

EXECUTIVE SUMMARY IVANPAH ENERGY CENTER

Ivanpah Energy Center, L.P., a Diamond Generating Corporation Company, a subsidiary of Mitsubishi Corporation proposes to construct and operate a 500 Megawatt (MW) gas-fired electric power generating station in southern Clark County, Nevada. The facility that would be known as the Ivanpah Energy Center, LP, would be located approximately 25 miles south of Las Vegas.

Six potential plant sites within the Ivanpah Valley were initially identified as potentially suitable for development; four sites were eliminated from further consideration due to environmental and engineering constraints. A site that is approximately 2.5 miles southeast of Goodsprings and a site that would be co-located with the Reliant Bighorn Generating Facility in Primm, Nevada were retained for further evaluation.

Ivanpah Energy Center (regardless of plant site location) would operate as a refrigerated air-cooled combined-cycle gas-fired facility with a nominal output of 500 MW. The facility would use two Westinghouse 501FD-60 Hz natural gas-fired combustion turbine generators with heat-recovery steam generators that would capture exhaust heat. A heat recovery system would be used to supply steam to drive a single steam turbine generator. Each of the combustion turbines would be equipped with dry low NO_x combustors and Selective Catalytic Reduction ammonia injection systems to control emission of NO_x. In addition, a Non-selective Catalytic Reduction unit would be used to control emissions of carbon

monoxide and volatile organic compounds. Full load output of the facility under expected operating conditions (both combustion turbine generators and the steam turbine generator running) would range from approximately 450 net MW to 540 net MW, depending on ambient air temperature.

Process water requirements for the facility would be minimized through the use of refrigerated air-cooled technology that would reduce requirements from approximately 300 acre feet per year (afy) to 50 afy. Potential impacts to water resources will be further reduced through the use of gray water from the Southern Nevada Correctional Center (SNCC). The project proponent would construct a water treatment plant near the SNCC and treated water would be piped to the power plant site. A well that is owned by the Las Vegas Valley Water District and located near the SNCC has been proposed by the project proponent as a back-up water supply, should gray water flows from the SNCC become curtailed or interrupted.

Proposed Goodsprings Plant Site

The Proposed Goodsprings Plant Site would be located on a 30-acre parcel; an additional 10 acres would be used as a temporary laydown area. Natural gas supply to the plant would be from the Kern River Gas Transmission (KRGT) pipeline which is adjacent to the plant site. Development of the site also would require improvements to the permanent northern access road and temporary southern access road and installation of a telecom-



munications line. The plant site, temporary laydown area, access roads, and telecommunications line would be on Bureau of Land Management (BLM) property.

Primm Plant Site Alternative

The Primm Plant Site Alternative would be co-located on industrial-use private land, with the Reliant Bighorn Generating Facility. Existing access roads and telecommunications corridors would be used; however, a 3.2-mile-long natural gas supply pipeline and a metering station would be required to provide natural gas from the KRGT to the plant site. The pipeline and metering station would be on BLM property.

Water Treatment Plant

Regardless of plant site location (Goodsprings or Primm), a water treatment plant would be constructed on one of two 0.7-acre parcels near the SNCC in Jean. Both parcels are located north of Prison Road on State of Nevada land.

Water Supply Pipeline

A water supply pipeline to the Goodsprings Plant Site would largely parallel Union Pacific Railroad (UPRR) right-of-way (ROW) to a BLM-designated Utility Corridor that would be used to interconnect the power plant to Mead Substation. The pipeline would be co-located within a new transmission line corridor to the vicinity of the Goodsprings Site. Three plant site access options were evaluated to route the pipeline from the transmission line corridor to the plant site. Two routes would extend south of a small mountain near the plant site; one route would cross over the mountain.

Two water supply pipeline routes were evaluated for the Primm Plant Site. One route would extend directly from the water treatment plant near the SNCC to the plant site, parallel to the UPRR ROW. The other route would parallel the UPRR ROW to the previously referenced utility corridor where it would be co-located within a new transmission line corridor to the plant site.

Transmission Line Interconnections

Thirteen alternative routes were initially identified for a single-circuit transmission line from the Goodsprings Plant Site to Mead Substation (Ivanpah-Mead #2). Two alternatives were carried forward for further consideration. A double-circuit line also would be required from the plant site to Table Mountain Substation (Ivanpah-Table Mountain #1 & #2). Lines also would interconnect to the existing Valley Electric Association (VEA) Pahrump-Mead Transmission Line.

Four Goodsprings Plant Site access options were identified to interconnect the previously referenced five circuits to the Ivanpah Energy Center, Mead Substation, Table Mountain Substation, and the existing Pahrump-Mead Transmission Line. One access option would cross over the mountain west of the plant site; two access options would extend all five circuits around or across the southern toe of the mountain. One access option would extend one circuit across the mountain and four circuits across or around the toe of the mountain.

Development of the Primm Plant Site would require construction of a circuit to Mead Substation (Ivanpah-Mead Transmission Line) and a circuit to Table Mountain Substation (Ivanpah-Table Mountain Transmission Line). Although

several potential routes were initially identified, four alternative routes were carried forward for further consideration.

No Action Alternative

Selection of the No Action Alternative would result in a failure to develop new generating capacity in Southern Clark County. Under such circumstances, the

region would continue to be reliant on existing and planned generation and the purpose and need for the Ivanpah Energy Center would not be met.

Alternatives and options that were evaluated in detail are summarized in Table ES-1.



Table ES-1. Summary of Alternatives Retained for Further Consideration

Project Component	Proposed Goodsprings Plant Site	Primm Plant Site Alternative
IEC Plant Site Location Alternatives	Alternative E— Proposed Goodsprings Plant Site	Alternative F – Primm Plant Site (co-location with Reliant Bighorn)
Natural Gas Pipeline	Direct connection to plant site. No routing required.	3.2-mile-long pipeline from KRGT and 0.46 acre metering station.
Telecommunications Line	Installation along a 7,200-foot-long corridor from the KRGT Compressor Station to the plant.	Installation along the existing Sprint Communications line in use by Reliant. No routing required
Access Roads	Northern Access (County Road 53Y), 20-foot-wide, paved, 3-foot-wide shoulders.	Access available on paved road through the Bighorn facility.
	Southern Access (County Road 28, existing trail, and County Road 53Y). Trail bladed to 18-foot-width.	
Water Treatment Facility	Use of one of two 0.7-acre parcels north of Prison Road.	
Water Supply Pipeline Route	South from SNCC along the west side of the UPRR ROW to and within BLM-designated Utility Corridor and Ivanpah-Mead Transmission Line #2 corridor.	Parallel to east side of the UPRR ROW to the plant site.
		Parallel to east side of the UPRR ROW to (and within) the Ivanpah-Mead/Ivanpah-Table Mountain Transmission Line corridor.
Water Supply Pipeline Plant Site Access Options	Across the mountain	N/A
	Traversing the southern slope of the mountain, north of Desert Tortoise fence.	
	Parallel to existing trail, around the southern toe of the mountain	
Transmission Line Alternatives	Two alternatives retained for further consideration.	Ivanpah-Mead—Four Alternatives Retained Ivanpah-Table Mountain –Two Alternatives Retained



Project Component	Proposed Goodsprings Plant Site	Primm Plant Site Alternative
Transmission Line Plant Site Access Options	Five circuits across the mountain	N/A
	Five circuits traversing the southern toe of the mountain, north of Desert Tortoise Fence	
	Five circuits parallel to an existing trail, around the toe of the mountain.	
	One circuit across the mountain, four circuits traversing the toe of the mountain	
Structure Type Options	Gray-painted single-pole tubular steel	
	Coreten single-pole tubular steel	
No Action Alternative	No Action Alternative Retained	



Comparative Summary of Impacts

Geology and Soils

Impacts to geology and soils that would be related to construction and operation of the Ivanpah Energy Center would be similar and negligible, regardless of alternative plant site selected. Use of the Goodsprings Site would eliminate mining potential on approximately 42 acres; whereas use of the Primm Site would eliminate mining potential on 9 acres. Erosion potential that would be associated with plant access options would only be associated with development of the Goodsprings Plant Site. Those access options that would cross the mountain west of the Goodsprings Plant Site (Options 1 and 4) would result in greater potential impacts than those that would cross south of the mountain (Options 2 and 3).

Mitigation measures that would be implemented to reduce the severity of erosion include the installation of appropriate drainage structures (i.e., gabions) and regrading and revegetation of disturbed areas. Those that could be taken to reduce impacts to mining operations include modifications to transmission line structure locations, spanning of mining areas, and negotiations with mining operators.

Impacts to geology, soils, and mining are expected to be less than significant, regardless of plant site alternative.

Groundwater and Surface Water

Ivanpah Energy Center (regardless of plant site location) would operate using a dry cooled system and refrigerated input air that would minimize process water requirements. Water that would be needed

for plant operations would be acquired from gray water flows from the Southern Nevada Correctional Center.

Groundwater would only be required as a supplement to the use of gray water. A well that is located near the SNCC has been proposed for use by the project proponent, should gray water flows from the SNCC be curtailed.

The use of refrigerated air technology and gray water would reduce groundwater dependence, thus resulting in less than significant impacts to the resource.

Biological Resources

Construction and operation of the Ivanpah Energy Center at the Proposed Goodsprings Plant Site would result in significant impacts to approximately 115 acres of moderate density (Category B) desert tortoise habitat. Approximately 36 acres would be permanently affected during the life of the project; 79 acres would be temporarily affected.

Construction and operation of the Ivanpah Energy Center at the Primm Plant Site would result in significant impacts to approximately 27 acres of moderate density (Category B) desert tortoise habitat. Less than one acre would be permanently affected; 26 acres would be temporary affected.

Construction and operation of the Proposed Goodsprings Plant Site would permanently impact *Penstemon spp.* habitat (primarily due to construction of the northern access road). Additional temporary impacts to the species would result from construction of the southern access road, water supply pipeline installation, and transmission line construction.

Development of the Primm Plant Site Alternative would temporarily impact *Penstemon spp.* habitat, primarily due to transmission line construction. Permanent impacts to the species that would be related to the Primm Plant Site Alternative are not expected.

Construction of transmission lines required to support the Ivanpah Energy Center at the Goodsprings Plant Site would cross approximately 13,000 linear feet of crucial Gambel's quail habitat. Those required for the Primm Plant Site would cross approximately 26,000 linear feet of habitat.

Transmission lines needed for both alternatives would cross approximately 21,000 linear feet of crucial desert tortoise habitat and would be in proximity to desert bighorn sheep habitat.

Impacts to all species would be reduced by using existing roads along established transmission line corridors, minimizing the extent of access road construction, and scheduling to avoid construction during the migratory bird nesting season and desert bighorn sheep lambing season. Land that would be temporarily disturbed would be restored in accordance with BLM-approved restoration plans. Potential impacts to *Penstemon spp.* could be ameliorated by seed collection and post construction reseeded. Impacts to cacti, yucca, and other important plant species would be reduced by transplanting.

Although impacts to the desert tortoise within moderate density areas would be significant, those within low density areas would be less than significant. Impacts to *Penstemon spp.*, desert bighorn sheep, and other species of concern would be less than significant.

Cultural and Paleontology

Class I cultural and paleontological data indicate that several sites of potential interest are within the project area. Field investigations will be conducted as part of the project to identify potential impacts and mitigation measures associated with the project.

Land Use and Zoning

The Ivanpah Energy Center, Proposed Goodsprings Plant Site would be constructed on BLM land. Approximately 30 acres would be permanently (during life of the project) used for the facility and an additional 10 acres would be used as a temporary laydown area. Construction of the Primm Plant Site would be on private land. An additional 0.7 acres of State of Nevada land would be used for the water treatment plant, regardless of plant site alternative. Permanent and temporary land use requirements for BLM lands total 336 acres for the Proposed Goodsprings Alternative and 327 acres for the Primm Plant Site Alternative.

The water treatment plant would be located on State of Nevada land that is zoned as rural open space. Construction of the plant would require a special use permit from Clark County.

Construction at the Goodsprings Plant Site would require rezoning of the land from rural open space to heavy industrial use. Variances and waivers would be requested for township/range line avoidance, height requirements, off-site development, county road abandonment, noise limitations, landscaping, and setback from non-industrial use areas.

The Primm Plant Site would be located on private land that is partially zoned for heavy industrial use. Eighty-five acres of the original 166 acres that are leased by Reliant Energy for the Bighorn facility have been zoned M-2 (heavy industrial). Although a portion of the original 85 acres may be available for use by Ivanpah Energy Center at Primm, it is likely that additional lands on the original 166-acre tract would require rezoning for heavy industrial use. Development of the Primm Plant Site would require variances and waivers for height requirements, off-site development, noise limitations, setback from non-industrial use areas, and landscaping.

The Primm Site is currently under lease by Reliant Energy from Primadonna Corporation. According to Reliant Energy (Greesom, 2002), the current lease allows an unspecified amount of additional electrical generation to be constructed on the leased lands; however, contractual arrangements between Reliant Energy and Diamond Generating Corporation would need to be negotiated.

Rangeland Management

Although impacts to rangeland are not expected to be significant, regardless of plant site alternative, those related to the Primm Plant Site Alternative would be slightly greater than those related to the Proposed Goodsprings Plant Site. Potential impacts associated with both alternatives include the potential introduction of noxious weeds; injury to, or loss of livestock during construction; damage to fences, gates, and cattle guards that could occur during construction; and reduced access to water and feed supplies during construction. Mitigation measures

would be followed to avoid or reduce the potential for impacts to livestock.

Recreation

Impacts to recreation are not expected to be significant, regardless of plant site, transmission line route, or water supply pipeline route selected. However, they would be slightly greater for the Primm Site Alternative because transmission line construction through recreation-use lands would be more extensive than would be needed to support development and operation of the Proposed Goodsprings Alternative. Regardless of alternative selected, potential impacts related to off-road events and casual users could be reduced by appropriate scheduling and the identification of work site locations.

Transportation

Construction of the Goodsprings Plant Site could result in greater impacts to highway safety than that of the Primm Plant Site, primarily because plant site construction and operation would affect traffic on SR 161. However, due largely to the inclusion of the temporary (south) access road, the level of impacts that would be associated with the Proposed Goodsprings Alternative are not expected to be significant.

Hazardous Materials

Ivanpah Energy Center (regardless of plant site location) would be constructed and operated in a manner that would avoid the release of hazardous and non-hazardous materials. The project proponent has agreed to use aqueous ammonia (concentrations of less than 20 percent), rather than hydrous ammonia. Therefore, impacts associated with hazardous or non-hazardous materials are not expected to be

significant, regardless of alternative selected.

Visual Resources

Construction and operation of either the Goodsprings or the Primm Plant Site are expected to result in weak to moderate visual impacts. The Goodsprings plant site would be screened from most views by intervening topography; the Primm plant site would be partially screened by the Reliant Bighorn Generating Facility. Slightly greater visual impacts would be associated with Goodsprings Plant Site Transmission Line Access Options 1 or 4 than would result from Options 2 or 3 because land disturbance and structures on the mountain west of the plant site would be more readily visible.

Potential impacts associated with new transmission lines would be mitigated through the use of gray-painted structures and non-specular conductor and (to the extent practicable) by paralleling existing transmission lines and structures.

Climate and Air Quality

Construction at the Proposed Goodsprings Site or the Primm Site would generate similar levels of airborne particulates during site clearance and road construction. However, since more site preparation and access road grading would be needed for the Goodsprings Plant Site than would be needed for the Primm Plant Site Alternative, related temporary impacts that would be associated with the Goodsprings Plant Site would be greater than those associated with the Primm Site Alternative.

The Ivanpah Energy Center would use appropriate technology to reduce air emissions. Impacts to air quality within

the Ivanpah Valley Air Shed are not expected to be significant, regardless of plant site location.

Noise

Clark County noise standards are not expected to be violated, regardless of plant site selected and impacts to area residents are expected to be less than significant. However, due to the proximity of the site to sensitive receptors (2.3 miles), it is likely that temporary noise impacts related to construction of the Proposed Goodsprings Plant Site would be slightly greater than those related to the Primm Plant Site Alternative.

Socioeconomics/Environmental Justice

Construction and operation of the Ivanpah Energy Center would result in similar impacts to area residents and Clark County, regardless of plant site location. Environmental Justice issues are not present at either alternative or their auxiliary components. Impacts to socioeconomics or Environmental Justice are not expected to be significant.

Transmission Line Engineering and Cost Considerations

An engineering analysis was provided to compare reliability, constructability, cost, and maintenance factors that are related to transmission lines required to serve the Proposed Goodsprings Plant Site and those required to serve the Primm Site Alternative. Results of the analysis indicate that transmission lines that would be needed to support the Goodsprings Plant Site would be somewhat more reliable than those associated with the Primm Plant Site. Construction of the Ivanpah Energy Center at the Primm Plant Site would be less difficult than that of the Goodsprings Plant

Site, primarily due to the presence of existing access roads. However, total line lengths associated with the Goodsprings Plant Site would be shorter than those of the Primm Plant Site.

Construction of transmission lines to support the Primm Plant Site Alternative would cost approximately 12 percent more than would be needed to support the Goodsprings Plant Site.

From a line maintenance perspective, the Proposed Goodsprings Plant Site is somewhat better due to the fact that all new lines would be within 1 mile of existing Valley Electric Association line corridors. Construction of the Ivanpah Energy Center at the Primm Site would introduce approximately 7.9 miles of new VEA line corridors. However, regardless of plant site location, the use of steel pole construction would minimize maintenance requirements.

Table ES-2. Areas of Disturbance by Project Component – Proposed Goodsprings Plant Site

Goodsprings Site – includes Option 2 across toe of mountain and line to Table Mountain						
	BLM ROW	Land Disturbance Within BLM ROW		Land Disturbance Outside of BLM ROW		Private and State Lands
		Permanent	Temporary	Permanent	Temporary	
Ivanpah Energy Center						
Plant Site (N-75493)	30.0	30.0				
Temporary Laydown Area (N-75493)	10.0		10.0			
Natural Gas Supply Pipeline (N-75471)	Negligible	Negligible	Negligible			
Telecommunications Line (N-75895) ⁽¹⁾	1.7		0.8			
Access Roads (N-75493)						
Northern Access Road (County Road 53Y) ⁽²⁾				2.7		
Southern Access Road ⁽³⁾					2.6	
Water Treatment Plant (no BLM permit required)	State of Nevada Land					0.7
Water Supply Pipeline (N-75475)						
Parallel to UPRR ROW and Co-located with Transmission Corridor (~57,560 linear ft)	13.2 ⁽⁴⁾		52.9 ⁽⁵⁾			
Ivanpah-Mead #2, Ivanpah-Table Mountain #1 & #2, and Pahrump-Mead Interconnections (N-75471 and N-75472)						
Approx. Line Length (~251,000 linear ft)						
Pole Sites (380)		<0.1				
Pole Work Areas (100x200 each)			174.5			
P&T Sites			2.8 ⁽⁶⁾		27.6 ⁽⁷⁾	
New Access Roads		4.8 ⁽⁸⁾				
Spur Roads		4.1 ⁽⁹⁾			5.2 ⁽¹⁰⁾	
OPGW	69.2 ⁽¹¹⁾					
Temp. Laydown Areas (total)					18.0	
Total Proposed Goodsprings Site		38.9	241.0	2.7	53.4	0.7



- (1) Total length - 7,200 linear ft -- 10 ft wide permanent ROW, 25 ft temporary disturbance along 1,400 linear feet.
 - (2) 7,500 linear ft – increase from 10 ft wide to 26 ft wide, pave 20 ft. width.
 - (3) 14,000 linear ft – increase from 10 ft side to 18 ft wide.
 - (4) 10 ft wide permanent ROW, partially within project transmission line corridors,
 - (5) 40 ft wide temporary disturbance
 - (6) 4 sites within ROW, (100x300 each)
 - (7) 40 sites outside of ROW, (100x300 each)
 - (8) 5,000 linear feet x 18 ft, from Table Mountain Sub. to Mead Sub. (2.1 ac), plus 6,500 linear feet x 18 ft, across toe of mountain (2.7 ac)
 - (9) 10,000 linear feet (spur roads) x 18 ft (4.1 ac)
 - (10) 12,500 linear feet (spur roads) x 18 ft from Table Mountain Sub. to Mead Sub. (5.2 ac)
 - (11) OPGW = 12 ft wide throughout length of ROW
- Note: Linear feet and acreages among transmission line alternatives and plant access options differ slightly.



Table ES-3. Areas of Disturbance by Project Component – Primm Plant Site Alternative

Primm Site – Includes to Table Mountain Circuit						
	BLM ROW	Land Disturbance Within BLM ROW		Land Disturbance Outside of BLM ROW		Private and State Lands
		Permanent	Temporary	Permanent	Temporary	
Ivanpah Energy Center						
Plant Site (N-75493)	Private Industrial Land					30.0
Temporary Laydown Area (N-75493)	Private Industrial Land					10.0
Natural Gas Supply Pipeline (N-75471)	4.4 ⁽¹⁾	0.5 ⁽²⁾	19.4 ⁽³⁾			
Telecommunications Line (N-75895)	None required					
Access Roads (N-75493)	None required					
Water Treatment Plant (no BLM permit required)	State of Nevada Land					0.7
Water Supply Pipeline (N-75475)						
Parallel to UPRR ROW (~57,800 linear ft)	13.3 ⁽⁴⁾		53.1 ⁽⁵⁾			
Ivanpah-Mead and Ivanpah-Table Mountain Circuits (N-75471 and N-75472)						
Approx. Line Length (~285,900 linear ft)						
Pole Sites (410)		<0.1				
Pole Work Areas (100x200 each)			188.3			
P&T Sites			3.4 ⁽⁶⁾		30.3 ⁽⁷⁾	
New Access Roads		4.2 ⁽⁸⁾				
Spur Roads		4.1 ⁽⁹⁾			5.2 ⁽¹⁰⁾	
OPGW	78.8 ⁽¹¹⁾					
Temp. Laydown Areas (total)					18.0	
Total Primm Site Alternative		8.8	264.2	- 0 -	53.5	40.7



- (1) 0.5 ac metering station plus 3.9 ac permanent pipeline ROW (10 ft width)
 - (2) 100 x 200 ft metering station
 - (3) 16,900 linear ft pipeline, 50 ft wide temporary disturbance
 - (4) 10 ft wide permanent ROW
 - (5) 40 ft wide temporary disturbance (an alternative using transmission line corridors would result in 66 acres of disturbance).
 - (6) 5 sites within ROW, (100x300 each)
 - (7) 44 sites outside of ROW, (100x300 each)
 - (8) 5,000 linear feet x 18 ft, from Table Mountain Sub. to Mead Sub.(2.1 ac), plus 5,000 linear feet x 18 ft from IEC to the north (2.1 ac)
 - (9) 10,000 linear ft (spur roads) x 18 ft (4.1 ac)
 - (10) 12,500 linear feet x 18 ft from Table Mountain Sub. to Mead Sub. (5.2 ac)
 - (11) OPGW = 12 ft wide throughout length of ROW
- Note: Linear feet and acreages among transmission line and water supply pipeline alternatives options differ slightly.



SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Construction and operation of the Ivanpah Energy Center would result in significant unavoidable impacts to the desert tortoise. Construction of the Proposed Goodsprings Plant Site, the telecommunications line, access roads, water supply pipeline, and transmission lines would result in the permanent loss of approximately 36 acres of Category B moderate density desert tortoise habitat. An additional 79 acres would be significantly affected during construction and prior to completion of restoration practices.

Construction and operation of the Ivanpah Energy Center at the Primm Plant Site would result in significant impacts due to the permanent loss of less than one acre of Category B moderate density habitat. Additional significant impacts would result from temporary impacts to approximately 27 acres of Category B moderate density habitat.

The decision to identify impacts within Category B habitat as “significant” was based on species density and a higher potential for project actions to affect greater numbers of desert tortoise than would be affected by actions in lower density areas. Species density within the category typically exceed 45 per square mile, whereas those within Category C density areas are below 45 per square mile. Category B lands, as designated by the BLM (1997), include the area west of I-15 from the vicinity of Jean to the southern limit of the Desert Tortoise Translocation Area and lands east and west of the interstate north of Jean.

Results of biological investigations that were carried out for the Ivanpah Energy Center EIS confirm relatively high densities of the species to be present along the northern and southern access roads to the plant site, land surrounding the plant site, and along most transmission line corridors west of I-15. Additional information, contained in the Draft Biological Assessment indicates that moderate (45 – 90 per square mile) to very high (140+ per square mile) densities were found to be present within all but one area west of I-15. Densities east of the interstate, including Eldorado Valley, ranged from very low (0 – 10 per square mile) to low (10 – 45 per square mile) in all but one area.

Project activities within moderate to high density desert tortoise habitat were considered to result in significant impacts to the species because actions within those areas (Category B) are more likely to directly or indirectly affect greater numbers of the species than similar actions within very low to low density habitat. The range of impacts include incidental take during construction or operation due to crushing or similar direct action, habitat fragmentation, introduction of noxious or other undesirable plant species, soil compaction and similar habitat degradation, and the potential for increased public access to area lands.

Direct long-term habitat loss associated with construction and operation of the Ivanpah Energy Center and north access road at the Goodsprings Plant Site and potential increased public access to the area south of the plant site represent significant unavoidable impacts that cannot be fully mitigated. Short-term and long-



term unavoidable impacts that can be (at least partially) mitigated include construction of the south access road, land disturbance due to water supply pipeline and telecommunications line installation, and transmission line installation. The range of mitigation measures include site restoration and revegetation and noxious weed controls.

CUMULATIVE IMPACTS

Ivanpah and Eldorado valleys have been previously impacted by a variety of activities ranging from the construction and continued use of major highways and secondary roads, unimproved roads and trails, pipelines, the Union Pacific Railroad, casinos and retail businesses, transmission lines and substations, and other facilities developed around Jean and Primm. Development within the area has resulted in the loss of natural resources and the transition of both valleys from their original undisturbed natural setting to one that, in many locations, represents an industrial or commercial setting. Similar changes have taken place in limited areas of the McCullough Range where roads and trails provide access through narrow passes that also are crossed by high voltage transmission lines.

Reasonable and foreseeable future actions that could contribute to cumulative impacts within Ivanpah and Eldorado valleys that would be related to the proposed action range from administrative actions through new facilities construction.

Administrative actions associated with implementation of the Clark County Conservation of Public Lands and Natural Resources Act of 2002 are likely to have far reaching ramifications on land uses within in Ivanpah Valley. Major new

facilities within the valley, including construction of the Ivanpah Valley Airport and a water supply pipeline from Las Vegas would directly affect land uses within the central portion of the valley and would contribute to secondary development elsewhere.

Increased development is likely to result in continued loss of habitat and mining and recreational opportunities. Rural characteristics of Ivanpah Valley and the communities of Goodsprings and Sandy Valley are likely to be changed over time to a more urbanized setting. As urbanization increases, traffic congestion and noise will increase, and visual aesthetics and air quality will degrade. Although many residents of Goodsprings and Sandy Valley view increased development as a degradation of their lifestyle, associated benefits are likely to result from improved public services.

SHORT-TERM USES OF THE ENVIRONMENT VERSUS LONG-TERM PRODUCTIVITY

Construction of the Ivanpah Energy Center at either the Goodsprings or the Primm location would commit the temporary use of 294 to 317 acres of federal land during construction. Long-term (permanent for the life of the project) commitments of federal land would range from nine acres (Primm Plant Site Alternative) to 42 acres (Proposed Goodsprings Plant Site Alternative). Lands that would be temporarily used during construction would represent a short-term use of the environment because they would be restored and returned to the BLM following restoration.

Short-term uses of the environment also would result in a variety of impacts to the



physical, biological, and human environment; however, such impacts would be offset during the life of the project through the generation of reliable power that would be available to the competitive market.

**IRREVERSIBLE AND
IRRETRIEVABLE COMMITMENT OF
RESOURCES**

Construction and operation of the Ivanpah Energy Center (regardless of plant site

location) and related facilities would require the commitment of a variety of resources that cannot be replaced, restored, or recovered. Project construction also would use a variety of resources that, after decommissioning of the facility, could be restored and returned for use in the future.

