

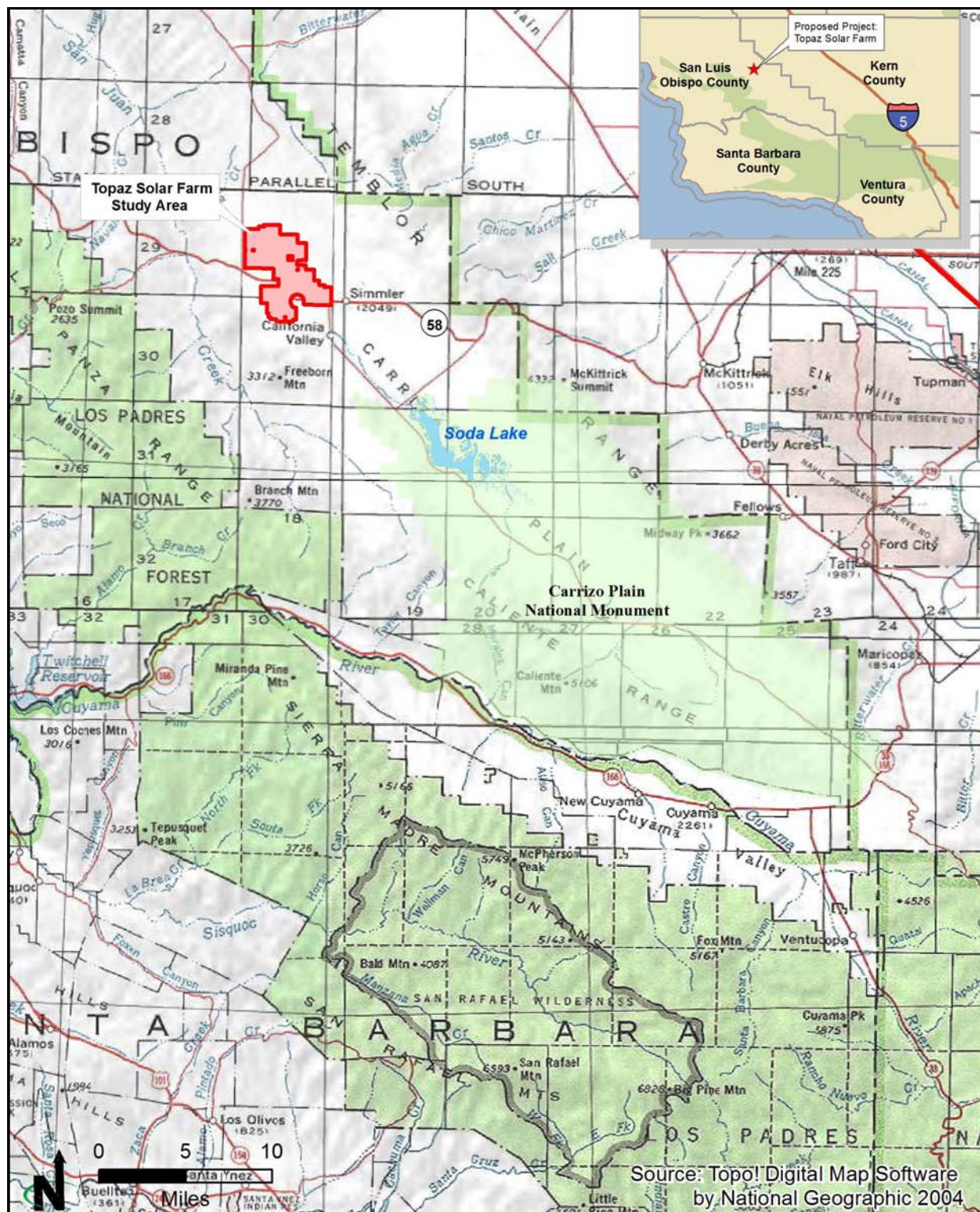
SUMMARY

INTRODUCTION

The United States (US) Department of Energy (DOE) is proposing to issue a loan guarantee to Royal Bank of Scotland to provide funding to Topaz Solar Farms, Limited Liability Corporation (LLC) (the Project Proponent) to construct and start up the Topaz Solar Farm (the Proposed Project), a nominal 550-megawatt (MW) photovoltaic (PV) solar energy generating facility. The Proposed Project would be located in eastern San Luis Obispo County, California (**Figure ES-1**, Regional Location Map). Upon completion, the facility would generate over one million megawatt hours (MWh) of electricity per year, enough to power 160,000 California homes annually.

DOE has determined that granting a federal loan guarantee to Royal Bank of Scotland to fund construction and startup of the Proposed Project constitutes a major federal action that may have a significant impact on the environment within the meaning of the National Environmental Policy Act (NEPA) (42 United States Code [USC] §§4321-4370h). DOE initiated preparation of this environmental impact statement (EIS) to examine the socioeconomic and environmental impacts from issuing the loan guarantee and from constructing, operating, and decommissioning the Proposed Project. The information contained in this EIS will be used by DOE in its decision-making process of whether to grant the federal loan guarantee for the Project.

The US Army Corps of Engineers (USACE), which has authority for issuing a Clean Water Act (CWA) Section 404 permit for the Proposed Project, is a cooperating agency for this EIS process. USACE will issue a separate decision document on the CWA Section 404 permit for the Proposed Project that will incorporate the environmental analyses from this EIS.



The proposed Topaz Solar Farm project is located on the Carrizo Plain, approximately one mile north of the community of California Valley and six miles northwest of the Carrizo Plain National Monument.

Regional Location Map

Topaz Solar Farm
San Luis Obispo County, CA

Figure S-I

PURPOSE AND NEED

Project Purpose and Need

The purpose of the Proposed Project is to increase the availability of electricity generated from renewable energy sources through the construction of a PV solar facility and associated transmission and support facilities. The need for increased renewable energy power generation stems from the following federal, state, and regional laws, regulations, goals, and policies:

- The Western Regional Climate Action initiative, a partnership among seven western states and four Canadian provinces, seeks to implement a cap and trade system with a goal of reducing emissions that cause global warming by 15 percent below 2005 levels by 2020.
- California Assembly Bill 32, signed into law in 2006, requires the California Air Resources Board (CARB) to develop regulations and market mechanisms to reduce California's greenhouse gas emissions to 1990 levels by 2020, an estimated 25-percent reduction.
- California Executive Order S-14-08, issued on November 11, 2008, established California Renewables Portfolio Standards requiring retail suppliers of electric services to increase procurement from eligible renewable energy resources to 33 percent by 2020. This order expanded the previous California Senate Bill 1078, passed in 2002, and Senate Bill 107, passed in 2006, which required retail suppliers of electric services to increase procurement of eligible renewable energy resources by 1 percent of their retail sales annually until they reached 20 percent by 2010.
- California Executive Order S-21-09, issued on September 15, 2009, directs CARB to adopt regulations increasing California's Renewables Portfolio Standard to 33 percent by 2020.

DOE Purpose and Need

The purpose and need of DOE's proposed action is to comply with its mandate to select eligible projects that meet the goals of the Energy Policy Act of 2005 (EPAc 2005), as amended by the American Recovery and Reinvestment Act (ARRA) of 2009. DOE is using the NEPA process and this EIS to assist in determining whether to issue a loan guarantee to the Project Proponent to support the Proposed Project.

EPAc 2005 established a federal loan guarantee program for eligible energy projects, and was amended by ARRA to create Section 1705, authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, among others. The primary purposes of ARRA are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and state and local fiscal stabilization. The Section 1705 program is designed to address the current economic

conditions of the nation, in part, through renewable energy, transmission, and leading-edge biofuels projects.

Issuing a loan guarantee to Royal Bank of Scotland to finance the Proposed Project would avoid the production of greenhouse gas emissions associated with conventional methods of electrical generation. Assuming electricity generated from the Proposed Project displaced energy produced by natural gas-fired power plants, the Proposed Project would have annual greenhouse gas savings upon buildout of approximately 285,493 metric tons of carbon dioxide, or 8,564,790 metric tons over the life of the Project.

USACE Purpose and Need

The USACE must verify compliance with both the CWA and NEPA prior to issuing a permit for the Project. USACE has chosen to participate as a cooperating agency in the NEPA process conducted by DOE. USACE will use this EIS to provide a portion of its necessary NEPA environmental review for determining whether to issue a CWA Section 404 permit. USACE will issue a separate decision document on the CWA Section 404 permit for the Proposed Project that will incorporate the environmental analyses from this EIS.

USACE has determined that Waters of the US potentially would be filled by the Proposed Project and has directed that the Project Proponent apply for a Standard Individual Permit. The USACE purpose and need statement describes and presents the basic purpose and overall purpose of the Proposed Project as contemplated by Section 404. The basic project purpose is the fundamental or irreducible reason for the project that is used by USACE to determine if the proposed project is water dependent. The overall project purpose is a more detailed, comprehensive and project-specific version of the basic project purpose and it is used by USACE in determining if the proposed project is in compliance with the CWA.

The Proposed Project is expected to fill less than 0.1 acre of defined Waters of the US. The Proposed Project will not fill any wetlands or US Environmental Protection Agency (EPA) Special Aquatic Sites as defined by the CWA Section 404(b)(1) Guidelines. Compensatory mitigation is being provided by the Project Proponent for unavoidable impacts on waters that cannot be further minimized in the form of establishment (creation) of new waters within the impacted watershed.

DOE PROPOSED ACTION AND ALTERNATIVES

Proposed Action

DOE's Proposed Action is to issue a federal loan guarantee to Royal Bank of Scotland to provide funding to the Project Proponent for the construction and startup of the Proposed Project, a nominal 550-MW solar energy generating facility within unincorporated eastern San Luis Obispo County, California,

approximately one mile north of the community of California Valley and six miles northwest of the Carrizo Plain National Monument.

The Proposed Project consists of a solar field of ground-mounted PV modules, an electrical collection system that converts generated power from direct current (DC) to alternating current (AC) and delivers it to a Project substation for collection and conversion from 34.5 kilovolts (kV) to 230 kV for delivery via a new on-site Pacific Gas and Electric Company (PG&E) switching station, and the PG&E switching station that interconnects the Proposed Project to PG&E's existing Morro Bay to Midway 230-kV transmission line, which runs in an east-west direction through the Project Site. PG&E upgrades to the Morro Bay to Midway transmission line are necessary to accommodate several projects in the region, including the final 150 MW of generated power by the Proposed Project (PG&E Reconductoring Project). The decision on the final facility configuration will be made by the County of San Luis Obispo through its conditional use permitting process; information on the final permitted configuration will be included in the Final EIS for the Proposed Project.

Key components of the Proposed Project include the following:

- Installation of approximately nine million PV solar modules and associated electrical equipment within up to 460 PV arrays;
- Electrical substation, switching station, and overhead collector lines;
- Monitoring and Maintenance Facility;
- Solar Energy Learning Center;
- Up to 22 miles of on-site access roads¹;
- Leach field and septic systems adjacent to the Monitoring and Maintenance facility and Solar Energy Learning Center; and
- Perimeter fencing around the PV arrays.

Generated electricity would be sold to PG&E under a long-term power purchase agreement in support of the requirement that PG&E provide its customers with 33 percent of its electricity from renewable sources by 2020, as mandated by Governor's Executive Order S-21-09.

¹ Because the location of access roads will be determined based on the San Luis Obispo County-permitted facility configuration, the miles of new roads that would need to be built versus the length of existing roads that would be improved is currently unknown.

The PG&E Reconductoring Project includes the following components:

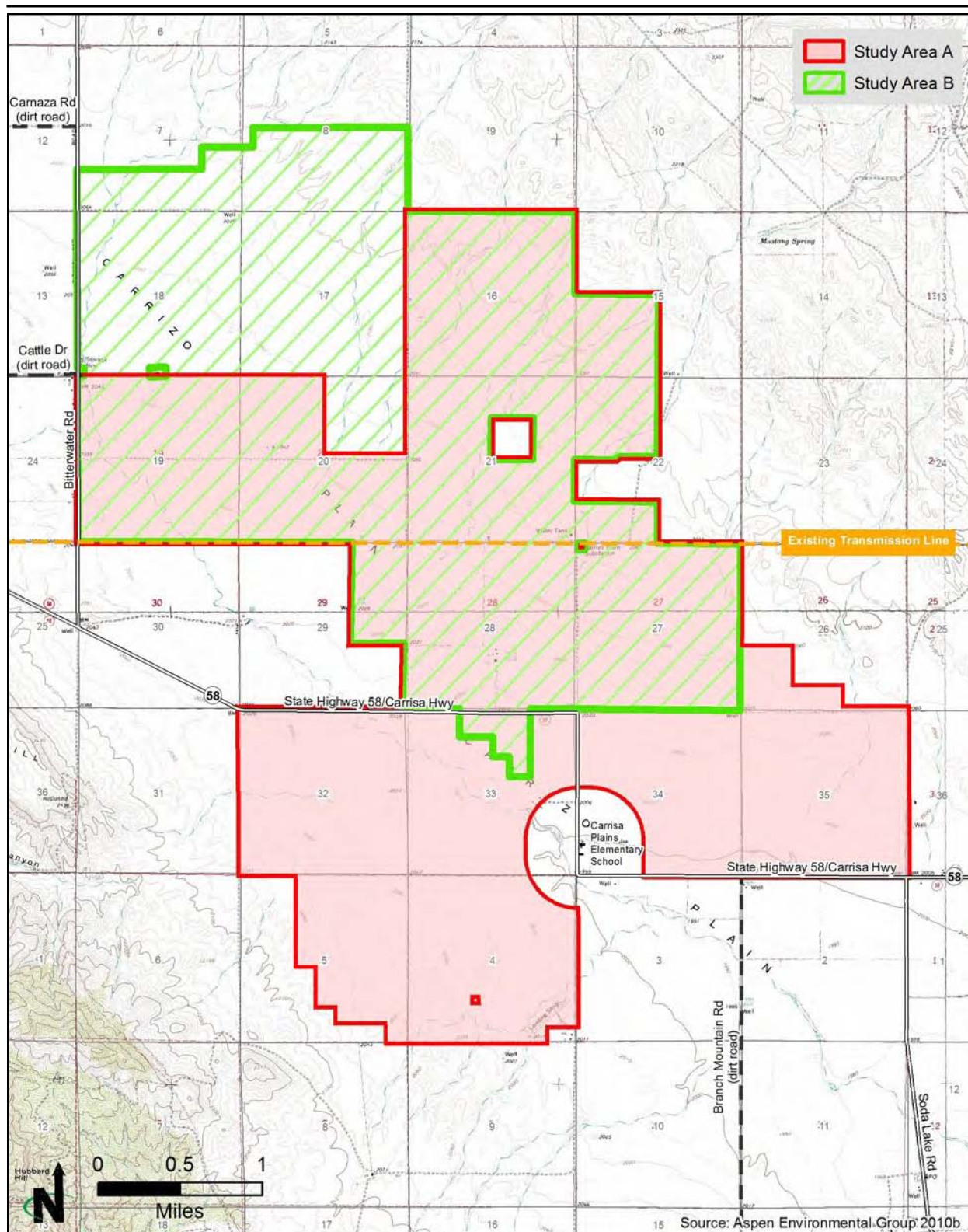
- Reconductoring approximately 35 miles of transmission line;
- Extending the height of every other tower by 20 feet to accommodate the new conductor;
- Potentially replacing up to ten percent of the towers to handle the additional weight;
- Installing an optical ground wire along the length of the reconducted line for static and fiber optic communications; and
- Installing a microwave tower and reflector.

Project-Specific Alternatives

Rather than being directly responsible for the siting, construction, and operation of respective projects selected in response to solicitations under EPCA 2005, DOE's actions under the act are limited to guaranteeing private financing secured by applicants for the project that they have submitted in their application. Therefore, DOE's overall decision will be to either provide a loan guarantee for the Proposed Project or to decline to provide a loan guarantee (no action alternative). However, the Project Proponent has secured options to purchase nearly 10,000 acres of land and is proposing to develop a facility on up to 4,100 acres of these lands. The Project Site has been divided into two overlapping study areas, Study Area A and Study Area B, on which the Proposed Project could be developed (**Figure S-1**, Study Area Map). The Project Proponent is proposing to develop the Proposed Project within one of these two study areas. These two project-specific alternatives are described below (and are hereafter referred to, interchangeably, as "alternatives" or "project-specific alternatives").

Alternative A: Develop the Proposed Project in Study Area A

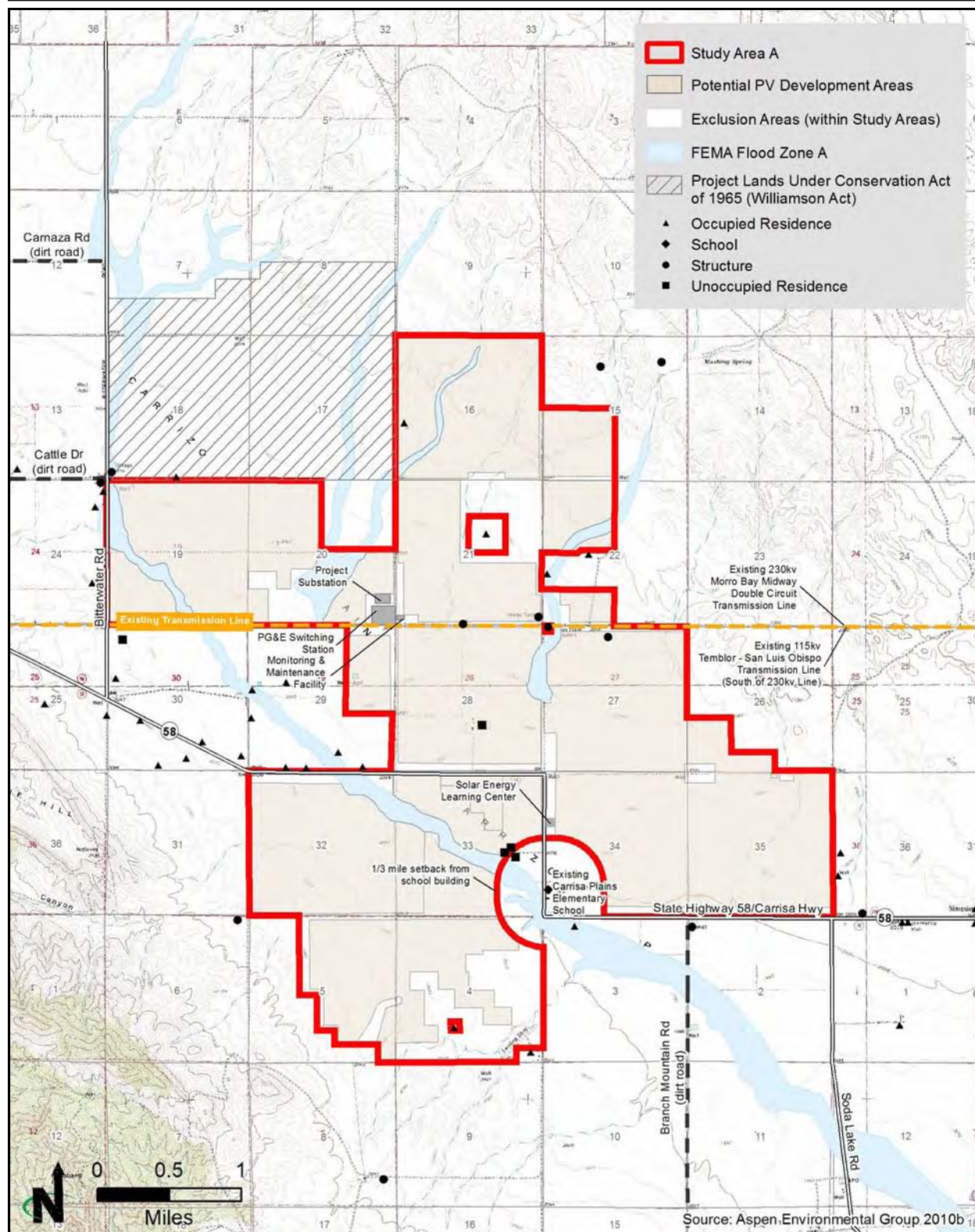
Under Alternative A, the Proposed Project would be developed on up to 4,100 acres of a larger 7,800-acre study area termed Study Area A. Study Area A is approximately one mile north of the community of California Valley and six miles northwest of the Carrizo Plain National Monument. This study area encompasses the southern three-quarters of the 10,000 acres that have been secured by the Project Proponent. **Figure S-2**, Alternative A, details the location of the Project substation, switching station, monitoring and maintenance facility, and Solar Energy Learning Center, as well as potential areas in which PV arrays could be located within Study Area A. This proposed development area could be up to 4,100 acres in size, although the Project Proponent's current preferred layout is only approximately 3,400 acres.



The Project Proponent is proposing to develop the Topaz Solar Farm in one of two study areas. The decision on the final facility configuration will be made by the County of San Luis Obispo through its conditional use permitting process.

Study Area Map
Topaz Solar Farm
San Luis Obispo County, CA

Figure S-2



Under Alternative A, the proposed Topaz Solar Farm would be developed on up to 4,100 acres. This alternative would avoid development of lands under Williamson Act contract.

Alternative A

Topaz Solar Farm
San Luis Obispo County, CA

Figure S-3

Alternative B: Develop the Proposed Project in Study Area B

Under Alternative B, Proposed Project would be developed on up to approximately 4,000 acres of a larger 6,300-acre study area termed Study Area B. Study Area B is approximately two miles north of the community of California Valley and seven miles northwest of the Carrizo Plain National Monument. This study area encompasses the northern two-thirds of the 10,000 acres that have been secured by the Project Proponent. **Figure S-3**, Alternative B, details the location of the Project substation, switching station, monitoring and maintenance facility, and Solar Energy Learning Center, as well as potential areas in which PV arrays could be located within Study Area B.

Comparison of Project-Specific Alternatives

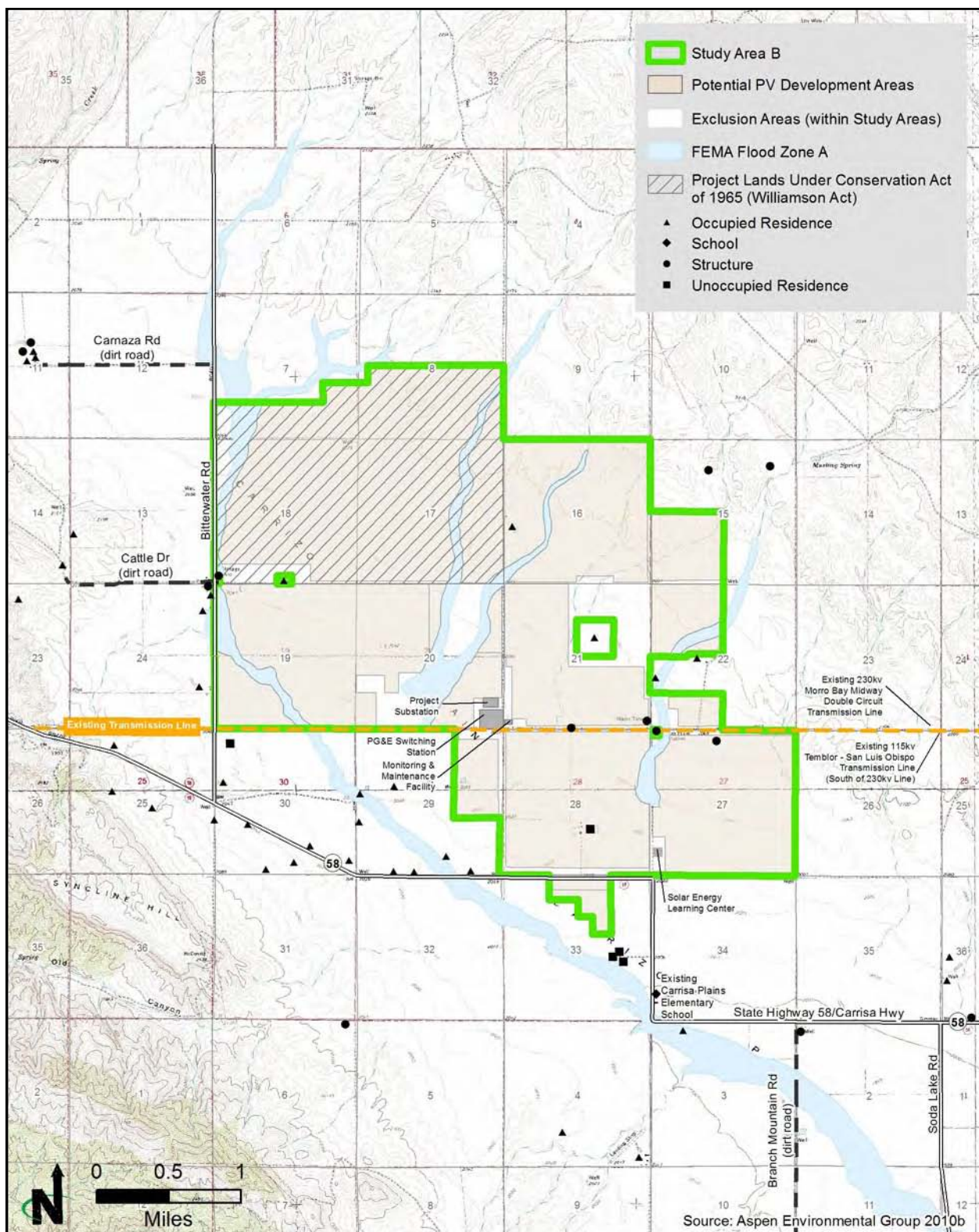
Both alternatives would consist of similarly sized solar generating equipment, a Project substation, a switching station, a monitoring and maintenance facility, a Solar Energy Learning Center, and infrastructure such as roads and fencing. The Project substation, switching station, and monitoring and maintenance facility would be sited in the same location under both alternatives. **Table S-1**, Comparison of Project-Specific Alternatives, provides a comparison of Alternative A and Alternative B. Other features would be the same under each alternative.

TABLE S-1
COMPARISON OF PROJECT-SPECIFIC ALTERNATIVES

PROJECT ELEMENT	ALTERNATIVE A	ALTERNATIVE B
Study Area (acres)	7,800	6,300
Developed Area (acres)	up to 4,100	up to 4,000
Overhead 34.5-kV Collector Lines (miles)	12	8
Access Roads (miles)	22	22

Project-Specific Alternatives Considered But Eliminated

Because DOE's decision in the context of the EPCA 2005 is strictly whether to provide or deny a federal loan guarantee for the Proposed Project, other alternatives available to DOE for agency action are not considered reasonable. The EIS nonetheless analyzes a range of reasonable project-specific alternatives to the Proposed Project itself. The project-specific alternatives that were considered but not carried forward for detailed analysis include alternative site locations, alternative project sizes, and alternative technologies. These project-specific alternatives did not meet the Project purpose and need, or are eliminated for other reasons provided in Section 2.1.3 of the EIS.



Under Alternative B, the proposed Topaz Solar Farm would be developed on up to approximately 4,000 acres of the 6,300-acre study area. This alternative would avoid most development south of Highway 58.

Alternative B

Topaz Solar Farm
San Luis Obispo County, CA

Figure S-4

No Action Alternative

Under the no action alternative, DOE would not provide a loan guarantee for the Proposed Project. In the absence of a DOE loan guarantee, the Project Proponent could still elect to construct and operate the proposed solar facility if it could obtain alternate sources of financing and the required permits from state and federal agencies; therefore, the DOE no action alternative could result in one of two potential scenarios:

- The Proposed Project would not be built; or
- The Proposed Project would be built by the Project Proponent without benefit of a loan guarantee.

Without DOE participation, it is possible that the Proposed Project would be canceled. For the purposes of analysis in this EIS, the DOE no action alternative will be a “No Build” alternative, meaning that environmental conditions would remain in the status quo and current land uses would continue. This scenario would not contribute to the federal loan guarantee program goal to make loan guarantees for energy projects that “avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases” or ARRA goals for rapid deployment of eligible renewable energy projects.

USACE PROPOSED ACTION AND ALTERNATIVES**Proposed Action**

Construction of the Proposed Project requires US Army Corps of Engineers permit pursuant to Section 404 of the CWA, along with appropriate NEPA analysis. As part of a separate CWA alternatives analysis in accordance with the Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), USACE will incorporate into their NEPA analysis an evaluation of the potential impacts on the aquatic environment resulting from the construction and operation of the Proposed Project. This regulatory process requires selection of the least environmentally damaging practicable alternative, which would reduce the impacts on waters of the US, over which USACE has jurisdiction, as long as the alternative meets the Project Proponent’s overall project purpose and so long as the alternative does not have other significant adverse environmental consequences.

The CWA “overall purpose” of the Proposed Project is to increase the availability of electricity generated from renewable energy sources through the development, in a high-solar resource area, of a 550-MW PV solar power plant and associated transmission and support facilities for interconnection to the Morro Bay to Midway 230-kV transmission line within eastern San Luis Obispo County, California.

No Action Alternative

Under the no action alternative, the Proposed Project would not be constructed.

PUBLIC INVOLVEMENT

Project scoping identifies issues of concern early in the EIS process. NEPA requires that the lead agency invite affected federal, state, and local agencies, any affected Native American tribes, and other interested persons to participate in the scoping process. The purpose of this scoping process is:

- (1) to inform the public about a proposed action and the alternatives being considered; and
- (2) to identify and clarify issues relevant to the EIS by soliciting public comments.

On October 22, 2010, DOE published a Notice of Intent (NOI) to prepare this EIS in the *Federal Register* (75 Fed. Reg. 65306), initiating a 30-day public scoping period. An announcement was published in the *San Luis Obispo Tribune* on October 29 and 31, 2010, the *Atascadero News* on October 29, 2010, and the *Paso Robles Press* on October 29, 2010, and mailed to federal, state, and local agencies, Native American tribes, special interest groups, and landowners soliciting information regarding environmental impacts that could potentially occur as a result of the Proposed Project. Copies of these materials are included in Appendix A of this EIS.

A public scoping meeting was held on November 16, 2010, at the Carrisa Plains Heritage Community Center. Approximately 30 persons attended the scoping meeting. Nine people entered comments into the public record during the public hearing portion of the meeting.

The scoping period ended on November 22, 2010. Seventeen written comment letters were received. Comment letters were submitted by the EPA, California Department of Forestry and Fire Protection (Cal Fire)/San Luis Obispo Fire Department, the County of San Luis Obispo, the Center for Biological Diversity, the Defenders of Wildlife/Sierra Club/Audubon California (submitted as one letter), and twelve individuals or their representatives that reside near the Project Site.

Some comments expressed support for the construction of the Topaz Project. Other comments expressed concern about the Project and identified the proposed Project Site as biologically valuable, for example, because of the presence of functional sensitive habitat and the potential to host a large number of rare biological resources. Comments expressed concern with regard to: site selection; impacts on sensitive biological resources, including sensitive habitat, protected species (e.g., the Federally protected San Joaquin Kit Fox), and wildlife movement; water quality and quantity in terms of the limited nature of water

resources and potential impacts to sensitive and locally-rare species; impacts on on-site drainage; full identification of sensitive habitats and species of the Carrizo Plain; impacts on nesting and foraging birds and bald and golden eagles; impacts from disposal of hazardous materials contained in PV panels; and the effects and causes of climate change. In addition, comments concerned the Proposed Project's consistency with local land use plans and existing land uses in the area, proximity to the Carrizo Plains National Monument, and seismic hazards.

The primary issues raised in the oral and written comments are presented in **Table S-2, Summary of Scoping Issues**.

TABLE S-2
SUMMARY OF SCOPING ISSUES

ISSUE	SUMMARY OF ISSUE	LOCATION WHERE ISSUE IS ADDRESSED IN THE EIS
Alternatives Analysis	Include a robust discussion of alternatives, including alternative sites, capacities, and technologies. Include alternatives to avoid or mitigate potential adverse impacts on biological resources. Identify an environmentally preferable alternative. Evaluate alternative locations for the site, including in the Westlands Competitive Renewable Energy Zone; alternatives to utility-scale solar, including rooftop solar and smaller facilities located closer to users; and more efficient solar panels.. Evaluate providing funding to other types of projects.	Section 2.1.2 provides information on the DOE alternative selection process. Section 2.1.3 describes project-specific alternatives and project-specific alternatives considered but eliminated.
Biological Resources	Evaluate impacts on protected species and on wildlife connectivity. Evaluate impacts related to the introduction of lighting, noise, loss and disruption of habitat on species in the area, including locally rare species. Provide a full accounting of all flora and fauna on the Project Site, a thorough analysis of project and cumulative impacts, and a description of measures to avoid, minimize, and mitigate project impacts. Adopt protocol to perform seasonal surveys for sensitive plant and animals as part of site characterization and monitoring. Measures to prevent the spread of noxious weeds should be included. Impacts to the safety of the San Joaquin kit fox and fencing.	Section 3.10 describes special status species in the project area and wildlife connectivity. Sections 3.8, 3.9, and 3.10 describe vegetation, wildlife, and special status species, respectively. Sections 3.8, 3.9, and 3.10 describe vegetation, wildlife, and special status species, respectively. Measures proposed to minimize impacts are included in these sections and in Table 2-9. Cumulative effects are described in Section 3.18. Noxious weeds are discussed in Section 3.8. Measures proposed to minimize impacts are in Table 2-9 and the "Topaz Solar Farm San Joaquin Kit Fox Conservation and Monitoring Plan," included in Appendix E.

TABLE S-2 (continued)
SUMMARY OF PRIMARY SCOPING ISSUES

ISSUE	SUMMARY OF ISSUE	LOCATION WHERE ISSUE IS ADDRESSED IN THE EIS
Cadmium Telluride	Analyze the ability of cadmium telluride (CdTe) and cadmium sulfide (CdS) to enter environmental pathways through breakage or fire. Discuss the long-term reliability of encapsulation, emissions from broken modules in arid environments, the number of broken or cracked panels that could be stockpiled on site, and the ability to fight fires using water. Provide information on end-of-life treatment of panels.	Section 3.15 discusses potential effects of CdTe modules. Section 2.3.4 describes module decommissioning and recycling.
Water Resources	Estimate the quantity of water the Proposed Project will require, describe the source of this water, and evaluate the effects on other water users and natural resources in the project area. Analyze the impacts of the Proposed Project on downstream waters. Analyze impacts on jurisdictional waters and wetlands.	Section 3.7 discusses groundwater supply, surface waters, floodplains, wetlands, and Waters of the US.
Visual Resources	Describe project-specific and cumulative impacts on the visual character of the area and on nearby landowners from large-scale solar development. Evaluate glare and effects on the night sky.	Section 3.3 describes the potential visual impacts related to the Proposed Project.
Air Quality	Describe impacts on air quality and measures to reduce impacts.	Section 3.4 describes potential air quality impacts. Air quality measures are described in Section 3.4 and in Table 2-9.
Noise	Disclose noise impacts during construction and operation of the solar facility.	Section 3.5 discusses potential noise impacts.
Prime Farmlands	The Proposed Project would affect prime farmlands.	Section 3.1 discusses prime farmlands.
Environmental Justice	Evaluate Proposed Project impacts on minority populations and on schoolchildren at Carrisa Plains Elementary School.	Environmental justice issues are discussed in Section 3.14.
Cumulative Impacts	Evaluate the cumulative impact of large-scale solar projects on resources such as sensitive species and habitat, water supply, traffic, hazardous materials, and the visual environment.	Cumulative impacts are discussed in Section 3.18.

SUMMARY OF ENVIRONMENTAL IMPACTS

Table S-3, Summary of Environmental Impacts, provides a summary of the potential environmental effects that could result from implementing the Proposed Action and no action alternative. Potential effects of the Proposed Action relate primarily to construction, as operation of the facility would affect few resources.

The Project Proponent has proposed some measures and San Luis Obispo County (County) and other agencies may require additional measures to minimize the impact the Proposed Action would have on the human and natural environment. Because the Project Proponent will comply with these measures, they have been incorporated into the Proposed Action analyzed in this EIS. These measures would be implemented during construction and operation to reduce environmental impacts and to ensure consistency with applicable federal, state, and County rules and regulations.

TABLE S-3
SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
LAND USE			
Minor to moderate adverse impacts. Alternative A contains no prime or unique farmlands or farmlands of statewide importance. Per Natural Resources Conservation Service (NRCS) analysis, 7,671 acres are farmlands of local importance, representing 2.8 percent of farmland in the county. Alternative A contains two occupied residences that could be partially or completely surrounded by PV arrays. The three-year construction process would disrupt land uses for these occupied residences, agricultural land uses within and near the Project Site, and the Carrisa Plains Elementary School. Construction of the Proposed Project may also periodically disturb visitors en-route to the Carrizo Plain National Monument. The presence of the Proposed Project would alter the rural and agricultural character of the immediate project area. Operation of the Proposed Project would result in the discontinuation of agriculture within the study area. It is possible, however, that some agriculture in the form of grazing may occur to control vegetation under the PV arrays.	Minor to moderate adverse impacts. Alternative B would have the same impacts as described for Alternative A except as noted below. - Per NRCS analysis, 6,193 acres are farmlands of local importance, representing 2.3 percent of farmland in the county. - The distance of Project facilities from Carrisa Plains Elementary School would increase by 800 feet, lessening potential adverse effects. - Visitors en route to the Carrizo Plains National Monument would be less affected because construction of PV arrays would occur farther away from main travel routes to the monument. - Alternative B includes lands under Williamson Act contract, which are contracts that preserve agricultural land uses in exchange for tax credits. Mitigation to compensate for loss of lands in the program would be required by the County if it elected to approve a conditional use permit (CUP) that included solar development on these lands.	Negligible to minor adverse impacts. Construction would temporarily conflict with agricultural and ranching operations. Reconductoring would not change existing land uses along the transmission line route.	No impacts. There would be no change in land uses on the Project Site.
Visual Resources			
Moderate to substantial adverse impacts. The major visual impact during construction would be the placement and movement of construction equipment and materials and varying levels of dust creation during earth-disturbing actions. Staging and parking areas would represent a moderate level of visual change over existing conditions for the time in which they were in use. The Proposed Project would increase development in	Moderate to substantial adverse impacts. Alternative B would have the same impacts as described for Alternative A except as noted below. PV array development would generally occur farther to the north and would thus be, for the most part, a greater distance away from public vantage points along Highway 58 and from Carrisa Plains Elementary School.	Minor to moderate adverse impacts. Construction within the foreground of sensitive receptors would have a short-term impact for the duration of the activity. Earth-disturbing activities could create fugitive dust	No impacts. The existing visual environment of the Project Site would remain the same.

TABLE S-3
SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
an agricultural area, introducing elements such as PV arrays, a substation, a switching station, a monitoring and maintenance building, a Solar Energy Learning Center, overhead collector line towers, and perimeter fencing. Primary public viewpoints would be from area roadways. The introduction of the Project would represent a moderate visual change from public viewpoints, although highly sensitive persons viewing the facility from nearby locations may experience a higher impact. In addition to public viewpoints, the Proposed Project would be visible from some area residences, particularly those residences that are fully or partially surrounded by Study Area A. While setbacks would provide a buffer zone between residents and the facility, the proposed facility may still have a substantial impact on nearby residences from the high degree of visual change.		clouds. Tower heights of every other tower would increase by 20 feet but would not introduce a new source of structure contrast, industrial character, view blockage, or skylining. Permanent elements would include new specular conductor line. The new conductor would reflect light and appear shiny to sensitive receptors in the vicinity of the line for the first 18 months after installation.	
Air Quality			
Minor to moderate adverse impacts. Construction would have adverse air quality impacts from fugitive dust and equipment emissions. Emissions would be reduced by implementing dust control in accordance with San Luis Obispo County Air Pollution Control District (APCD) requirements and other measures to reduce emissions associated with construction equipment on the Project Site. Operation of the Proposed Project would result in no emissions of criteria air pollutants or greenhouse gases from operation of the solar generating equipment itself. Operation of the facility would result in minor emissions from personal and maintenance vehicles, limited delivery trucks, and limited equipment exhaust, as well as fugitive dust emissions from windborne dust and dust generated by vehicles on unpaved surfaces.	Minor to moderate adverse impacts. Air quality impacts would be similar to those described for Alternative A.	Negligible to minor adverse impacts. Minor fugitive dust emissions and emissions of criteria pollutant and greenhouse house emissions would occur from operation of vehicles and construction equipment. Operation of the reconducted line itself would generate no emissions. Minor emissions from vehicles used for routine maintenance and repair would occur.	No new impact. No change in air emissions would occur. Continued minor to moderate adverse fugitive dust impacts from farming operations. Potential beneficial impacts on global climate change described under the Proposed Action would not

TABLE S-3
SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
Displacement of the current composition of PG&E-delivered electricity with Project-generated electricity would reduce greenhouse gas emissions by 288,475 metric tons annually, or 8,654,250 metric tons over the life of the Project. Operation of the Proposed Project would therefore represent a potential beneficial impact by reducing greenhouse gas emissions and helping to prevent or mitigate adverse effects of climate change. The Project would also help meet California's Renewable Portfolio Standard.			be realized.
Noise			
Minor to moderate adverse impacts. Construction of the Proposed Project would result in increases in noise levels that would be adverse when in close proximity to sensitive receptors. Sensitive receptors, including the two rural residences surrounded by the Project and the Carrisa Plains Elementary School, would experience temporary and intermittent noise levels greater than measured ambient levels. Construction would occur within permissible hours of operation as specified by code. Construction-related traffic would cause an increase in noise levels along affected roadways. Construction-related traffic noise levels would be less than the County's maximum allowable noise exposure limit for transportation noise sources. Noise from operation of the Proposed Project would be limited to vehicle use, the transformers and inverters, and heating, ventilation and air-conditioning systems and would have negligible impacts on sensitive noise receptors. Intermittent noise may occur during limited nighttime maintenance and if a breaker is thrown at the switching station.	Minor to moderate adverse impacts. Construction noise impacts would be similar to those described for Alternative A except as described below: • Carrisa Plains Elementary School would be 800 feet farther away from the Project boundary and would experience reduced noise levels compared with Alternative A. • Construction would be closer to one residence in Section 18.	Minor to moderate adverse impacts. Residences within one mile of the transmission line would experience temporary noise impacts during construction activities. Noise from corona activity and maintenance would be minor, similar to current conditions.	No impact. Noise conditions from actions at the Project Site would remain the same as currently experienced. Noise impacts along Highway 58 and other truck transportation and delivery routes would occur during construction of the California Valley Solar Ranch (CVSR), if the facility was permitted and constructed.

**TABLE S-3
SUMMARY OF ENVIRONMENTAL IMPACTS**

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
Geology and Soils			
Minor to moderate adverse impacts. Construction would have the potential for increased erosion, and slope instability and landslides along moderate slopes of the La Panza Range foothills in the southwestern corner of the study area have the potential to impact Project facilities. Soil testing indicated that soils underlying Study Area A are moderately to severely corrosive to steel, are aggressive to copper, and are expansive, requiring design measures to prevent adverse impacts associated with construction in corrosive and expansive soils. Due to the absence of active faults at the Project Site, no potential for damage to Project structures or hazards to people at the Project Site from surface fault rupture is anticipated.	Minor to moderate adverse impacts. Impacts would be similar to those described for Alternative A except as noted below. There would be no impact related to landslides or slope failures due to the topography of Study Area B.	Minor to moderate adverse impacts. Reconductoring would have potential short-term and localized erosion impacts during construction. Segments of the transmission line are within 200 feet of the Alquist-Priolo Earthquake Zone; potential exists for seismically induced slope failures or damage to transmission line structures.	No new impact. Current site conditions would remain the same. Continued minor to moderate adverse soil erosion impacts from land use practices such as ranching and farming.
Water Resources			
Minor to moderate adverse impacts. Study Area A contains 31 ephemeral drainages, totaling approximately 15 acres over 67,437 linear feet. Construction of road crossings and underground electrical collection system trenches would result in the permanent loss of less than 0.1 acre of jurisdictional ephemeral drainages. Jurisdictional wetland features totaling 3.11 acres have been documented in Study Area A, including vernal pools, ephemeral wetland depressions, and channel wetlands. Jurisdictional wetlands would be avoided and protected by buffers or setbacks ranging from 25 to 250 feet during construction. Road crossings and overhead and underground	Minor to moderate adverse impacts. Impacts would be similar to those described for Alternative A except as noted below. - Study Area B contains 12 ephemeral drainages occurring over approximately 31,742 linear feet; this alternative would result in the permanent loss of less than 0.1 acre of these drainages. - Jurisdictional wetland features totaling 0.71 acres have been documented in Study Area B, including vernal pools and ephemeral wetland depressions. Wetlands would be avoided and protected by buffer zones as described for Alternative A. - Road crossings and overhead and underground electrical collection lines would be installed in	Negligible to minor adverse impacts. The project could result in impacts on surface water, groundwater, and floodplains and includes the potential for water quality degradation. Negligible impacts on water resources from operation.	No new impact. Current site conditions would remain the same. Continued minor to moderate impacts on water quality caused by land use practices such as ranching and farming in wetlands and floodplains.

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SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
electrical collection lines would be installed in FEMA-designated Zone A floodplains. Depending on the PV array configuration permitted by the County, some PV arrays could also be sited in the 100-year floodplain. The level of disturbance would not be expected to raise base flood elevations or affect up- or downstream flow levels. Alternative A would require an average of 170,500 gallons per day during construction, with a maximum demand of 550,000 gallons per day (primarily for dust control). Construction water obtained from groundwater wells on the Project Site would increase drawdown during summer months but would have only minor adverse effects on surrounding groundwater users. Operation would have minor to no adverse effects on water quality, wetlands, ephemeral drainages, groundwater supply, or groundwater recharge.	FEMA-designated Zone A floodplains under Alternative B; no arrays would be sited in floodplains. The level of development is not expected to raise base flood elevation or affect upstream or downstream flows. A greater amount of water would be required for construction due to increased grading requirements under this alternative. Similar to Alternative A, this would have only minor adverse effects on surrounding groundwater users.		
Vegetation			
Minor adverse impacts. Study Area A contains 4,380 acres of cropland and 3,356 acres of annual grassland. Construction would result in the long-term removal of vegetation in areas associated with Project equipment and infrastructure. Temporary removal of vegetation would occur at parking and staging areas, trenching areas, and areas that would be graded to reduce slopes. Soil disturbance during construction could indirectly facilitate the invasion or spread of nonnative, invasive, or noxious weeds; however, weed prevention and control measures would be implemented to reduce the likelihood for the spread of invasion of weeds. Much of the current cropland acreage would be converted to annual grassland habitat. As a result, the	Minor adverse impacts. Impacts on vegetation from construction would be similar to those described for Alternative A except as noted below. Study Area B contains 4,712 acres of cropland and 1,689 acres of annual grassland. More cropland could be converted to grassland under Alternative B compared with Alternative A, depending on the PV array configuration that was permitted by the County.	Minor adverse impacts. Direct impacts on vegetation could occur from construction activities in staging areas, pull sites, and temporary access roads. Indirect effects include potential for weed introduction or spread, soil compaction, erosion, and sedimentation. No permanent impacts on vegetation.	No new impact. Current site conditions would remain the same. Continued minor adverse impacts on vegetation from land use practices such as ranching and dry farming.

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SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
Project Site may result in a net increase in annual grassland habitat through elimination of seasonal tilling. The Project could result in a beneficial effect on vernal pools and ephemeral wetland depressions through the elimination of tilling and the implementation of passive solar uses. No direct effects on vegetation are expected from operation of the Proposed Project. A vegetation management plan would be implemented during Project operation to control plant height and invasive species.			
Wildlife			
Minor to moderate adverse impacts. Construction activities could cause mortality or injury to a variety of wildlife species, especially slower-moving species, small animals, species that have subsurface burrows, or ground- or shrub-nesting birds. Bird mortality and/or injury could occur during operation of the Proposed Project due to collision or electrocution. Avian Power Line Interaction Committee (APLIC) guidelines and avian protection measures would be implemented to reduce the likelihood of bird collision and electrocution with collector lines. Habitat loss, fragmentation, and degradation caused by the Project could displace wildlife from the Project Site over the long term, preventing them from using the site for foraging, breeding, wintering, and shelter. Alternative A would permanently displace pronghorn antelope from up to 4,100 acres within the Project Site.	Minor to moderate adverse impacts. Impacts on wildlife would be similar to those described under Alternative A except as noted below. - Tule elk forage and calve in the northern parcels within Study Area B, an area of approximately 1,795 acres mostly comprised of active croplands. Alternative B would permanently displace approximately 80 elk from 1,215 acres of foraging habitat within the proposed fenced portion of Alternative B. - Alternative B would permanently displace pronghorn antelope from up to 4,000 acres.	Minor to moderate adverse impacts. The project would potentially impact bird nests and create disturbance to tule elk and pronghorn antelope calving grounds. PG&E would implement mitigation measures similar to those in its San Joaquin Valley Operations and Maintenance Multi-Species Habitat Conservation Plan (HCP) to reduce temporary impacts. No operational impacts would occur from reconductoring.	No new impact. Current site conditions would remain the same. Continued minor adverse impacts on wildlife from land use practices such as ranching and farming.

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SUMMARY OF ENVIRONMENTAL IMPACTS

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
Special Status Species			
Minor to moderate adverse impacts. Surveys of the Project Site detected the presence in Study Area A of three federally protected species: two species of fairy shrimp and the San Joaquin kit fox. The Project would avoid all occurrences of the federally listed species of fairy shrimp. Potential direct and indirect construction impacts on San Joaquin kit fox would be mitigated through implementation of measures developed through consultation with the County, United States Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG). Potential long-term effects include a change in the habitat structure in the area, which could result in a decrease, increase, or maintenance of San Joaquin kit fox numbers. Operational impacts would be minimized through implementation of additional mitigation measures developed in consultation with the above-listed agencies. Surveys detected the presence of nine special status plant species. Construction activities would likely result in short-term adverse effects on special status plants occurring within the fenced area if the activities overlap the bloom periods, if perennial species are removed, or if substantial soil disturbance occurs. The Proposed Action could have a long-term beneficial effect on special status plants through the permanent conversion of an estimated 2,360 acres of cropland habitat to annual grassland habitat. Construction activities could potentially have direct impacts on other special status animal species. In the long term, cessation of farming activity and conversion of croplands to a passive solar facility could improve habitat quality, resulting in a potential beneficial effect on these species.	Minor to moderate adverse impacts. Impacts would be similar to those described under Alternative A except as noted below. • Surveys of the Project Site detected the presence in Study Area B of two federally protected species: one species of fairy shrimp and the San Joaquin kit fox. • Alternative B would impact fewer special status plant species, since only four species were detected within Study Area B. • Alternative B would permanently convert an estimated 2,852 acres of cropland habitat within the fenced area to annual grassland habitat that would be potentially suitable for special status plant establishment.	Minor to moderate adverse impacts. Construction could result in disturbance to or loss of numerous special status species or their habitat, including blunt-nosed leopard lizard, San Joaquin whipsnake, coast horned lizard, burrowing owl, Swainson's hawk, white-tailed kite, Nelson's antelope squirrel, San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, Tulare grasshopper mouse, and American badger. The project could potentially impact special status species bird nests. PG&E would implement measures to reduce the impacts on biological resources. In addition, mitigation would include compensation for impacts on giant kangaroo rat, San Joaquin kit fox, and Nelson's antelope squirrel. No impacts on special status species would occur from operation of the reconducted line.	No new impact on special status species. Land uses would remain the same. Continued impacts on special status species from land use practices such as ranching and farming.

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SUMMARY OF ENVIRONMENTAL IMPACTS**

ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
Cultural Resources			
Minor to moderate adverse impacts. No potentially eligible resources were identified within Study Area A, subject to SHPO concurrence. There is the potential for undiscovered buried cultural resources and/or human remains to exist at the Project Site. In the event of an unanticipated discovery, measures would be followed to reduce the likelihood for impact. These measures could include ceasing work and having a qualified archeologist evaluate the resource for eligibility to the state or national registers, or contacting the County Coroner if human remains are encountered. Operation of the Proposed Project would have minor to moderate indirect impacts on the historic landscape setting of cultural resources by altering the landscape. Project operations would not be expected to encounter previously undiscovered resources due to the lack of surface-disturbing actions. However, if such discoveries are made, procedures such as those described for construction should be followed.	Minor to moderate adverse impacts. Impacts would be similar to those described under Alternative A except as noted below. No potentially eligible resources were identified within Study Area B, subject to SHPO concurrence.	Minor adverse impacts. No eligible cultural resources sites would be affected by construction. The potential exists for undiscovered buried cultural resources and/or human remains along the transmission line, though the potential would be low based on previous disturbance along the route. Impacts on cultural resources would not be expected to occur during operation of the reconducted line.	No impact. Existing site conditions would remain the same.
Paleontology Resources			
Minor to moderate adverse impacts. Although no vertebrate fossils have been recorded within the Project Site, several fossil-bearing geologic formations with high sensitivity are located in Study Area A. Therefore, there is a moderate potential for construction activities to directly impact paleontological resources. To minimize potential impacts, a Paleontological Monitoring and Treatment Plan would be prepared to outline the criteria for determining paleontological resource significance and guidelines for whether a resource should be avoided	Minor to moderate adverse impacts. Impacts would be similar to those described under Alternative A except as noted below. More grading could occur under Alternative B; therefore, the increase in ground disturbance would result in a slightly increased potential for encountering and disturbing paleontological resources under this alternative.	Minor to moderate adverse impacts. Construction in areas with low sensitivity is not expected to encounter paleontological resources. Construction in areas with a higher sensitivity may encounter such resources. Application of a Paleontological Monitoring	No impact. Existing site conditions would remain the same.

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ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
or recovered.		and Treatment Plan, as determined necessary by the County, would reduce impacts on paleontological resources during construction. No paleontological impacts would occur during operation.	
Socioeconomics			
Minor to moderate impacts. Alternative A would create 500 peak construction jobs, temporarily reducing unemployment in the region and contributing beneficially to the local economy. Solar construction projects in the region may result in periods when temporary housing demand exceeds supply, a minor to moderate adverse impact. Operation of the Proposed Project would not displace any jobs, as Project lands are currently farmed by the property owners. Operation would have negligible beneficial impact as a result of reduction in local unemployment. Local governments could benefit economically from tax revenues due to Project operation.	Minor to moderate impacts. Potential impacts would be the same as those described for Alternative A.	Negligible impact. Most of the work would be carried out by PG&E employees with a maximum estimated construction workforce of 50 individuals and would not affect employment levels or the local economy. No impact from operation, as no additional workforce would be required.	No impact. Socioeconomic conditions would remain the same. Beneficial impacts on employment and the local economy associated with project construction would not be realized.
Environmental Justice and Protection of Children			
Negligible to minor adverse impact. A minority or low-income population as characterized by the Council on Environmental Quality (CEQ) does not exist in the immediate project area. Therefore, significant adverse impacts on these populations are not anticipated from construction and operation of the Proposed Project.	Negligible to minor adverse impact. Impacts would be similar to those described under Alternative A except as noted below. Alternative B would have a slightly lesser potential for adverse effect on children, as the Project would be developed at a greater distance from Carrisa Plains Elementary School when	Negligible to minor adverse impact. No minority communities have been identified in the San Luis Obispo County portion of the project area. Minority populations do exist	No impact. Conditions for low-income and minority populations in Kern County would remain the same.

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ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
The Carrisa Plains Elementary School is within close proximity of the Project Site. Measures including setbacks and fencing are being proposed to reduce the risk to children. Operation would not place children at risk, as Project facilities would be fenced and no public access would be permitted. In addition, operations would not introduce air pollutants or hazardous materials into the environmental pathways.	compared with Alternative A.	along or near the transmission line route in Kern County. Impacts to these populations would be minimized through measures to reduce air and noise impacts during construction. Negligible impact on children, as construction sites and material storage areas would be secured. Operation would have no environmental justice-related effects over existing conditions.	Conditions for children at the Project Site would remain the same.
Public Health and Safety/ Hazardous Materials			
Minor to moderate adverse impact. Construction of the facility would follow federal, state, and local laws and regulations governing handling and storage of hazardous materials. Vehicle fuel and transformer oil stored on site would have full secondary containment. All construction activities would be performed by trained personnel and would be carried out in compliance with Occupational Safety and Health Act (OSHA) requirements to minimize the risk of construction-related accidents, injuries or spills. Operation of the facility would present little public health or safety risk from intentional destructive acts. The fire risk for a PV solar project is very low due to the limited use of combustible materials in the Project components. No public access to the facility would be allowed, the entire Project Site would be fenced and monitored with security cameras, and the site perimeter would be patrolled twice per day. With	Minor to moderate adverse impact. Public health and safety impacts would be the same as described for Alternative A.	Minor adverse impacts. Only small amounts of hazardous materials and herbicides would be used during construction. Reconductoring activities would take place in areas of low or moderate fire hazard severity and would not pose a substantial fire risk. Possible health effects associated with exposure to EMFs have been the subject of scientific investigation since the 1970s. Reviews of the scientific literature have consistently indicated insufficient evidence of an	No impact. There would be no change to existing public health and safety conditions.

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ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
these security measures in place, the risk of intentional destruction would be negligible. No adverse health effects are anticipated related to electric and magnetic fields (EMF) or use of CdTe panels.		association between EMF exposure and adverse health effects in humans.	
Transportation			
Moderate adverse impact. The Proposed Project would affect the local transportation network during the construction period. Construction-related traffic would not result in a decrease in level of service (LOS) on area roadways; however, individual drivers would experience substantial delays along a section of Highway 58 east of the Project Site, when the road would be closed in one direction and trucks exceeding a certain size would be escorted through a nine-mile section of roadway. Fifteen full-time workers would be employed during operation of the Proposed Project. The addition of 15 round trips would not cause a decrease in LOS on any area roadways.	Moderate adverse impact. Transportation-related impacts from construction, operation, and decommissioning would be the same as described for Alternative A.	Minor adverse impacts. Construction traffic would not alter LOS on area roadways. Construction would briefly close Highway 33 while crews reconnector the overhead line across the highway. Helicopter operations, used to access remote portions of the line, may also require temporary road closures. These actions would have a temporary, impact on transportation. No impacts during operation.	No impact. Traffic conditions associated with current land uses would remain the same. Temporary adverse transportation impacts along Highway 58 would occur if the CVSR project is constructed.
Infrastructure			
Minor to moderate adverse impact. Construction activities would increase the risk of fire, placing an increased demand on limited fire protection and safety services during construction. County development impact fees paid by the Project Proponent would allow the nearest fire station to attain adequate staffing necessary to respond to emergencies at the Project Site. To ensure adequate emergency vehicle access throughout the construction period, Cal Fire and the Sheriff's Department would	Minor to moderate adverse impact. Infrastructure impacts would be the same as described for Alternative A.	No impact. Reconductoring would be accomplished by up to 50 PG&E employees. Construction would not impact school enrollment, increase the demand for police or fire services, or interrupt electrical service	No impact. Existing infrastructure conditions or public service requirements would remain the same.

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ALTERNATIVE A	ALTERNATIVE B	RECONDUCTORING	NO ACTION ALTERNATIVE
review construction plans to ensure adequacy of access for emergency service providers. The Project Site is in a high severity risk area for wildland fire. However, existing grassland vegetation is considered a low-fuel load type of vegetation and is one of the easier vegetation and habitat types to manage or control when fire conditions exist. A Wildfire Management Plan has been prepared for the Project to manage fire conditions. Operation of the Project could result in a minor increase in enrollment levels at local schools. The Project Proponent would pay development fees, which, together with increased school revenue from property tax increases, would provide a minor beneficial impact on local schools.		along the line. Operation would not increase demands on any current services or utilities.	