for conditions of certification are established to allow sufficient staff time to review and comment and, if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

Failure to submit compliance documents within the specified lead-time may result in delays in authorization to commence various stages of project development.

If the project owner anticipates commencing project construction as soon as the project is certified, it may be necessary for the project owner to file compliance submittals prior to project certification. Compliance submittals should be completed in advance where the necessary lead time for a required compliance event extends beyond the date anticipated for start of construction. The project owner must understand that the submittal of compliance documents prior to project certification is at the owner's own risk. Any approval by Energy Commission staff is subject to change, based upon the Commission Decision.

Compliance Reporting

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Energy Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

Posting A Surety Bond (COMPLIANCE-5)

Prior to site disturbance and each increment of construction, the project owner shall post a surety bond adequate to cover the cost of decommissioning and restoration, including the removal of the project features that have been constructed for that portion of the site and restoring the native topography and vegetation. An "increment of construction" shall mean a significant feature of construction, such as site grading, a building, a fluid storage tank, a water treatment facility, a hydrogen production facility, a switchyard, or a group of solar collectors connected to an electrical transformer (including that transformer). This Surety bond will apply to only site disturbance features located on public lands managed by BLM.

The project owner shall provide the surety bond to the BLM AO for approval and to the CPM for review with written evidence indicating that the surety bond is adequate to cover the cost of decommissioning and removing the project features constructed, allowing for site restoration. The written evidence shall include a valid estimate showing that the amount of the bond is adequate to accomplish such work. The timing for the submittal of the surety bond and approval of this document shall be coordinated with the BLM AO and CPM. Over the life of the project, the surety bond will be updated as necessary to account for any changes to the project description and/or decommissioning costs.

Compliance Matrix (COMPLIANCE-6)

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all conditions of certification in a spreadsheet format. The compliance matrix must identify:

1. the technical area;
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable;
7. the compliance status of each condition, e.g., “not started,” “in progress” or “completed” (include the date); and
8. if the condition was amended, the date of the amendment.

Satisfied conditions shall be placed at the end of the matrix.

Monthly Compliance Report (COMPLIANCE-7)

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the **Key Events List. The Key Events List form is found at the end of these General Conditions.**

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and an electronic searchable version of the Monthly Compliance Report within 10 working days after the end of each reporting month.

Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain, at a minimum:

1. A summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. Documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, as well as the conditions they satisfy and submitted as attachments to the Monthly Compliance Report;
3. An initial, and thereafter updated, compliance matrix showing the status of all conditions of certification;
4. A list of conditions that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;
5. A list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;
6. A cumulative listing of any approved changes to conditions of certification;
7. A listing of any filings submitted to, or permits issued by, other governmental agencies during the month;
8. A projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;
9. A listing of the month's additions to the on-site compliance file; and
10. A listing of complaints, notices of violation, official warnings, and citations received during the month, a description of the resolution of the resolved actions, and the status of any unresolved actions.

All sections, exhibits, or addendums shall be separated by tabbed dividers or as acceptable by the CPM.

Annual Compliance Report (COMPLIANCE-8)

After construction is complete, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project, unless otherwise specified by the CPM. Each Annual Compliance Report shall include the AFC number, identify the reporting period, and shall contain the following:

1. An updated compliance matrix showing the status of all conditions of certification (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);

2. A summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. Documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal letter, with the condition it satisfies, and submitted as attachments to the Annual Compliance Report;
4. A cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;
5. An explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. A listing of filings submitted to, or permits issued by, other governmental agencies during the year;
7. A projection of project compliance activities scheduled during the next year;
8. A listing of the year's additions to the on-site compliance file;
9. An evaluation of the on-site contingency plan for unplanned facility closure, including any suggestions necessary for bringing the plan up to date (see Compliance Conditions for Facility Closure); and
10. A listing of complaints, notices of violation, official warnings, and citations received during the year, a description of the resolution of any resolved matters, and the status of any unresolved matters.

Confidential Information (COMPLIANCE-9)

Any information that the project owner deems confidential shall be submitted to the Energy Commission's Executive Director with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information that is determined to be confidential shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501, et. seq.

Annual Energy Facility Compliance Fee (COMPLIANCE-10)

Pursuant to the provisions of Section 25806(b) of the Public Resources Code, the project owner is required to pay an annual compliance fee, which is adjusted annually. Current Compliance fee information is available on the Energy Commission's website http://www.energy.ca.gov/siting/filing_fees.html. Contact the CPM for the current fee information. The initial payment is due on the date of the Business Meeting at which the Energy Commission adopts the final decision. All subsequent payments are due by July 1 of each year in which the facility retains its certification. The payment instrument shall be made payable to the California Energy Commission and mailed to: Accounting Office MS-02, California Energy Commission, 1516 9th St., Sacramento, CA 95814.

Reporting of Complaints, Notices, and Citations (COMPLIANCE-11)

Prior to the start of construction, the project owner must send a letter to property owners living within one mile of the project notifying them of a telephone number to contact project representatives with questions, complaints, or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering with a date and time stamp recording. All recorded complaints shall be responded to within 24 hours. The telephone number shall be posted at the project site and made easily visible to passersby during construction and operation. The telephone number shall be provided to the CPM who will post it on the Energy Commission's web page at: http://www.energy.ca.gov/sitingcases/power_plants_contacts.html

Any changes to the telephone number shall be submitted immediately to the CPM, who will update the web page.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies to the CPM of all complaint forms, including noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations within 10 days of receipt. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form (Attachment A).

FACILITY CLOSURE

At some point in the future, the project will cease operation and close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situation and project setting that exist at the time of closure. Laws, Ordinances, Regulations, and Standards (LORS) pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place: planned closure, unplanned temporary closure, and unplanned permanent closure.

CLOSURE DEFINITIONS

Planned Closure

A planned closure occurs when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

Unplanned Temporary Closure

An unplanned temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster or an emergency.

Unplanned Permanent Closure

An unplanned permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unplanned closure where the owner implements the on-site contingency plan. It can also include unplanned closure where the project owner fails to implement the contingency plan, and the project is essentially abandoned.

COMPLIANCE CONDITIONS FOR FACILITY CLOSURE

Planned Closure (COMPLIANCE-12)

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed Facility Closure Plan to the Energy Commission for review and approval at least 12 months (or other period of time agreed to by the CPM) prior to the commencement of closure activities. The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed Facility Closure Plan with the Energy Commission.

The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site;
2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;
3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and
4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Energy Commission CPM for the purpose of discussing the specific contents of the plan.

In the event that there are significant issues associated with the proposed facility closure plan's approval, or if the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Energy Commission may hold public hearings as part of its approval procedure.

As necessary, prior to or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities until the Energy Commission approves the Facility Closure Plan.

Unplanned Temporary Closure/On-Site Contingency Plan (COMPLIANCE-13)

In order to ensure that public health and safety and the environment are protected in the event of an unplanned temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety impacts and environmental impacts are taken in a timely manner.

The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days, unless other arrangements are agreed to by the CPM, the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment. (Also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management.)

In addition, consistent with requirements under unplanned permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unplanned temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail, within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that an unplanned temporary closure is likely to be permanent, or for a duration of more than 12 months, a closure plan consistent with the requirements for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

Unplanned Permanent Closure/On-Site Contingency Plan (COMPLIANCE-14)

The on-site contingency plan required for unplanned temporary closure shall also cover unplanned permanent facility closure. All of the requirements specified for unplanned temporary closure shall also apply to unplanned permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the event of abandonment.

In the event of an unplanned permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, or e-mail within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan, consistent with the requirements for a planned closure, shall be developed and submitted to the CPM within 90 days of the permanent closure or another period of time agreed to by the CPM.

Post Certification Changes to the Energy Commission Decision: Amendments, Ownership Changes, Staff Approved Project Modifications and Verification Changes (COMPLIANCE-15)

The project owner must petition the Energy Commission pursuant to Title 20, California Code of Regulations, section 1769, in order to modify the project (including linear facilities) design, operation or performance requirements, and to transfer ownership or operational control of the facility. **It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769.** Implementation of a project modification without first securing Energy Commission, or Energy Commission staff, approval may result in enforcement action that could result in civil penalties in accordance with section 25534 of the Public Resources Code.

A petition is required for **amendments** and for **staff approved project modifications** as specified below. Both shall be filed as a "Petition to Amend." Staff will determine if the change is significant or insignificant. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the CPM, who will file it with the Energy Commission's Dockets Unit in accordance with Title 20, California Code of Regulations, section 1209.

The criteria that determine which type of approval and the process that applies are explained below. They reflect the provisions of Section 1769 at the time this condition was drafted. If the Commission's rules regarding amendments are amended, the rules in effect at the time an amendment is requested shall apply.

Amendment

The project owner shall petition the Energy Commission, pursuant to Title 20, California Code of Regulations, Section 1769(a), when proposing modifications to the project (including linear facilities) design, operation, or performance requirements. If a proposed

modification results in deletion or change of a condition of certification, or makes changes that would cause the project not to comply with any applicable laws, ordinances, regulations or standards the petition will be processed as a formal amendment to the final decision, which requires public notice and review of the Energy Commission staff analysis and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(a). Upon request, the CPM will provide a sample petition to use as a template.

Change of Ownership

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission. The petition shall be in the form of a legal brief and fulfill the requirements of Section 1769(b). Upon request, the CPM will provide a sample petition to use as a template.

Staff Approved Project Modification

Modifications that do not result in deletions or changes to conditions of certification, that are compliant with laws, ordinances, regulations, and standards and will not have significant environmental impacts may be authorized by the CPM as a staff approved project modification pursuant to section 1769 (a) (2). Once staff files an intention to approve the proposed project modifications, any person may file an objection to staff's determination within 14 days of service on the grounds that the modification does not meet the criteria of section 1769 (a) (2). If a person objects to staff's determination, the petition must be processed as a formal amendment to the decision and must be approved by the full commission at a noticed business meeting or hearing.

Verification Change

A verification may be modified by the CPM without requesting an amendment to the decision if the change does not conflict with the conditions of certification and provides an effective alternate means of verification.

CBO DELEGATION AND AGENCY COOPERATION

In performing construction and operation monitoring of the project, Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). Energy Commission staff may delegate CBO responsibility to either an independent third party contractor or the local building official. Energy Commission staff retains CBO authority when selecting a delegate CBO, including enforcing and interpreting state and local codes, and use of discretion, as necessary, in implementing the various codes and standards.

Energy Commission staff may also seek the cooperation of state, regional, and local agencies that have an interest in environmental protection when conducting project monitoring.

ENFORCEMENT

The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Energy Commission Decision. The specific action and amount of any fines the Energy Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, oversight, unforeseeable events, and other factors the Energy Commission may consider.

NONCOMPLIANCE COMPLAINT PROCEDURES

Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1237, but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by future law or regulations.

Informal Dispute Resolution Process

The following procedure is designed to informally resolve disputes concerning the interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate an informal dispute resolution process. Disputes may pertain to actions or decisions made by any party, including the Energy Commission's delegate agents.

This process may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1237, but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The process encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be brought before the full Energy Commission for consideration via the complaint and investigation procedure.

Request for Informal Investigation

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for an informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant

information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter. Within seven working days of the CPM's request, provide a written report to the CPM of the results of the investigation, including corrective measures proposed or undertaken. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to also provide an initial verbal report, within 48 hours.

Request for Informal Meeting

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures proposed or undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within 14 days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate Energy Commission staff and staff of any other agencies with expertise in the subject area of concern, as necessary;
3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner;
4. After the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230, et. seq.

Formal Dispute Resolution Procedure-Complaints and Investigations

Any person may file a complaint with the Energy Commission's Dockets Unit alleging noncompliance with a Commission decision adopted pursuant to Public Resources Code section 25500. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1237.

**COMPLIANCE TABLE 1
SUMMARY of COMPLIANCE CONDITIONS OF CERTIFICATION**

KEY EVENTS LIST

PROJECT: _____

DOCKET #: _____

COMPLIANCE PROJECT MANAGER: _____

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
Online Date	
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	
Start Ground Disturbance	
Start Grading	
Start Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Roll of Steam Turbine	
Obtain Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	
Synchronization with Grid and Interconnection	
Complete T/L Construction	
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	
Complete Gas Pipeline Construction	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-1	Unrestricted Access	The project owner shall grant Energy Commission staff and delegate agencies or consultants unrestricted access to the power plant site.
COMPLIANCE-2	Compliance Record	The project owner shall maintain project files on-site. Energy Commission staff and delegate agencies shall be given unrestricted access to the files.
COMPLIANCE-3	Compliance Verification Submittals	The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed or the project owner or his agent.
COMPLIANCE-4	Pre-construction Matrix and Tasks Prior to Start of Construction	Construction shall not commence until the all of the following activities/submittals have been completed: <ul style="list-style-type: none"> • property owners living within one mile of the project have been notified of a telephone number to contact for questions, complaints or concerns, • a pre-construction matrix has been submitted identifying only those conditions that must be fulfilled before the start of construction, • all pre-construction conditions have been complied with, • the CPM has issued a letter to the project owner authorizing construction.
COMPLIANCE-5	Surety Bond	Prior to site disturbance and each increment of construction, the project owner shall post a surety bond adequate to cover the cost of decommissioning and restoration and provide the surety bond to the BLM AO for approval.
COMPLIANCE-6	Compliance Matrix	The project owner shall submit a compliance matrix (in a spreadsheet format) with each monthly and annual compliance report which includes the status of all compliance conditions of certification.
COMPLIANCE-7	Monthly Compliance Report including a Key Events List	During construction, the project owner shall submit Monthly Compliance Reports (MCRs) which include specific information. The first MCR is due the month following the Energy Commission business meeting date on which the project was approved and shall include an initial list of dates for each of the events identified on the Key Events List.

COMPLIANCE TABLE 1
SUMMARY of COMPLIANCE CONDITIONS OF CERTIFICATION

CONDITION NUMBER	SUBJECT	DESCRIPTION
COMPLIANCE-8	Annual Compliance Reports	After construction ends and throughout the life of the project, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports.
COMPLIANCE-9	Confidential Information	Any information the project owner deems confidential shall be submitted to the Energy Commission's Executive Director with a request for confidentiality.
COMPLIANCE-10	Annual fees	Payment of Annual Energy Facility Compliance Fee
COMPLIANCE-11	Reporting of Complaints, Notices and Citations	Within 10 days of receipt, the project owner shall report to the CPM, all notices, complaints, and citations.
COMPLIANCE-12	Planned Facility Closure	The project owner shall submit a closure plan to the CPM at least 12 months prior to commencement of a planned closure.
COMPLIANCE-13	Unplanned Temporary Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned temporary closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-14	Unplanned Permanent Facility Closure	To ensure that public health and safety and the environment are protected in the event of an unplanned permanent closure, the project owner shall submit an on-site contingency plan no less than 60 days prior to commencement of commercial operation.
COMPLIANCE-15	Post-certification changes to the Decision	The project owner must petition the Energy Commission to delete or change a condition of certification, modify the project design or operational requirements and/or transfer ownership of operational control of the facility.

COMPLAINT LOG NUMBER: _____ DOCKET NUMBER: _____
PROJECT NAME: _____

COMPLAINANT INFORMATION

NAME: _____	PHONE NUMBER: _____
ADDRESS: _____	

COMPLAINT

DATE COMPLAINT RECEIVED: _____	TIME COMPLAINT RECEIVED: _____
COMPLAINT RECEIVED BY: _____	<input type="checkbox"/> TELEPHONE <input type="checkbox"/> IN WRITING (COPY ATTACHED)
DATE OF FIRST OCCURRENCE: _____	
DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION): _____ _____ _____	
FINDINGS OF INVESTIGATION BY PLANT PERSONNEL: _____ _____ _____	
DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT?	<input type="checkbox"/> YES <input type="checkbox"/> NO
DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS: _____	
DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION: _____ _____ _____	
DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION?	<input type="checkbox"/> YES <input type="checkbox"/> NO
IF NOT, EXPLAIN: _____ _____ _____	

CORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED: _____
DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED): _____
DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED): _____
OTHER RELEVANT INFORMATION: _____ _____ _____

"This information is certified to be correct."

PLANT MANAGER SIGNATURE: _____ DATE: _____

(ATTACH ADDITIONAL PAGES AND ALL SUPPORTING DOCUMENTATION, AS REQUIRED)

LIST OF PREPARERS

**RICE SOLAR ENERGY PROJECT (RSEP)
09-AFC-10
PREPARATION TEAM**

Executive SummaryJohn Kessler
 Introduction Allison Shaffer, Liana Reilly, John Kessler
 Project DescriptionJohn Kessler
 Alternatives Suzanne Phinney
 Cumulative Scenario Suzanne Phinney
 Air Quality..... Brenner Munger, William Walters, Jacquelyn Leyva
 Biological Resources Scott D. White, Chris Huntley
 Cultural Resources..... Kim J. Tremaine, Stephen Tromly, George Kline
 Hazardous Materials Management..... Geoff Lesh, Ph.D., Rick Tyler
 Land Use Shaelyn Strattan
 Noise and Vibration Geoff Lesh, Shahab Khoshmashrab
 Public Health Obed Odoemelam, Ph.D.
 Socioeconomic Resources Kristin Ford
 Soils and Water Resources Mike Conway, Abdel-Karim Abulaban, Ph.D., P.E.
 Traffic and Transportation James Jewell, Alan Lindsley, Shaelyn Strattan, Scott Debacuhe
 Transmission Line Safety and Nuisance Obed Odoemelam, Ph.D.
 Visual Resources William Kanemoto, Alan Lindsley, James Jewell
 Waste Management Ellen Townsend-Hough
 Worker Safety and Fire Protection Geoff Lesh, PE, Ph.D., Rick Tyler
 Facility Design Erin Bright
 Geology and Paleontology Dal Hunter
 Power Plant Efficiency Shahab Khoshmashrab
 Power Plant Reliability Shahab Khoshmashrab
 Transmission System Engineering Ajoy Guha, P. E. and Mark Hesters
 General Conditions Chris Davis
 Project Assistant Teraja Golston
 Staff Counsel Deborah Dyer

**DECLARATION OF
John S. Kessler**

I, John S. Kessler, declare as follows:

1. I am presently a consultant as a Project Manager to the California Energy Commission for the Siting Office of the Siting, Transmission and Environmental Protection Division.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Executive Summary, Introduction, Project Description, and Other CEQA and NEPA Considerations** for the Rice Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony, and if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 6, 2010

Signed: 

At: Sacramento, California

JOHN S. KESSLER
Kessler and Associates, LLC
2801 Shady Lane, Pollock Pines, CA 95726
Ofc: (530) 644-2010, Fax: (530) 644-2051
Email: zephyr@innercite.com

PROFESSIONAL EXPERIENCE:

Mr. Kessler is a licensed Civil Engineer in California with over 28 years experience in water supply and power generation, which includes planning and managing projects with responsibilities in operations, maintenance, environmental assessment, licensing, regulatory compliance, permitting and project management.

May 2000 - Present: Principal - Kessler and Associates

Established Kessler and Associates to provide engineering, regulatory and operating services related to energy and associated water supply projects;

California Energy Commission (CEC) – Application for Certification (AFC) Licensing Process
Project Management and Soil & Water Resource Assessments of Proposed Gas-Fired Generating Facilities (Serving as Project Manager or Technical Lead to assess all potential soil and water resource impacts and/or evaluate water supply/cooling alternatives for the following projects:)

- Humboldt Bay Repowering Project, 06-AFC-7, Serving as the Project Manager of the AFC licensing process before the CEC for the Humboldt Bay Repowering Project (HBRP); The HBRP is a proposed 163-MW facility to replace aging generating units of Humboldt Bay Power Plant.
- Victorville 2 Hybrid Power Project, 07-AFC-1, Serving as the Project Manager of the AFC licensing process before the CEC for the Victorville 2 Hybrid Power Project (Victorville 2); which is a proposed 563 MW facility integrating combined cycle and solar-thermal technology.
- Walnut Creek Energy Park, 05-AFC-2; Co-authored Staff Assessment;
- Vernon Power Plant, 06-AFC-1; Co-authored Staff Assessment;
- Los Esteros Critical Energy Facility, 01-AFC-12; Authored Staff Assessment and coordinated the resolution of storm water discharge issues into Coyote Creek with responsible agencies including City of San Jose, Santa Clara Valley Water District, San Francisco RWQCB, and the U.S. Army Corps of Engineers;
- San Francisco Electric Reliability Project, 04-AFC-01; Authored initial Staff Assessment;
- Blythe Energy Project Transmission Line Modifications, 99-AFC-8, Co-authored Staff Assessment/Environmental Assessment;
- Blythe II Energy Project, 02-AFC-01; Prepared a Water Supply & Cooling Alternatives Analysis;
- San Joaquin Valley Energy Center, 01-AFC-22; Co-authored Staff Assessment;
- Palomar Power Plant, 01-AFC-24; Supported soil and storm water testimony;
- Tesla Power Plant, 01-AFC-21; Prepared Water Supply Alternatives Analysis, and coordinated closely with local agencies to demonstrate the feasibility of using recycled water; The final Commission decision adopted our recommendation to require use of recycled water;

- Inland Empire Energy Center, 01-AFC-17; Co-authored Staff Assessment;
- Russell City Energy Center, 01-AFC-7; Co-authored Staff Assessment;
- East Altamont Energy Center, 01-AFC-6; Prepared a Water Supply Alternatives Analysis, and coordinated with agency representatives to demonstrate the feasibility of using recycled water; The final Commission decision adopted our recommendation to require use of recycled water;
- Valero Cogeneration Project, 01-AFC-05, Co-authored Staff Assessment;
- Avenal Power Plant, 01-AFC-20; Co-authored Staff Assessment before project was suspended;
- Baldwin Hills – Supported Evidentiary Hearings before being withdrawn by the applicant;

CEC – Assessment of Alternative Generation Technologies

Served as the author of the Hydropower Chapter discussing the status of development, potential for new development, costs, and deployment constraints including environmental effects, in comparison to development of gas-fired generation technologies;

CEC - Water Discharge Assessment of Coastal Power Plants – Executive Order 22-01

Served as Project Manager of Water Resources to assess the generation curtailments resulting from regulatory-required cooling water discharge limitations at various coastal thermal power plants;

CEC - Environmental Performance Report of California’s Electric Generation Facilities

Co-authored the 2001, 2003 and 2005 Water and Biological Resources Sections, providing research and analysis of trends in power plant water resource utilization affected by technological changes, improved environmental safeguards, regulatory influences in market development, and diminishing supplies of fresh water;

CEC – California/Mexico Border Energy Issues – 2005 EPR White Paper

Authored the Water Chapter evaluating water quality and supply issues associated with existing and planned energy infrastructure along the U.S-Mexico border, finding that power plant water demands threaten to compromise our most fundamental needs, securing enough water to sustain life and food production;

CPUC – EIR for PG&E’s Application for Authorization to Divest its Hydroelectric Generating Facilities and Related Assets

- Served as Hazards Section Leader and Team Member of the Public Services and Utilities Section in preparing the EIR for considering PG&E's divestiture of its entire hydroelectric system; The environmental assessment included evaluating the safety and potential risks of PG&E’s dams throughout its hydroelectric system in Northern California.

DWR – Oroville Relicensing

Prepared a description of operations for the Oroville Complex, in support of the FERC Relicensing process to understand project constraints and opportunities for modified operations to enhance natural resource protection, water supply and power generation.

Utica Power Authority – Dam Safety and Project Management Services

Serving as UPA’s dam safety engineer and project manager of environmental compliance and special construction projects; The projects include managing natural resources, and planning maintenance and construction improvements to water conveyance and storage facilities.

El Dorado Irrigation District – Engineering, Regulatory Permitting and Compliance Services

Assessed condition of the 23-mile El Dorado Canal water conveyance system, proposing a range of maintenance and capital improvements including cost estimates; Am currently preparing Standard

Operating Procedures and facilitating employee training for project O&M, and preparing license compliance plans for protection of natural resources;

September 1995 – April 2000: Hydroelectric Director - El Dorado Irrigation District

Overall responsibilities included managing operation, maintenance, construction and regulatory activities and the acquisition of the El Dorado Hydroelectric Project from PG&E to EID; Construction activities included managing improvements to the penstock and powerhouse, replacing and relining sections of the penstock, and replacing turbine nozzle bodies, jet deflectors, governors, hydraulic oil systems and associated plant controls. Planning and feasibility studies included evaluating alternatives for replacing canal sections and a diversion dam which incurred flood damage and resulted in approximately \$30 million in capital replacement.

Aug. 1993 – Sept. 1995: Project Engineer - Northern California Power Agency

Managed planning of various enhancements and aquatic resource studies associated with the North Fork Stanislaus River Hydroelectric Project and relicensing studies associated with the Angels and Utica Projects; Coordinated initial development phases of new biomass energy from the Gridley Rice Straw Project for prototype development testing in the production of ethanol;

July 1984 – August 1993: Hydro Supervisor – Pacific Gas & Electric Company

Managed the operations, maintenance, capital improvements and regulatory compliance activities for the El Dorado and Chili Bar Hydroelectric Projects; Responsibilities included planning, estimating and managing numerous water conveyance and dam maintenance/capital projects;

Aug. 1979 – July 1984 - Hydraulic Engineer and Hydrographer/Hydrologist - PG&E

Managed various capital projects within PG&E's and its water district/agency partner's hydroelectric systems, including the low level outlet repair of New Bullards Bar Dam, that required several weeks of underwater construction. Also forecasted snowpack runoff and planned water storage and conveyance schedules for optimizing hydro generation production as integrated with PG&E's other generation and power import sources;

EDUCATION AND PROFESSIONAL CERTIFICATES:

- State Of California Professional Civil Engineer, License No. C034897;
- B.S. Civil Engineering, University Of California, Davis, June 1979;
- A.A. Diablo Valley College, Pleasant Hill, June 1976;

HONORS AND AWARDS:

- 2001 Outstanding Performance Award from the State of California - Energy Commission;
- 1999 Outstanding Achievement Award for Transfer of the El Dorado Hydroelectric Project from PG&E to the El Dorado Irrigation District;

PROFESSIONAL ASSOCIATIONS:

- American Society of Civil Engineers

Jsk:JK's Resume – 2007 - CEC

DECLARATION OF
Suzanne L. Phinney, D.Env.

I, Suzanne L. Phinney, declare as follows:

1. I am presently employed by Aspen Environmental Group, consultant to the California Energy Commission's Facilities Siting Office of the Systems Assessments and Facilities Siting Division as a Senior Associate.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare staff testimony on **TSE Appendix A** for the **Rice Solar Energy Project Staff Assessment** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/9/2010

Signed: 

At: Sacramento, California

DECLARATION OF
Suzanne L. Phinney, D.Env.

I, Suzanne L. Phinney, declare as follows:

1. I am presently employed by Aspen Environmental Group, consultant to the California Energy Commission's Facilities Siting Office of the Systems Assessments and Facilities Siting Division as a Senior Associate.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare staff testimony and errata on **Alternatives** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/9/2010

Signed: 

At: Sacramento, California

DECLARATION OF
Suzanne L. Phinney, D.Env.

I, Suzanne L. Phinney, declare as follows:

1. I am presently employed by Aspen Environmental Group, consultant to the California Energy Commission's Facilities Siting Office of the Systems Assessments and Facilities Siting Division as a Senior Associate.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare staff testimony on **Cumulative Impacts** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/9/2010

Signed: 

At: Sacramento, California



SUZANNE L. PHINNEY
Senior Associate, Energy and Infrastructure

ACADEMIC BACKGROUND

Doctorate, Environmental Science & Engineering (D.Env.), University of California, Los Angeles, 1981
M.S., Marine Biology, Dalhousie University, Halifax, Nova Scotia, Canada, 1975
B.A., Biological Sciences, University of California, Berkeley, 1973

PROFESSIONAL EXPERIENCE

Dr. Phinney has 30 years of experience in the environmental and energy field, providing technical and policy support in energy analysis, environmental assessment, environmental remediation, air and water quality assessments, risk assessment, regulatory compliance, permitting, and project/program management. Her particular emphasis is energy and infrastructure with projects addressing climate change, alternative energy generation technologies, liquefied natural gas, petroleum infrastructure, advanced transportation vehicles and fuels, land use and energy, and power plant siting. Prior to employment at Aspen, Dr. Phinney worked for 16 years with Aerojet, where she oversaw all environmental and safety issues.

Aspen Environmental Group

2001 to present

Dr. Phinney manages energy and infrastructure projects for Aspen and provides environmental support on major projects. She has provided energy and environmental expertise to the following clients:

California Energy Commission (CEC). Dr. Phinney has supported CEC staff since 2001. She has prepared analyses for several power plants throughout the State, and has authored or contributed to over a dozen special studies. She is currently Deputy Program Manager for planning studies conducted by the Aspen team. Her major efforts for the CEC include the following.

- **Power Plant Siting, CEC, Project Management/Technical Support (2001 – Present).** Dr. Phinney prepared the alternatives analysis for the following power plants under review by the Energy Commission:
 - **Palomar Energy Project** – 500 MW combined-cycle natural gas facility in Escondido, San Diego County
 - **Russell City Energy Center** – 600 MW combined-cycle natural gas facility in Hayward, Alameda County
 - **Eastshore Energy Center** - 115.5 MW simple-cycle natural gas facility in Hayward, Alameda County
 - **Carrizo Energy Solar Farm** – 177 MW solar thermal (Compact Linear Fresnel Reflector) plant in the Carrizo Plain, San Luis Obispo County
 - **CPV Sentinel Energy Project** – 850 MW natural gas plant in the Coachella Valley, Riverside County
 - **Marsh Landing Generating Station**- 930 MW natural gas plant within the existing Contra Costa Power Plant in Antioch, Contra Costa County
 - **Orange Grove Project** – 96 MW natural-gas peaking facility near Pala, San Diego County
 - **Willow Pass Generating Station** – 550 MW natural gas plant within the existing Pittsburg Power Plant in Pittsburg, Contra Costa County

- **Almond 2 Peaking Power Plant Project** – 174 MW natural-gas peaking facility near Ceres, Stanislaus County
- **Abengoa Mojave Solar Project** – 250 MW solar thermal (parabolic trough) plant near Harper Dry Lake, San Bernardino County
- **Ridgecrest Solar Power Project** – 250 MW solar thermal (parabolic trough) plant on 3,920 acres of BLM land near Ridgecrest, Kern County

Dr. Phinney prepared the waste management assessments of power plant licensing applications:

- **Eastshore Energy Center** – 115.5 MW natural gas simple-cycle plant in Hayward, Alameda County
- **Carrizo Energy Solar Farm** – 177 MW solar thermal (Compact Linear Fresnel Reflector) plant in the Carrizo Plain, San Luis Obispo County
- **Palmdale Hybrid Power Project** – 570 MW natural gas-solar thermal (parabolic trough) hybrid plant in Palmdale, Los Angeles County
- **SES Solar Two Siting Case** – 750 MW solar thermal (Stirling dish) plant on 6,500 acres of mostly BLM land in Imperial County
- **Hanford Energy Park Peaker Plant** – 120 MW simple-cycle, natural gas facility in Hanford, Kings County
- **Ridgecrest Solar Power Project** – 250 MW solar thermal (parabolic trough) plant on 3,920 acres of BLM land near Ridgecrest, Kern County
- **Blythe Solar Power Project** – 1,000 MW solar thermal (parabolic trough) plant on 9,400 acres of BLM land near Blythe, Riverside County
- **Palen Solar Power Project** – 500 MW solar thermal (parabolic trough) plant on 5,200 acres of BLM land in the Chuckwalla Valley, Riverside County

Dr. Phinney also coordinated the study of cooling water alternatives for the Tesla and Tracy natural gas, combined-cycle power plants.

- **Environmental Performance Report, CEC, Project Manager/Technical Support (2001, 2003, 2005).** Dr. Phinney was Project Manager for Aspen's technical contributions, graphics and production efforts for the 2001 Environmental Performance Report (EPR) which detailed the current and historical air, water and biological impacts from in-state generation facilities. She provided support to the water resources discussion in the 2003 EPR and managed the analysis of out-of-state generation facilities for the 2005 EPR.
- **Advanced Electric Generation Technologies, CEC, Project Manager (2001 - 2002).** Dr. Phinney served as Project Manager for a report defining the technical development, developmental capacity, commercial status, costs and deployment constraints of selected alternative electric generation technologies. Technologies included geothermal, fuel cell, solar thermal, solar photovoltaic, wind and hydro. The focus was on development and application of the technology in California. Two page fact sheets on each technology and a matrix comparing all technologies was developed. Finally, an updated discussion of renewable technologies was developed for insertion into the alternatives section of Staff Assessments for power plant applications.
- **Liquefied Natural Gas Support, CEC, Technical Author (2002 – 2007).** Dr. Phinney has been instrumental in the preparation of numerous safety and policy reports on liquefied natural gas (LNG). She authored the Commission document: *International and National Efforts to Address the Safety and Security of Importing Liquefied Natural Gas: A Compendium*. This report reviewed national and international LNG regulations, standards and guidelines, reviewed risk assessment techniques, and identified, compiled and reviewed LNG safety/risk studies. Dr. Phinney helped organize LNG Access Workshops held in June 2005 and prepared a 40 page summary of presentations made at the workshops. She developed over 30 fact sheets on LNG subject areas for distribution to the public. Dr. Phinney compiled state and local comments on a proposed LNG terminal at the Port of Long Beach;

these were presented in the *Safety Advisory Report on the Proposed Sound Energy Solutions Natural Gas Terminal at the Port of Long Beach, California*, which was delivered to the Federal Energy Regulatory Commission within the mandated 30-day period imposed by the 2005 federal Energy Bill. She provided technical review for the report *The Outlook for Global Trade in Liquefied Natural Gas Projections to the year 2020*.

- **Natural Gas Market Assessment Support, CEC, Technical Author/Editorial Support (2005 – 2007).** Dr. Phinney contributed to natural gas supply and demand analyses for the Commission document, *Natural Gas Assessment Update*. She provided technical and editorial support to the 2005 and 2007 Integrated Energy Policy Report (IEPR) documents, *Preliminary (and subsequently the Revised report) Reference Case in Support of the 2005 Natural Gas Market Assessment* and *2007 Natural Gas Market Assessment*. She edited the Commission document *Natural Gas Quality: Power Turbine Performance During Heat Content Surges*.
- **Petroleum Infrastructure Environmental Performance Report, CEC, Project Manager (2005).** Dr. Phinney served as Project Manager for the 2005 IEPR document *Petroleum Infrastructure Environmental Performance Report*. In addition to managing preparation of the report and workshop presentations, she prepared responses to comments and provided policy recommendations.
- **Hydropower and Global Climate Change, CEC, Technical Author (2005).** Dr. Phinney coauthored the document *Potential Changes in Hydropower Production from Global Climate Change in California and the Western United States*. This report investigated the effects of climate change on hydropower production in the West and compared impacts and policy actions in California, the Pacific Northwest, and the Southwest.
- **Advanced Energy Pathways, CEC, Project Manager (2006 – 2008).** Dr. Phinney provided project management support for a 3-year study evaluating the effects of advanced transportation technologies and fuels (out to 2050) on California's natural gas and electricity systems. This report involved the development of baseline and alternative energy demand and supply scenarios, in-depth technical analysis of advanced transportation technologies and fuels, and the development of an energy-rich model.
- **Land Use and Energy, CEC, Project Manager/Technical Author (2006 – 2008).** Dr. Phinney authored a CEC report on the linkages between land use and energy, which ultimately became one of the two chapters presented in the 2006 IEPR Update. The report highlighted how energy can be better integrated in land use planning, and how efforts such as smart growth can help the state meet its energy and greenhouse gas emission reduction goals. She organized a full-day workshop involving over a dozen speakers representing state agencies, local governments, research entities, environmental groups, utilities, and non-profits. Dr. Phinney was one of the authors of the 2007 land use and energy follow-up report which further defined the role of land use in meeting California's energy and climate change goals. She helped synthesize the report into a chapter for the 2007 IEPR. Dr. Phinney helped edit the Land Use Subgroup of the Climate Action Team report prepared for submission to the California Air Resources Board AB 32 Scoping Plan.
- **AB 1632 Nuclear Power Plant Assessment, CEC, Technical Author (2007 – 2008).** Dr. Phinney was a key member of a team evaluating nuclear power issues in the state in response to AB 1632 legislation. She managed and prepared report sections regarding the impacts to local communities and the environmental issues and costs associated with alternatives, including renewables, to the state's two nuclear facilities. These sections were incorporated in the report *An Assessment of California's Nuclear Power Plants*.
- **Environmental Screening Tool for Out-of-State Renewable Energy Facilities, CEC, Project Manager (2009).** Dr. Phinney prepared an environmental screening tool/analysis allowing CEC to determine quickly whether out-of-state renewable facilities requesting RPS certification met California laws, ordinances, regulations and standards.

- **Energy Aware Facility Planning and Siting Guide, CEC, Project Manager (2009-2010).** Dr. Phinney is updating a 1997 version of the Energy Aware Guide to help local governments plan for and permit electricity generation facilities and transmission lines that will be needed in the upcoming years. The Guide informs planners, decision makers and the public about what, how, and why electricity infrastructure may be developed.

California Public Utilities Commission. Dr. Phinney has managed several environmental assessments for the CPUC and has been heavily involved in editorial support of many other CPUC documents prepared by Aspen.

- **Looking Glass Network Initial Study/Mitigated Negative Declaration, CPUC, Project Manager (2002 – 2003).** Dr. Phinney served as Project Manager for the preparation of Initial Study/Mitigated Negative Declarations (IS/MND) for this telecommunication project that involved construction in the San Francisco Bay Area and the Los Angeles Basin to allow fiber optic connections in numerous locations.
- **Williams Communications Sentry Marysville Project IS/MND, CPUC, Project Manager (2002 – 2003).** Dr. Phinney served as Project Manager for the installation of fiber optic connection to a Beale Air Force Base in Yuba County.
- **Kirby Hills II Natural Gas Storage Facility IS/MND, CPUC, Project Manager (2007).** Dr. Phinney managed an IS/MND for expansions at a natural gas storage facility in Solano County.
- **Multiple EIR Documents, CPUC, Technical Editor (2004 - 2008).** Dr. Phinney provided editorial and QA/QC review for the Diablo Canyon Steam Generator Replacement EIR, the Miguel Mission 230 kV Transmission Line EIR and the Sunrise Powerlink EIR/EIS.

California Institute of Technology/University of California. Dr. Phinney provided project management support to the following project.

- **Combined Array for Research in Millimeter-wave Astronomy EIS/EIR, U.S. Forest Service and the University of California (2001 – 2002).** Dr. Phinney was the Project Manager for this EIS/EIR for a radio telescope antenna array to be placed at a high altitude site in the Inyo National Forest. The evaluation of alternatives was especially contentious, and Aspen's field analyses of several potential sites were pivotal in the ultimate selection of one of these alternative sites.

Western Area Power Administration. Dr. Phinney provided editorial and QA/QC support to the following projects.

- **North Area ROW Maintenance Project Environmental Assessment, Western, Technical Editor/QA/QC (2006-2008).** Dr. Phinney provided technical editing and QA/QC support for all documents relating to the development of 800 miles of transmission lines in Northern California.
- **Sacramento Area Voltage Support Supplemental EIS/EA, Technical Editor/QA/QC (2006 – 2008).** Dr. Phinney provided technical editing and QA/QC support for all environmental documentation and permitting for new construction and reconstruction of transmission lines in the greater Sacramento area.

Vermont Yankee Nuclear Power Plant Report, Vermont Department of Public Service, Project Manager (December 2008 to January 2009). Dr. Phinney was the Project Manager and provided technical support for the environmental analysis of the continued operation of the Vermont Yankee Nuclear Power Station in Vernon, Vermont. The report assessed the environmental impacts to land, water and air resources (including climate change), soil and seismicity, on-site and off-site storage and disposal of high-level and low-level nuclear waste.

GenCorp

1999 to 2000

- As Vice President, Environmental and Regulatory Affairs, Dr. Phinney held primary responsibility for coordinating the company's aerospace and automotive environmental activities with various federal, State, and local regulatory agencies. Her specific responsibilities included: working with external groups and entities to develop responsible environmental legislation, regulations, and standards and the implementation of sound public policy; developing stakeholder base and strategy to ensure that company objectives were achieved; facilitating company and regulatory agency discussions to achieve more comprehensive and quicker remediation of sites; and spearheading a stakeholder group to develop and fund scientific studies on selected chemicals of concern.

Aerojet General Corporation

1984 to 1999

As Vice President, Environmental Health and Safety, Dr. Phinney ensured that programs were in place to meet all regulatory requirements and company initiatives. Her responsibilities included: providing strategic direction and management of all superfund-related investigation and remediation activities; developing environmental management plans; communicating environmental requirements, concerns, and successes to both internal and external audiences, including the board of directors, investment banking, and the analyst community; and participating as a member of the leadership council in defining company-wide business objectives and targets.

- Dr. Phinney created the first corporate EHS department, defining and staffing key functional areas. She managed a \$20,000,000 annual budget and oversaw a staff of up to 30 professionals. Select accomplishments include: the development of remediation technologies that resulted in the cleanup of over 50 billion gallons of contaminated groundwater; development of the world's first groundwater treatment facility for perchlorate; significant reductions in emissions and hazardous waste generation; representation on numerous legislative and regulatory task forces and leadership positions on external business and community EHS committees and councils; and extensive public outreach efforts.

PREVIOUS EXPERIENCE, 1976 TO 1984

Jacobs Engineering Group. Dr. Phinney conducted toxicological, ecological, and air and water quality assessments.

Department of Environmental Science and Engineering at the University of California, Los Angeles. Dr. Phinney analyzed legal, economic, public health, and administrative barriers to waste water reuse. She also conducted an analysis of ecological and institutional factors in coastal siting of power plants.

Southwest Los Angeles Junior College. Dr. Phinney taught lecture and laboratory courses in general science.

TRAINING

- Certificate, Executive Program, University of California, Davis, 1989
- Expert Witness Training, California Energy Commission, 2001

HONORS AND AWARDS

- Who's Who of American Women, 18th Edition
- YWCA Outstanding Woman of the Year (Sciences) Award, 1992
- Woman of Achievement Award, Downtown Capitol Business and Professional Women, 1993
- Individual Award for Outstanding Contribution in Air Quality, 1995
- Sacramento Safety Center Incorporated, Eagle Award for Safety, 1998
- Regional Award for Outstanding Contribution in Air Quality, 2003

ACTIVITIES AND ASSOCIATIONS

- Editorial Board, The Environmental Professional, 1987-1989
- City of Sacramento Toxic Substances Commission, 1986-1988
- Sacramento Environmental Commission, 1988-1991
- Board of Directors, League of Women Voters of Sacramento, 1989-1999; President 1996-1997; Co-President 1997-1998; 2003-2005; Energy Study Committee 2005; Moderator/Facilitator of Debates and Forums (e.g., climate change, the SACOG's MTP, and flood control)
- Toxics Consultant, League of Women Voters of Sacramento, 1988-1989
- Member, Advisory Committee on AB 3777 (Risk Management Prevention Programs)
- Board of Directors, American Lung Association of Sacramento-Emigrant Trails, 1992-2000; President 1998-1999;
- Board of Directors, Sacramento Metropolitan Chamber of Commerce, 1992-1997; Vice President, Public Policy, 1996-1997
- Board of Directors, Air and Waste Management Association, 1991-1994
- Steering Committee Chair, Cleaner Air Partnership, 1993-1996, 2000-2001; Executive Committee 1993 to present
- Co-chair, TCE Issues Group, 1994-2000
- Sacramento Water Forum, 1995-2000
- Rate Advisory Committee, Sacramento Municipal Utility District, 1999-2001

SELECTED PUBLICATIONS/PRESENTATIONS

- Phinney, S.L., Panel Moderator, Climate Change Initiatives for California, AEP Annual Conference, Shell Beach, California, 2007.
- Phinney, S.L., Panel Moderator, Is there a Need for LNG in California, AEP Annual Conference, Shell beach, California, 2007.
- Phinney, S.L., "LNG Safety Analysis in California – Federal, State and Local Processes" Presented at California Foundation on the Environment and the Economy, 2005.
- Phinney, S.L., "Energy Basics" Presented at League of Women Voters of California Annual Convention, 2005.
- Phinney, S.L., Presentation to U.S. Department of Justice, Office of the U.S. Attorney, on Women and Equality, 2004.
- Phinney, S.L., "Trends in Industrial Waste Generation and Management" Presented at National Ground Water Association Conference, Las Vegas, Nevada, 1996.
- Phinney, S.L., "Effective Management of an RI/FS to Reduce Financial Exposure," Manufacturers Alliance Environmental Management Council, Washington, D.C., 1995.
- Phinney, S.L., "Knowing Your Compliance Challenge," 7th Annual California Statewide Community Awareness and Emergency Response (CAER) Conference, Sacramento, California, 1995.
- Phinney, S.L., "Industry's Role in Broadening the Use of Alternative Fuels in America," Clean Cities Ceremony, Sacramento, California, 1994.
- Phinney, S.L., "Aerospace Industry Perspective on Defense Conversion," AAAS Annual Meeting, San Francisco, California, 1994.
- Phinney, S.L., "Aerojet's Waste Reduction Successes," Business for the Environment Conference, Sacramento, California, 1993.
- Phinney, S.L., "Company Worker Trip Reduction Programs Under the Clean Air Act Amendments." MAPI Hazardous Materials Management Council, Washington, D.C., 1993.
- Phinney, S.L., Testimony Before House Government Operations Subcommittee, 1993.
- Phinney, S.L., Moderator, The Clean Air Act, A Public Forum, Sacramento, California, 1993.

- Phinney, S.L., Plenary Session Chairperson and Speaker, "Business and the Environment: Must You Sacrifice One for the Other?" National Association of Environmental Professionals Conference, Seattle, Washington, 1992.
- Phinney, S.L., "Facing the Challenge: The New California EPA." HazMat Northern California Conference, San Jose, California, 1992.
- Phinney, S.L., "Understanding the Client Perspective." Environmental Business Conference, Pasadena, California, 1991.
- Phinney, S.L., Panelist – Women of Science: Secrets of Success. Workshop, AAAS Annual Meeting, Washington, D.C., 1991.
- Phinney, S.L., Keynote Address, ADPA International Symposium on Compatibility and Processing, San Diego, California, 1991.
- Phinney, S.L., Keynote Address, Women in Science and Technology Conference, Jackson, Mississippi, 1991.
- Phinney, S.L., Guest Speaker, Sacramento County Bar Association, Environmental Law Section, Sacramento, California, 1991.
- Phinney, S.L., "Managing CERCLA Compliance from the Corporate Perspective." Hazardous Materials Management Conference/West, Long Beach, California, 1988.
- Phinney, S.L., and C.A. Fegan, "Identifying a Feasible, Effective Treatment Method for an Unusual Chemical of Concern." Proceedings, American Defense Preparedness Association 16th Environmental Symposium, New Orleans, Louisiana, 1988.
- Phinney, S.L., "A Proactive Superfund Cleanup by Industry." Proceedings of the 4th Annual Hazardous Materials Management Conference/West, Long Beach, California, 1988.
- Thompson, C.H., S.L. Phinney and F.R. McLaren, "Aerojet: A Regional Site Program – Problem Definition." Proceedings of the Hazardous Waste and Environmental Emergencies Conference, Cincinnati, Ohio, 1985.
- Kahane S.W., S.L. Phinney and A. Wright, "The Tightening Environmental Regulatory Climate for Hazardous Waste Management – Current Mandates and Future Directions for Industrial Compliance." Proceedings of the 1984 AIChE Summer National Meeting, Philadelphia, Pennsylvania, 1984.
- Bachrach, A., D.M. Morycz, S.L. Phinney and S.W. Kahane, "Regulation and Offshore Oil and Gas Facilities." In: Emerging Energy/Environmental Trends and the Engineer. Eds. R.D. Nuefeld and R.W. Goodwins, 1983.
- Lindberg, R.G., S.L. Phinney, J. Daniels and J. Hastings (eds.), "Environmental Assessment of the U.S. Department of Energy's Solar Thermal Technology Program." Prepared for the U.S. Department of Energy, June 1982.
- Kahane, S.W., S.L. Phinney, J.A. Hill and R.C. Sklarew, "Key Considerations in Assessing the Air Impacts of Projected Outer Continental Shelf Oil and Gas Development," presented at the 74th Annual Air Pollution Control Association Meeting, Philadelphia, Pennsylvania, 1981
- Phinney, S.L., "The U.S. Environmental Protection Agency's Pesticide Registration Program: A Case Study – Chloramben." Doctoral Dissertation, Environmental Science and Engineering Program, University of California, Los Angeles, California, 1981.
- Phinney, S.L., (contributing author) et al. "Institutional Barriers to Wastewater Reuse in Southern California." Environmental Science and Engineering Report Prepared for the Office of Water Research and Technology, U.S. Department of the Interior, 1979.
- Phinney, S.L., "Area-Restricted Feeding in American Plaice." Masters Thesis. Dalhousie University, Halifax, Nova Scotia, Canada, 1975.

**DECLARATION OF
Brenner Munger**

I, **Brenner Munger**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as an **Air Resources Engineer**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Air Quality** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/9/10

Signed: Brenner Munger

At: Sacramento, California

RESUME

RAYMOND BRENNER MUNGER

EDUCATION

Bachelor of Science in Mechanical Engineering
University of California, Santa Barbara, Graduated with honors, June 1970

Master of Science in Engineering
University of California, Irvine, December 1972

Doctor of Philosophy in Engineering
University of California, Irvine, December 1981

EXPERIENCE

Dates: January 2010 to Present
Title: Air Resources Engineer, Siting, Transmission and Environmental Protection
Division, California Energy Commission, 1516 9th Street, Sacramento, CA 95814

Duties: Conducts staff assessments of air quality impact analyses prepared by project applicants in support of certification process for thermal power plant projects over 50 MW in California. Reviews compliance reports for power plants.

Dates: September 2004 to December 2009
Title: Manager, Power Supply Engineering Department (PSED)
Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Responsible for ~50 engineers and support personnel to provide design engineering, project engineering, project management and field engineering support for the capital improvement program (~\$32 million annual capital budget) for the existing power generation assets of Hawaiian Electric Company.

Responsible for the project management support for the generation unit additions for Hawaiian Electric Company (HECO), Maui Electric Company (MECO) and Hawaii Electric Light Company (HELCO). Since 2004, provided project management and engineering support for the completion of five major generation unit addition projects for HECO, MECO and HELCO totaling over \$480 million.

Procure engineering and permitting consultants for generation unit additions through competitive bidding processes and managed consultant contracts for design engineering, permitting, project management, major equipment procurement, construction management and commissioning support for the HECO capital improvement program and the major generation unit addition projects.

Prepare and review applications, testimony and responses to information requests for submittal to Hawaii Public Utilities Commission and Consumer Advocate for capital projects and rate case proceedings.

Regularly serve as lead for cross-functional working groups on a variety of studies and assignments including strike response planning, management review of the Power Supply operations, maintenance and overhaul management programs and seismic vulnerability assessment.

Dates: July 1995 to September 2004

Title: Manager, Power Supply Planning & Engineering Department, Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Responsible for ~55 engineers, planners and technical support personnel providing long range resource planning (Integrated Resource Planning, Generation Planning and later in this position Transmission Planning) in addition to the traditional engineering functions required for the capital improvement programs for power generation facilities. The geographical scope of the planning and engineering support covered HECO, MECO and HELCO. The engineering support included the design engineering, project engineering and project management support for the capital improvement program for the existing power generation assets of Hawaiian Electric Company.

Responsible for the project management support for the generation unit additions for HECO, MECO and HELCO.

Major capital projects completed include a 13-mile fuel oil pipeline from HECO's Barber's Point Tank Farm to the HECO Waiiau Power Plant. Scope of responsibilities for the project team included planning, permitting, community relations, engineering, materials procurement, construction and negotiation of services and O&M contracts with a third party.

For the Integrated Resource Planning effort, served as Chair for the Supply-side Resource Advisory Group, which consisted of representatives from government, environmental groups, academia, and industry. The deliverable for this effort was a report on the supply side resources to be considered for inclusion in the long-term resource plans for HECO, MECO and HELCO.

Routinely made presentations on technical matters to both technical and lay audiences.

Regularly served as lead for cross-functional working groups on a variety of studies and assignments including competitive bidding for new generation, fuel oil infrastructure study, interface with LNG project developers, implementation of enterprise software system for Power Supply and strike response planning,

Dates: June 1988 to June 1995

Title: Manager, Engineering Department, Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Managed department of ~80 engineers and support personnel to provide design engineering, project engineering and project management support for the capital improvement program for the power generation, transmission, substation and communications assets of Hawaiian Electric Company.

Responsible for the project management support for the generation unit additions for Hawaiian Electric Company, Maui Electric Company and Hawaii Electric Light Company.

Procured consultants through competitive bidding processes and managed consultant contracts for design engineering, project management, major equipment procurement, construction management and commissioning support for these major generation, transmission and substation addition projects.

Program responsibilities included the corporate renewable energy program and the corporate program for membership in the Electric Power Research Institute (Manager of EPRI Technology Transfer - METT). Reviewed proposed state legislation, drafted

testimony and presented testimony to state legislative committees on engineering and renewable energy matters.

Dates: August 1984 to June 1988

Title: Manager, Environmental Department, Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Duties: Responsible for overall environmental management programs for Hawaiian Electric Company (HECO), Maui Electric Company (MECO) and Hawaii Electric Light Company (HELCO).

Managed ~16 engineers, environmental scientists and support personnel to provide air quality permitting, water quality permitting, compliance audits and assessments, ambient air quality monitoring, emissions source testing, water quality monitoring, noise monitoring, and laboratory support for HECO, MECO and HELCO. Topical areas of responsibility included air, water, hazardous wastes, noise and PCBs.

Augmented in-house personnel with contractors and consultants on an on-going basis to manage workload and meet critical deadlines.

Interfaced regularly with state and federal regulatory agencies on permitting, compliance monitoring and reporting, regulation development and enforcement matters.

Reviewed proposed state legislation, drafted testimony and provided testimony to state legislative committees on environmental matters.

Served as utility representative on inter-disciplinary advisory committee to state regulatory agency on air regulation development.

Dates: August 1981 to July 1984

Title: Senior Engineer and Program Manager, Environmental Research & Technology (ERT), Inc., Newbury Park, California 91320

Duties: Responsible for management and technical direction of project teams for a variety of studies which included:

Microscale modeling of motor vehicle CO impacts in Sacramento, CA and Richmond, CA areas in support of request for reduction in CO nonattainment areas.

Air quality impact assessments for cogeneration projects, resource recovery facilities, and marine tanker emissions using UNAMAP and regional photochemical air quality models.

Development of software systems for addressing the atmospheric release of hazardous materials.

Analytical evaluations of the technical basis for (1) proposed modifications of gasoline lead content regulations, and (b) current nonattainment designations in California.

Responsible for management of computer operations at ERT Newbury Park, CA office, coordination with ERT Concord, MA Computer Services Division, and identification and evaluation of alternatives for improving system efficiency and upgrading/ replacing system hardware.

Principal liaison and business development contact for local and state regulatory and planning agencies involved with air resources.

Dates: September 1979 to July 1981

Title: Air Pollution Research Specialist, Air Quality Modeling Section, Research Division, California Air Resources Board

Duties: Responsible for the regional and microscale air quality modeling components of the nonattainment planning program for Sacramento Valley and San Joaquin Valley Air Basins. This required coordination with federal, local, and other state agencies as well as other CARB divisions. As part of this effort, directed and coordinated the work of several Air Quality Modeling Section (AQMS) staff.

Conducted air quality modeling studies in support of regulation and model rule development by other CARB divisions and in evaluation of regulations proposed by other agencies.

Assessed air quality impacts of specific projects using currently available Gaussian and numerical air quality models. Provide support and direction to local agency staff in air quality studies of specific projects.

Prepared an air quality modeling guidelines document which identified models and modeling procedures acceptable to the CARB. This document was in support of the New Source Review and Prevention of Significant Deterioration programs in the state.

Developed and applied computer software packages for preprocessing data for input to regional air quality modeling. Specific packages were for wind data and terrain data.

Performed statistical analysis involving multiple regression analysis and factor analysis of meteorological and air quality data. Specific products included an algorithm for estimating upper air temperatures for Bakersfield area using Fresno temperature sounding data.

Dates: August 1974 to August 1979

Title: Associate Air Resources Engineer, Air Quality Maintenance Planning Branch, Planning Division, California Air Resources Board

Duties: Provided general technical support to the long range planning activities of the ARB and local agencies, i.e., the Air Quality Maintenance Planning effort. A major product of this support was the Air Quality/Land Use Planning Handbook for California, Part II - Air Quality Fundamentals for Planners. Another major activity was the Land Use/Oxidant Precursors Emissions Study which investigated the relationships between land use patterns and the emissions of oxidant precursors.

Major accomplishments during this period include:

Authored portions and edited all of Emissions and Air Quality Assessment, Air Resources Board Report No. ARB/EP-76001, the first Executive Office-approved report on emissions assessment published by CARB staff.

Coordinated the efforts of over ten staff members in the writing and production of Part II of the Air Quality/Land Use Planning Handbook. Authored portions and edited all of Part II of the handbook.

Supervised and participated in the preparation of the feasibility study for a data digitizing/data reduction system to develop the digitized land use data base for the Land Use/Oxidant Precursors Emissions Study. The feasibility study was submitted to the State Data Processing Management Office, Department of Finance. With conditional approval from DOF, I had lead responsibility for completing contract negotiations with the vendor for the system hardware and software.

Participated in the development of air quality analysis techniques for use in Prevention

of Significant Deterioration and Air Conservation Programs and the development of guidelines for use by state and local technical staff to determine the necessary level of analysis by area and source type.

Dates: November 1973 to July 1974

Title: Assistant Engineering Specialist - Air Pollution, Land Use Planning Program, Evaluation and Planning, California Air Resources Board

Duties: Provided air quality technical support to five-member interdisciplinary team working to interface ongoing air quality, land use and transportation planning processes. Areas of responsibility included: 1) emissions assessments and projections for both mobile and stationary sources, and 2) air quality estimates and projections utilizing non-computer-based techniques. Participated in the preparation of reports documenting methodologies for use by local and regional planners in their air quality planning efforts. LUPP produced ten reports, of which I authored four.

Dates: January 1973 to October 1973

Title: Assistant Engineering Specialist-Air Pollution, Implementation Planning Unit, Division of Implementation and Enforcement, California Air Resources Board

Duties: The Implementation Planning Unit had the staff responsibility, under Board direction, for developing, evaluating, and implementing air quality strategies. Implementation of these strategies was effected by adoption in the State Implementation Plan. I participated in the control strategy evaluation via emissions assessments and air quality projections for Revision 3 of the SIP. Specific duties included monitoring rules and regulations of air pollution control districts and the Environmental Protection Agency, compiling emissions assessments for motor vehicles and aircraft for base years and future years, evaluating the impact of alternate control strategies on mobile source emissions, and providing staff support for the first indirect source proposal presented to the Air Resources Board.

LICENSES AND ORGANIZATIONS

Registered Mechanical Engineer in California - ME16427
Registered Professional Engineer in Colorado - No. 16333
Registered Professional Engineer in Hawaii – No. 6127
Associate Member, American Society of Mechanical Engineers

E-mail: bmunger@energy.state.ca.us

DECLARATION OF
Testimony of William Walters, P.E.

I, **William Walters**, declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission's Siting, Transmission and Environmental Protection Division, as a senior associate in engineering and physical sciences.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Air Quality** and **Greenhouse Gases** for the **Rice Solar Energy Project Staff Assessment/Draft Environmental Impact Statement** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 6, 2010

Signed:  _____

At: Aqoura Hills, California

WILLIAM WALTERS, P.E.
Air Quality Specialist

ACADEMIC BACKGROUND

B.S., CHEMICAL ENGINEERING, 1985, CORNELL UNIVERSITY

PROFESSIONAL EXPERIENCE

Mr. Walters has over 20 years of technical and project management experience in environmental compliance work, including environmental impact reports, emissions inventories, source permitting, energy and pollution control research RCRA/CERCLA site assessment and closure, site inspection, and source monitoring.

Aspen Environmental Group

2000 to present

Responsible as lead technical and/or project manager of environmental projects, including the following specific relevant recent (2000 and forward) responsibilities and projects:

- **Engineering and Environmental Technical Assistance to Conduct Application for Certification Review for the California Energy Commission:**
 - Preparation and project management of the air quality section of the Staff Assessment and/or Initial Study and the visual plume assessment for the following licensing projects: Hanford Energy Park; United Golden Gate, Phase I; Huntington Beach Modernization Project*; Woodland Generating Station 2; Ocotillo Energy Project, Phase I; Magnolia Power Project*; Colusa Power Project; Rio Linda/Elverta Power Plant Project; Roseville Energy Center; Henrietta Peaker Project; Tracy Peaking Power Plant Project*; Avenal Energy Project; San Joaquin Valley Energy Center*; Salton Sea Unit 6 Project*; Modesto Irrigation District Electric Generation Station*; Walnut Energy Center*; Riverside Energy Resource Center*; Pastoria Energy Facility Expansion; Bullard Energy Center; Panoche Energy Center; Starwood Power Plant; Riverside Energy Resource Center Units 3 and 4 Project; Colusa Generating Station*; Chula Vista Energy Upgrade Project*; Orange Grove Power Plant Project*; Carlsbad Energy Center Power Project*; Hydrogen Energy California (in process); Canyon Power Plant Project*; Imperial Valley Solar Project*; Beacon Solar Energy Project; Calico Solar Power (in process); Abengoa Mojave Solar Project; Genesis Solar Energy Project; Blythe Solar Power Project; Palen Solar Power Project (in process); Ridgecrest Solar Power Project; Rice Solar Energy Project (in process); Ivanpah Solar Electric Generating Station project.
 - Preparation and project management of the visible plume assessment for the following licensing projects: Metcalf Energy Center Power Project*; Contra Costa Power Plant Project*; Mountainview Power Project; Potrero Power Plant Project; El Segundo Modernization Project; Morro Bay Power Plant Project; Valero Cogeneration Project; East Altamont Energy Center*; SMUD Cosumnes Power Plant Project*; Pico Power Project; Blythe Energy Project Phase II; City of Vernon Malburg Generating Station; San Francisco Electric Reliability Project; Los Esteros Critical Energy Facility Phase II; Roseville Energy Park; City of Vernon Power Plant; South Bay Replacement Project; Walnut Creek Energy Park; Sun Valley Energy Project; Highgrove Power Plant; Colusa Generating Station; Russell City Energy Center; Avenal Energy Project; Community Power Project; San Gabriel Generating Station; Sentinel Energy Project; Victorville 2 Hybrid Power Project; City of Palmdale Hybrid Energy Project (in process); Chevron Richmond Power plant Replacement Project; Tracy Combined Cycle Power Plant; Lodi Energy Center; and San Joaquin Solar 1&2 Power Plant.
 - Assistance in the aircraft safety review of thermal plume turbulence for the Riverside Energy Resources Center; Russell City Energy Center Amendment*; Eastshore Energy Power Plant*; Carlsbad Energy Center (in progress), City of Palmdale Hybrid Energy Project; Riverside Energy Resource Center Units 3 and 4 Project; Victorville 2 Hybrid Power Project; Blythe Energy Project Phase II*, Tracy Power Plant; Avenal Energy Project; and Blythe Solar Energy Project siting cases. Assistance in the aircraft safety review of

* - Includes providing expert witness testimony.

thermal and visual plumes of the operating Blythe Energy Power Plant. Preparation of a white paper on methods for the determination of vertical plume velocity determination for aircraft safety analyses.

■ **Other California Energy Commission and relevant project experience:**

- Preparation and instruction of a visual water vapor plume modeling methodology class for the CEC.
- Preparation and project management of the public health section of the Initial Study for the Woodland Generating Station 2 Energy Commission licensing project.
- Preparation of project amendment or project compliance assessments, for air quality or visual plume impacts, for several licensed power plants, including: Metcalf Energy Center; Pastoria Power Plant; Elk Hills Power Plant; Henrietta Peaker Project; Tracy Peaker Project; Magnolia Power Project; Delta Energy Center; SMUD Cosumnes Power Plant; Walnut Energy Center; San Joaquin Valley Energy Center; City of Vernon Malburg Generating Station; Otay Mesa Power Plant; Los Esteros Critical Energy Facility; Pico Power Project; Riverside Energy Resource Center; Blythe Energy Project Phase II; Inland Empire Energy Center; Salton Sea Unit 6 Project; Black Rock 1, 2, and 3 Geothermal Power Project, and Starwood Power-Midway Peaking Power Plant.
- Preparation of the air quality section of the staff paper “A Preliminary Environmental Profile of California’s Imported Electricity” for the Energy Commission and presentation of the findings before the Commission.
- Preparation of the draft staff paper “Natural Gas Quality: Power Turbine Performance During Heat Content Surge”, and presentation of the preliminary findings at the California Air Resources Board Compressed Natural Gas Workshop and a SoCalGas Technical Advisory Committee meeting.
- Preparation of the staff paper “Emission Offsets Availability Issues” and preparation and presentation of the Emission Offsets Constraints Workshop Summary paper for the Energy Commission.
- Preparation of information request and data analysis to update the Energy Commission’s Cost of Generation Model capital and operating cost factors for combined and simple cycle gas turbine projects. Additionally, performed a review of the presentation for the revised model as part of the CEC’s 2007 Integrated Energy Policy Report workshops, and attended the workshop and answering Commissioner questions on the data collection and data analysis. Prepared an update to the Energy Commission’s capital and operating cost factors for combined and simple cycle gas turbine projects within the Cost of Generation model as part of the 2009 Integrated Energy Policy Report process.
- Preparation of the Air Quality Section, air quality emission calculations, or other technical studies, in support of the environmental documentation for renewable energy projects including; the Liberty Energy XXIII Renewable Energy Project; the Topaz Solar Farm, the Pacific Wind Energy Project, and the Pine Tree Wind Development Project.
- Preparation of comments on the Air Quality, Alternatives, Marine Traffic, Public Safety, and Noise section of the Cabrillo Port Liquefied Natural Gas Deepwater Port Draft EIS/EIR for the City of Oxnard.

CERTIFICATION

- Chemical Engineer, California License 5973

AWARDS

- California Energy Commission Outstanding Performance Award 2001

DECLARATION OF

I, Jacquelyn Leyva declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting Office of the Systems Assessments and Facilities Siting Division as an Air Resources Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Air Quality** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/28/10 Signed: Original Signature in Dockets

At: Sacramento, California

Jacquelyn Leyva

Objective

Expanding my knowledge of engineering to improve life and teach others.

Experience

March '09 – Present **CA Energy Commission** **Sacramento, CA**
Air Resources Engineer

- Currently co-authoring staff assessment for the technical area of air quality for the Engineering and Siting Division permitting power plant projects over 50 MW in the state of CA. Currently working on renewable ARRA funding projects along with natural gas power projects.
- Reviewing emission compliance reports
- Authoring staff analysis for project amendments
- Trained in CEQA and NEPA analysis, along with AERMOD air modeling.

August '08 – March '09 **ERRG, Inc.** **Martinez, CA**
Engineering Assistant

- Assisted with both technical and field duties for a variety of environmental investigations.
- Assisted on an environmental site assessment, preliminary assessments (PA), site inspections, and remedial investigations feasibility studies.
- Field duties performed include groundwater sampling and air sampling

June '07 – March '08 **Tetra Tech EC, Inc** **Santa Ana, CA**
Engineering Assistant Intern

- Working on various Department of Defense projects in environmental engineering.
- Helped assist in 5 year review of remediation approaches.
- Helping assist with a commercial project creating a water reuse/recycle treatment plant.

June '05 – September '05 **SF Regional Water Board** **Oakland, CA**
Consultant

- Wrote a memorandum regarding total petroleum hydrocarbons showing up as false positives in submitted quarterly monitoring reports for NPDES FUEL permit.
- Researched various EPA methods of testing for VOC, and Fuel constituents in water.
- Communicated with consultants from Weiss Associates and state funded laboratories to come to a conclusion for memorandum.
- Site inspections, site reports.

Education

2003-June 2008 University of California Irvine Irvine, CA

- B.S., Chemical Engineering
- MAES (Mexican American Engineers and Scientists) - Vice Chair 2004-2005
- CAMP summer science program participant 2003

June 1999 – September 2003 Las Lomas High School Walnut Creek, CA

- High School Diploma
- Life time member of CSF (California Scholarship Federation).

DECLARATION
Testimony of Scott D. White

I, **Scott D. White**, declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission's Siting, Transmission and Environmental Protection Division, as a senior associate in botany.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Biological Resources** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 23, 2010

Signed: 

At: Upland, California



SCOTT D. WHITE
Senior Associate/Senior Biologist

ACADEMIC BACKGROUND

MA, Biology, 1992 and BA, Biology, 1981, Humboldt State University; Secondary Teaching Credential, Life Science, 1982

PROFESSIONAL EXPERIENCE

Scott D. White holds Bachelor's and Master's degrees in biology from Humboldt State University and has over 17 years experience including NEPA, CEQA and SMARA compliance. His primary experience is with southern California floristics and vegetation, including wetlands, coastal sage scrub, chaparral, and forests. He is well experienced with the regional flora, including rare, threatened, and endangered species and is a coauthor of *Vascular Plants of Western Riverside County: An Annotated Checklist*. Mr. White has recently joined Aspen in the firm's Inland Empire office after working for a number of years as a subcontractor to Aspen. He has performed field surveys and analyzed biological resources professionally in California since 1987. His projects have included biological and cumulative impacts analyses; focused surveys for special status species in a variety of habitats; design and implementation of monitoring plans and land management plans; data collection and analysis in coastal sage scrub, chaparral, oak woodlands, desert shrublands and pinyon woodlands; wetlands delineations and mitigation plans for state and federal permitting; upland revegetation plans for mine reclamation; recovery plans for listed T/E species; and interagency planning efforts for long-term land use and conservation planning on public and private lands. He has extensive experience with federal, state and local agencies and has published a number of studies.

Aspen Environmental Group

2009 to present

- **Newhall Ranch Specific Plan EIR and Sect. 2081 Review (2006-present), California Department of Fish and Game.** Document review and revision, agency/applicant coordination and consultation, in support of CDFG's CEQA and state Endangered Species Act compliance review, including conservation planning and document production addressing listed San Fernando Valley spineflower and other biological impacts.
- **Rice Solar Energy Project; Calico Solar Energy Project (2010-present), California Energy Commission.** Preparing CEC Biological Resources Staff Assessment chapters; review and compile information from Application for Certification and Responses to Data Requests; coordinate with CEC staff; plan and manage coordination and review among cooperating agencies; public workshop participation; CEQA, NEPA, state and federal ESAs, 1600, 404, and Warren-Alquist compliance.

Consulting Biologist: Scott White Biological Consulting; White & Leatherman BioServices 1998-present; Psomas and Associates, 1995-1998; Tierra Madre Consultants 1989-1995. Mr. White performed biological surveys, report preparation (per CEQA, NEPA, SMARA, state and federal wetlands requirements, and local planning policies), client contact, and agency coordination. Specialties include rare plant surveys, wetlands delineations, vegetation sampling and description, habitat characterization (e.g., suitability for rare wildlife species), revegetation planning, and mitigation design. Representative projects include the following:

- **Tehachapi Renewal Transmission Project (2008), California Public Utilities Commission/US Forest Service.** Field surveys for rare, threatened and endangered plants on powerline corridor and alternate routes in Chino/Puente Hills, San Gabriel Mountains, Los Angeles Basin, and Inland Empire areas, Los Angeles, Orange, San Bernardino, and Riverside counties.
- **Carbonate Habitat Management Strategy (1999-2004), Specialty Minerals, Inc.; Mitsubishi Cement Inc.; Omya California Inc.:** Document review, comment, and revision; agency/industry coordination and consultation, including BLM, US Forest Service, CDFG, USFWS in support of management plan and federal Endangered Species Act compliance to resolve land use conflicts among the mining industry and listed threatened/endangered limestone endemic plants, San Bernardino County.
- **Draft Recovery Plan for Three Desert *Astragalus* Species (2004-2007), US Fish and Wildlife Service:** Review and compilation of specimen data, field survey reports, agency planning documents and conservation biology literature to prepare draft recovery plan per US Fish and Wildlife Service specifications; San Bernardino, Riverside, and Imperial Counties.
- **Biological Technical Reports, Desert tortoise surveys, Revegetation Plans (1999-2007, West Coast Aggregate.** Field surveys, data collection and analysis; and technical reports and plans in support of mining plan revisions, per CEQA and State Mining and Reclamation Act (SMARA); Coachella Valley, Riverside County (numerous similar projects documenting and analyzing biological resources impacts for mining and other land use planning projects throughout S. California, 1989-present).
- **Lucerne Valley-Big Bear Lake Fiber Optic Cable (2005), Verizon:** Field surveys and impacts analysis for rare, threatened and endangered plants on cable route from desert floor to Big Bear Lake area; wrote Biological Assessment per National Forest guidelines; managed and directed construction monitoring per National Forest requirements, San Bernardino County.
- **Proposed Fort Irwin Natural Gas Pipeline (2004-2005), Johnson Controls, Inc.:** Field surveys and impacts analysis for rare, threatened and endangered plants and animals (including desert tortoise, Lane Mountain milk vetch, and others) on proposed pipeline alignments, San Bernardino County.
- **Proposed Improvements: State Hwy 79 (2006) and I-215 (2008), CalTrans:** Field surveys and impacts analysis for rare, threatened and endangered plants on numerous public and private parcels on a series of alternate roadway alignments, western Riverside County.
- **San Bernardino National Forest / Rancho Santa Ana Botanic Garden (2008-2009):** Field surveys for rare, threatened and endangered plants in San Jacinto and San Bernardino Mountains. (meadows, pebble plains, etc.) in San Bernardino and Riverside counties.
- **Angeles National Forest Botanical Surveys (2004):** Field surveys and impacts analysis for rare, threatened and endangered plants on ANF project sites for fuel management, transportation, and recreation; San Gabriel Mountains, Los Angeles and San Bernardino counties.
- **Botanical Field Guide (2004):** Field surveys, specimen preparation, photography, and text for botanical field guide for the Soboba Indian Reservation, San Jacinto Mountain foothills, western Riverside County.
- **Biological Technical Reports, field surveys, responses to comments (2002-2007), United States Gypsum, Imperial Co. and BLM:** Field surveys and impacts analysis for special status plants and animals on proposed quarry expansion lands; Biological Technical Report and detailed Responses to Comments for joint EIR/EIS.
- **Los Angeles County. Department of Public Works (2002-03):** Field surveys for threatened or endangered plants (e.g., Braunton's milk vetch) in existing and proposed flood control channels and debris basins, Santa Clarita Valley and San Gabriel Mtn. foothills, Los Angeles County.

Botanist: San Bernardino National Forest

1987-1989

Team leader for data collection and assisted in data analysis for vegetation management planning and ecosystem classification; assisted in analysis and interpretation of vegetation data, leading to a classification system of southern California chaparral; provided mapping and implementation recommendations for prescribed burn planning and other habitat management projects; assisted in vegetation sampling of California spotted owl territories; prepared Environmental Assessments in compliance with NEPA.

SELECTED TECHNICAL EXPERIENCE/TRAINING AND CERTIFICATIONS

- Planning and land use policies, including mitigation banking, to mitigate ongoing loss of native habitats.
- Use of quantitative data and multivariate statistics to classify plant communities and wildlife habitat.
- Occurrence and distributions of native and naturalized plants in Southern California particularly in the Inland Empire and surrounding mountain ranges.
- Role of fire and other natural disturbance in southern California shrublands and forests.
- Effects of brown headed cowbird nest parasitism on native bird populations, and potential application of habitat management to reduce parasitism rates.

CERTIFICATIONS

California Dept. of Fish and Game and USDI Fish and Wildlife Service authorization to collect listed endangered, threatened and rare plants (Research Association permittee under RSABG permits)

SERVICE

- Vegetation Committee; California Native Plant Society (member 1990-1998; acknowledged reviewer of *A Manual of California Vegetation*, J.O. Sawyer & T. Keeler-Wolf 1995 and Second Ed., Sawyer, Keeler-Wolf & J.M. Evans 2009).
- Guest editor; *Fremontia* Coastal Sage Scrub special issue (October 1995).
- Field trip leader and training seminar instructor for local volunteer organizations including The Crafton Hills Conservancy, The Riverside Land Conservancy, The San Bernardino Valley Audubon Society, California Native Plant Society, and Rancho Santa Ana Botanic Garden.
- Peer reviewer of Federal Register listing proposals and critical habitat proposals, US Fish and Wildlife Service (2004-present).
- Southern California Botanists Board of Directors (1997-2002); President (1999-2000); peer reviews for SCB journal *Crossosoma* (1997-present); Co-editor, *Crossosoma* (effective 2009).
- Research Associate, Rancho Santa Ana Botanic Garden and U.C. Riverside Herbarium

MEMBERSHIPS

California Botanical Association

Arizona Native Plant Society

California Native Plant Society

Southwestern Association of Naturalists

Southern California Academy of Sciences

Southern California Botanists

The Wildlife Society

PROFESSIONAL PRESENTATIONS

- “Critiquing Botanical Consulting from a 20 Year Perspective,” presented at California Native Plant Society State-wide conference, Sacramento, 2009.
- “Conservation Planning for Limestone Endemic Plants in the Northern San Bernardino Mountains,” presented at Southern California Botanists annual symposium, Cal State Fullerton, 2002.
- With Orlando Mistretta: “Introducing Two Federally Listed Carbonate endemic Plants onto a Disturbed Site in the San Bernardino Mountains, California,” presented at 3rd Southwestern Rare Plant Symposium, Flagstaff, Arizona, September 2000.
- “Structure and Function in Southern California Chaparral,” presented at Southern California Botanists annual symposium, Cal State Fullerton, 1997.
- With Martha Blane: “Planning and Monitoring for Ecological Function,” presented at Society for Ecological Restoration California Chapter annual conference, Yosemite National Park, 1996.
- “Vegetation Descriptions, Site Characteristics, and Plant Ecology in Puente Hills Shrublands,” presented at Symposium on Natural Resources in the Puente Hills Chino Hills Corridor, Whittier College, 1994.

**DECLARATION OF
Kim Tremaine**

I, **Kim Tremaine**, declare as follows:

1. I am presently employed by **Tremaine & Associates, Inc.** in the **Cultural Division of the California Energy Commission** as a **Cultural Resources Specialist**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on **Cultural Resources**, for the **Rice Solar Energy Project**, based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/23/10

Signed: 

At: West Sacramento, California



Kim J. Tremaine,
Ph.C.
Principal, Senior
Archaeologist

TREMAINE & ASSOCIATES,
INC.
859 Stillwater Rd., Suite
1
West Sacramento, CA 95605

EDUCATION

PH.C. ANTHROPOLOGY,
UNIVERSITY OF
CALIFORNIA, DAVIS, 1997.

M.A. CULTURAL RESOURCES
MANAGEMENT,
SONOMA STATE UNIVERSITY,
1989.

B.A. ANTHROPOLOGY,
SONOMA STATE
UNIVERSITY, 1985.

PROFESSIONAL TRAINING

USFS HERITAGE RESOURCES
MANAGEMENT TRAINING,
ELDORADO NATIONAL FOREST,
1994.

SECTION 106 COURSE,
ADVISORY COUNCIL ON
HISTORIC PRESERVATION,
1992.

CEQA WORKSHOPS

- 2003, ACRA
- 1997, OHP

RESEARCH INTERESTS

- CALIFORNIA PREHISTORY
- HUNTER-GATHERER
ADAPTATIONS
- OBSIDIAN STUDIES
- SOCIAL HISTORY
- GENEALOGY
- GEOPHYSICAL
APPLICATIONS
- PUBLIC OUTREACH
- NAT'L HERITAGE AREAS
DEVELOPMENT

Present Position

1994-2010. Principal Investigator, Tremaine & Associates, Inc.

Past Positions

1990-1993. Senior Staff Archaeologist, Biosystems Analysis, Inc.

1984-1990. Research Associate, SSU; Project Coordinator, SSU
Field Technician, Basin Research Associates.

1979-1980. Field Technician, Environmental Research Associates.

Relevant Experience from Last Five Years

As business owner and Principal Investigator, Kim is responsible for overseeing the implementation of multiple projects in various stages of completion. As such, she works closely with Project Managers to ensure that the requirements of federal, state, and local laws are met, while balancing her obligation to manage cultural resources and as well as work within budget/scheduling constraints. She also acts as a point-of-contact with government officials and Native American groups/individuals, to work out solutions to problems that may crop up.

2009. Regional Transit District Light Rail Project. Project Investigator under contract with the Regional Transit District. Oversaw project, including deferred identification, testing, data recovery, and archaeological monitoring.

2008. PG&E Pole Replacement Project. Principal Investigator under subcontract with Entrix. Oversaw records searches, intensive archaeological surveys, and impact analyses for pole replacements along numerous transmission lines throughout Northern California.

2008. Sacramento Natural Gas Storage Project. Principal Investigator under subcontract with Sycamore Environmental. Conducted Peer Review as part of EIR Mitigation Measures, conducted additional survey to address areas not previously covered during previous inventory effort.

2007. PG&E Line 108 Replacement Project, Sacramento County, California. Principal Investigator under subcontract with ESA. Oversaw inventory of resources, wrote EIR sections, conducted impacts analysis, developed mitigation measures, and monitored during pipeline replacement work. The lead agency for this project was the California State Lands Commission.

PROFESSIONAL AFFILIATIONS



Kim J. Tremaine,
Ph.C.
Principal, Senior
Archaeologist

TREMAINE & ASSOCIATES,
INC.
859 Stillwater Rd., Suite
1
West Sacramento, CA 95605

Register of
Professional
Archaeologists

American Cultural
Resources
Associates
(Former Board
Member)

Society for
American
Archaeology

Society for
California
Archaeology

Central California
Archaeological
Foundation (Current
Board Member)

Society for
Historical
Archaeology

California
Historical Society

International
Association for
Obsidian Studies

Society for
Archaeological
Sciences

Geological Society
of America

Society for
Exploration
Geophysics, Near-
Surface Geophysics
Section

2006-2009. Sutter Hospital
Expansion Project. Principal

Investigator under contract with Sutter Health Medical Center for Cultural Resources services. Oversaw project, including deferred identification, testing, data recovery (historic Sutter's Fort cemetery), archaeological monitoring, Native American inspectors, public outreach, and media representative.

2004-2009. Amtrak Light Rail Extension Project, between Folsom and Sacramento. Principal Investigator under contract with Sacramento Regional Transit for the Cultural Resources services. Oversaw project, including testing and data recovery for late prehistoric sites with burials and cremations, dance house etc., archaeological monitoring, and Native American Inspection. Tremaine worked with the Office of Historic Preservation, the Native American Heritage Commission, the local Native Americans, the City, Regional Transit, the County, and SMUD (all stakeholders), and representative attorneys for these stakeholder, as mediator, facilitating the limit of impacts as much as possible. The lead agency on this project was the Federal Highways Administration.

2001-2007. Box Canyon Hydroelectric Facility Relicensing Project. Consultant with GANDA for the Bureau of Indian Affairs (representing the Kalispel Tribe) over a period of six years on the FERC Relicensing Project in northeastern Washington, along the Pend Oreille River. Participated in Studies Requests, Draft 4(e)s, numerous conference calls and meetings, as well as contributing to large documents and/or commenting on documents/milestones such as Additional Draft Settlement Negotiations, Draft FERC License Application, Final License Application, ICDs, Scoping Documents for the DEIS and FEIS, Substantial Evidence Document, Project Impact Report, Watershed Assessment, and Final Study Plan (not listed in chronological order).

2003-2008. Sacramento City Hall Data Recovery Project. Principal Investigator under contract with the City of Sacramento, Department of Public Works. Oversaw geophysics, testing, monitoring, and data recovery efforts in compliance with CEQA regulations. During mass excavation for an underground parking structure, a deeply buried site was encountered, dating between 9,000 and 4,000 years old. The site was found to be exceptionally well preserved, yielding a large collection of faunal remains, cooking stones, large multi-function cobble-core tools, dart points, stone net weights, bone fish hooks, medicine bowls, a few mortars, many pestles, numerous bone awls, and ornamental stone items, as well as human remains. The final report was completed in 2008.

2002. Cosumnes Power Plant Project, Sacramento County, California. Principal Investigator, under subcontract with IEC. Oversaw peer review of cultural resource management compliance documentation, consultation with the California Energy Commission, and geophysical survey of segments along 26-mile pipeline route deemed sensitive for possible buried archaeological deposits.

2003-2004. Wetland Enhancement Projects in Tulare, Kern, Humboldt, Lassen, Modoc, Colusa, Solano, and San Joaquin Counties, California. Principal Investigator under contract with the Natural Resources Conservation Service. Oversaw projects, wrote or edited final reports.

2002-2003. 7th Street Extension Project, Sacramento, California. Principal Investigator under contract with the City of Sacramento, Department of Public Works. Oversaw geophysical survey for subsurface features and various stages of monitoring, testing, report writing, and public outreach.

2002. Central Valley Energy Center Project, Fresno County, California. Principal Investigator/Project Manager under subcontract with Peregrine Environmental. Oversaw identification of historic buildings and structures along various pipeline routes for delivering of natural gas, along with documentation and assessment of their significance, report writing, and consultations with staff at the California Energy Commission regarding data gaps and satisfaction of those gaps and/or other concerns.

2001. Long Haul Fiber Optic Segments between Sacramento and Bakersfield, and between Sacramento and Emeryville, Northern California. Principal Investigator/Project Manager under subcontract with BHE. Oversaw survey, site recordation, and monitoring along the route from Sacramento to Bakersfield. This required deployment of multiple staff at multiple locations for over a year in the field and consultation with multiple tribes of Native Americans. California Public Utilities Commission was the lead agency on this project.

Selected Reports

Tremaine, K.J.

2010. Cultural Resources Inventory for the Johnson Rancho, Bear River Hop Farm, and Dave Browne Properties, Yuba County, California.

Tremaine, K.J., and G. Farris

2009. Rediscovering a Legacy: Archaeological Monitoring Report for the Sacramento Regional Transit District Light Rail Project. Prepared for Sacramento Regional Transit, Sacramento, California,

Tremaine, K.J.

2008. Investigations of a Deeply Buried Early and Middle Holocene Site (Ca-Sac-38) for the City Hall Expansion Project, Sacramento, California. Prepared for the City of Sacramento, California.

Relevant Professional Papers & Presentations

2007 Unearthing a Protohistoric Occupation on the Edge of Historic Sutter's Lake During a Monitoring Project in Downtown Sacramento: Lesson's Learned. Invited Paper, presented at the Society for California Archaeology Annual Meeting, San Jose, California.

2006 Sacramentan's Early Efforts to Build a City as Revealed in the Union Pacific Railyards. Paper presented at the Society for California Archaeology Annual Meeting, Sacramento, California.

2005 Shadows of a Distant Past: Archaeological Findings at CA-SAC-38. [third author, with Maggie Trumbly and John Lopez]. Paper presented at the Society for California Archaeology Annual Meeting, Sacramento, California.

1996 Paleolandscapes of the Central Valley as they Relate to the Delta Region and Human Prehistory. Invited paper, presented at the Central California Archaeological Foundation Symposium: Sacramento River Ecosystem Prehistory", Chico, California.

DECLARATION OF SHAELYN STRATTAN

I, **Marsha L. (Shaelyn) Strattan**, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission, and Environmental Protection Division as a **Planner II**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on **Land Use, Recreation, and Wilderness** for the **Rice Solar Energy Project**, based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 9, 2010

Signed: Marsha L. (Shaelyn) Strattan

At: Sacramento, California

Marsha L. (Shaelyn) Strattan
Environmental Planner II
California Energy Commission
Siting, Transmission, and Environmental Protection Division
Community Resources Unit

EXPERIENCE SUMMARY

Twelve years experience in land use planning, recreation, environmental review and analysis, and project management with the California Energy Commission, California State Parks, and Calaveras County Planning Department. Twenty-five years of writing, editing, and research experience, focused on recreation, agriculture, and the environment, with the California Air Resources Board, California Department of Toxic Substances Control, California Department of Fish and Game, and as owner of *The Wordworker*, a writing, editing, and research company, specializing in environmental research, education, and public relations. Seven years experience as an Air Traffic Control Specialist with the Federal Aviation Administration and U.S. Air Force. Six years as National Weather Service (NWS) certified Weather Observer.

PROFESSIONAL EXPERIENCE

***California Energy Commission
Planner II***

2 yrs/9 mos¹

Environmental Technical Specialist - Identify, describe, and analyze complex environmental issues related to the construction and operation of electrical energy production facilities, transmission corridors, alternative energy technologies and energy conservation, and Commission programs and policies. Prepare components of Staff Analyses to comply with requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), with emphasis on the identification and mitigation of environmental impacts to land use, traffic and transportation, visual resources, and environmental justice. Prepare and present Commission reports and expert technical testimony.

Project Manager - Plan, organize, and direct the work of an interdisciplinary environmental and engineering staff team engaged in the evaluation of complex/controversial energy facility siting applications and major commission programs.

California Energy Commission (CEC): Analyst for Eastshore Energy Power Plant (06-AFC-06; Land Use and Traffic & Transportation/Aviation); Victorville II Hybrid Power Project (07-AFC-01; Land Use); Humboldt Bay Generating Station (06-AFC-07); Traffic & Transportation); Ridgecrest Solar Power Project (09-AFC-9; Land Use/Recreation/ Wilderness); Rice Solar Energy Project (09-AFC-10; Land Use/Recreation/Wilderness); and Russell City Energy Center Amendment (01-AFC-7C; Land Use and Traffic & Transportation/ Aviation). Project Manager for Beacon Solar Energy Project (08-AFC-02); San Gabriel Generating Station (07-AFC-02); and Kings River Conservation District Community Power Project (07-AFC-07)

***Calaveras County Planning Department
Planner III (Senior Planner)***

2 yrs/9 mos²

Planning and evaluation of complex land use projects; environment review (CEQA/NEPA; Timber Harvest Plans; outside agency reviews); project and contract manager for consultants (EIR, natural and cultural resource studies, and peer reviews); preparation/review of resource ordinances; preparation/coordination of conservation and utility easements; CEQA/NEPA coordinator; liaison with Calaveras Council of Governments and county counsel on land use issues; planning liaison with State

¹ Nov 2006 – Nov 2008 and Dec 2009 – present.

² Feb 2005 – Nov 2006 and Nov 2008 – Nov 2009

and federal resource agencies (e.g., California Department of Fish and Game, Forestry and Fire (CalFIRE), and Parks & Recreation; U.S. Fish and Wildlife Service, U.S. Forest Service, and Bureau of Land Management) to develop consistent mitigations and policies, and coordinate project evaluation and enforcement.

**California Department of Parks & Recreation
Environmental Coordinator (Associate Park & Recreation Specialist)**

Jan 2001 - Jan 2005

Supervising Lead: Coordinate environmental review for DPR's Major Capital Outlay, Minor Capital Outlay, and Accessibility programs with Service Center and district staff. Consult with project managers, designers, and environmental specialists to refine project scope and identify potentially environmental impacts for park projects in Northern and Central California. Prepare environmental documents (CEQA/NEPA) for DPR and joint agency (DPR/BLM,NPS,USFS, USFWS) projects,. Project and contract manager for consultants preparing environmental analysis. Prepare or work with consultants to prepare the environmental impact analysis for General Plans (GPs) and Resource Management Plans for State Park units. Prepare application(s) for project-specific state and federal environmental permits, grant proposal, application, and supporting documents for project-related federal funding (High Sierra Museum and Visitor Center at Donner Memorial State Park). Review environmental documents prepared by non-departmental entities to determine the potential impact on ongoing or proposed projects or programs. Prepare comments identifying potential impacts to the department's interests and/or effectiveness of proposed mitigation. Review and comment on pending legislation, as it relates to environmental issues, CEQA/NEPA, and Departmental policy/procedures.

Statewide Environmental Coordinator (January 2002 - June 2003): Develop and coordinate a standardized CEQA/NEPA review process and establish criteria for evaluating project impacts and environmental compliance documents. Provide training for District and Service Center personnel involved in the preparation and processing of environmental documents. Develop training support materials. Conduct CEQA seminars at California Trails and Greenways Conference (September 2002 & 03) and Resource Ecologists' In-Service Training Seminar (2002). Act as Service Center liaison with the Environmental Stewardship Section of the Natural Resources Division regarding the effectiveness and improvement of the environmental review process.

**California Air Resources Board (Research Division)
Research Writer**

Nov 1998-Nov 2000

Research, write, and/or edit technical documents, presentations, and related materials, with special emphasis on scientific and environmental writing for a general readership. These documents include Requests for Proposals; responses to public inquiries; consumer guidelines and fact sheets; articles for magazines and technical journals; brochures; webpage information (both internal and external); legislative bill analyses; briefing documents; proposals; and Board presentations and agenda items. Evaluate suitability of documents for publication.

**The Wordworker
Owner & Primary Researcher/Editor/Author**

May 1987-Nov 1999

Work included narratives (including voice-overs), scripting, copy editing, transcription, and technical writing; proposals (grants, bids, and new business); legal briefs (environmental and family law); training and teacher's manuals; desktop publishing (brochures, newsletters, flyers, etc.); and adaptation of scientific information for general readership. Research, draft, review/edit, and comment on CEQA/NEPA environmental documents; coordinate preparation of materials among project scientists, lead and responsible agencies, and applicants. Promotional consultant and press liaison for several non-profit fundraisers, seminars, and symposiums.

Federal Aviation Administration
Air Traffic Control Specialist

1975-1981

Control air traffic at Salem Tower (Salem, OR) and the Oakland Air Traffic Control Center in Fremont, CA. Coordinate aviation-related search and rescue operations. Provide pilot weather briefings, flight plan assistance, and in-flight information at Bellingham International Airport, Dannelly Field (Montgomery, AL) and Purdue University Airport (W. Lafayette, IN).

Tennessee Valley Authority
Engineering Aide

1974-75 (18 mos)

Set, monitor, and analyze dosimeters at Browns Ferry and Sequoia Nuclear Power Plants. Collect and analyze vegetation, silage, milk, water, and air samples from surrounding areas to establish background radiation levels and provide on-going radiation monitoring.

EDUCATION

- Colleges & Universities
 - American River College (Sacramento, CA)
 - Sacramento City College (Sacramento, CA)
 - Consumnes River College (Sacramento, CA)
 - Calhoun Community College (Huntsville, AL)
 - University of Alabama (Tuscaloosa, AL)
 - Whatcom Community College (Bellingham, WA)
 - California State University – Sacramento, CA
 - University of California – Davis (Davis, CA)

- Certificate: Land Use and Environmental Planning [University of California – Davis; 20 units of core classes and 22 elective courses (272.5 hours)]

- Certificate: Technical Writing (American River College)

- Certificate: Meteorology/Weather Observer (National Weather Service; 1975); Licensed from 1975-1982

MILITARY SERVICE

- U.S. Air Force - Aircraft Control & Warning Operator (honorable discharge – August 1969)
- California Air National Guard – Air Traffic Controller (honorable discharge 1984)

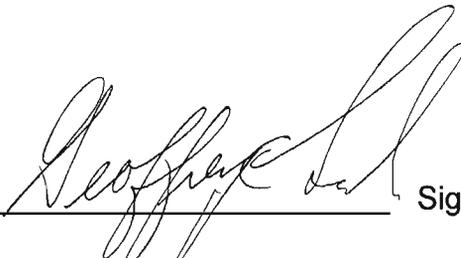
**DECLARATION OF
Geoffrey Lesh**

I, **Geoffrey Lesh** declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as a **Mechanical Engineer**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on the **Hazardous Materials Management Section** and the **Worker Safety and Fire Protection Section** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: _____



Signed: _____

9/22/2010

At: _____

Sacramento, California

Geoffrey Lesh, P.E.
Mechanical Engineer

WORK HISTORY

California Energy Commission Mechanical Engineer 2002 - Current

- Review and analyze applicants' plans for safe management of hazardous materials, and for protecting worker safety.

Self-Employed Independent Investor 2000 - 2002

- Wrote market analysis computer software and traded personal account.

Read-Rite Corp Wafer Engineering Manager 1994 - 2000

- Designed and developed wafer manufacturing processes for computer data storage systems. Managed team of engineers and technicians responsible for developing wet and dry chemical processes for manufacturing, including process and safety documentation.
- Managed process and equipment selection for manufacturing processes.
- Processes included vacuum processed metals and ceramics, grinding-polishing, plating, etching, encapsulation, process troubleshooting, and SPC reporting.

Dastek Corp (Komag Joint Venture Start-up) Wafer Engineering Manager 1992 - 1994

- Developed wafer processes for new technology recording head for hard disk drives.
- Managed team of engineers and technicians.
- This position included start-up of wafer fab, including line layout, purchase, installation, and startup of new process equipment, etc.

Komag, Inc Alloy Development Manager 1989 - 1992

- Developed new vacuum-deposited recording alloys
- Responsible for planning and carrying-out tests, designing experiments, analyzing results, managing test lab conducting materials characterizations.
- Extensive process modeling and data analysis.

Verbatim Corp (Kodak) Process Development Manager 1983 - 1989

- Mechanical engineering for computer disk manufacturing, including product, process, and equipment including metal-ceramic-plastic processes for optical disk development.
- Production processes included plating, metal evaporation, reactive sputtering, laser-based photolithography, injection molding.
- Steering Committee Member, *Center for Magnetic Recording Research, UC San Diego*

IBM Corp Mechanical/Process Engineer 1977 - 1983

- Product development for photocopiers and computer tape-storage systems.

EDUCATION

Stanford University, Master of Science Degree
UC-Berkeley, Bachelor of Science Degree
(Double Major)

University of Santa Clara, Graduate Certificate
Registered Professional Engineer, California

Materials Science and Engineering
Mechanical Engineering,
Materials Science and Engineering
Magnetic Recording Engineering
Mechanical #M32576
Metallurgical #MT1940

DECLARATION OF

Dr.Obed Odoemelam

I, **Obed Odoemelam** declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting, Transmission, and Environmental protection Division as a Staff Toxicologist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Public Health** for the Rice Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/6/2010 Signed: Odoemelam

At: Sacramento, California

DECLARATION OF

Dr.Obed Odoemelam

I, **Obed Odoemelam** declare as follows:

1. I am presently employed by the California Energy Commission in the Facilities Siting, Transmission, and Environmental protection Division as a Staff Toxicologist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Transmission Line Safety and Nuisance** for the Rice Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/6/2010 Signed: 

At: Sacramento, California

RESUME

DR. OBED ODOEMELAM

EDUCATION:

- 1979-1981 University of California, Davis, California. Ph.D., Ecotoxicology
- 1976-1978 University of Wisconsin, Eau Claire, Wisconsin. M.S., Biology.
- 1972-1976 University of Wisconsin, Eau Claire, Wisconsin. B.S., Biology

EXPERIENCE:

1989

The Present: California Energy Commission. Staff Toxicologist.

Responsible for the technical oversight of staffs from all Divisions in the Commission as well as outside consultants or University researchers who manage or conduct multi-disciplinary research in support of Commission programs. Research is in the following program areas: Energy conservation-related indoor pollution, power plant-related outdoor pollution, power plant-related waste management, alternative fuels-related health effects, waste water treatment, and the health effects of electromagnetic fields. Serve as scientific adviser to Commissioners and Commission staff on issues related to energy conservation. Serve on statewide advisory panels on issues related to multiple chemical sensitivity, ventilation standards, electromagnetic field regulation, health risk assessment, and outdoor pollution control technology. Testify as an expert witness at Commission hearings and before the California legislature on health issues related to energy development and conservation. Review research proposals and findings for policy implications, interact with federal and state agencies and industry on the establishment of exposure limits for environmental pollutants, and prepare reports for publication.

1985-1989 California Energy Commission.

Responsible for assessing the potential impacts of criteria and noncriteria pollutants and hazardous wastes associated with the construction, operation and decommissioning of specific power plant projects. Testified before the Commission in the power plant certification process, and interacted with federal and state agencies on the establishment of environmental limits for air and water pollutants.

1983-1985 California Department of Food and Agriculture.

Environmental Health Specialist.

Evaluated pesticide registration data regarding the health and environmental effects of agricultural chemicals. Prepared reports for public information in connection with the eradication of specific agricultural pests in California.

**DECLARATION OF
Kristin Ford, Planner I**

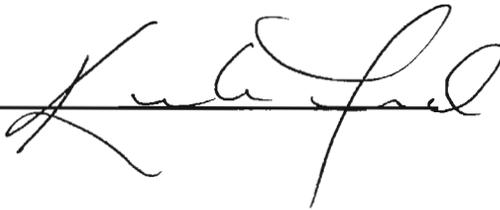
I, Kristin Ford, declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Office of the Siting, Transmission & Environmental Protection Division as a Planner I.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on Socioeconomics for the Rice Solar Energy Power Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8/9/10

Signed: _____



At: Sacramento, California

Kristin S. Ford

Experience

Environmental Planner November 2009 to Present

California Energy Commission, Sacramento, California

- Conduct CEQA-equivalent environmental review for proposed and existing power plants.
- Write analysis for Socioeconomics, Traffic, Visual Resources and Land Use sections for staff assessments.
- Provide expert witness testimony on Socioeconomics, Traffic, Visual Resources and Land Use issues at Energy Commission hearings.

Assistant Planner June 2006 to July 2009

City of Sacramento, Environmental Planning Services, Sacramento, California

- Evaluated, prepared and supervised the preparation of a variety of environmental documents under the California Environmental Quality Act (CEQA); analyzed data and made recommendations on complex planning matters involving issues related to land use, traffic, utilities, aesthetics, noise, energy, historic preservation, air quality and biological resources.
- Prepared, researched and reviewed Mitigation Monitoring Plans per CEQA, the California State & Federal Endangered Species Acts (CESA & FESA), the Clean Water Act (CWA), the Migratory Bird Treaty Act (MBTA) and the Natomas Basin Habitat Conservation Plan.
- Conducted biological resources site assessments for proposed development projects. Determined the need for preparation and/or review of specific studies, such as Wetland Delineations, Nesting Raptor Surveys, and Arborist Reports, to identify resources and provide mitigation measures.
- Coordinated the release of the City of Sacramento's 2030 General Plan Draft/Final Environmental Impact Report between various City departments, the Planning Commission, City Council and the consultant team.

Environmental Coordinator August 2005 to June 2006

Nella Oil Company, Auburn, California

- Coordinated company-wide environmental regulatory compliance activities, including:
 - site investigations;
 - underground fuel-storage tank environmental compliance recommendations and subsequent tank upgrades; and
 - hazardous waste removal.
- Maintained and managed Air Quality Management District and Environmental Health Department permits for 60+ gas stations.

Student Assistant March 2005 to August 2005

California Energy Commission, Sacramento, California

- Conducted research and provided technical writing support to Biology and Water Departments for the annual Energy Policy Report impact analyses.
- Maintained and managed compliance files on power plant facilities.

Student Assistant June 2004 to March 2005

Central Valley Regional Water Quality Control Board, Sacramento, California

- Supported National Pollutant Discharge Elimination System (NPDES) staff by:
 - maintaining waste water treatment plant discharge self-monitoring reports and case files; and
 - analyzed (Amador, Sutter, Placer and Yolo county) wastewater treatment plant monthly monitoring reports for possible permit violations.

Education

2005 Bachelor of Arts, Environmental Studies, California State University, Sacramento

2001 Associate of Arts, Liberal Studies, Allan Hancock College, Santa Maria, California

**DECLARATION OF
Mike Conway**

I, Mike Conway, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division, as an Engineering Geologist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on the **Soil and Water Resources** for the **Rice Solar Energy** project (09-AFC-10) based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 22, 2010

Signed: 

At: Sacramento, California

Resume For: Mike Conway

Education: Bachelor of Science in Geology, University of California, Davis, August 2003.
Master of Science in Geology, California State University, Sacramento, expected 2011

Certifications: Certified Professional in Erosion and Sediment Control (CPESC)
Certified Erosion, Sediment and Storm Water Inspector (CESSWI)
Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

Experience:

Engineering Geologist: California Energy Commission, Sacramento, CA **2009**

- Conduct analyses of soil and water resource reports submitted to Commission
- Assess impacts to soil and water resources from construction and operation of energy producing facilities
- Perform onsite evaluations of soil and water resources pre and post-project
- Implement a CEQA-like review of proposed energy projects to evaluate environmental impacts

Environmental Scientist: Central Valley Water Board, Rancho Cordova, CA **2009**

- Wrote municipal storm water permits for Phase I communities in the Central Valley
- Reviewed storm water annual reports for Phase I and II municipalities
- Conducted audits of industrial sites for compliance with storm water permits
- Conducted audits of municipalities for compliance with municipal permits
- Help communities better understand how to effectively implement storm water programs
- Represented Water Board in large technical workshops and other public forums

Environmental Consultant: Wood Rodgers, Inc., Sacramento, CA **2006-2009**

- Consulted clients on how to comply with Federal, State and local storm water quality and environmental regulations
- Helped public and private sector clients gain State Water Resources Control Board (SWRCB) permit coverage under Large and Small MS4 General Permits, NPDES Permits, CWA Section 401 Permits
- Consulted clients on Army Corps of Engineers, 404 Permitting
- Developed a storm water quality manual for Yolo County
- Prepared Caltrans environmental documentation and design for all project phases
- Prepared Storm Water Management Plans (SWMP) and Storm Water Pollution Prevention Plans (SWPPP)
- Drafted water pollution control exhibits using both AutoCAD and MicroStation
- Prepared Caltrans Storm Water Data Reports including cost estimates
- Designed landscaping plans for Caltrans' Modesto Ramp Rehabilitation Project
- Prepared Spill Prevention Control and Countermeasure (SPCC) plans
- Created Hazardous Materials Business Plan for City of Fort Bragg, California
- Prepared proposals for outgoing environmental quality project bids
- Performed field visits to evaluate Best Management Practice (BMP) effectiveness in reducing erosion and sedimentation
- Facilitated multiple storm water quality training workshops for groups up to 20 plus

Storm Water Quality Consultant: Envirosafety Services, Elk Grove, CA **2004-2006**

- Wrote site specific SWPPPs to include guidance specific to city, county, and geographical constraints
- Designed BMP exhibits using AutoCAD
- Conducted inspections at construction sites throughout the Central Valley for (SWPPP) compliance
- Resolved storm water compliance issues in cooperation with site superintendents, county and city inspectors
- Researched current storm water protection regulations to best protect clients

Post-Graduate Researcher: Dept. of Land, Air, and Water Resources, U.C. Davis, CA **2003**

- Studied the effects of irrigation practices on wetland ecology and water quality
- Independently organized monthly analyses and data processing of selenium contaminated invertebrate, algae, and water samples from the Tulare Lake Drainage District
- Managed concentrated acids, carcinogenic solutions, and final fluorescence measurements
- Compiled research data and presented findings to a team of eight colleagues

Lab Technician: Raney Geotechnical Laboratory, West Sacramento, CA **2001**

- Conducted moisture density, unconfined compression tests, Atterburg Limit, curve, plasticity tests, and basic calculations for soil samples
- Administered load tests on concrete cylinders and mortar samples
- Performed percolation tests and Dynamic Cone Penetrator (DCP) tests in the field and gathered water samples for environmental analysis

**DECLARATION OF
AbdelKarim Abulaban**

I, AbdelKarim Abulaban, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division, as an Associate Civil Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on the **Soil and Water Resources** for the **Rice Solar Energy** project (09-AFC-10) based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony, and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 23, 2010

Signed: 

At: Sacramento, California

AbdelKarim Abulaban

Education

Ph.D. Civil Engineering, University of Minnesota (*Hydrology and Water Resources*).

Thesis title: Modeling the transport of sorbing chemicals in heterogeneous porous media.

B.S. and M.S. Civil Engineering, Yarmouk University, Jordan (*Water Resources*).

Registration:

Registered Professional Engineer (Civil) with the state of California (Lic. No. 76030)

Employment

June 2010-Present: Associate Civil Engineer

CA Energy Commission, Sacramento, CA.

Reviewing and evaluating the construction, operation, and maintenance of energy facilities and power plants for water supply, wastewater disposal, waste, water quality, and stormwater to assess the potential impacts to human health and the environment. Also, reviewing sensitive project sites that may have issues involving flooding and stormwater management, discharges to impaired water bodies, depleted groundwater and surface water resources, and wastewater management and disposal methods, in addition to responding to soils or water resources issues that may arise regarding power plant operations, and conducting investigations to determine if any violations of the program's regulations, the Energy Commission's conditions of certification, or the CA Environmental Quality Act (CEQA) have occurred.

Dec. 2006-May 2010: Water Resources Engineer

CA Dept. of Water Resources, Fresno, CA.

In charge of hydraulic modeling and sediment transport for the San Joaquin River restoration project. Perform 1- and 2-D hydraulic analysis to support restoration of the San Joaquin River for the purpose of improving spawning/rearing habitat, enhancing floodplain connectivity, and improving riparian corridor.

Dec. 2001-Dec. 2006: Retained Hydrologist

J.L. Nieber & Associates, Hydrologic Consultants, Lindstrom, Minnesota, USA.

Hydrologic analysis and assessment of environmental impact of contamination incidents on ground water resources, as well as design of remediation plans. Contaminants analyzed included hydrocarbons, chlorinated solvents, as well as agrichemicals.

Dec. 90 – Dec. 93: Retained Hydrologist.

BAUMGARTNER ENVIRONICS, INC, Olivia, Minnesota, USA.

Assessment of the environmental impact of contamination incidents on groundwater resources, and design of action plans.

Sep. 2003-Sep. 2005:

Assistant Professor, Hashemite University, Zarqa, Jordan.

Taught general and specialized courses in the civil engineering department: Water and Wastewater Treatment Methods; Wastewater Engineering; Statics; Engineering Drawing; Visual Communication.

June – August, 96, 97, 98, 2000:

Army High Performance Computing Research Center, Minneapolis, Minnesota.

Taught and helped teach the Summer Institute course in hydrology and transport in porous media. The Summer Institute is a summer course offered to promising upper class students from member institutions. The ground water flow and transport group normally has about 4 students from different backgrounds. I was involved in training the students to use a particle tracking solute transport code which I developed, and also to use the DoD's Ground Water Modeling System, GMS; however, in the summer of 2000 I was in charge of the whole group consisting of four students.

August, 1997:

University of Minnesota, Minneapolis, Minnesota, USA.

Taught a short course on the application of the Department of Defense's Ground Water Modeling System, GMS, offered by the American Society of Agricultural Engineers and attended by about 40

professionals and academicians from around the United States as well as several countries around the world.

Research

i- Ground Water Flow and Transport:

Oct. 93-Mar. 2002: Research Associate

Biosystems and Agricultural Engineering Department, University of Minnesota, USA.

Modeling single and multi-phase flow and multicomponent transport in variably saturated heterogeneous porous media with chemical transformation such as adsorption and biodegradation. A computer model based on the Random Walk Particle Tracking technique was successfully developed and applied for this purpose. Because of the large memory and CPU time requirements, the model was developed and implemented using on a **supercomputer platform** through several grants from the Minnesota Supercomputer Center. This work was continued in a joint effort between the Biosystems and Agricultural Engineering Department and the Army High Performance Computing Research Center through a grant from the US Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.

I also was involved in the modeling of flow and transport through preferential flow paths caused by unstable wetting fronts. Sample results for a simple scenario can be found on the World Wide Web by visiting <http://www.arc.umn.edu/education/SummerInst/1996/>

ii- Surface Water Hydrology:

Oct. 93- Jun. 95: Post-Doctorate Associate

Department of Biosystems and Agricultural Engineering, University of Minnesota, Saint Paul, Minnesota, USA.

Analysis of the impact of and best management practices of surface tile inlets on the water quality in the Minnesota River basin.

Sep. 84 - Jun. 87: Research Assistant

Civil Engineering Dept., Yarmouk University, Irbid, Jordan.

Development of Intensity-Duration-Frequency (IDF) Curves for design rain storms in Irbid Region. This research was supported by a grant from Yarmouk University.

Sample Publications

Hamasha, S.; Abu Allaban, M; **Abulaban A.** (2008). Modeling Atmospheric Turbidity at Zarqa Area Using Meteorological Data. JJP, 1:(1), 53-60.

Munjed Al-Sharif, J. Abu Ashour, **A. Abulaban**, and S. Al-Shar'a, (2007), Effect of Soil-Water Separation Technique on the Estimation of Bacterial Adsorption onto Soil, Jordan Journal of Civil Engineering, Vol.(1), No. 2. pp. 295-302.

Peters, J.F., Howington, S.E., Maier, R.S., **Abulaban, A.**, and Nieber, J.L (2002). *Imbedding velocity autocorrelation into simulators for constituent transport through porous media*. Computational Methods in Water Resources: Proceedings of the Xivth International Conference on Computational Methods in Water Resource Proceedings, Delft, The Netherlands, pp.405-412.

Abulaban, A. and J.L. Nieber (2000). *Modeling plume behavior of non-linearly sorbing solutes in saturated heterogeneous porous media*. *Advances in Water Resources*, **23**, pp. 893-905.

Abulaban, A., J.L. Nieber, and D. Misra (1998). *Modeling plume behavior of non-linearly sorbing solutes in saturated homogeneous porous media*. *Advances in Water Resources*, **21** (6) pp. 487-498.

Nguyen, H.V., J.L. Nieber, and **A. Abulaban** (1998). *An improved method to model gravity-driven unstable flow in porous media*. International Workshop 'Soil Water Repellency: Origins, Assessment, Occurrence, Consequences, Modeling, and Amelioration', Wageningen, The Netherlands, September 2-4, 1998.

DECLARATION OF
JAMES EARL JEWELL

I, James Earl Jewell, declare as follows:

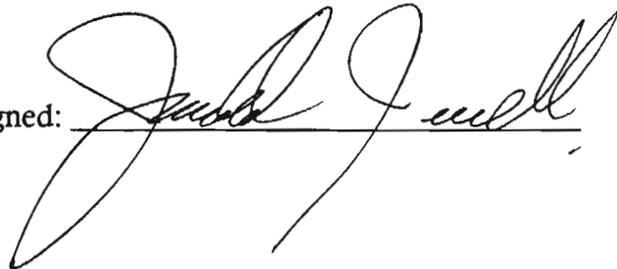
1. I am currently under contract with the Aspen Environmental Group to provide environmental technical assistance to the California Energy Commission. Under Contract No. 700-08-001 I am serving as an Illuminating Engineer to provide Peak Workload Support for the Energy Facility Siting Program and for the Energy Planning Program.
2. A copy of my professional qualifications and experience is attached hereto and incorporated herein.
3. I assisted in the preparation of the staff testimony on Traffic and Transportation and Visual Resources for the Rice Solar Energy Project (09-AFC-10) based on my independent analysis of the Application for Certification and supplements thereto, data from reliable sources and documents, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is accurate and valid with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions applicable to matters of intrusive light and glare and relative brightnesses, and if called as a witness, could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 28 September 2010

Signed: _____

At: San Francisco, California

A handwritten signature in black ink, appearing to read "James Earl Jewell", is written over a horizontal line. The signature is fluid and cursive.

JAMES EARL JEWELL, LC, ATF, IES, CIES (Hon), SAH

EDUCATION:

BA, College of the Pacific
MFA, School of Drama, Yale University

EMPLOYMENT:

1957-67, Engineering Division, Holzmüller Corporation
1967-69, Theatre Consulting Service, Bolt, Beranek & Newman
1969-87, Lighting Services Administrator, Pacific Gas & Electric Company
1987- present, Consultant in Lighting
Since 1993 in association with Alan Lindsley, AIA, IES

PROFESSIONAL ACTIVITIES:

Illuminating Engineering Society
President – 1984-85
Vice President – 1983-84
Director – 1979-86
Office Lighting Committee – 1976 - present, Chairman, 1978-80
Roadway Lighting Committee – 1974 – present, Chairman, 1990-92
Regional Energy Committee Chairman – 1974-76, 1978-84
Energy Advisory Committee – 1973-75
Technical Missions – China – 1984, 1987, 1988

European Lighting Congress: Strasbourg, 1969; Florence, 1977; Granada, 1981;
Lausanne, 1985; Budapest, 1989; Edinburgh, 1993; Berlin, 2001

Pacific Basin Lighting Congress: Chairman, Shanghai, 1989; Bangkok, 1993;
Nagoya, 1997; Organizing Committee, Delhi, 2002; Cairns, 2005; Bangkok,

2009

Edison Electric Institute: Street Lighting Committee – 1971-87, Chairman 1979-81

International Commission on Illumination:

Board of Administration – 1983-87, 1987-91
Division Four (Lighting for Transport)
Technical Committee 4.34 -- 1980-95
Technical Committee 4.25 -- 1992-99

Professional Light Designers Convention: London, 2007; Berlin, 2009

Expert Witness – Admitted as an expert witness in the Superior Courts of Amador,
Contra Costa, and San Francisco Counties.

AWARDS AND HONOURS:

IES Regional Technical Award – 1985
IES Distinguished Service Award – 1986
College of Fellows of the American Theatre --1988
Honourary Member, China IES – 1989
CIE Distinguished Service Award – 1991
IES Louis B. Marks Award – 1993

CERTIFICATION:

LC – Granted in 1990 by the National Council on the Qualification of Lighting Professionals

RELEVANT WORK EXPERIENCE:

With PG&E appeared before CEC Committee and Staff on lighting issues with respect to the siting and licensing of Geysers steam power plants.

On behalf of PG&E and the IES appeared before the Simonson Committee to consult on the development of the lighting portions of Title 24.

On behalf of PG&E and the IES appeared before the CEC on numerous occasions to support the development of fluorescent lamp promotional programs and to assist in developing rigorous lighting ballast standards for California and on other lighting energy management issues.

While at PG&E supported and oversaw funding for projects on daylight following and electronic ballasts. Projects supported by both the DOE and CEC.

In practice as a lighting consultant worked with private clients and jurisdictions on matters concerned with light trespass and “intrusive” lighting.

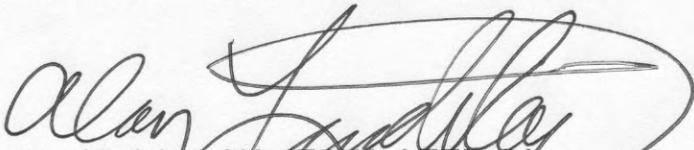
JEJewell
19 February, 2010

DECLARATION OF
Alan Lindsley, AIA, IESNA, LEED GA

I, Alan Lindsley, declare as follows:

1. I am presently Owner of Lindsley Architectural Lighting.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the Intrusive Light analysis in the Traffic and Transportation section of the Rice Supplement Staff Assessment based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.


Alan Lindsley, AIA, IESNA, LEED GA

Digitally signed by Alan Lindsley
DN: cn=Alan Lindsley,
o=Lindsley Architectural
Lighting, ou,
email=alindsley@lindsleylightin
g.com, c=US
Date: 2010.09.28 16:47:10
-07'00'

L I N D S L E Y

Architectural Lighting

<i>One Market Plaza</i> Disabled Access Study San Francisco, CA	1,445,000 square feet	Dallas, TX	
<i>AT&T Gateway Tower</i> Architectural Design Guide Seattle, WA	1,000,000 square feet		<i>Campion Hall, USF</i> San Francisco, CA <i>Exterior Lighting</i>
<i>St. Ignatius Church Master Plan</i> San Francisco, CA	40,000 square feet		<u>RESEARCH LABS</u> <i>Berkeley Wireless Research Center</i> 8,000 square feet Berkeley, CA <i>Electronic Design Automation Center</i> 18,000 square feet Berkeley, CA
<u>SITE/FACADE LIGHTING</u>			
<i>Lake Fork Pump Station</i> Lake Fork, TX	75,000 square feet		<u>EXPERT WITNESS/ LIGHT TRESPASS/ LIGHTING ORDINANCES</u>
<i>Sanctuario de Guadalupe</i> Dallas, TX	South Facade		<i>Yountville Municipal Golf Course</i> Light Trespass & Installation Mitigation Yountville, CA
<i>St. Ignatius Church</i> San Francisco, CA	Exterior Lighting		<i>Pan v. City & County of San Francisco</i> Trip and Fall Litigation San Francisco, CA
<i>Larkspur Landing Lobby</i> Larkspur, CA	5,000 square feet		<i>Carondelet High School</i> Light Trespass Analysis Concord, CA
<i>Grace Cathedral</i> East Facade Lighting San Francisco, CA			<i>Verizon Cell Phone Tower</i> Light Trespass Analysis Concord, CA
<i>Daniels & Fisher Tower</i> Denver, CO	19,000 square feet		<i>City of Concord</i> Lighting Ordinance Draft Review Concord, CA
<i>Masonic Building</i> Denver, CO	54,000 square feet		<i>Alpine Hills Tennis & Swimming Club</i> Light Trespass Analysis Portola Valley, CA
<i>Loyola-Marymount Campanile</i> Los Angeles, CA			<u>THEATRICAL</u>
<i>90 New Montgomery Street</i> San Francisco, CA	110,000 square feet		<i>Palace/ Heritage Theaters</i> 15,000 square feet Grapevine, TX
<i>Emerystation Office Building</i> Emeryville, CA	250,000 square feet		<i>Jinks Theater</i> 12,000 square feet San Francisco, CA
<i>St. Peter's & Paul</i> San Francisco, CA			<u>MEDICAL</u>
<i>Yountville Golf Course</i> Driving Range Yountville, CA			<i>DTC Eye Associates</i> Outpatient Surgery Denver, CO
<i>International House</i> Berkeley, CA	Facade/ Entry Lighting		<u>EDUCATIONAL</u>
<i>595 Market Street Lobby</i> San Francisco, CA	5,000 square feet		<i>Academy of Art College Light Lab</i> Lighting Demonstration Facility
<i>Hunter's Glen Baptist Church</i> Dallas, TX	Facade Lighting Study		
<i>123 Townsend Street</i> San Francisco, CA	Lobby Remodel		
<i>Azure Residence Tower</i> Dallas, TX	400,000 square feet		
<i>1530/1526 Main Street</i>	<i>Exterior Lighting</i>		

L I N D S L E Y

Architectural Lighting

Alan Lawrence Lindsley, AIA, IESNA, LEED GA

Alan Lindsley, Principal and Founder of Lindsley Architectural Lighting, is noted for his creativity, depth of knowledge, strategic capabilities and commitment to green design. He has over thirty years of extensive project management experience in lighting design, interior architecture and historic preservation. As a result, he has the unique ability to fully understand and integrate lighting design with architecture. His design solutions integrate the creative use of lighting design products as well as custom fixtures that he creates for the client. The quality of his projects are frequently recognized by clients and peers within the industry. Numerous IESNA Section awards and AIA awards have been awarded for his project work.

As a hands on designer, he is completely involved in the design, technical evaluation, project coordination and implementation of each project. He has strong capabilities in delivering creatively designed, energy efficient and sustainable projects for corporate, institutional and governmental clients. Working with building departments throughout the United States, he has developed a strong base of knowledge in resolving complicated energy and building code issues. He is well-experienced in effectively directing the efforts of large multi-disciplinary teams to provide effective budget and scheduling controls.

Alan's commitment to energy efficiency and sustainable design spans several decades. His approach incorporates daylighting, use of high efficacy light sources, lighting control systems, and the intelligent application of light and darkness to highlight architectural features and address the needs of the people who inhabit or use the space. He has been actively involved in the dark sky movement to reduce light pollution as well as the American Institute of Architect's 2030 Initiative to produce a carbon neutral building. Alan is a LEED (Leadership in Energy and Environmental Design) Green Associate and member of the US Green Building Council.

Prior to starting his firm, Alan was Vice President at Brereton Architects and an Associate at Gensler and Associates. Alan received his Bachelors of Environmental Design / Architecture from University of Colorado at Boulder. He is a licensed architect (AIA) in California as well as several other states and holds a National Council of Architectural Registration Board certificate.

Current Projects

Wylie Civic Center

300,000 square feet
Wylie, TX

Green's Restaurant

6,000 square feet
San Francisco, CA

Antique Automobile Museum

10,000 square feet
Martinez, CA

California Energy Commission

Solar Generation Facilities
Glare Studies

- Ivanpah Solar Project
- SES Solar 1 & 2
- San Joaquin Solar
- Mojave Solar One
- FPL Genesis
- Solar Millennium Palen
- Solar Millennium Ridgcrest
- Solar Millennium Blythe

Relevant Projects

Yountville Municipal Golf

Course

Light Trespass & Installation
Mitigation

Yountville, CA

Pan v. City & County of San Francisco

Trip and Fall Litigation
San Francisco, CA

Carondelet High School

Light Trespass Analysis
Concord, CA

Verizon Cell Phone Tower

Light Trespass Analysis
Concord, CA

City of Concord

Lighting Ordinance Draft Review
Concord, CA

Alpine Hills Tennis & Swimming Club

Light Trespass Analysis
Portola Valley, CA

Alan is currently launching a manufacturing business producing sustainable solid state (LED) light fixtures for light commercial and residential use. For more information visit www.lindsleylighting.com

Additional information and projects are available on our web site at www.lindsleyarchitecturallighting.com.

L I N D S L E Y

Architectural Lighting

CORPORATE HEADQUARTERS

<i>The Gap</i> San Francisco, CA	100,000 square feet
<i>The Shorenstein Company</i> San Francisco, CA	17,000 square feet
<i>Amerada Hess Corporation</i> Denver, CO	40,000 square feet
<i>National Reinsurance</i> Stamford, CN	80,000 square feet
<i>Hamilton Brothers Oil</i> Denver, CO	100,000 square feet
<i>Levi Strauss & Company</i> San Francisco, CA	700,000 square feet
<i>Informix Campus</i> Palo Alto, CA	1 million square feet
<i>Champlin Petroleum</i> Denver, CO	200,000 square feet
<i>Amoco Production Company</i> Denver, CO	650,000 square feet
<i>Dantz Development Corporation</i> Walnut Creek, CA	30,000 square feet

CORPORATE OFFICES

<i>Scient</i> San Francisco, CA	180,000 square feet
<i>Sony Product Design Center</i> San Francisco, CA	12,000 square feet
<i>Prager, McCarthy & Sealy</i> San Francisco, CA	10,000 square feet
<i>Health Plan of San Mateo</i> San Mateo, CA	22,000 square feet
<i>Westpac Banking Corporation</i> San Francisco, CA	14,000 square feet
<i>Relational Technology, Inc..</i> Alameda, CA	82,000 square feet
<i>West Coast Life Insurance</i> San Francisco, CA	45,000 square feet
<i>Merrill, Pickard, Anderson & Eyre</i> Palo Alto, CA	8,000 square feet
<i>Clarion Resources</i> Denver, CO	12,000 square feet
<i>First Deposit National Corp.</i> Greater San Francisco Bay Area	Various Projects
<i>American Savings and Loan</i> Stockton, CA	200,000 square feet
<i>Dome Petroleum Corporation</i>	155,000 square feet

Denver, CO	
<i>Bank of the West</i> Pleasant Hill, CA	125,000 square feet
<i>33 New Montgomery Street</i> San Francisco, CA	330,000 square feet
<i>One DTC</i> Denver, CO	225,000 square feet
<i>Boettcher DTC</i> Denver, CO	180,000 square feet
<i>Hudson's Bay Centre</i> Denver, CO	180,000 square feet
<i>City Square</i> Oakland, CA	150,000 square feet
<i>222 Kearny Street</i> San Francisco, CA	115,000 square feet
<i>455 Market Street</i> San Francisco, CA	349,000 square feet
<i>Prudential Plaza</i> Denver, CO	130,000 square feet
<i>The Cascades</i> Denver, CO	308,000 square feet
<i>Speer Center</i> Denver, CO	149,000 square feet
<i>Empire Park</i> Denver, CO	350,000 square feet
<i>One Denver Place</i> Denver, CO	250,000 square feet
<i>Great West Plaza I & II</i> Denver, CO	250,000 square feet
<i>Charles Schwab, Phase I & II</i> Pleasanton, CA	360,000 square feet

LAW OFFICES

<i>Jackson, Tufts, Cole & Black</i> San Francisco, CA	14,500 square feet
<i>Kutak, Rock & Huie</i> Denver, CO	45,000 square feet
<i>Anderson & Pearl</i> Reno, NV	8,000 square feet
<i>Heller, Ehrman, White & McAuliffe</i> Palo Alto, CA	40,000 square feet
<i>Brobeck, Phleger & Harrison</i> San Francisco, CA	15,000 square feet

L I N D S L E Y

Architectural Lighting

RESTAURANTS

<i>Elroy's Restaurant</i> San Francisco, CA	17,000 square feet
<i>301 Restaurant</i> San Francisco, CA	6,000 square feet
<i>Boudin Bakery & Cafe</i> United States	12 Selected Stores
<i>Grill Squared</i> Mesa, AZ	8,100 square feet

RETAIL

<i>The North Face Corporate Showrooms</i> 5,000 square feet San Leandro, CA	
<i>The North Face</i> New York City, NY	20,000 square feet
<i>Pier One Imports</i>	4 Selected Stores
<i>The GAP Stores</i>	14 Selected Stores
<i>Jessica McClintock</i> San Francisco, CA	4,500 square feet
<i>American Savings and Loan</i> Branch Banking Pleasanton, CA	5,000 square feet
<i>First Interstate Bank</i> Oakland, CA	10,000 square feet
<i>Writer Square</i> Denver, CO	110,000 square feet
<i>Fantasies</i> Denver, CO	1,200 square feet
<i>Clint Faubion's Mens Store</i> Denver, CO	4,000 square feet
<i>Flower Kiosk</i> San Francisco, CA	45 square feet
<i>Geiger-Brickel Showroom</i> San Francisco, CA	4,500 square feet
<i>Bank of America</i> San Mateo, CA	8,500 square feet
<i>A.G. Ferrari Grocers</i> San Francisco Bay Area	4 Selected Stores
<i>Good Guys Electronics</i> Glendale, CA	14,000 square feet

ATHLETIC FACILITIES

<i>Villa Sports SPLASH</i> Colorado Springs, CO	14,000 square feet
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<i>San Francisco Athletic Club</i> San Francisco, CA	30,000 square feet
<i>24 hr Nautilus</i> Denver, CO	15,000 square feet

SPECIALTY

<i>B of A Video Production Facility</i> Televideo Production Suite San Francisco, CA	16,000 square feet
<i>Vallejo Street Renovation</i> Historic District Street Lighting San Francisco, CA	
<i>Oakland A's Press Box</i> Oakland, CA	3,000 square feet
<i>World Bank Child Care Center</i> Washington, D.C.	6,000 square feet

SINGLE / MULTI-FAMILY

<i>Matthews Residence</i> Orinda, CA	3400 square feet
<i>Alderson House</i> Tiburon, CA	5400 square feet
<i>Banks/ Baron Residence</i> Oakland, CA	3200 square feet
<i>Slater Residence (Esherick Original)</i> Los Altos Hills, CA	
<i>McNealy Residence</i> Portola Valley, CA	
<i>Shenkman Residence</i> Tiburon, CA	6,000 square feet
<i>DeSilva Island Townhouses</i> Marin, CA	3200 square feet
<i>Siebel Apartment</i> Paris, FR	8,000 square feet
<i>Park Townsend Housing</i> San Jose, CA	70,000 square feet
<i>Knights Valley Residence</i> Knights Valley, CA	25,000 square feet
<i>Paigebrook Farms Renovation</i> Westlake, TX	10,000 square feet
<i>Azure Residence Tower</i> Dallas, TX	400,000 square feet

CONTINUING CARE RETIREMENT COMMUNITIES

<i>Classic by Hyatt</i> Palo Alto, CA	1,000,000 square feet
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L I N D S L E Y

Architectural Lighting

<i>The Sequoias</i> San Francisco, CA	200,000 square feet	<u>CIVIC</u>	
<i>Querencia at Barton Creek</i> Austin, TX	400,000 square feet	<i>Courthouse Square</i> Riverside, CA	55,000 square feet
<u>SACRED SPACES</u>		<i>Wylie Civic Center</i> Wylie, TX	160,000 square feet
<i>St. Peter's Church</i> San Francisco, CA	20,000 square feet	<i>The Beach Chalet</i> San Francisco, CA	6,000 square feet
<i>Old St. Mary's Church</i> San Francisco, CA	50,000 square feet	<i>City of Hayward City Hall</i> Hayward, CA	155,000 square feet
<i>St. Agnes Cathedral</i> San Francisco, CA	75,000 square feet	<i>911 Emergency Building</i> San Francisco, CA	65,000 square feet
<i>Mission Dolores</i> San Francisco, CA	12,000 square feet	<i>Hearst Castle</i> San Simeon, CA	50,000 square feet
<i>St. Peter's Church</i> San Francisco, CA	20,000 square feet	<i>Tower Building</i> Dallas, TX	56,000 square feet
<i>St. Agnes Cathedral</i> San Francisco, CA	75,000 square feet	<i>The Columbarium</i> San Francisco, CA	10,000 square feet
<i>Mission Dolores</i> San Francisco, CA	12,000 square feet	<i>Food & Fiber Building</i> Dallas, TX	50,000 square feet
<i>Congregation Beth Am</i> Ark of the Covenant Lighting Los Altos, CA		<i>Centennial/ Automobile Building</i> Dallas, TX	100,000 square feet
<i>Sanctuario de Guadalupe</i> Dallas, TX	20,000 square feet	<i>Fair Park Bandshell</i> Dallas, TX	
<i>Sanctuario de Guadalupe Tower</i> Dallas, TX	6,000 square feet	<i>Hopkins County Courthouse</i> Sulphur Springs, TX	16,000 square feet
<i>Hunter's Glen Baptist Church</i> Dallas, TX	Facade Lighting Study	<i>Old Red Courthouse</i> Dallas, TX	40,000 square feet
<i>St. Ignatius Church Exterior</i> San Francisco, CA	24,000 square feet	<i>Wylie Civic Center</i> Wylie, TX	300,000 square feet
<i>St. Ignatius Church Master Plan</i> San Francisco, CA	40,000 square feet	<u>HOSPITALITY</u>	
<i>St. Ignatius Stations of the Cross</i> San Francisco, CA	10,000 square feet	<i>Bohemian Club</i> San Francisco, CA	50,000 square feet
<i>St. Ignatius Upper Nave (PII)</i> San Francisco, CA	10,000 square feet	<i>The Donatello Hotel</i> San Francisco, CA	15,000 square feet
<i>St. Ignatius Parish Offices</i> San Francisco, CA	3,700 square feet	<i>Joule Boutique Hotel</i> Dallas, TX	250,000 square feet
<i>St. Joan of Arc Catholic Church</i> San Ramon CA	10,500 square feet	<i>Delta Gamma House</i> Berkeley, CA	2,000 square feet
<i>Sanctuario de Guadalupe</i> Dallas, TX	20,000 square feet	<u>MASTER PLANNING</u>	
<i>Sanctuario de Guadalupe Tower</i> Dallas, TX	6,000 square feet	<i>Fair Park Esplanade</i> Master Plan Dallas, TX	1 million square feet
		<i>Wadsworth Publishing</i> Master Plan San Mateo, CA	60,000 square feet

L I N D S L E Y

Architectural Lighting

San Francisco, CA

San Francisco Art Institute Tower
125th Anniversary Celebration
San Francisco, CA

Kalmanovitz Hall 10,000 square feet
University of San Francisco
San Francisco, CA

Thacher Gallery 1,000 square feet
University of San Francisco
San Francisco, CA

Tenderloin Elementary School 30,000 square feet
San Francisco, CA

MUSEUM DISPLAY

Petro-Lewis Mineral Collection
Denver, CO

Leland Stanford Museum 16,000 square feet
Sacramento, CA

Bohemian Club 50,000 square feet
San Francisco, CA

Thacher Gallery 10,000 square feet
San Francisco, CA

SIGNAGE

3COM 3D Site Signage
Santa Clara, CA

EPRI Site Signage
San Mateo, CA

MULTI-USE PROJECTS

116 University Avenue 16,000 square feet
Palo Alto, CA

102 University Avenue 10,400 square feet
San Mateo, CA

**DECLARATION OF
William D. Kanemoto**

I, William Kanemoto, declare as follows:

1. I am presently under contract with Aspen Environmental Group to provide environmental technical assistance to the California Energy Commission. Under Contract No. 700-08-001, I am serving as a Visual Resource Specialist to provide Peak Workload Support for the Energy Facility Siting Program and for the Energy Planning Program.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the final staff testimony on Visual Resources for the Rice Solar Energy Project (RSEP) Power Plant Licensing Case based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. I am personally familiar with the facts and conclusions applicable to the visual resource analysis and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 27, 2010

Signed: _____



At: Oakland, California

William Kanemoto

Visual Resource/Aesthetics Analyst

Academic Background:

M. Landscape Architecture, University of Michigan, Ann Arbor, 1982
B.A. Liberal Arts (Honors), University of California, Santa Cruz, 1973

Professional Experience:

Principal

William Kanemoto & Associates, Oakland, California, 1993 - Present

William Kanemoto is Principal of William Kanemoto & Associates, an environmental consulting practice specializing in visual analysis and computer visualization in the context of environmental review. In this capacity he has served as principal investigator for visual analysis and simulation on a wide range of major infrastructure and development projects, including the High Desert Power Project AFC, Port of Oakland Expansion EIS, Route 4 East/Pittsburg BART EIS, FMC Substation and Transmission Line PEA, and numerous other infrastructure and transportation projects. Mr. Kanemoto received recognition from the California Association of Environmental Professionals for visual analysis, computer simulation, animation, and video production for the Stanford Sand Hill Road Projects EIR, prepared by EIP Associates and judged 'Best State-Wide EIR of 1997'.

Associate Director

Environmental Simulation Laboratory,
Institute of Urban and Regional Development,
Center for Environmental Design Research
University of California, Berkeley, 1994 - 2000

Instructed graduate students in the College of Environmental Design, U.C. Berkeley, served as consultant on various major planning projects in the San Francisco Bay Area, and conducted design collaborations with counterparts at Keio University and ARK CyberUniversity in Tokyo, Japan via the Internet.

Principal Investigator/Project Manager

Dames & Moore, San Francisco/Oakland, California, 1988-1992

Served as principal investigator of numerous visual analyses of major infrastructure projects throughout the U.S., in Europe, and in Asia. Gained extensive familiarity with the application of a wide range of professionally accepted visual assessment techniques in the context of CEQA, NEPA, and related regulatory requirements of the CPUC, CEC, FERC, DOT, U.S. Forest Service, BLM, and other agencies.

Project Manager

LSA Associates, Pt. Richmond, California, 1987-1988

Project manager and planner on environmental impact reports for various residential and commercial development projects in northern California.

Environmental Planner

Holton Associates, Berkeley, California, 1984-1987

Preparation of various resource and regulatory studies including EIRs, FERC Exhibit E, Section 404 alternative analyses, riparian restoration studies, and cumulative impact methodology studies for EPRI and Sierra County, CA.

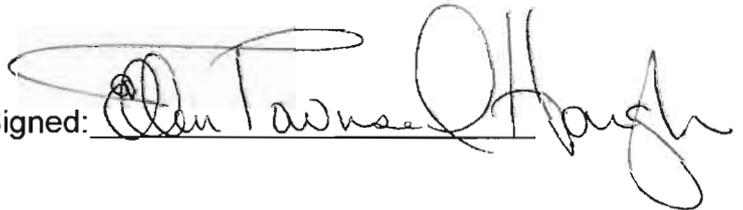
**DECLARATION OF
Ellen Townsend-Hough**

I, **Ellen Townsend-Hough** declare as follows:

1. I am presently employed by the California Energy Commission in the Environmental Siting Office of the Siting Transmission & Environmental Protection Division as an Associate Mechanical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on Waste Management for the Rice Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/28/10

Signed: 

At: Sacramento, California

Ellen Townsend-Hough, REA
(Registered Environmental Assessor, REA 1 – 05465)

SUMMARY

I am a chemical engineer with 30 years of experience. My professional career has afforded me many unique growth and development opportunities. I have a working knowledge of the California Environmental Quality Act. My strengths are in analyzing and performing complex environmental engineering analyses, in areas such as Waste Management, Hazardous Materials Management, Worker Safety, and Water Resources. I worked as a policy advisor to a California Energy Commissioner for three years. I am also an US Environmental Protection Agency Environmental Justice trainer.

PROFESSIONAL EXPERIENCE

Writing

- Write environmental impact reports , negative declarations that require technical evaluation of mechanical engineering and environmental aspects of pollution control systems, environmental impacts, public health issues and worker safety.

Technical Analysis and Presentation

- Performs mechanical engineering analysis of designs for complex mechanical engineering analysis of designs for systems such as combustion chambers and steam boilers, turbine generators, heat transfer systems, air quality abatement systems, cooling water tower systems, pumps and control systems
- Review and process compliance submittals in accordance with the California Environmental Quality Act, the Warren Alquist Act, the Federal Clean Air Act and the California and Federal Occupational Health and Safety Acts to assure compliance of projects
- Provides licensing recommendations and function as an expert witness in regulatory hearings.
- Provide public health impact analysis to assess the potential for impacts associated with project related air toxic/non-criteria pollutant emissions.
- Evaluate the potential of public exposure to pollutant emissions during routine operation and during incidents due to accidents or control equipment failure
- Provide an engineering analysis examining the likelihood of compliance with the design criteria for power plants and also examine site specific potential significant adverse environmental impacts

Technical Skills

- Establish mitigation that reduces the potential for human exposure to levels which would result in significant health impact or health risk in any segment of the exposed population.
- Assist with on-site audits and inspection to assure compliance with Commission decisions.
- Review and evaluate the pollution control technology applied to thermal power plants and other industrial energy conversion technologies.
- Work with the following software applications: WORD, Excel, and PowerPoint.

Policy Advisor

- Provided policy, administrative and technical advice to the Commissioner Robert Pernell. My work with the Commissioner focused on the policy and environmental issues related to the Commission's power plant licensing, research and development and export programs.
- Track and provide research on varied California Energy Commission (CEC) programs. Prepare analysis of economic, environmental and public health impacts of programs, proposals and other Commission business items.
- Represent Commissioner's position in policy arenas and power plant siting discussions.
- Write and review comments articulating commission positions before other regulatory bodies including Air Resources Board, California Public Utilities Commission, and the Coastal Commission.
- Wrote speeches for the Commissioner's presentations.

EDUCATION

Bachelor of Science, Chemical Engineering
Drexel University, Philadelphia Pennsylvania

Continuing Education

Hazardous Material Management Certificate, University California Davis
Urban Redevelopment and Environmental Law, University of California Berkley
Analytical Skills, California Department of Personnel Administration (DPA) Training Center
Legislative Process/Bill Analysis, DPA Training Center
Federally Certified Environmental Justice Trainer

**DECLARATION OF
Erin Bright**

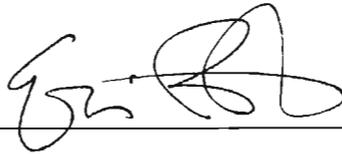
I, **Erin Bright**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Engineering Office** of the Siting, Transmission and Environmental Protection Division as a **Mechanical Engineer**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on **Facility Design** for the **Rice Solar Energy Project** (09-AFC-10) based on my independent analysis of the Application, supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 11, 2010

Signed: _____



At: Sacramento, California

Erin Bright
Mechanical Engineer

Experience Summary

Two years of experience in the electric power generation field, including analysis of noise pollution, construction/licensing of electric generating power plants, and engineering and policy analysis of thermal power plant regulatory issues. One year of experience in the alternative energy field, including analysis of alternative fuel production and use.

Education

- University of California, Davis--Bachelor of Science, Mechanical Engineering and Materials Science
- University of California, Davis Extension Program--Renewable Energy Systems

Professional Experience

2007 to Present-- Mechanical Engineer, Energy Facilities Siting Division - California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

2006 to 2007--Energy Analyst, Fuels & Transportation Division - California Energy Commission

Performed analysis of use potential and environmental effects of emerging non-petroleum fuels, including compressed natural gas, biomass, hydrogen and electricity, in heavy and light duty transportation vehicles. Contributor to Energy Commission's alternative fuels plan.

**DECLARATION OF
AJOY GUHA**

I, **Ajoy Guha**, declare as follows:

1. I am presently employed by the California Energy Commission in the **Transmission System Engineering unit** of the Siting, Transmission and Environmental Protection Division as an Associate Electrical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **Transmission System Engineering**, for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/28/10

Signed: 

At: Sacramento, California

RESUME

AJOY GUHA

*Associate Electrical Engineer
California Energy Commission
1516 Ninth Street, MS 46
Sacramento, CA 95814*

EDUCATION:

MSEE, POWER SYSTEMS ENGINEERING, PURDUE UNIVERSITY, INDIANA
BSEE, ELECTRICAL ENGINEERING, CALCUTTA UNIVERSITY, INDIA

CERTIFICATIONS:

REGISTERED PROFESSIONAL ENGINEER, CALIFORNIA, INDIANA & ILLINOIS
MEMBER OF IEEE; MEMBER OF THE INSTITUTION OF ENGINEERS OF INDIA

SUMMARY OF PROFESSIONAL BACKGROUND:

Ajoy Guha, P. E. has years of electric utility experience with an extensive background in evaluating and determining current and potential transmission system reliability problems and their cost effective solutions. He has a good understanding of the transmission issues and concerns. He is proficient in utilizing computer models of electrical systems in performing power flow, dynamic stability and short circuit studies, and provide system evaluations and solutions, and had performed generator interconnection studies, area transfer and interconnected transmission studies, and prepared five year transmission alternate plans and annual operating plans. He is also experienced in utilizing Integrated Resource Planning computer models for generation production costing and long term resource plans, and had worked as an Executive in electric utilities and experienced in construction, operation, maintenance and standardization of transmission and distribution lines.

WORK EXPERIENCE:

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING AND ENVIRONMENTAL DIVISION, SACRAMENTO, CA, 11/2000-Present.

Working as Associate Electrical Engineer in the Transmission System Engineering unit on licensing generation projects. Work involves evaluating generation interconnection studies and their impacts on transmission system, and providing staff assessments and testimony to the commission, and coordination with utilities and other agencies.

ALLIANT ENERGY, DELIVERY SYSTEM PLANNING, MADISON, WI, 4/2000-9/2000.

Worked as Transmission Services Engineer, performed Generator Interconnection studies and system planning studies.

IMPERIAL IRRIGATION DISTRICT, POWER DEPT., Imperial, California, 1985-1998.

Worked as Senior Planning Engineer in a supervisory position and in Transmission, Distribution and Integrated Resource planning areas. Performed interconnection studies for 500 MW geothermal plants and developed plan for a collector system, developed methodologies for transmission service charges, scheduling fees and losses. Worked as the Project Leader in the 1992 Electricity Report (ER 92) process of the California Energy Commission. Worked as the Project Leader for installation of an engineering computer system and softwares. Assumed the Project Lead in the standardization of construction and materials, and published construction standards.

CITY LIGHT & POWER, Frankfort, Indiana, 1980 – 1985.

Worked as Assistant Superintendent and managed engineering, construction and operation depts.

WESTERN ILLINOIS POWER CO-OP., Jacksonville, Illinois, 1978 – 1980.

Worked as Planning Engineer and was involved in transmission system planning.

THE CALCUTTA ELECTRIC SUPPLY CORPORATION LTD. (CESC), Calcutta, India, 1964 –1978.

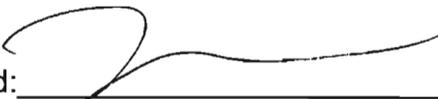
Worked as District Engineer and was responsible for managing customer relations, purchasing and stores, system planning, construction, operation and maintenance departments of the most industrialized Transmission and Distribution division of the Utility. Worked as PROJECT MANAGER for construction of a 30 mile Double Circuit 132 kV gas-filled Underground Cable urban project. During 1961-63, worked as Factory Engineer for design, manufacturing and testing of transformers, motor starters and worked in a coal-fired generating plant.

**DECLARATION OF
Mark Hesters**

I, **Mark Hesters**, declare as follows:

1. I am presently employed by The California Energy Commission in the **Siting, Transmission and Environmental Protection Division** as a Senior Electrical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on **Transmission System Engineering**, for the **Rice Solar Energy Project**, based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/27/10 Signed: 
At: Sacramento, CA

Mark Hesters
Associate Electrical Engineer

Mark Hesters has fourteen years of experience in electric power regulation. He worked in the Engineering Office of the California Energy Commission's Energy Facilities Siting & Environmental Protection Division since 1998 providing analysis of California transmission systems and testimony on transmission systems in several Commission power plant certification processes. Prior to that Mark worked in the CEC's Electricity Analysis Office providing lead analysis on Southern California Edison resource issues and modeling support for all areas of California. He holds a B.S. degree from the University of California at Davis in Environmental Policy Analysis and Planning.

**DECLARATION OF
Chris Davis**

I, Chris Davis, declare as follows:

1. I am presently employed by the California Energy Commission in the Siting, Transmission and Environmental Protection Division, as a Compliance Project Manager.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on the **General Conditions Including Compliance Monitoring and Closure Plan** for the **Rice Solar Energy Project** (09-AFC-10) based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 8-9-10

Signed: 

At: Sacramento, California

Chris Davis

California Energy Commission
1516 Ninth St., MS-2000
Sacramento, California 95814
(916) 654-4842

Professional Experience

*January 2008
to present*

California Energy Commission

Planner III Compliance Project Manager – Oversee power plant construction. Process amendments to Energy Commission project certifications. Direct technical staff in tasks related to compliance issues regarding power plant project design, construction, operation, and associated environmental issues. Work with power plant operators, public agencies, community groups, engineering, legal and technical staff to identify and resolve issues.

2007-2008

California Energy Commission

Energy Specialist I – Education and outreach for the New Solar Homes Partnership (NSHP) and the Building Standards Office. Developed fact sheets on proposed changes to the 2008 building standards and a tutorial on how to use the PV Calculator to figure photovoltaic system power production and expected incentives. Wrote case study, articles and Web pages explaining various aspects of the NSHP program. Certified by CalCERTS (California Energy Rating and Testing Services) as a Home Energy Rating System (HERS) rater for photovoltaic systems. Organized, developed materials and staffed Energy Commission booth/tables for conferences put on by California Building Energy Consultants (CABEC) and others.

2005-2007

State Water Quality Control Board

Information Officer I - Liaison between the media and both the State Water Board and Central Valley Regional Water Board. Issues included waste (NPDES) permits, groundwater contamination and treatment, once-through cooling, emerging contaminants, contaminated beaches, stormwater containment, and areas of special biological significance. Organized, produced and served as master of ceremonies for presentations of grant awards to repair watersheds, practice sustainable forestry and construct water treatment facilities.

2005-2008

California Energy Commission

Information Officer I – Joined the Energy Commission media office during California's power crisis. Liaison between Energy Commission and media in the area of power plant licensing. Wrote

news releases about projects as they reached milestones in the approval and construction process, including a number of releases for Governor's office about new facilities beginning operations. Initiated and developed Power Plant Fact Sheet in cooperation with Siting Office manager.

DECLARATION OF

I, **Rick Tyler** declare as follows:

1. I am presently employed by the California Energy Commission in the Engineering Office of the Siting, Transmission, and Environmental Protection Division as a Senior Mechanical Engineer.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I supervised preparation of the Revised Staff Assessment for Hazardous Materials Management and Worker Safety Fire Protection Sections for the Rice Solar Energy Project based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony and errata is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and errata and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 9/28/10

Signed: 

At: Sacramento, California

RICK TYLER

Associate Mechanical Engineer

CALIFORNIA ENERGY COMMISSION

EDUCATION B.S., Mechanical Engineering, California State University, Sacramento. Extra course work in Statistics, Instrumentation, Technical Writing, Management; Toxicology, Risk Assessment, Environmental Chemistry, Hazardous Materials Management, Noise Measurement, and regulations regarding control of toxic substances.

Near completion of course work necessary to obtain a certificate in hazardous materials management from University of California, Davis.

EXPERIENCE

Jan. 1998- Present California Energy Commission - Senior Mechanical Engineer
Energy Facility Siting and Environmental Protection Division

Responsible for review of Applications for Certification (applications for permitting) for large power plants including the review of handling practices associated with the use of hazardous and acutely hazardous materials, loss prevention, safety management practices, design of engineered equipment and safety systems associated with equipment involving hazardous materials use, evaluation of the potential for impacts associated with accidental releases and preparation and presentation of expert witness testimony and conditions of certification. Review of compliance submittals regarding conditions of certifications for hazardous materials handling, including Risk Management Plans Process Safety Management.

April 1985- Jan. 1998 California Energy Commission - Health and Safety
Program Specialist; Energy Facility Siting and Environmental Protection Division.

Responsible for review of Public Health Risk Assessments, air quality, noise, industrial safety, and hazardous materials handling of Environmental Impact Reports on large power generating and waste to energy facilities, evaluation of health effects data related to toxic substances, development of recommendations regarding safe levels of exposure, effectiveness of measures to control criteria and non-criteria pollutants, emission factors, multimedia exposure models. Preparation of testimony providing Staff's position regarding public health, noise, industrial safety, hazardous materials handling, and air quality issues associated with proposed power plants. Advise Commissioners, Management, other Staff and the public regarding issues related to health risk assessment of hazardous materials handling.

Nov. 1977-
April 1985

California Air Resources Board - Engineer (last 4 years Associate level)

Responsible for testing to determine pollution emission levels at major industrial facilities; including planning, supervision of field personnel, report preparation and case development for litigation; evaluate, select and acceptance-test instruments prior to purchase; design of instrumentation systems and oversight of their repair and maintenance; conduct inspections of industrial facilities to determine compliance with applicable pollution control regulations; improved quality assurance measures; selected and programmed a computer system to automate data collection and reduction; developed regulatory procedures and the instrument system necessary to certify and audit independent testing companies; prepared regulatory proposals and other presentations to classes at professional symposia and directly to the Air Resources Board at public hearings. As state representative, coordinated efforts with federal, local, and industrial representatives.

PROFESSIONAL
AFFILIATIONS/
LICENSES

Past President, Professional Engineers in California
Government Fort Sutter Section;
Past Chairman, Legislative Committee for Professional Association of Air Quality Specialists. Have passed the Engineer in Training exam.

PUBLICATIONS,
PROFESSIONAL
PRESENTATIONS
AND
ACCOMPLISHMENTS

Authored staff reports published by the California
Air Resources Board and presented papers regarding
continuous emission monitoring at symposiums.

Authored a paper entitled "A Comprehensive Approach to Health Risk Assessment", presented at the New York Conference on Solid Waste Management and Materials Policy.

Authored a paper entitled "Risk Assessment A Tool For Decision Makers" at the Association of Environmental Professionals AEP Conference on Public Policy and Environmental Challenges.

Conducted a seminar at University of California, Los Angeles for the Doctoral programs in Environmental Science and Public Health on the subject of "Health Risk Assessment".

Authored a paper entitled "Uncertainty Analysis -An Essential Component of Health Risk Assessment and Risk Management" presented at the EPA/ORNL expert workshop on Risk Assessment for Municipal Waste Combustion: Deposition, Uncertainty, and Research Needs.

Presented a talk on off-site consequence analysis for extremely hazardous materials releases. Presented at the workshop for administering agencies conducted by the City of Los Angeles Fire Department.

Evaluated, provided analysis and testimony regarding public health and hazardous materials management issues associated with the permitting of more than 20 major power plants throughout California.

Developed Departmental policy, prepared policy documents, regulations, staff instruction, and other guidance documents and reference materials for use in evaluation of public health and hazardous materials management aspects of proposed power plants.

Project Manager on contracts totaling more than \$500,000.

RES.RT

**DECLARATION OF
SHAHAB KHOSHMAHRAB**

I, **SHAHAB KHOSHMAHRAB**, declare as follows:

1. I am presently employed by the California Energy Commission in the **ENGINEERING OFFICE** of the Facilities Siting Division as a **MECHANICAL ENGINEER**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I participated in the preparation of the staff testimonies on **Noise and Vibration, Power Plant Efficiency, and Power plant Reliability** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimonies are valid and accurate with respect to the issues addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimonies and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: October 7, 2010

Signed: 

At: Sacramento, California

Shahab Khoshmashrab
Mechanical Engineer

Experience Summary

Nine years experience in the Mechanical, Civil, Structural, and Manufacturing Engineering fields involving engineering and manufacturing of various mechanical components and building structures. This experience includes QA/QC, construction/licensing of electric generating power plants, analysis of noise pollution, and engineering and policy analysis of thermal power plant regulatory issues.

Education

- California State University, Sacramento-- Bachelor of Science, Mechanical Engineering
- Registered Professional Engineer (Mechanical), California

Professional Experience

2001-2004--Mechanical Engineer, Systems Assessment and Facilities Siting-- California Energy Commission

Performed analysis of generating capacity, reliability, efficiency, noise and vibration, and the mechanical, civil/structural and geotechnical engineering aspects of power plant siting cases.

1998-2001--Structural Engineer – Rankin & Rankin

Engineered concrete foundations, structural steel and sheet metal of various building structures including energy related structures such as fuel islands. Performed energy analysis/calculations of such structures and produced structural engineering detail drawings.

1995-1998--Manufacturing Engineer – Carpenter Advanced Technologies

Managed manufacturing projects of various mechanical components used in high tech medical and engineering equipment. Directed fabrication and inspection of first articles. Wrote and implemented QA/QC procedures and occupational safety procedures. Conducted developmental research of the most advanced manufacturing machines and processes including writing of formal reports. Developed project cost analysis. Developed/improved manufacturing processes.

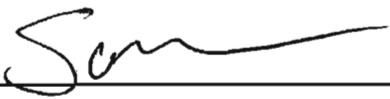
**DECLARATION OF
Testimony of Scott Debauche**

I, **Scott Debauche**, declare as follows:

1. I am presently employed by Aspen Environmental Group, a contractor to the California Energy Commission, Siting, Transmission and Environmental Protection Division, as a **Traffic and Transportation Technical Specialist**.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I prepared the staff testimony on **Traffic and Transportation** for the **Rice Solar Energy Project Staff Assessment/Draft Environmental Impact Statement** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 7, 2010

Signed: 

At: Agoura Hills, California



SCOTT DEBAUCHE
Environmental Planner

ACADEMIC BACKGROUND

B.S., Urban & Regional Planning, University of Minnesota, 1994

PROFESSIONAL EXPERIENCE

Mr. Debauche is an environmental planner with over 14 years of experience preparing a variety of federal and State of California environmental, planning, and analytical documents for large-scale infrastructure and development projects. Mr. Debauche brings the experience of specializing in the integration and completion of NEPA and CEQA documentation joint documentation evaluating Transportation/Traffic, Noise, Socioeconomics and Environmental Justice, Air Quality, and Alternatives analyses.

Aspen Environmental Group

2001 to present

- **TANC Transmission Project (TTP) EIR/EIS, several Northern California Counties.** Mr. Debauche is currently serving as the Technical Specialist in charge of preparation of the EIR/EIS Transportation/Traffic and Socioeconomics CEQA/NEPA analyses. The Transmission Agency of Northern California (TANC) and Western Area Power Administration (Western), an agency of the U.S. Department of Energy (DOE), are the CEQA lead agency and NEPA lead agency, respectively. The TTP generally would consist of new and upgraded 500 kilovolt (kV) and 230 kV transmission lines, substations, and related facilities generally extending from northeastern California near Ravendale in Lassen County to the California Central Valley through Sacramento and Contra Costa Counties and westward into the San Francisco Bay Area.
- **Little Rock Reservoir Sediment Removal Project EIS/EIR, Palmdale, CA.** Mr. Debauche is the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, and Socioeconomics analyses for this joint EIS/EIR evaluating the impacts of sediment removal alternatives for the Little Rock Reservoir and Dam on USFS Angeles National Forest (NEPA Lead Agency) lands in Los Angeles County. The project involves impacts to the arroyo toad, extensive coordination with USFWS for a Section 7 consultation, incorporation of new Forest Service Plan updates and requirements into the analysis, preparation of the Forest Service required BE/BA, and analysis of compliance with federal conformity requirements. Aspen is currently working on the Administrative Draft EIR/EIS and assisting the PWD with portions of their Proposition 50 grant application to the DWR.
- **Alta Wind Project EIR, Kern County, CA.** Mr. Debauche is the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, and Air Quality analyses for this EIR. The applicant, Alta Windpower Development, LLC, proposes to develop the Alta-Oak Creek Mojave Project (proposed project or project) for the commercial production of up to 800 Megawatts (MW) of electricity from wind turbines. The proposed project would result in construction of up to 350 wind turbine generators, their ancillary facilities and supporting infrastructure located on three distinct land areas comprising a total of approximately 10,750 acres located approximately 3 miles west of State Route (SR) 14 (Antelope Valley Freeway) and 3 miles south of SR-58 in the Willow Springs area of eastern Kern County.

- **Liberty Energy Power Plant EIR, Banning, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Air Quality, Public Services and Utilities, and Hazardous Materials analyses for this CEQA document. Liberty Energy is proposing to construct a new biomass power plant, located at the eastern terminus of Westward Avenue in the City of Banning, Riverside County, California. The generating facility would include three power generation units (trains) to produce 15 MW (17.5 MW gross). Each unit would utilize a bubbling fluidized bed gasifier boiler to generate heat to produce high pressure steam.
- **Baldwin Hills Oil Field Community Standards District EIR Review and Ordinance Preparation, Culver City, CA.** Mr. Debauche served as the Technical Specialist for the City of Culver City reviewing the Los Angeles County Baldwin Hills Oils Field Community Standards District EIR Noise analysis evaluating the impacts of expanding the existing Baldwin Hills oil field. Once completed, Mr. Debauche then prepared the Noise section of the newly enacted City of Culver City Community Standards District overlay zone restricting noise generation by the Baldwin Hills Oil Field on the residents of Culver City.
- **Topaz Solar Project EIR, San Luis Obispo County, CA.** Mr. Debauche is the Technical Specialist in charge of preparation of the Transportation/Traffic and Air Quality sections of this EIR for this 500 MW solar photovoltaic project in the Carrizo Plain area. This project requires the conversion of approximately 6,000 acres of open space (60 percent of which are under land preservation contracts) to an industrial use.
- **California Valley Solar Ranch EIR, San Luis Obispo County, CA.** Mr. Debauche is the technical specialist in charge of preparation of the Air Quality analysis of this EIR for this 250 MW solar photovoltaic project in the Carrizo Plain area. This project requires the conversion of approximately 4,000 acres of open space to an industrial use.
- **Long Beach LNG Import Project EIR/EIS, Long Beach, CA.** Under contract to the City of Long Beach, Aspen was tasked to review the Draft EIS/EIR for the proposed construction and operation of this onshore LNG facility to be located at the Port of Long Beach. Mr. Debauche reviewed the document for technical adequacy and assisted the City in preparing written comments for the following sections of the EIS/EIR: Transportation/Traffic and Noise.
- **Sunset Substation and Transmission and Distribution Project EIR, Banning, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this EIR. The City of Banning proposes to construct the Sunset Substation and supporting 33-kilovolt (kV) transmission line that would interconnect with the City's existing distribution system. The purpose of this new substation and transmission is to relieve the existing overloads that are occurring within the City's electric system and to accommodate projected growth in the City.
- **MARS EIR/EIS, Monterey, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Environmental Justice analysis for this EIR/EIS, which would evaluate the effects associated with the installation and operation of the proposed Monterey Accelerated Research System (MARS) Cabled Observatory Project (Project) proposed by Monterey Bay Aquarium Research Institute (MBARI)[NEPA Lead Agency]. The goal of the Project was to install and operate, in State and Federal waters, an advanced cabled observatory in Monterey Bay that would provide a continuous monitoring presence in the Monterey Bay National Marine Sanctuary (MBNMS) as well as serve as the test bed for a state-of-the-art regional ocean observatory, currently one component of the National Science Foundation (NSF) Ocean Observatories Initiative (OOI). The Environmental Justice analysis evaluated the potential for any disproportionate project impacts to both land-based populations and fisheries workers.
- **Diablo Canyon Power Plant (DCPP) Steam Generator Replacement Project EIR, San Luis Obispo County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation

of the Socioeconomics and Alternatives analyses sections of this EIR. The EIR addressed impacts associated with the replacement of the eight original steam generators (OSGs) at DCPD Units 1 and 2 due to degradation from stress and corrosion cracking, and other maintenance difficulties. The Proposed Project would be located at the DCPD facility, which occupies 760 acres within PG&E's 12,000-acre owner-controlled land on the California coast in central San Luis Obispo County. Land use issues of concern include impacts to agricultural lands, recreational resources, and potential Coastal Act inconsistencies.

- **Lake Canyon Dam and Detention Basin Project EIR, Ventura County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Air Quality, and Hazardous Materials analyses for this CEQA document. The proposed project would include an earthfill dam and detention basin located in an unincorporated area of Ventura County, California. It would operate in conjunction with the existing Arundell Dam and Detention Basin, which is located an estimated 600 feet south-southwest and downstream of the proposed project site, to detain peak storm flows and capture the associated debris expected from a 100-year storm event.
- **Colton Substation Project IS/MND, Colton, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Air Quality, and Hazardous Materials analyses for this CEQA document. The City of Colton proposes to construct the 1.9 acre North Substation and supporting 1.7 miles of 69 kV subtransmission and distribution facilities necessary to interconnect with the existing city-owned subtransmission and distribution systems.
- **San Antonio Creek Giant Reed Removal Project IS/MND, Ventura County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of a number of technical issues area analyses for this CEQA document including: Transportation/Traffic, Noise, Air Quality, and Hazardous Materials. The purpose of the project is to remove giant reed within the upper reaches of the San Antonio Creek watershed and several tributaries to support other existing efforts to remove this invasive plant species along the main stem of the Ventura River and its watershed.

California Public Utilities Commission (CPUC). Under Aspen's environmental services contract with the CPUC, Mr. Debauche has prepared environmental analysis sections of environmental reports analyzing large-scale infrastructure projects. His project experience with the CPUC includes the following:

- **Tehachapi Renewable Transmission Project (TRTP) EIR/EIS, Kern, Los Angeles, and San Bernardino Counties, CA.** For this EIR/EIS prepared by USFS, Angeles National Forest and CPUC, Mr. Debauche is currently serving as the Technical Specialist for Noise and Alternatives evaluation for SCE's proposal to construct, use, and maintain a series of new and upgraded high-voltage electric transmission lines and substations to deliver electricity generated from new wind energy projects in eastern Kern County. Approximately 46 miles of the project would be located in a 200- to 400-foot right-of-way on National Forest System land (managed by the Angeles National Forest) and approximately three miles would require expanded right-of-way within the Angeles National Forest. The proposed transmission system upgrades of TRTP are separated into eight distinct segments: Segments 4 through 11. Segments 1 (Antelope-Pardee) and Segments 2 and 3 (Antelope Transmission Project) were evaluated in separate CEQA and NEPA documents as described below.
- **Devers-Palo Verde 500 kV Transmission Line Project EIS/EIR, southern California/western Arizona.** For this EIR/EIS prepared by U.S. Bureau of Land Management and CPUC, Mr. Debauche served as the Technical Specialist for Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for SCE's proposed 250-mile transmission line project from the Palo Verde Nuclear power plant in Arizona to the northern Palm Springs area in California. Major issues of concern include EMF and visual impacts on property values, impacts on the area's vast recreational resources and tribal lands, and the development and evaluation of several route alternatives, including the Devers-Valley No. 2 Route Alternative, which eventually was approved by the CPUC.

- **Antelope-Pardee 500 kV Transmission Line Project EIS/EIR, Los Angeles County, CA.** For this EIR/EIS prepared by USFS, Angeles National Forest and CPUC, Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for SCE's proposed 25-mile transmission line project from the Antelope Substation in the City of Lancaster, through the ANF, and terminating at SCE's Pardee Substation in Santa Clarita. Major issues of concern included impacts to biological, recreational, and cultural resources within Forest lands, EMF and visual impacts on property values, impacts on residences in the urbanized southern regions of the route, and the development and evaluation of several route alternatives.
- **El Casco System Project EIR, Riverside, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this EIR prepared for the CPUC to evaluate SCE's application for a Permit to Construct (PTC) the El Casco System Project. The Proposed Project would be located in a rapidly growing area of northern Riverside County, which includes the Cities of Beaumont, Banning, and Calimesa. A 115 kV subtransmission line begins at Banning Substation and extends westward toward the proposed El Casco Substation site within the existing Banning to Maraschino 115 kV subtransmission line and Maraschino–El Casco 115 kV subtransmission line ROWs. Major issues of concern include impacts to existing and residential land uses, which have led to the development of a partial underground alternative and a route alternative different than the project route proposed by SCE (the Applicant). The 1,200-page Draft EIR was released for a 45-day public review and comment on December 12, 2007, and evaluates project alternatives at the same level of detail as the Proposed Project analysis.
- **Antelope Transmission Project, Segments 2 & 3 EIR, Los Angeles and Kern Counties, CA.** For this EIR prepared by the CPUC, Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation. The proposed Project includes both Segment 2 and Segment 3 of the Antelope Transmission Project, and involves construction of new transmission line infrastructure from the Tehachapi Wind Resource Area in southern Kern County, California, to SCE's existing Vincent Substation in Los Angeles County, California. The Tehachapi Wind Resource Area is one of the State's greatest potential sources for the generation of wind energy. A variety of wind energy projects are currently in development for this region. Major issues of concern include EMF and visual impacts on property values, impacts on residences and agricultural resources, and the development and evaluation of several substation and route alternatives.
- **SDG&E Miguel Mission Substation Draft EIR.** The major part of the Proposed Project would include the installation of a new, bundled 230 kV circuit between Miguel and Mission Substations, which would be located entirely within SDG&E's existing 35-mile ROW. Mr. Debauche prepared social science analysis for the Initial Study, as well as the Draft EIR Project Description and several key environmental sections.
- **PG&E's Proposed Divestiture of Hydroelectric Assets Project EIR.** Mr. Debauche prepared several key sections of the Draft EIR, including Socioeconomics and Hazardous Materials analysis. PG&E owns and operates the largest private hydroelectric power system in the nation. Situated in the Sierra Nevada, Southern Cascade, and Coastal mountain ranges of California, this system is strung along 16 different river basins and annually generates approximately five percent of the power consumed each year in California. The proposed sale of assets also includes approximately 140,000 acres of land proposed for sale with the hydroelectric system. The EIR analyzes the range of operational changes that could occur under new ownership, including complex integrated models that analyze power generation and water management.
- **Viejo System Project IS/MND, Orange County, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for the project's CEQA documentation, including and Initial Study, prepared on behalf of the CPUC to evaluate Southern California Edison's (SCE) Application for a Permit to Construct the Viejo System Project, which was in SCE's forecasted demand of electricity and goal of providing reliable electric service in southern Orange County. The Viejo System Project would serve Lake Forest, Mission Viejo, and the surrounding areas. Components of the project included, construction of the new 220/66/12 kilovolt (kV) Viejo Substation, installation of a new 66 kV subtransmission line within an existing SCE right-of-way, replacement of 19 double-circuit tubular steel poles with 13 H-frames structures, and minor modification to other transmission lines. Major issues of concern include visual impacts of transmission towers, EMF effects, and project impacts on property values.

- **Looking Glass Networks Fiber Optic Cable Project IS/MND, northern and southern California.** As part of Aspen's ongoing contract with the CPUC for review of Telecommunications projects, this document encompasses and evaluation of project impacts and network upgrades in the San Francisco Bay Area and the Los Angeles Basin Area. Prepared the socioeconomic analysis for this comprehensive CEQA document reviewing the potential impacts of hundreds of miles of newly proposed fiber optic lines throughout northern and southern California, including Los Angeles and Orange Counties. Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives evaluation for the project's CEQA documentation.

California Energy Commission (CEC), Technical Assistance in Application for Certification Review.

In response to California's power shortage, Aspen is assisting the California Energy Commission in evaluating the environmental and engineering aspects of new power plant applications throughout the State. As part of this effort, Mr. Debauche works as a technical specialist for Transportation/Traffic, Socioeconomics and Environmental Justice, and Alternatives analyses for the following power plant projects:

- **Carlsbad Energy Center Project, Carlsbad, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic and Alternatives Staff Assessments for Carlsbad Energy Center, LLC's Application for Certification (AFC) to build the Carlsbad Energy Center Project (CECP), which will consist of a 558 MW gross combined-cycle generating facility configured using two units with one natural-gas-fired combustion turbine and one steam turbine per or unit. Issues of concern include major incompatibilities with local LORS, and cumulative impacts from widening of I-5.
- **Hydrogen Energy California Power Plant Project, Kern County CA.** Technical Specialist in charge of preparation of the Transportation/Traffic and Socioeconomics/Environmental Justice Staff Assessments for Hydrogen Energy International, LLC integrated gasification combined cycle (IGCC) power generating facility called Hydrogen Energy California (HECA) in Kern County, California. The proposed project will gasify petroleum coke (or blends of petroleum coke and coal, as needed) to produce hydrogen to fuel a combustion turbine operating in combined cycle mode. The gasification component would produce 180 million standard cubic feet per day (MMSCFD) of hydrogen to feed a 390 megawatt (MW) gross combined cycle plant providing California with low-carbon baseload power to the grid.
- **CPV Vaca Station Power Plant Project, Vacaville, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment prepared for the CPV Vaca Station (CPVV) project, a natural gas-fired, combined-cycle electrical generating facility rated at a nominal generating capacity of 660 megawatts (MW). The CPVV is proposed for a 24-acre site located at the intersection of Lewis and Fry roads in a rural area within the city limits of Vacaville, Solano County.
- **Ivanpah Solar Electric Generating System Project, San Bernardino County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment/BLM EIS for a 400-megawatt solar thermal electric power generating system. The project's technology would include heliostat mirror fields focusing solar energy on power tower receivers producing steam for running turbine generators. Related facilities would include administrative buildings, transmission lines, a substation, gas lines, water lines, steam lines, and well water pumps. The proposed project would be developed entirely in the Mojave Desert region of San Bernardino County, California.
- **Abengoa Mojave Solar Power Project, San Bernardino County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment for a nominal 250 megawatt (MW) solar electric generating facility to be located near Harper Dry Lake in an unincorporated area of San Bernardino County. The project will implement well-established parabolic trough technology to solar heat a heat transfer fluid (HTF) technology.
- **Rice Solar Energy Generating System Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment/BLM EIS for a 50,000 megawatt hours (MWh) of renewable energy annually, with a nominal net generating capacity of 150 megawatts (MW) located in an unincorporated area of eastern Riverside County, California. The proposed facility will use concentrating solar power (CSP) technology, with a central receiver tower and an integrated thermal storage system.

- **Blythe Solar Power Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment/BLM EIS for a 1,000 MW solar thermal electric generating facility in Riverside County. The project will utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola.
- **GWF Henrietta Peaker Project, Kings County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for GWF's proposal to modify the existing Henrietta Power Plant. New once-through steam generators (OTSGs) will be installed to allow the plant to be operated in its current simple-cycle configuration with no steam generation but with the selective catalytic reduction (SCR) and oxidation catalyst in operation, or to operate as a combined-cycle power plant generating an additional 25 MW of power with new proposed emission limits.
- **Palen Solar Power Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment/BLM EIS for a 500 MW solar thermal electric generating facility in Riverside County. The Project will utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola.
- **Watson Cogeneration Steam and Electric Reliability Project, Carson, CA.** Technical Specialist for the Transportation/Traffic Staff Assessment for a nominal 85 MW combustion turbine generator (CTG), with a single-pressure heat recovery steam generator (HRSG) to provide additional process steam to the BP Carson refinery, to the existing cogeneration facility owned by Watson. The project site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within BP's existing Carson Refinery (BP Refinery), in the City of Carson, Los Angeles County.
- **Oakley Generating Station Project, Oakley, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for a natural gas-fired, combined-cycle electrical generating facility rated at a nominal generating capacity of 624 megawatts (MW). The proposed project would be located in the City of Oakley, in Contra Costa County.
- **Canyon Power Plant Project, Anaheim, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a nominal 200 megawatt (MW) simple-cycle plant, using four natural gas-fired combustion turbines and associated infrastructure proposed by Southern California Public Power Authority (SCPPA). This project is a peaking power plant project located within the City of Anaheim, California.
- **GWF Tracy Combined Cycle Power Plant Project, San Joaquin County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for GWF's proposal to modify the existing TPP, a nominal 169-megawatt (MW) simple-cycle power plant, by converting the facility into a combined-cycle power plant with a nominal 145 MW, net, of additional generating capacity.
- **Lodi Energy Center Project, Lodi, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessment for a natural gas-fired, combined-cycle electrical generating facility rated at a nominal 225-megawatt (MW). The Lodi Energy Center is proposed for a site parcel of approximately 4.4 acres adjacent to the City of Lodi's White Slough Water Pollution Control Facility (WPCF)
- **Kings River Conservation District Community Peaker Power Plant Project, Fresno County, CA.** Technical Specialist in charge of preparation of the Transportation/Traffic Staff Assessment for the Kings Rivers Conservation District, who filed a Small Power Plant Exemption for the King River Conservation District Peaking Power Plant. The proposed 97-megawatt natural gas-fired plant will be located south of the City of Fresno and near the community of Malaga in Fresno County.
- **Valero Cogeneration Project, Benicia, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a proposed cogeneration facility at the Valero Refinery in Benicia. Issues addressed included impacts on public services and other project-related population impacts such as school impact fees.
- **Rio Linda/Elverta Power Project, Sacramento, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a 560-megawatt natural gas power plant in

the northern Sacramento County. Issues of importance included environmental justice and impacts on property values.

- **Magnolia Power Project, Burbank, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for this nominal 250-megawatt natural gas combined-cycle fired electrical generating facility to be located at the site of the existing City of Burbank power plant. Environmental justice issues and potential impacts on local economy and employment were evaluated.
- **Avenal Energy Project, Kings County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a 600-megawatt combined cycle electrical generating facility, and associated linear facilities.
- **Inland Empire Energy Center Project, Riverside County, CA.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a 670-megawatt natural gas-fired, combined-cycle electric generating facility and associated linear facilities including, a new 18-inch, 4.7-mile pipeline for the disposal of non-reclaimable wastewater, and a new 20-inch natural gas pipeline. The project would be located on approximately 46-acres near Romoland, within Riverside County.
- **Coastal Plant Study.** Technical Specialist in charge of preparation of the Socioeconomics/Environmental Justice Staff Assessments for a possible modernization, re-tooling, or expansion of California's 25 coastal power plants including the Encina Power Plant and the San Onofre Nuclear Power Plant.

Los Angeles Department of Water and Power (LADWP). Responsible for conducting the analyses of the technical and social science issue areas for a variety of EISs and EAs as part of two environmental services contracts. Delivery orders have included:

- **River Supply Conduit (RSC) Upper Reach Project EIR, Los Angeles and Burbank, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for the CEQA document for this project. The RSC is a major transmission pipeline in the LADWP water distribution system. The existing RSC pipeline's purpose is to transport large amounts of water from the Los Angeles Reservoir Complex and local ground water wells to reservoirs and distribution facilities located in the central areas within of the City of Los Angeles. The LADWP proposed a new larger RSC pipeline to replace and realign the Upper and Lower Reaches of the existing RSC pipeline, which would involve the construction of approximately 69,600 linear feet (about 13.2 miles) of 42-, 48-, 60-, 66-, 72-, 84-, and 96-inch diameter welded steel underground pipeline.
- **Mulholland Pumping Station and Lower Hollywood Reservoir Outlet Chlorination Station Project IS/MND, Los Angeles, CA.** Under Aspen's on-going environmental services contract with the City of Los Angeles Department of Water and Power (LADWP), Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to replace the existing historic pumping/chlorination station building as well as the existing lavatory and unoccupied Water Quality Laboratory buildings with a new single structure pumping/chlorination station within the LADWP's Hollywood Reservoir Complex located in the Hollywood Hills section of the City Los Angeles. These improvements were required due to the age and deterioration of the facility and the potential risk of seismic damage to existing structures. An Initial Study was prepared in support of a City of Los Angeles General Exemption.
- **Taylor Yard Water Recycling Project (TYWRP) IS/MND, Los Angeles and Glendale, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to construct the TYWRP in order to provide recycled water produced by the Los Angeles–Glendale Water Reclamation Plant (LAGWRP) to the Taylor Yard. An important part of the City of Los Angeles' expanding emphasis on water conservation is the concept that water is a resource that can be used more than once. Because all uses of water do not require the same quality of supply, the City has been developing programs to use recycled water for suitable landscaping and industrial uses. The project is located in the southernmost part of the City of Glendale and northeastern part of the City of Los Angeles. The IS/MND was adopted in the Summer of 2007.

- **DC Electrode Project IS/MND, Los Angeles, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to construct a new electrode distribution line from West Los Angeles to the Pacific Ocean stopping point in Malibu, CA up the Pacific Coast Highway.
- **District Cooling Plant Project, Los Angeles IS/MND, CA.** Mr. Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for this project. LADWP proposed to construct a District Cooling Plant and Distribution System (proposed project) in order to provide a centralized system for producing chilled water for use by area users, which are generally large commercial, governmental, industrial and institutional buildings who generate their own chilled water utilizing individual chiller plants for space cooling and air-conditioning.

U.S. Army Corps of Engineers, Los Angeles District. Responsible for conducting the analyses of the social science issue areas for a variety of EISs and EAs as part of two environmental services contracts. Delivery orders have included:

- **Prado Basin/Norco Bluffs/Reach 9 of the Santa Ana River Dikes Supplemental EAs, Riverside County, CA.** Debauche served as the Technical Specialist in charge of preparation of the Transportation/Traffic analysis of two structural alternatives for the Norco Bluffs Toe Stabilization project as well as the No Action/No Project Alternative. Aspen developed the alternatives analyzed in this Supplemental NEPA Environmental Assessment document, a description of the alternatives' physical, construction, and operational characteristics, and a discussion of the potential environmental impacts.
- **Northeast Phoenix Drainage Area Alternatives Analysis Report, Phoenix and Scottsdale, AZ.** Mr. Debauche served as a Technical Specialist in charge of preparation of the Alternatives analysis report that evaluated the potential environmental impacts associated with channel and detention basin alternatives to control flooding problems resulting from fast rate of development in the northeast Phoenix area.
- **Murrieta Creek Flood Control and Environmental Restoration Project.** Mr. Debauche served as a Technical Specialist in charge of preparation of the Environmental Assessment and Mitigation Monitoring plan for Phase 1 of a flood control and restoration project in Riverside County.

California Department of Water Resources. Responsible for conducting the environmental analyses for CEQA compliance as part of two environmental services contracts. Delivery orders have included:

- **Piru Creek Stabilization and Restoration Project IS/MND, northern Los Angeles County.** The California Department of Water Resources (CDWR) proposes to repair erosion damage at a series of three locations downstream of Pyramid Dam and seismically retrofit the Pyramid Dam access bridge that crosses Piru Creek. Mr Debauche served as Technical Specialist in charge of preparation of the Initial Study Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for the proposed project.
- **Pyramid Lake Repairs and Improvements Project IS/MND and EA, northern Los Angeles County.** Mr Debauche served as Technical Specialist in charge of preparation of the Initial Study Transportation/Traffic, Noise, Socioeconomics, and Alternatives analyses for the proposed project, which DWR and the Department of Boating and Waterways (DBW) conducted repairs and improvements at various recreational sites at Pyramid Lake, which is located on the border between Los Padres National Forest and Angeles National Forest; recreation is managed by Angeles National Forest. In addition to the CEQA documentation and preparation of permit applications, Aspen coordinated DWR and DBW's efforts with the USFS, and the permitting agencies (i.e., CDFG, RWQCB, and USACE). Through coordination with the USAC, Aspen prepared the NEPA EA for Corps 404 permit process, and reviewed and coordinated revisions to the 1602 with CDFG.

Los Angeles Unified School District (LAUSD), Los Angeles County, CA. Deputy Program manager and Technical writer for several CEQA documents (EIRs and IS/MNDs) being prepared as part of Aspen's ongoing services contract with the LAUSD to help approve school projects that would meet existing overcrowded conditions in the greater Los Angeles area. Projects have included:

- **New School Construction Program EIR.** Served as a Technical Specialist in charge of preparation of the social science issues, including Socioeconomics, Noise, Transportation/Traffic, and Alternatives analyses for this Program EIR being prepared for the LAUSD. The LAUSD 2020 Program would provide student

seats throughout the LAUSD via a combination of the addition of portable classrooms to existing campuses, modernization and reconfiguration of existing campuses, and the construction of new schools.

- **East Valley Middle School No. 2 EIR.** Served as a Technical Specialist for this middle school project proposed to be located at the previous Van Nuys Drive-In site, preparing the Transportation/Traffic and Noise analyses. The EIR focused on impacts associated with air quality, hazards and hazardous materials, noise, land use and planning, and traffic and transportation. Major issues of concern included traffic and noise generated by school operation activities. The EIR included LAUSD design standards and measures employed to minimize environmental impacts.
- **Mt. Washington Elementary School Multi-Purpose Room Addition Project IS/MND.** Served as the Technical Specialist in charge of preparation of the IS/MND for the development of a multi-purpose room facility, including a library, auditorium, and theater, to the existing Mt. Washington Elementary School campus located in Los Angeles. The surrounding residential community had concerns regarding the proposed project's impacts on aesthetics, traffic, air quality, and noise. Of particular concern, was impacts generated due to the after-hours use of the multi-purpose room facility by civic and community groups.
- **Canoga Park New Elementary School IS/MND.** Served as Served as the Technical Specialist in charge of preparation of the IS/MND for this elementary school project proposed to be developed on a parcel of land owned by the non-profit organization, New Economics For Women (NEW). This "turn-key" project consisted of a Charter Elementary School to be developed by NEW and sold to the LAUSD for operation. It was later decided that NEW would lease the school back and run it as a charter school. Issues of concern included, pedestrian safety, traffic, air quality, noise, and land use.
- **Hughes Magnet Span School IS/MND.** Served as the Technical Specialist in charge of preparation of the Socioeconomics, Hydrology, Public Services and Utilities, and Recreational analyses for the proposed re-opening of the existing Hughes Middle School as a Magnet Span School serving up to 1,620 District 6th through 12th grade students. The re-opening of the Hughes Middle School would require the relocation of the existing uses of the campus. The existing Enadia Way Elementary School and Platt Ranch Elementary School would be re-opened for the relocation of these uses.
- **Wonderland Elementary School Portable Classroom Additions IS/MND.** Served as the Technical Specialist in charge of preparation of the IS/MND for a proposed addition to the Wonderland Avenue Elementary School, located in the City of Los Angeles.
- **Pio Pico Elementary School Playground Expansion IS/MND.** Technical Specialist in charge of preparation of the Notice of Preparation, Initial Study, and Administrative Draft EIR for the expansion of a playground at the existing Pio Pico School in the LAUSD. The playground was proposed on five residential properties. One of the residences is a potentially significant historical resource because of its association with an African-American woman journalist, Fay M. Jackson. This project was cancelled by the LAUSD after completion of the administrative draft report.
- **Fairfax Senior High School Portable Classroom Addition IS/MND.** Served as Technical Specialist in charge of preparation of the IS/MND for the addition of portable classrooms at the school. Major issue areas covered were noise, hydrology, and geotechnical analysis.
- **Polytechnic Senior High School Portable Classroom Addition IS/MND.** Served Technical Specialist in charge of preparation of the IS/MND for the addition of portable classrooms at the school. Major issue areas covered were noise, hydrology, and geotechnical analysis.
- **Washington Senior High School Portable Classroom Addition IS/MND.** Technical Specialist in charge of preparation of the IS/MND for the addition of portable classrooms at the school. Major issue areas covered were noise, hydrology, and geotechnical analysis.

EIP Associates

1998 to 2001

MTA Mid Cities/Westside Transit Corridor Study EIS/EIR. Was a key Technical Specialist in charge of preparation of the EIS/EIR for this 3-phase (including prepared the Major Investment Study (MIS), the Environmental Impact Statement (EIS), and an evaluation of the urban design implications of transit interventions on selected routes) study intended to address current and long range traffic congestion in the central and westside areas of the Los Angeles Basin. Three east/west corridors and a range of transit

alternatives ranging including Rapid Bus, light rail, and heavy rail are being evaluated. In addition to preparing several issue area chapters of this comprehensive joint EIS/EIR, Mr. Debauche assisted with the Environmental Justice analysis, the Section 4(f) Parklands discussion, Transportation/Traffic, and the Land Use sections of the EIS/EIR.

Wes Thompson Ranch Development Project EIR. Served as Technical Specialist for this hillside residential development in the City of Santa Clarita. Issues of concern included seismic and air quality impacts associated with the excavation of 2 million cubic yards of soil, the project's non-compliance with the City's hillside ordinance for innovative design, and traffic generated by project-related population growth in the area. Four different site configuration alternatives were developed as part of the EIR analysis. Other issues of concern included sensitive biological resources, the potential for hydrological impacts due to disturbance of the hillside, and cultural resources. As the technical writer for socioeconomics, noise, hazardous materials, air quality, and public services, Mr. Debauche conducted the Transportation/Traffic and Alternatives analyses.

City of Santa Monica Environmental Assessments. Was key Technical Specialist in charge of preparation of several environmental assessment documents for housing, commercial, institutional, and mixed-use developments in compliance with CEQA. As the technical writer for socioeconomics, noise, hazardous materials, air quality, and public services, Mr. Debauche conducted the Transportation/Traffic, Noise, and Alternatives analyses for:

- **Seaview Court Condominiums IS/MND.** This comprehensive Initial Study/Mitigated Negative Declaration included six technical reports including traffic, cultural resources, parking survey, shade and shadow analysis, and a geotechnical assessment to evaluate the level of severity of this development in the waterfront area of Santa Monica. Major issues of concern were; parking and project-generated traffic on adjacent narrow residential streets; visual obstruction and shading impacts of the proposed structure; liquefaction and seismic impacts to adjacent properties as result of the project's excavation for a subterranean parking garage; and the potential impacts of the project to impact the integrity of a historic district and the historic Seaview Walkway to the beachfront.
- **Four-Story Hotel IS/MND.** A comprehensive Initial Study/Mitigated Negative Declaration was prepared for this four-story hotel adjacent to St. John's Hospital in Santa Monica. Major issues of concern included project-generated traffic on surrounding multi-family residential uses and emergency access to the hospital.
- **Santa Monica College Parking Structure B Replacement EIR.** This focused EIR addressed issues related to traffic and neighborhood land use impacts associated with the addition of a 3-story parking structure in the center of the SMC campus. Major issues of concern included the potential for project-generated traffic to cause congestion at the school's main entrance on Pico Boulevard, and the potential for overflow traffic to impact the Sunset Community of single-family homes adjacent to the school.
- **North Main St. Mixed-Use Development Project EIR.** This EIR included evaluation of impacts resulting from the development of a mixed-use development in Santa Monica's "Commercial Corridor" on Main Street, with ground-floor residences and boutique commercial uses. Major issues of concern included traffic and parking impacts to Main Street and surrounding residential land uses, shade and shadow impacts, and neighborhood impacts.

Specific Plans and Redevelopment Projects. As Technical Specialist for Transportation/Traffic, Socioeconomics, Noise, Hazardous Materials, Air Quality, and Public Services/Utilities, Mr. Debauche conducted analyses and prepared these environmental sections for:

- **Cabrillo Plaza Specific Plan EIR in Santa Barbara.** This project consisted a mixed-use commercial development on Santa Barbara's waterfront on Cabrillo Boulevard. On-site uses included an aquarium, specialty retail, restaurants, and office space.
- **Culver City Redevelopment Plan and Merger EIR.** This programmatic EIR evaluated the impacts of the City's redevelopment of its redevelopment zones. A major land use survey and calculation of acreage of redevelopment lands was conducted as part of the EIR.

- **Dana Point Headlands Specific Plan EIR.** This EIR evaluated the development of coastal bluff in the City with hotel, single- and multi-family residential, and commercial uses. Major issues of concern included ground disturbance as a result of excavation, impacts to terrestrial and wildlife biology, recreation impacts to beachgoers, and project-generate population inducement.
- **Triangle Gateway Redevelopment Project EIR in Beverly Hills, CA.** This EIR evaluated the development of a supermarket, retail shops, and office space in the triangle gateway portion of downtown Beverly Hills. Issues of concern evaluated by Mr. Debauche included traffic, land use, and impacts to on-site historic structures.
- **UCLA Campus Housing Expansion.** This EIR evaluated the development and expansion of campus housing within the UCLA campus. Issues of concern evaluated by Mr. Debauche included hazardous materials and population/housing.

CH2M Hill - Minneapolis, MN

1995 to 1998

- **Minneapolis/St. Paul International Airport Expansion EIS:** Mr. Debauche was a key writer of the EIS for this \$4 million technical and environmental study, including the preparation of an Environmental Impact Statement (EIS), and an evaluation of the urban design implications of a proposed \$800 million expansion of the existing MSP International airport, including transit and terminal modifications and the inclusion of a new perpendicular runway. The studies included alternatives to the project and the long-term effects on the cities of Minneapolis and St. Paul. In addition to preparing several issue area chapters of this comprehensive EIS, Mr. Debauche assisted with the Environmental Justice Analysis (per Executive Order 12898), the Section 4(f) Parklands discussion, and the socioeconomics sections of the EIS. In addition, Mr. Debauche assisted with preparation of a technical report on airport noise effects on nearby housing and mitigation programs for the impacts of the proposed runway.
- **Minneapolis/St. Paul Wastewater Treatment Facility Expansion EIS:** Was a key writer of the EIS for expansion of the existing wastewater treatment facility serving the twin cities area. The studies included alternatives to the project and the long-term effects on the cities of Minneapolis and St. Paul. Mr. Debauche prepared several issue area chapters of this comprehensive EIS, including the Environmental Justice Analysis (per Executive Order 12898), and the socioeconomics sections of the EIS.

PROFESSIONAL ASSOCIATIONS

- American Planning Association (APA), Chapter Member

DECLARATION OF
Testimony of Dal Hunter, Ph.D., C.E.G.

I, **Dal Hunter, Ph.D., C.E.G.**, declare as follows:

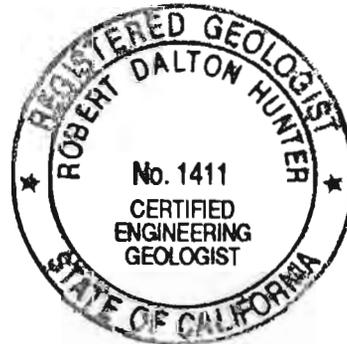
1. I am presently employed as a subcontractor to Aspen Environmental Group, a contractor to the California Energy Commission, Systems Assessment and Facilities Siting Division, as an Engineering Geologist.
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.
3. I helped prepare the staff testimony on **GEOLOGY AND PALEONTOLOGY** for the **Rice Solar Energy Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: August 6, 2010

Signed: _____

At: Black Eagle Consulting, Inc.
Reno, Nevada



eyp 3.31.11

Robert D. Hunter, Ph.D., C.E.G.

Engineering Geologist

Vice President

Education

- Ph.D. – Geology – 1989 – University of Nevada, Reno
- M.S. – Geology – 1976 – University of California - Riverside
- B.S. – Earth Science – 1972 – California State University, Fullerton

Registrations

- Registered Geologist – California
- Certified Engineering Geologist – California
- Professional Geological Engineer – Nevada

Experience

1997 to Present: Black Eagle Consulting, Inc.; Vice President. Dr. Hunter is in charge of all phases of geological, geotechnical, and geochemical projects and is responsible for conducting, coordinating, and supervising geotechnical investigations for public and private sector clients. He has worked on numerous industrial and commercial projects over the last 30 years. Dr. Hunter is very familiar with state and federal design specifications as well as CEQA and NEQA requirements related to geology and paleontology.

Dr. Hunter has also provided geological, geotechnical, and paleontological review and written and oral testimony for California Energy Commission (CEC) power plant projects including:

- El Segundo Power Redevelopment Project (including compliance monitoring)
- Magnolia Power Project (including compliance monitoring)
- Ocotillo Energy Project (Wind Turbines)
- Vernon-Malburg Generating Station
- Inland Empire Energy Center (including compliance monitoring)
- Palomar Energy Project
- Henrietta Peaker Project
- BP Carson Peaker Project
- East Altamont Energy Center
- Avenal Energy Center
- Teayawa Energy Center monitoring
- Walnut Energy Center (including compliance monitoring)
- Riverside Energy Resource Center
- Salton Sea Unit 6 (Geothermal Turbines)
- National Modoc Power Plant
- Pastoria Energy Center
- Walnut Creek Energy Park
- Sun Valley Energy Project
- El Centro Unit 3 Repower Project

- AES Highgrove Project
 - South Bay Replacement Project
 - Vernon Power Plant
 - Bullard Energy Center Project
 - Humboldt Bay Repowering Project (including compliance monitoring)
 - Victorville Power Project
 - Carlsbad Energy Center
 - San Gabriel Generating Station
 - Orange Grove
 - Chula Vista Energy Upgrade
 - Carrizo (Solar)
 - KRCD Community Power
 - Carrizo Power Plant (including compliance monitoring)
 - Sentinel Peaker Project
 - Canyon Power Plant
 - Riverside Acorn SPPE Project
 - Beacon Solar Generating Station
 - Stirling 2 Solar Project
 - Stirling 1 Solar Project
 - City of Palmdale
 - eSolar1 Solar Generating Project
 - Otay Mesa Generating Project (compliance monitoring)
 - Mountainview Power Plant Project (compliance monitoring)
 - Consumes Power Plant (compliance monitoring)
 - Sunrise Power Project (compliance monitoring)
 - Niland Power Project (compliance monitoring)
 - Panoche Power Plant (compliance monitoring)
 - Colusa Generating Station (compliance monitoring)
 - Starwood Power Plant (compliance monitoring)
 - Los Mendanos Power Plant (compliance monitoring)
 - Blythe Combined Cycle Plant (compliance monitoring)
 - Roseville Energy Plant (compliance monitoring)
- Attended Expert Witness Training Sponsored by CEC.

1978 to 1997: SEA, Incorporated; Geotechnical Manager, Engineering Geologist. Dr. Hunter was in charge of all phases of geotechnical projects for SEA, including project coordination and supervision, field exploration, geotechnical analysis, slope stability analysis, soil mechanics, engineering geochemistry, mineral and aggregate evaluations, and report preparation. Numerous investigations were undertaken on military, commercial, industrial, airport, residential, and roadway projects. He worked on many geothermal power plants, providing expertise in foundations design, slope stability, seismic assessment, geothermal hazard evaluation, expansive clay, and settlement problems. Project types included high-rise structures, airports, warehouses, shopping centers, apartments, subdivisions, storage tanks, roadways, mineral and aggregate evaluations, slope stability analyses, and fault studies.

1977 to 1978: Fugro (Ertec) Incorporated Consulting Engineers and Geologists; Staff Engineering Geologist; Long Beach, California.

Affiliations

- Association of Engineering Geologists

Publications

- Hunter, 1988, *Lime Induced Heave in Sulfate Bearing Clay Soils*, Journal of Geotechnical Engineering, ASCE, Vol. 14, No. 2, pp. 150-167.
- Hunter, 1989, *Applications of Stable Isotope Geochemistry in Engineering Geology*: Proceedings of the 25th Annual Symposium on Engineering Geology and Geotechnical Engineering.
- Hunter, 1993, *Evaluation of Potential Settlement Problems Related to Salt Dissolution in Foundation Soils*: Proceedings of the 29th Annual Symposium on Engineering Geology and Geotechnical Engineering.

REFERENCES

- BTC 2010a – Building Trades Council, San Bernardino and Riverside Counties/B. Perez (tn: 57596).** Report of Conversation by S. Debauche – CEC with B/ Perez – Building Trades Council Regarding Worker Commute and Housing Expectations. Dated 6-7-10. Submitted to CEC/Docket Unit on 7/15/10.
- CEC 2009a – California Energy Commission/ T. O'Brien (tn: 54246).** Data Adequacy Recommendation. Dated 11/23/09. Submitted to CEC/Docket Unit on 11/25/09.
- CEC 2010a – California Energy Commission/ J. Kessler (tn: 54941).** Issues Identification Report. Dated 1/21/10. Submitted to CEC/ Docket Unit on 1/21/10.
- CEC 2010b - California Energy Commission/J. Kessler (tn 55395).** Data Request Set 1 (#'s 1-168), Dated 2/16/10. Submitted to Solar Reserve/J. Benoit on 2/16/10.
- CEC 2010c - California Energy Commission/M. Layton (tn 55395).** Staff's Comments on MDAQMD's PDOC. Dated 7/1/10. Submitted to MDAQMD/A. DeSalvio on 7/1/10.
- CH2MHill 2010a – CH2M Hill/D. Davy (tn 55813).** Applicant's Response to CEC Staff Data Requests 1 to 168, dated 3/08/10. Submitted to CEC/J. Kessler on 3/09/10.
- CH2MHill 2010b – CH2M Hill/ D. Davy (tn 55924).** Applicant's Response to CEC Staff Data Requests 130, 139 to 141, 143 to 144, dated 3/16/10. Submitted to CEC/J. Kessler on 3/16/10.
- CH2MHill 2010c – CH2M Hill/ D. Davy (tn 56090).** Applicants Draft Biological Assessment in Response in Response to CEC Data Request 45, 47, 48, dated 3/29/10. Submitted to CEC/J. Kessler on 4/10/10.
- CH2MHill 2010d – CH2M Hill/ D. Davy (tn 56161).** Applicant's Response to CEC Workshop Queries 9 & 10 – Gen. Tie Alignment & Reduce Acreage Alternatives, dated 4/7/10. Submitted to CEC/J. Kessler on 4/7/10.
- CH2MHill 2010e – CH2M Hill/ D. Davy (tn 56212).** Applicant's Responses to CEC Workshop Queries 4, 6 – 8 and 11 (Biological & Cultural Resources, Soil & Water), dated 4/12/10. Submitted to CEC/J. Kessler on 4/12/10.
- CH2MHill 2010f – CH2M Hill/ D. Davy (tn 56445).** Applicant's Responses to CEC Staff Data Requests 49-51, 54, 56–58, 75, 121 (Bio and Stormwater), dated 4/27/10. Submitted to CEC/J. Kessler on 4/27/10.
- CH2MHill 2010g – CH2M Hill/ D. Davy (tn 56455).** Applicant's Responses to CEC Staff Data Request DR-CR-41 (CHRIS Data), dated 4/8/10. Submitted to CEC/J. Kessler on 4/8/10.
- CH2MHill 2010h – CH2M Hill/ D. Davy (tn 56478).** Applicant's Response to CEC Workshop Query 12 (Stormwater Detention Basin), dated 4/29/10. Submitted to CEC/J. Kessler on 4/29/10.
- CH2MHill 2010i – CH2M Hill/ D. Davy (tn 56566).** Applicant's Response to CEC Staff Data Request 61 (CDFG Streambed Alteration Notification), dated 5/5/10. Submitted to CEC/J. Kessler on 5/5/10.

- CH2MHill 2010j – CH2M Hill/ D. Davy (tn 56587).** Applicant's Response to CEC Staff Data Request 46 (CDFG Incidental Take Permit Application), dated 5/5/10. Submitted to CEC/J. Kessler on 5/5/10.
- CH2MHill 2010k – CH2M Hill/ D. Davy (tn 57123).** Applicant's Response to CEC Staff Workshop Query regarding Telecommunications, dated 6/14/10. Submitted to CEC/J. Kessler on 6/14/10.
- CH2MHill 2010l – CH2M Hill/D. Davy (tn 57202).** Applicant's Supplemental Information 2 – Air Quality and Public Health, dated 06/17/10. Submitted to CEC/J. Kessler on 06/17/10.
- CH2MHill 2010m – CH2M Hill/D. Davy (tn 56284).** Applicant's Response to CEC Staff Workshop Queries 1 to 3 – Air Quality, dated 4/16/10. Submitted to CEC/J. Kessler on 04/16/10.
- CH2MHill 2010n – CH2M Hill/D. Davy (tn 56794).** Applicant's Application to MDAQMD for Authority to Construct the Wet surface Air Cooler. Response to CEC Staff Workshop Queries 1 to 3 – Air Quality, dated 4/16/10. Submitted to CEC/J. Kessler on 04/16/10.
- CH2MHill 2010o – CH2M Hill/D. Davy (tn 56709).** Applicant's Mojave Fringe-toed Lizard Habitat Assessment. Dated 5/14/10. Submitted to CEC/J. Kessler on 5/14/10.
- CH2MHill 2010p – CH2M Hill/D. Davy (tn 56710).** Applicant's Interim Report on Avian Point Count & Burrowing Owl Phase 2 Surveys. Dated 5/14/10. Submitted to CEC/J. Kessler on 5/14/10.
- CH2MHill 2010q – CH2M Hill/D. Davy (tn 56913).** Applicant's Archival Research on Rice Army Airfield and Camp Rice. Dated 5/27/10. Submitted to CEC/J. Kessler on 5/27/10.
- CH2MHill 2010r – CH2M Hill/D. Davy (tn 57082).** Email from U.S. Army Corps of Engineers to U.S. EPA Documenting Non-Jurisdictional Waters for RSEP. Dated 6/9/10. Submitted to CEC/J. Kessler on 6/9/10.
- CH2MHill 2010s – CH2M Hill/D. Davy (tn 57199).** Applicant's Transmission System Impact Study. Dated 6/14/10. Submitted to CEC/J. Kessler on 6/14/10.
- CH2MHill 2010t – CH2M Hill/D. Davy (tn 57201).** Applicant's Updated Hazardous Materials List. Dated 6/16/10. Submitted to CEC/J. Kessler on 6/16/10.
- CH2MHill 2010u – CH2M Hill/D. Davy (tn 57231).** Applicant's Draft Historical Properties Treatment Plan, dated 6/18/10. Submitted to CEC/J. Kessler on 06/18/10.
- CH2MHill 2010v – CH2M Hill/D. Davy (tn 57294).** Applicant's Supplementary Information Item (S2) #4 – Preliminary Results of Golden Eagle Surveys , dated 6/23/10. Submitted to CEC/J. Kessler on 06/23/10.
- CH2MHill 2010w – CH2M Hill/D. Davy (tn 57613)** Applicant's Filing of Archaeological Features at Rice Army Airfield. Submitted to CEC/J. Kessler on 7/16/10.
- CH2MHill 2010x – CH2M Hill/D. Davy (tn 57619).** Applicants Supplemental Information Item #6 - Revised General Arrangement. Submitted to CEC/J. Kessler 07-13-10.

- CH2MHill 2010y – CH2M Hill/D. Davy (tn 57879).** Letter from USACE to Sycamore Environmental regarding determination that there are no jurisdictional waters of U.S. Submitted to CEC/J. Kessler 8-2-10.
- CH2MHill 2010z – CH2M Hill/D. Davy (tn 58065).** Applicant's Rice Army Airfield Cultural Features Mapbook & Index Map. Submitted to CEC/J. Kessler 8-16-10.
- CH2MHill 2010aa – CH2M Hill/D. Davy (tn 58144).** Applicant's Supplementary Info. Item 8, Biological Resources Vegetation & Wash Channel Acreages. Submitted to CEC/J. Kessler 8-23-10.
- CH2MHill 2010ab – CH2M Hill/D. Davy (tn 58696).** Applicant's Fire Needs Assessment. Submitted to CEC/J. Kessler 10-1-10.
- GB 2010a – Galati Blek, LLP/ M. Mills (tn: 54962).** Applicant's Proposed Schedule & Request for Scoping Order. Dated 1/22/10. Submitted to CEC/ Docket Unit on 1/22/10.
- GB 2010b – Galati Blek, LLP/ M. Mills (tn: 57127).** Applicant's Letter regarding FAA Compliance. Dated 6/15/10. Submitted to CEC/ Docket Unit on 6/15/10.
- GB 2010c – Galati Blek, LLP/ M. Mills (tn: 57294).** Applicant's Letter re Riverside County Impact Fees & Fire Dept. Requirements. Dated 7/6/10. Submitted to CEC/ Docket Unit on 7/6/10.
- MDAQMD 2010a – Mojave Desert Air Quality Management District/ A. DeSalvio (tn: 57128).** Preliminary Determination of Compliance. Dated 6/10/10. Submitted to CEC/ Docket Unit on 6/15/10.
- Riverside 2010a – County of Riverside (tn: .)** Initial Study for Chuckwalla Valley Raceway. Dated _____. Submitted to CEC/ Docket Unit on _____.
- Riverside 2010b – County of Riverside (tn: 56666).** Letter from Riverside County Fire Department in Response to Letter from Geoff Lesh - CEC. Dated 5/4/10. Submitted to CEC/ Docket Unit on 5/13/10.
- Riverside 2010c – County of Riverside (tn: 56641).** Report of Conversation with Ray Juarez - Riverside County Planning Department by Shaelyn Strattan – CEC. Dated 5/11/10. Submitted to CEC/ Docket Unit on 5/12/10.
- Riverside 2010d – County of Riverside (tn: 57574).** Email from Riverside County Sheriff's Department in Response to email from Kristin Ford regarding Sheriff services for RSEP. Submitted to CEC on 5/14/10. Submitted to CEC/ Docket Unit on 7/13/10.
- Riverside 2010e – County of Riverside (tn: 57607).** Letter #2 from Riverside County Fire Department regarding Fire Protection services for RSEP. Submitted to CEC on 6/16/10. Submitted to CEC/ Docket Unit on 7/15/10.
- SR 2009a – Solar Reserve/ T. Georgis (tn: 53723).** Application for Certification. Dated 10/13/09. Submitted to CEC/Docket Unit on 10/21/09.
- SR 2009b – Solar Reserve/ T. Georgis (tn: 54204).** Applicant's Data Adequacy Supplement. Dated 11/19/09. Submitted to CEC/Docket Unit on 11/20/09.

SR 2010a – CH2M Hill/D. Davy (tn 56794). Applicant's Application to MDAQMD for Authority to Construct the Wet surface Air Cooler. Dated 5/7/10. Submitted to CEC/J. Kessler on 5/7/10.

SR 2010b – Solar Reserve/ S. Kaminski (tn: 58353). Applicant's description of heliostat power and control cable installation. Dated 8/18/10. Submitted to CEC/Docket Unit on 9/8/10.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
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1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

**APPLICATION FOR CERTIFICATION
FOR THE *RICE SOLAR ENERGY POWER
PLANT PROJECT***

Docket No. 09-AFC-10

PROOF OF SERVICE
(Revised 8/5/2010)

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DECLARATION OF SERVICE

I, Maria Santourdjian, declare that on October 11, 2010, I served and filed copies of the attached Staff Assessment and Draft Environmental Impact Statement dated October 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [<http://www.energy.ca.gov/sitingcases/ricesolar>].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

FOR SERVICE TO ALL OTHER PARTIES:

- sent electronically to all email addresses on the Proof of Service list;
 by personal delivery;
 by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

- one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

- depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 09-AFC-10
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Originally Signed in Dockets
Maria Santourdjian