Draft
Environmental Impact Report/ Environmental Impact Statement

Southern California Edison's
Eldorado–Ivanpah Transmission Line Project

April 2010

Volume I

State of California
Public Utilities Commission

A.09-05-027
SCH #2009071091

Bureau of Land Management
Needles Field Office

DES-10-16

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COVER SHEET

Title: Eldorado–Ivanpah Transmission Project (EITP)

Subject: Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS)

Lead Agencies: California Public Utilities Commission (CPUC) and U.S. Department of the Interior Bureau of Land Management (BLM)

Abstract: Southern California Edison (SCE) proposes to construct, operate, and maintain new and upgraded transmission facilities. The upgraded transmission lines would extend approximately 35 miles in Clark County, Nevada, and San Bernardino County, California. The purpose of the proposed project is to provide the transmission facilities necessary to interconnect and deliver up to 1,400 megawatts (MW) of renewable energy that is expected to be generated in the Ivanpah Valley area in compliance with federal and state requirements. The proposed project would include the following components:

- Powerlines
  - Eldorado–Ivanpah Transmission Line: A new double-circuit 230-kilovolt [kV] transmission line, approximately 35 miles long, would be constructed between the existing Eldorado Substation in Nevada and the proposed Ivanpah Substation in California. It would replace the existing 115-kV transmission line that runs from Eldorado through Baker, Coolwater, and Dunn Siding to Mountain Pass. The existing 115-kV transmission line that is west of the proposed Ivanpah Substation would remain unchanged.
  - Subtransmission Line: A proposed 600- to 800-foot-long addition to an existing 115-kV subtransmission line from a connection point on the existing Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV line would be connected to the proposed Ivanpah Substation.
  - Distribution Line: An extension of an existing 33-kV distribution line would be built to provide light and auxiliary power to the proposed Ivanpah Substation.
- Substations
  - Ivanpah Substation: The proposed substation would be located in California near Primm, Nevada, and would serve as a connector hub for solar energy generated in the Ivanpah Valley area. The substation would include a mechanical and electrical equipment room and microwave tower.
  - Eldorado Substation: Changes inside the existing Eldorado Substation would be made to accommodate the new Eldorado–Ivanpah 230-kV transmission line.
- Redundant Telecommunication System

This EIR/EIS evaluates the impacts of the proposed project and 7 potential alternatives or combinations of alternatives. The primary environmental resource issues analyzed in this document were potential effects on Aesthetics and Visual Resources; Air Quality; Biological Resources; Cultural Resources; Geology, Soils, Minerals, and Paleontology; Hazards, Health, and Safety; Hydrology and Water Quality; Land Use; Noise; Public Services and Utilities; Recreation; Socioeconomics, Population and Housing, and Environmental Justice; and Transportation and Traffic.

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Comments: Comments on the Draft EIR/EIS must be submitted to the address provided above by June 21, 2010, which presents the end of the public review period. Email comments may be sent to Ivanpah@ene.com.

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
AAQS	ambient air quality standards
AB	Assembly Bill
AC	Alternating Current
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACSR	Aluminum Conductor Steel Reinforced
AEP	Association of Environmental Professionals
ANCA	Airport Noise Compatibility Area
APM	Applicant Proposed Measure
AQCMM	Air Quality Construction Mitigation Manager
ARPA	Archaeological Resources Protection Act
ASTM	American Society for Testing Materials
ATC	Authority to Construct
BCC	Birds of Conservation Concern
BCCE	Boulder City Conservation Easement
BCI	Bat Conservation International
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BRMIMP	Biological Resources Mitigation Implementation and Monitoring Plan
BVUSD	Baker Valley Unified School District
C	Celsius
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
cal BP	calibrated years before the present
Cal/EMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California State Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCCP	Clark County Comprehensive Plan
CC-DAQEM	Clark County Department of Air Quality and Environmental Management
CCDOA	Clark County Department of Aviation
CCR	California Code of Regulations
CCSD	Clark County School District
CDCA	California Desert Conservation Area
CDE	Department of Education, California
CDF	California Department of Finance
CDFG	California Department of Fish and Game
CDWR	California Department of Water Resources
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act

CERTS/EPG	Consortium for Electric Reliability Technology Solutions/Electric Power Group
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	Methane
CIPC	California Invasive Plant Council
CIWMB	California Integrated Waste Management Board
cm	Centimeter
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
COC	Condition of Certification
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
CREZ	California Renewable Energy Zone
CRHR	California Register of Historical Resources
CRS	Cultural Resources Specialist
CSC	California species of special concern
Cumulative dBA	Allowable Increase in Cumulative Noise Level
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dBA	A-weighted decibel
DEHS	Department of Environmental Health and Safety, San Bernardino County
DEIR	Draft Environmental Report
DESCP	Drainage, Erosion, and Sedimentation Control Plan
DHS	Department of Health Services, California
dm	Decimeters
DNL	Daytime-Nighttime Noise Level
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control, California
DWMA	Desert Wildlife Management Area
EAP	Energy Action Plan
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
EITP	Eldorado–Ivanpah Transmission Project
ELF	Extremely low frequency
EMF	electromagnetic field
EO	element occurrence
EPAct	Energy Policy Act
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
F	Fahrenheit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission

FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act
FRP	Facility Response Plan
FSA/DEIS	Final Staff Assessment / Draft Environmental Impact Statement
FTA	Federal Transit Administration
g	acceleration of gravity
GHG	greenhouse gas
GO	General Order
GWP	global warming potential
H_2S	hydrogen sulfide
HAER	Historic American Engineering Record
HAPs	hazardous air pollutants
HAZMAT	hazardous materials
HCP	Habitat Conservation Plan
HMBP	Hazardous Materials Business Plan
hp	horsepower
HSC	Health and Safety Code
HSWA	Hazardous and Solid Waste Act
HWCL	Hazardous Waste Control Law, California
HWMP	Hazardous Waste Management Plan
Hz	Hertz
I-15	Interstate 15
IARC	International Agency for Research on Cancer
IBC	International Building Code
ICC	International Code Council
IEPR	Integrated Energy Policy Report
IMA	Intensively Managed Area
IMACS	Intermountain Archaeological Computer System
IPCC	Intergovernmental Panel on Climate Change
ISEGS	Ivanpah Solar Electric Generating System
kcmil	kilo circular mils
km	Kilometer
KOP	key observation point
kV	kilovolt
kV/m	kilovolts per meter
kW	kilowatt
LADWP	Los Angeles Department of Water and Power
L_{dn}	Daytime-Nighttime Noise Level
L_{eq}	equivalent sound pressure level
LGIP	Large Generator Interconnection Procedures
LIMA	Less Intensively Managed Area
LORS	Laws, Ordinance, Regulations, and Standards
LOS	Level of Service
LST	lattice steel tower
LVCVA	Las Vegas Convention and Visitors Authority
$\mu g/m^3$	micrograms per cubic meter
m	meter
MBTA	Migratory Bird Treaty Act
MDAQMD	Mojave Desert Air Quality Management District
MEER	mechanical and electrical equipment room

mG	milliGauss
mgd	million gallons per day
MM	mitigation measure
MMP	mitigation and monitoring program
MMT	million metric tons
$MMTCO_2e$	million metric tons of CO_2 equivalents
MNP	Mojave National Preserve
MP	milepost
MRDS	Mineral Resource Data System
MSHCP	Multiple Species Habitat Conservation Plan
MUMA	Multiple Use Managed Area
MVA	megavolt ampere
MW	megawatt
mybp	million years before present
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAHC	Native American Heritage Commission
NAWS	Naval Air Weapons Station
NCCP	Natural Communities Conservation Plan
NCDC	National Climatic Data Center
NCP	National Contingency Plan
NDEP	Nevada Department of Environmental Protection
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEMO	Northern and Eastern Mojave
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFIP	National Flood Insurance Program
NGS	National Geographic Society
NHPA	National Historic Preservation Act
NHPC	National Historic Preservation Council
NIEHS	National Institute of Environmental Health Sciences
NNHP	Nevada Natural Heritage Program
NNPS	Nevada Native Plant Society
NO_2	nitrogen dioxide
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NRS	Nevada Revised Statutes
NSPS	New Source Performance Standards
OES	Governor's Office of Emergency Services
OHV	off-highway vehicle
OPGW	optical ground wire
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl

PE	professional engineer
PEA	Proponent's Environmental Assessment
PFYC	Potential Fossil Yield Classification
PG	professional geologist
PM_{10}	particulate matter less than or equal to 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 micrometers in diameter
PPA	Purchase Power Agreement
ppm	parts per million
PRC	Public Resources Code
PRMMP	Paleontological Resource Management and Monitoring Plan
PRR	Paleontological Resources Report
PRS	Paleontological Resource Specialist
PSD	Prevention of Significant Deterioration
PTO	Permit to Operate
PU	Public Utilities
PUCN	Public Utilities Commission of Nevada
RCRA	Resource Conservation and Recovery Act
RCS	Remote Control Switch
RETI	Renewable Energy Transmission Initiative
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RPS	Renewables Portfolio Standard
RWD	Report of Waste Discharge
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SBCFD	San Bernardino County Fire Department
SBCM	San Bernardino County Museum
SCADA	supervisory control and data acquisition
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SEL	sound exposure level
SF_6	sulfur hexafluoride
SFS	Stateline Fault System
SIP	State Implementation Plan
SNSA	Southern Nevada Supplemental Airport
SO_2	sulfur dioxide
SPCCP	Spill Prevention, Countermeasure, and Control Plan
SPLA&SL	San Pedro, Los Angeles, and Salt Lake Railroad
SPS	Special Protection System
SR	State Route
SRMA	Special Recreation Management Area
Staff	Bureau of Land Management and California Energy Commission Staff
STG	steam turbine-generator
SVP	Society of Vertebrate Paleontology
SWPPP	stormwater pollution prevention plan

SWRCB	State Water Resources Control Board, California
TAC	toxic air contaminant
TSD	treatment, storage, and disposal
TSP	tubular steel pole
U.S. EPA	U.S. Environmental Protection Agency
UBC	Uniform Building Code
UEPA	Utility Environmental Protection Act
UFT	underground fuel tank
UMA	Unmanaged Area
UPRR	Union Pacific Railroad
URTD	upper respiratory tract disease
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USC	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VdB	vibration velocity level in decibels
VOC	volatile organic compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
VRP	visibility-reducing particle
WBWG	Western Bat Working Group
WEAP	Worker Environmental Awareness Program
WECC	Western Electricity Coordinating Council
WECC PEIS	West-wide Energy Corridor Programmatic Environmental Impact Statement
WHBA	Wild Free-Roaming Horses and Burros Act
WHO	World Health Organization
WQMP	Water Quality Management Plan

Executive Summary

ES.1 Introduction

On May 28, 2009, Southern California Edison (SCE, or the applicant) submitted an application (A.09-05-027) to the California Public Utilities Commission (CPUC) for a Certificate of Public Convenience and Necessity (CPCN) to construct and operate the Eldorado–Ivanpah Transmission Project (EITP, or the project). Because the project would be located primarily on lands managed by the Bureau of Land Management (BLM), the applicant also filed a right-of-way (ROW) application with the BLM for a permit to construct. In compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act of 1969 (NEPA), as amended, the CPUC and the BLM have prepared this Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) to provide to both agency decision-makers and the public detailed information about the environmental impacts of the project, reasonable alternatives to the project and ways to mitigate or avoid the project's adverse environmental impacts.

The CPUC's purpose for preparing the EIR is to disclose any environmental impacts associated with the proposed project and its alternatives and to assist the agencies in determining whether to issue a CPCN and ROW for the EITP. The need for the proposed project is driven by state requirements related to the interconnection and distribution of renewable energy. The California Energy Commission (CEC) has identified lack of transmission infrastructure as a barrier to accessing remote renewable energy resources (CEC 2007).

The applicant has filed an application for a ROW across public lands with the BLM pursuant to Title V of the Federal Land Policy and Management Act (FLPMA) to upgrade the existing electric transmission system with a newer and larger transmission line, substations, and communications facilities. Federal orders and laws require government agencies to evaluate energy generation projects and facilitate the development of renewable generation sources. The BLM will evaluate the ROW application in accordance with 43 Code of Federal Regulations (CFR) 2800.

The BLM's purpose in preparing the EIS is to:

- Disclose the potential effects of authorizing the proposed transmission line and examine reasonable alternatives to the proposed action;
- Determine whether the proposed transmission line is consistent with BLM land use plans;
- Decide whether the ROW grant should be issued for the transmission line;
- Determine the most appropriate location for the transmission line on federal lands, considering multiple use objectives; and
- Determine conditions that should be applied to the construction, operation, and maintenance of the transmission line on federal lands.

This Draft EIR/EIS describes and evaluates the environmental impacts that are expected to result from construction and operation of the applicant's proposed EITP, and presents recommended mitigation measures that, if adopted, would avoid or minimize many of the significant environmental impacts identified. In accordance with CEQA and NEPA requirements, this EIR/EIS also identifies alternatives to the proposed project (including the No Project / No Action Alternative) that could avoid or minimize significant environmental impacts associated with the project as proposed by the applicant, and evaluates the environmental impacts associated with these alternatives. Specifically, the information contained in this EIR/EIS will be considered by the CPUC and the BLM in their respective deliberations on approval of the CPCN and the ROW grant. The information may also be considered by other agencies responsible for permits related to the project.

Under Sections 3.2 and 5.7 of the California Independent System Operator's (CAISO's) Tariff and Sections 210 and 212 of the Federal Power Act (16 United States Code [U.S.C.] § (i) and (k)), the applicant is obligated to interconnect and integrate power generation facilities into its electric system. This requirement includes renewable power generation sources as well as traditional generation sources.

The applicant's purpose for the proposed project is to interconnect and deliver up to 1,400 megawatts (MW) of solar energy that is expected to be developed in the Ivanpah Valley area. The existing Eldorado Substation and regional transmission lines cannot accommodate the additional power that would be generated by the anticipated solar projects in the Ivanpah Valley. The applicant has proposed to construct the EITP to connect planned renewable energy sources to the CAISO-controlled transmission grid. The CAISO plans and approves transmission interconnections and maintains an Interconnection Request Queue of generation projects that have requested access to the transmission grid. The EITP would also improve line reliability so that it would comply with North American Electric Reliability Corporation (NERC) standards.

The applicant identified the following additional objectives for the project in the Proponent's Environmental Assessment (PEA):

1. Reliably interconnect new solar generation resources in the Ivanpah Valley area and help the applicant and other California utilities comply with the California Renewables Portfolio Standard (RPS) in an expedited manner;
2. Comply with all applicable reliability planning criteria required by NERC, the Western Electricity Coordinating Council (WECC), and the CAISO;
3. Construct facilities in an orderly, rational, and cost-effective manner to maintain reliable electric service by minimizing service interruptions during construction;
4. Maximize the use of existing transmission line ROWs to minimize effects on previously undisturbed land and resources;
5. Minimize environmental impacts through selection of routes, tower types, and locations;
6. Where existing ROW is not available, use the shortest feasible route that minimizes environmental impacts; and
7. Meet project needs in a cost-effective and timely manner.

In addition to the applicant's stated purpose and objectives for the project, three solar developers have become party to the CPUC proceedings and have formally stated their support for the EITP. These developers have applications to construct solar generation facilities near the proposed project and have stated their intention to connect to the California electrical grid through the EITP. BrightSource Energy, Inc., filed a response in support of the project on October 26, 2009, and reiterated its support for the project at the CPUC's pre-hearing conference on December 2, 2009. First Solar, Inc., appeared as a party at the pre-hearing conference and stated its support for the project; First Solar intends to connect its proposed generation facility to the EITP lines in the area of the proposed project. Similarly, in a Motion for Party Status dated January 11, 2010, NextLight Renewable Power, LLC., stated both its support for and intention to interconnect with the proposed project.

Based on the content of the PEA and related federal and state objectives, the BLM and CPUC have abridged the objectives for the proposed project to the following:

1. To connect renewable energy sources in the Ivanpah Valley area in compliance with Executive Order 13212, the Energy Policy Act of 2005, the Federal Power Act, California Senate Bill 1078, and California Senate Bill 107;
2. To improve reliability in compliance with applicable standards, including NERC, WECC, CAISO, and SCE standards; and

3. To maximize the use of existing ROW and designated utility corridors to minimize impacts on environmental resources.

ES.2 Overview of the Proposed Project and Alternatives

The proposed EITP would include the following components:

- **Powerlines**
  - **Eldorado–Ivanpah Transmission Line –** A new double-circuit 230-kilovolt (kV) transmission line, approximately 35 miles long, would be constructed between the existing Eldorado Substation in Nevada and the proposed Ivanpah Substation in California. It would replace a portion of the existing 115-kV transmission line that runs from Eldorado through Baker, Coolwater, and Dunn Siding to Mountain Pass. The existing 115-kV transmission line that runs west from the proposed Ivanpah Substation to the Mountain Pass Substation would remain unchanged.
  - **Subtransmission Line –** A proposed 600- to 800-foot-long addition to an existing 115-kV subtransmission line from a connection point on the existing Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV line would be connected to the proposed Ivanpah Substation, to connect the substation to the existing 115-kV subtransmission system.
  - **Distribution Lines –** A 1-mile extension of the existing Nipton 33-kV distribution line would be constructed with underground circuitry to provide light and auxiliary power to the proposed Ivanpah Substation. In addition, a new 4,300-foot segment from the existing Nipton 12-kV distribution line would be built to provide power to a proposed microwave telecommunications site.
- **Substations**
  - **Ivanpah Substation –** The proposed substation would be located in California near Primm, Nevada, and would serve as a connector hub for solar energy generated in the Ivanpah Valley area. The substation would include a mechanical and electrical equipment room (MEER) and microwave tower.
  - **Eldorado Substation –** Changes would be made inside the existing Eldorado Substation to accommodate the new Eldorado–Ivanpah 230-kV transmission line.
- **Telecommunication System**
  - Existing overhead ground wire would be replaced with optical ground wire on an approximately 25-mile section of the existing Eldorado–Lugo 500-kV transmission line.
  - A 4.8-mile-long underground duct from the Eldorado–Lugo 500-kV transmission line to a proposed communication site in Nipton, California, would be installed.
  - A microwave path consisting of two 180-foot-tall communication towers would be installed between Nipton and the proposed Ivanpah Substation (a length of approximately 12 miles).
  - A communications room would be installed in the MEER at the new Ivanpah Substation to house communication equipment.
  - Telecommunication equipment would be installed at the Eldorado Substation.

Alternatives to the proposed project were developed in accordance with CEQA and NEPA requirements. Before filing the application, the applicant consulted with both the CPUC and the BLM through a pre-filing process, and a number of alternatives were developed at that time. Additionally, the CPUC and the BLM performed an independent and thorough review of all the information submitted with the application to develop a range of reasonable alternatives that would reduce one or more adverse effects. This process included a review of surveys, studies, and applicable planning documents for the region and a meeting with the CAISO on September 28, 2009, to discuss reliability standards and transmission system planning.

Alternatives to the proposed project carried forward for further analysis in this EIR/EIS are different transmission line routes and telecommunications options. Alternatives carried forward are considered at an equivalent level of analysis as the proposed project in this EIR/EIS. The alternatives carried forward for analysis in this EIR/EIS are:

- **Parallel to Los Angeles Department of Water and Power (LADWP) Corridor Alternative (Transmission Alternative Route A):** This alternative would deviate from the existing ROW from milepost (MP) 1 to MP 7, paralleling an existing LADWP transmission line to bypass a 0.8-mile segment of the proposed route that would not be located within the existing BLM designated utility corridor.
- **North of Eldorado Alternative (Transmission Alternative Route B):** This alternative would deviate from the existing ROW from MP 1 to MP 2, paralleling an existing Eldorado–Mead 230-kV transmission line to bypass a 0.8-mile segment of the proposed route that would not be located within an existing BLM-designated utility corridor.
- **North Dry Lakes Reroute Alternative (Transmission Alternative Route C):** This alternative would deviate from the existing ROW from MP 27 to MP 35 to avoid crossing Ivanpah Dry Lake.
- **South Dry Lakes Reroute Alternative (Transmission Alternative Route D):** This alternative would deviate from the existing ROW from MP 27 to MP 30 and would parallel the existing LADWP Marketplace–Adelanto 500-kV transmission line where that line crosses through the Ivanpah Dry Lake. This route would reduce the overall transmission footprint, since the EITP towers would follow to the extent feasible the existing LADWP 500-kV ROW.
- **South Dry Lakes Bypass Alternative (Transmission Subalternative E):** This alternative is a sub-alternative of Transmission Alternative Route D and would replace the northernmost portion of Alternative D. This route would also reduce the overall transmission footprint, since the EITP towers would follow to the extent feasible the existing LADWP 500-kV ROW.
- **Telecommunication Alternative (Golf Course):** This alternative would deviate from the proposed telecommunication route outside the Town of Nipton, California. This alternative would not require the proposed microwave tower. The telecommunications line would continue along the north side of Nipton Road in a new underground duct for approximately 10 miles. The telecommunications line would then be underbuilt on existing distribution lines for approximately 10 miles to the proposed Ivanpah section, with the exception of a segment that would be installed in a new underground duct beneath the Primm Valley Golf Course.
- **Telecommunication Alternative (Mountain Pass):** This alternative would deviate from the proposed telecommunication route outside the town of Nipton, California. This alternative would not require the proposed microwave tower. The telecommunications line would continue along the north side of Nipton Road in a new underground duct for approximately 10 miles. West of the town of Mountain Pass, the telecommunications line would be underbuilt on existing distribution lines for approximately 15 miles and then would run north of the existing Mountain Pass Substation to the proposed Ivanpah Substation.

Additional alternatives were considered but eliminated from further consideration, based on a preliminary analysis of potential environmental impacts, feasibility, and ability to meet the basic project objectives outlined in Section ES.1. These alternatives and the rationale for their elimination are discussed in detail in Appendix A-1, Alternative Screening Report.

ES.3 Choice among Alternatives

This summary describes the proposed project and alternatives. A more detailed description is provided in Chapter 2, “Description of the Proposed Project and Alternatives.” To determine the alternatives that would be analyzed in detail in this Draft EIR/EIS, a screening process was completed. The results of this process are documented in the Alternatives Screening Report provided in Appendix A-1. The alternatives screening process evaluated 18 potential alternatives, classified in four major categories: system, routing, telecommunication, and technology. The alternatives screening process consisted of the following steps:

- **Step 1 –** Describe each alternative to facilitate comparative evaluation.
- **Step 2 –** Evaluate the advantages and disadvantages of each alternative compared with the proposed project, based on CEQA/NEPA criteria such as project objectives, purpose, and need; feasibility; and environmental effects.
- **Step 3 –** Retain for analysis only the alternatives that meet the CEQA/NEPA criteria.

As a result of this screening process, seven alternatives were carried forward to be analyzed in this Draft EIR/EIS along with the No Project / No Action Alternative and the proposed project. The advantages and disadvantages of these alternatives are summarized in Table ES-1.

Ranking of Alternatives and Selection of the Environmentally Superior Alternative (CEQA) and Agency Preferred Alternative (NEPA)

The environmental analysis presented in this EIR/EIS evaluates the potential impacts associated with the reasonable range of alternatives carried forward for analysis. The alternatives were ranked from the most to the least environmentally preferred to facilitate selection of the Environmentally Superior Alternative under CEQA (California Code of Regulations [CCR], Title 14 §15126.6(e)(2)). Similarly, the results of the comparison of alternatives lead to the BLM Preferred Alternative under NEPA.

The various transmission alternative routes could have major differences in potential impacts on biological resources. Increases in the total temporary and permanent disturbance of previously undisturbed desert habitat would result in the direct and indirect loss of habitat for listed or sensitive plant species, native vegetation communities, and sensitive wildlife habitat. Alternatives B and C would have the greatest associated disturbance and effects on these resources. The increase in the spatial extent of the project footprint would increase the potential for disturbing wildlife and inducing wildlife mortality. In particular, Alternative C would cross higher quality desert tortoise habitat. Alternative D and Subalternative E would also have associated impacts on native vegetation (pink funnel lily) not found along the proposed project route.

Comparison of alternatives has resulted in the following ranking of environmentally preferred alternatives:

- Proposed Project
- Transmission Alternative Routes A and D, with Subalternative E
- Transmission Alternative Route B
- Transmission Alternative Route C
- Golf Course Telecommunication Alternative
- Mountain Pass Telecommunication Alternative

Each transmission or telecommunication alternative was analyzed separately; however because the transmission alternatives are minor route variations, Transmission Alternative Routes A or B could be combined with either Transmission Alternative Routes C or D or Subalternative E. Similarly, any of the routing alternatives could be combined with either telecommunication alternative.

Table ES-1 Summary Comparison of Components of the Proposed Project and Alternatives

Category	Alternatives	Preliminary Environmental Comparison with the Proposed Project	
		Advantages	**Disadvantages**
Transmission Alternative Routes	Parallel to LADWP (Transmission Alternative A)	• Would eliminate several transmission crossovers near Eldorado Substation • Route would fall within an existing BLM-designated utility corridor • Reduced impacts to cultural resources • Reduced impacts to intermittent streams	• Potential for greater habitat disturbance. The construction area west of Eldorado Substation consists of undisturbed desert habitat • Potential for greater impact to tortoise habitat, other wildlife, rare plant species, and desert vegetation
	North of Eldorado (Transmission Alternative B)	• Reduced impacts to cultural resources • Reduced impacts to intermittent streams due to fewer crossings • Route would fall within an existing BLM-designated utility corridor	• Would require 5.3 miles of new transmission line ROW • Greater potential for ground disturbance from new transmission line ROW
	North Dry Lakes Reroute (Transmission Alternative C)	• Avoids crossing Ivanpah Dry Lake • Reduced visual impact compared with the proposed project; existing transmission line would be removed and relocated and it would not be visible from nearby residential use • Reduced impacts to paleontological resources • Reduced impacts to intermittent streams due to fewer crossings	• Potential for greater impacts to desert tortoise and its habitat. This alternative has a higher quality desert tortoise habitat compared with the proposed route. • Potential for greater impacts to cultural resources associated with disturbance of Arrowhead Trail Highway • Would require 5.3 miles of new 130-foot ROW north of Ivanpah Dry Lake and Primm, Nevada
	South Dry Lakes Reroute (Transmission Alternative D)	• Would reduce the overall transmission footprint, following to the extent feasible the existing LADWP 500-kV ROW • Reduced visual impact compared with the proposed project; existing transmission line would be removed and relocated and it would not be visible from nearby residential use • Reduced potential for the presence of sensitive wildlife or plant species occurring within the limits of this alternative (except native pink funnel lily) • Reduced impacts to intermittent streams due to fewer crossings	• Potential for greater impacts to cultural resources • Potential for greater ground disturbance due to new access roads • Would require approximately 3.3 miles of new ROW
	South Dry Lakes Bypass (Transmission Subalternative E)	• Similar to those identified for Alternative D	• Similar to those identified for Alternative D

Table ES-1 Summary Comparison of Components of the Proposed Project and Alternatives

Category	Alternatives	Preliminary Environmental Comparison with the Proposed Project	
		Advantages	**Disadvantages**
Telecommunication Alternatives	Golf Course Telecommunication Alternative	• Visual impacts may be reduced for certain portions of the telecommunication line that would be located underground	• Potential for greater ground disturbance and impacts to paleontological resources due to underground construction • Underground construction has potential for greater impacts to sensitive habitat and to cultural and paleontological resources
	Mountain Pass Telecommunication Alternative	• Visual impacts may be reduced for certain portions of the telecommunication line that would be located underground or out of line-of-sight of sensitive resources	• Greater potential for ground disturbance and impacts to paleontological resources due to underground construction • Potential for greater construction-related hazards due to transport, use, or disposal of hazardous materials and for upsets or accidents involving releases of hazardous materials

Note: Information provided here is based on the applicant's preliminary design for the EITP and is subject to change during final engineering.

Key:
kV = kilovolt
LADWP = Los Angeles Department of Water and Power
ROW = right-of-way

Based on the conclusions of the environmental analysis, the CPUC has determined that the environmentally superior alternative is the proposed project, because it would have less land disturbance and its impacts on sensitive biological resources would be less significant, and because it would meet all of the project's objectives. However, under CEQA the proposed project would result in significant and unavoidable impacts to desert tortoise habitat and significant adverse impacts to air quality, hydrology, and public services.

Likewise, based on the results of the environmental review and comparison of the major environmental issues associated with each alternative evaluated, the BLM has determined that the agency preferred alternative under NEPA is the proposed action (proposed project). The "agency preferred alternative" is the alternative that the agency believes would fulfill its statutory mission and responsibilities, considering economic, environmental, technical, and other factors (Title 40 CFR Section 1502.14(e)). From the reasonable range of alternatives carried forward for analysis, the proposed project would have an overall lower land disturbance and fewer potential adverse effects on biological resources. However, under NEPA the proposed project would result in major unavoidable adverse effects on desert tortoise habitat and moderate to major adverse effects on aesthetics, air quality, hydrology, and public services.

ES.4 Whole of the Action (CEQA) /Cumulative Action (NEPA)

In addition to the environmental impacts analysis of the proposed project and its alternatives, this document contains information on the proposed Ivanpah Solar Electric Generating System (ISEGS) project. The ISEGS project, proposed by BrightSource, Inc., is currently under review with the CEC and the BLM under Docket 07-AFC-05. To fulfill the requirements of both CEQA and NEPA, the CEC and the BLM published a Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) in November 2009. A Supplemental DEIS was published on April 16, 2010.

After the FSA/DEIS publication, BrightSource, Inc., submitted a modified design to the CEC and the BLM known as the Mitigated Ivanpah 3 proposal. The Mitigated Ivanpah 3 proposal was primarily designed to mitigate impacts to special-status plant species. CEC staff analyzed this proposal and published an FSA/DEIS Addendum in March 2010 to update their analysis of the original design. According to the FSA/DEIS Addendum, most of the ISEGS project's potential direct and indirect impacts would be mitigated to a less than significant level. However, because the BLM is currently reviewing the Addendum, the summary of the environmental analysis for the ISEGS project presented in this Draft EIR/EIS is based on the original FSA/DEIS published in November 2009, which was based on a larger project footprint than the modified design.

Because ISEGS would be a stationary generation facility located in California, the CEC has the authority to issue a permit to BrightSource, Inc., for the proposed ISEGS project. Also, because the project would be located on federal lands, the BLM has the authority to issue a ROW grant for the project. The CEC and the BLM are the joint state and federal lead agencies responsible for conducting the environmental analysis for ISEGS. However, BrightSource, Inc., has an executed Purchase Power Agreement (PPA) with the applicant to connect its ISEGS project to the EITP. Based on the existence of a signed PPA and the quantity and quality of information available on the ISEGS project, the CPUC and the BLM determined that the ISEGS project would be discussed in this document as part of the "Whole of the Action / Cumulative Action" to comply with CEQA and NEPA disclosure requirements.

This EIR/EIS, therefore, analyzes the EITP (including the transmission upgrade, the substation, and the telecommunication system and alternatives) but includes a summary of the ISEGS project's design and environmental impacts, as disclosed in the November 2009 ISEGS FSA/DEIS. Within Chapter 2, "Project Description," and within each resource section in Chapter 3, "Environmental Analysis / Environmental Effects," the summary of ISEGS' environmental impacts is intended for both disclosure and to assist agency decision-makers. The Whole of the Action / Cumulative Action sections do not include a new analysis of impacts but rather a synopsis of the CEC's and the BLM's determinations.

A brief description of the ISEGS project from the FSA/DEIS follows.

> **ISEGS.** The ISEGS Project proposed by BrightSource Energy, Inc., would be a solar-concentrating thermal power plant and related facilities. The project, located 4.5 miles southwest of Primm, Nevada, would be developed in two construction phases, each with a capacity of 100 megawatts (MW), and a third construction phase of 200 MW capacity for a final generation capacity of 400 MW. The land mass required for this project consists of 914 acres for Phase I, 921 acres for Phase II, and 1,836 acres for Phase III, a total of 4,073 acres. Additional acreage would be required for shared facilities such as a substation, access road, natural gas pipeline, water and transmission lines, and construction staging activities.
>
> The proposed development would include fields of sun-tracking heliostat mirrors (214,000 mirrors in total) that would reflect solar heat into boilers on centralized 459-foot-tall power towers (seven towers in total for the entire project). Steam from the boilers would power steam turbine generators to produce the electricity. The facility would also include a natural gas backup to provide additional heat for plant start-up and during temporary cloud cover. The natural gas would be supplied through a 6-mile-long pipeline measuring between 4 to 6 inches in diameter that would supply gas from the Kern River Gas Transmission pipeline.

ES.5 Areas of Controversy, Issues Raised, and Issues to be Resolved

The CPUC and the BLM determined that the proposed EITP could cause a significant adverse effect on the environment. The agencies therefore initiated preparation of an EIR/EIS. The CPUC filed a Notice of Preparation (NOP) with the State Clearinghouse and the BLM published a Notice of Intent (NOI) in the Federal Register. These notices formally initiated a public scoping period during which public and agency input was solicited on the scope of issues that should be addressed in the EIR/EIS. Comments received during the scoping period are included in the Scoping Summary Report (Appendix E).

Sensitive environmental issue / resource areas identified during the scoping process are listed in Table ES-2 and are discussed in detail in Chapter 3 of the EIR/EIS.

Table ES-2 Sensitive Environmental Resource / Issue Areas Identified during the Scoping Process

Issue / Resource Area	Topics Addressed in the Analysis
Alternatives	• Impacts to biological resources, including wildlife • CEQA and NEPA compliance
Biological Resources	• Impacts on migratory birds • Impacts on vegetation • Impacts on wildlife • Mojave National Preserve impacts • Clark County Multiple Species Habitat Conservation Plan (MSHCP)
Cultural Resources	• National Historic Preservation Act compliance
Cumulative Impacts	• Conflicts with applicable federal, state, or local land use plans, goals, or policies • Conflicts with proposed land use • Impacts to biological resources, including wildlife • Lighting interference
Lands and Real Estate	• Clark County Multiple Species Habitat Conservation Plan (MSHCP) • Boulder City Conservation Easement (BCCE)
Purpose and Need	• NEPA compliance
Regulatory Guidelines and Consistency	• NEPA compliance
Safety	• Southern Nevada Supplemental Airport (SNSA)
	•

ES.6 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) to avoid or minimize impacts of the proposed EITP or its alternatives on environmental resources. These APMs are part of the EITP and are distinguished from mitigation measures for potentially significant impacts under CEQA and NEPA. If the proposed EITP (or any of its alternatives) is approved, the applicant will implement the APMs listed in Table ES-3 regardless of whether potential significant impacts were identified during the environmental analysis under this EIR/EIS.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
Aesthetics	
APM AES-1: Road Cut Rock Staining	Where new roads are required in the South McCullough Mountains to access new or existing transmission and subtransmission towers, the applicant would consult with the BLM regarding feasible methods to treat the exposed rock to match the overall color of the adjacent weathered rock.
APM AES-2: Seeding and Inter-Planting	Where new roads are required in the South McCullough Mountains to access new or existing transmission and subtransmission towers, road cuts would be treated by seeding and/or inter-planting into the disturbed areas to restore the area to an appearance that would blend back into the overall landscape context.
APM AES-3: Non-Reflective Finish	LSTs and TSPs would be constructed of steel that was galvanized and treated at the factory to create a dulled finish that would reduce reflection of light off of the tower members. As appropriate to the environment, the galvanized coating would also be treated to allow the towers to blend into the backdrops. Non-specular transmission cable would be installed for the new transmission line to minimize conductor reflectivity.
APM AES-4: Regrade / Revegetate Construction Sites	Areas around new or rebuilt transmission and subtransmission structures that must be cleared during the construction process would be regraded and revegetated to restore them to an appearance that would blend back into the overall landscape context.
APM AES-5: Use Existing Access Roads	To the extent feasible, existing access roads would be used.
APM AES-6: Minimize Road Modifications**.**	Widening and grading of roads would be kept to the minimum required for access by proposed project construction equipment.
APM AES-7: Dust Suppression	During the construction period, dust suppression measures would be used to minimize the creation of dust clouds potentially associated with the use of the access roads.
APM AES-8: Substation Lighting Control	The substation lighting would be designed to be manually operated only when required for non-routine nighttime work. The lighting would be directed downward and shielded to eliminate offsite light spill at times when the lighting might be in use.
Air Quality	
	The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulation.
Biological Resources	
APM BIO-1: Preconstruction Surveys	Preconstruction biological clearance surveys would be conducted by qualified biologists to identify special-status plants and wildlife.
APM BIO-2: Minimize Vegetation Impacts	Every effort would be made to minimize vegetation removal and permanent loss at construction sites. If necessary, native vegetation would be flagged for avoidance.
APM BIO-3: Avoid Impacts on State and Federal Jurisdiction Wetlands	Construction crews would avoid impacting the streambeds and banks of streams along the route to the extent possible. If necessary, an SAA would be secured from the CDFG. Impacts would be mitigated based on the terms of the SAA. No streams with flowing waters capable of supporting special-status species would be expected to be impacted by the proposed project.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-4: Best Management Practices	Crews would be directed to use Best Management Practices (BMPs) where applicable. These measures would be identified prior to construction and incorporated into the construction operations.
APM BIO-5: Biological Monitors	Biological monitors would be assigned to the project in areas of sensitive biological resources. The monitors would be responsible for ensuring that impacts on special-status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors would flag the boundaries of areas where activities would need to be restricted in order to protect native plants and wildlife or special-status species. Those restricted areas would be monitored to ensure their protection during construction.
APM BIO-6: Worker Environmental Awareness Program	A Worker Environmental Awareness Program (WEAP) would be prepared. All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project. The WEAP training would include a review of the special-status species and other sensitive resources that could exist in the project area, the locations of sensitive biological resources and their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained.
APM BIO-7: Avoid Impacts on Active Nests	SCE would conduct project-wide raptor and nesting bird surveys and remove trees or other vegetation, if necessary, outside of the nesting season (nesting season in the project area is late February to early July). If vegetation or existing structures containing a raptor nest or other active nest needed to be removed during the nesting season, or if work was scheduled to take place in close proximity to an active nest on an existing transmission or subtransmission tower or pole, SCE would coordinate with the USFWS, CDFG, and/or the NDOW as appropriate to obtain written verification prior to moving the nest.
APM BIO-8: Avian Protection	All transmission and subtransmission towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006).
APM BIO-9: Facility Siting	Final tower and spur road locations would be adjusted to avoid sensitive biological resources to the greatest extent feasible.
APM BIO-10: Invasive Plant Management	An invasive plant management plan would be developed to reduce the potential for spreading invasive plant species during construction activities.
APM BIO-11: Desert Tortoise Measures	• A field contact representative would be designated and would oversee compliance monitoring activities and coordination with authorizing agency(s). Compliance activities would at a minimum include conducting preconstruction surveys, assuring proper removal of desert tortoise, staffing biological monitors on construction spreads, and upholding all conditions authorized. The field contact representative would also oversee all compliance documentation including daily observation reports, non-compliance and corrective action reports, and final reporting to any authorized agency upon project completion. • All work area boundaries associated with temporary and permanent disturbances would be conspicuously staked, flagged, or marked to minimize surface disturbance activities. All workers would strictly limit activities and vehicles to the designated work areas. • Crushing/removal of perennial vegetation in work areas would be avoided to the maximum extent practicable. • All trash and food items generated by construction and maintenance activities would be promptly contained and regularly removed from the project site(s) to reduce the attractiveness of the area to common ravens. • Pets would not be allowed in working areas unless restrained in a kennel. • Where possible, motor vehicles would be limited to maintained roads and designated routes.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-11: Desert Tortoise Measures (Cont.)	• Vehicle speed within the project area, along ROW maintenance routes, and along existing access roads would not exceed 20 miles per hour. Speed limits would be clearly marked and all workers would be made aware of these limits. • Constructed road berms would be less than 12 inches in height and have slopes of less than 30 degrees. • Construction monitoring would employ a designated field contact representative, authorized biologist(s), and qualified biologist(s) approved by the BLM during the construction phase. At a minimum, qualified biologist(s) would be present during all activities in which encounters with tortoises could occur. A qualified biologist is defined as a person with appropriate education, training, and experience to conduct tortoise surveys, monitor project activities, provide worker education programs, and supervise or perform other implementing actions. An authorized biologist is defined as a wildlife biologist who has been authorized to handle desert tortoises by the USFWS or CDFG. A field contact representative is defined as a person designated by the project proponent who is responsible for overseeing compliance with desert tortoise protective measures and for coordination with agency compliance officer(s). • Preconstruction clearance surveys would be conducted within 48 hours of initiation of site-specific project activities, following USFWS protocol (USFWS 1992). The goal of a clearance survey is to find all tortoises on the surface and in burrows that could be harmed by construction activities. Surveys would cover 100% of the acreage to be disturbed. All potential tortoise burrows within 100 feet of construction activity would be marked. Tortoise burrows would be avoided to the extent practicable, but would be excavated if they would be crushed by construction activities. • Any tortoise found on the surface would be relocated to less than 1,000 feet away. Tortoises would be handled carefully following the guidelines given in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1999). Tortoises would be handled with new latex gloves each time to avoid transmission of disease, and handlers would especially note guidelines for precautions to be taken during high-temperature periods. • If a potential tortoise burrow were required to be excavated, the biologist would proceed according to the guidelines given in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1999). Tortoises removed from burrows would be relocated to an artificial burrow (Desert Tortoise Council 1999). The entrance of the artificial burrow would be blocked until construction activities in the area were over (Desert Tortoise Council 1999). • For activities conducted between March 15 and November 1 in desert tortoise habitat, all activities in which encounters with tortoises might occur would be monitored by a qualified or authorized biologist. The biologist would be informed of tortoises relocated during preconstruction surveys so that he or she could watch for the relocated tortoises in case they attempted to return to the construction site. The qualified or authorized biologist would watch for tortoises wandering into the construction areas, check under vehicles, examine excavations and other potential pitfalls for entrapped animals, examine exclusion fencing, and conduct other activities to ensure that death or injuries of tortoises was minimized.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-11: Desert Tortoise Measures (Cont.)	• No overnight hazards to desert tortoises (e.g., auger holes, trenches, pits, or other steep-sided depressions) would be left unfenced or uncovered; such hazards would be eliminated each day prior to the work crew and biologist leaving the site. Large or long-term project areas would be enclosed with tortoise-proof fencing. Fencing would be removed when restoration of the site was completed. • Any incident occurring during project activities which was considered by the biological monitor to be in non-compliance with the mitigation plan would be documented immediately by the biological monitor. The field contact representative would ensure that appropriate corrective action was taken. Corrective actions would be documented by the monitor. The following incidents would require immediate cessation of the construction activities causing the incident, including (1) imminent threat of injury or death to a desert tortoise; (2) unauthorized handling of a desert tortoise, regardless of intent; (3) operation of construction equipment or vehicles outside a project area cleared of desert tortoise, except on designated roads; and (4) conducting any construction activity without a biological monitor where one was required. If the monitor and field contact representative did not agree, the federal agency's compliance officer would be contacted for resolution. All parties could refer the resolution to the federal agency's authorized officer. • All construction personnel, including subcontractors, would undergo a WEAP. This instruction would include specific desert tortoise training on distribution, general behavior and ecology, identification, protection measures, reporting requirements, and protections afforded by state and federal endangered species acts. • Parked vehicles would be inspected prior to being moved. If a tortoise were found beneath a vehicle, the authorized biologist would be contacted to move the animal from harm's way, or the vehicle would not be moved until the desert tortoise left of its own accord. The authorized biologist would be responsible for taking appropriate measures to ensure that any desert tortoise moved in this manner was not exposed to temperature extremes that could be harmful to the animal. • Should any desert tortoise be injured or killed, all activities would be halted, and the field contact representative and/or authorized biologist immediately contacted. The field contact representative and/or authorized biologist would be responsible for reporting the incident to the authorizing agencies. • A report to the USFWS would be produced reporting all tortoises seen, injured, killed, excavated, or handled. GPS locations of live tortoises would be reported. • The applicant would implement a Raven Management Program that would consist of: (1) an annual survey to identify any tortoise remains at the base of the towers; this information would be relayed to the BLM so that the ravens and/or their nests in these towers could be targeted for removal, (2) SCE making an annual or one time contribution to an overall raven reduction program in the California or Nevada desert, with an emphasis on raven removal in the vicinity of this project.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-12: Desert Bighorn Sheep Measures	The applicant would consult with the BLM, USFWS, and NDOW regarding conservation measures to avoid impacts on desert bighorn sheep during construction. Project areas with the potential to impact bighorn sheep include the proposed transmission line route through the McCullough Mountains and the telecommunication route segment in the southern Eldorado Valley between the Highland Range and the Southern McCullough Mountains. Avoidance and minimization measures could include such elements as preconstruction surveys, biological monitoring, and timing construction activities to avoid bighorn sheep active seasons. Construction requiring the use of helicopters would be conducted outside of bighorn lambing season (April through October) and the dry summer months when bighorn may need to access artificial water sources north of the propose route in the McCullough Mountains (June through September).
APM BIO-13: Western Burrowing Owl Measures	Where project ground-disturbing activities would occur prior to the burrowing owl breeding season (mid-March to August), all burrows, holes, crevices, or other cavities in suitable habitat on the project, within the limits of proposed ground disturbance, would be thoroughly inspected by a qualified biologist before collapsing. This would discourage owls from breeding on the construction site. Other species using burrows would be relocated prior to collapsing burrows. If construction were to be initiated after the commencement of the breeding season and burrowing owls could be seen within areas to be affected by ground construction activities, behavioral observations would be done by a qualified biologist to determine their breeding status. If breeding were observed, the nest area would be avoided, with an appropriately sized buffer sufficient to prevent disturbance during construction activities until the chicks fledged.
APM BIO-14: Gila Monster and Chuckwalla Measures	The following measures are the current NDOW construction site protocols for the Gila monster (NDOW 2005). These protocols are applicable for the Gila monster in both the Nevada and California sections of the project, and applicable for the chuckwalla in the Nevada section of the project. Through the WEAP, workers and other project personnel should (at a minimum) know how to: (1) identify Gila monsters and be able to distinguish them from other lizards such as chuckwallas and banded geckos; (2) report any observations of Gila monsters (in Nevada) to the biological monitor for notification of the NDOW; (3) be alerted to the consequences of a bite resulting from carelessness or unnecessary harassment; and (4) be aware of protective measures provided under state law. • Live Gila monsters found in harm's way on the construction site would be captured and then detained in a cool, shaded environment (<85 degrees Fahrenheit) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation purposes. Despite the fact that a Gila monster is venomous and can deliver a serious bite, its relatively slow gait allows for it to be easily coaxed or lifted into an open bucket or box, carefully using a long handled instrument such as a shovel or snake hook (note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points). • A clean 5-gallon plastic bucket with a secure, vented lid; an 18-inch x 18-inch x 4-inch plastic sweater box with a secure, vented lid; or a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location (e.g., GPS record), date, time, and circumstances (e.g., biological survey or construction) and habitat description (vegetation, slope, aspect, and substrate) would also be provided to NDOW.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-14: Gila Monster and Chuckwalla Measures (Cont.)	• Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses would not be covered by NDOW. However, NDOW would be immediately notified during normal business hours. If an animal is killed or found dead, the carcass would be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, habitat, and mapped location. • Should NDOW's assistance be delayed, biological or equivalent acting personnel on site may be requested to remove and release the Gila monster out of harm's way. Should NDOW not be immediately available to respond for photo-documentation, a 35-mm camera or equivalent (5 mega-pixel digital minimum preferred) would be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures, preferably on slide film (.tif or .jpg digital format) would be provided to NDOW. Pictures would include the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).
Cultural Resources	
APM CR-1: Conduct Archaeological Inventory of Areas that May Be Disturbed	Conduct an intensive archaeological inventory of all areas that may be disturbed during construction and operation of the proposed project. A complete cultural resources inventory of the project area has been conducted, details of which are contained in a technical report. Should the project substantially change and areas not previously inventoried for cultural resources become part of the construction plan, the applicant would ensure that such additional areas are inventoried for cultural resources prior to any disturbance. All surveys would be conducted and documented according to applicable laws, regulations, and professional standards.
APM CR-2: Avoid and Minimize Impacts on Significant Cultural Resources Wherever Feasible	Avoid and minimize impacts on significant or potentially significant cultural resources wherever feasible. To the extent practical, the applicant would avoid or minimize impacts on archaeological resources, regardless of its CRHR or NRHP eligibility status. This includes siting all ground-disturbing activities and other project components outside a buffer zone established around each recorded archaeological site within or immediately adjacent to the right-of-way.
APM CR-2a. Avoid Direct Impacts on Significant Cultural Resources through Project Final Design	Project Final Design would avoid direct impacts on significant or potentially significant cultural resources. To the extent practical, all ground-disturbing activities and other project components would be sited to avoid or minimize impacts on cultural resources listed as or potentially eligible for listing as, unique archaeological sites, historical resources, or historic properties.
APM CR-2b. Conduct a Preconstruction Worker Environmental Awareness Program (see BIO-6, PALEO-3, and W-11)	The program would be presented to all proposed project personnel who have the potential to encounter and alter unique archaeological sites, historical resources, or historic properties, or properties that may be eligible for listing in the CRHR or NRHP. This includes construction supervisors as well as field construction personnel. No construction worker would be involved in ground-disturbing activities without having participated in the Worker Environmental Awareness Program.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM CR-2c. Protective Buffer Zones	Establish and maintain a protective buffer zone around each recorded archaeological site within or immediately adjacent to the right-of-way. A protective buffer zone would be established around each recorded archaeological site and treated as an "environmentally sensitive area" within which construction activities and personnel are not permitted. Monitoring would be conducted to ensure that the protective areas are maintained.
APM CR-3. Evaluate Significance of Unavoidable Cultural Resources	Evaluate the significance of all cultural resources that cannot be avoided. Cultural resources that cannot be avoided and which have not been evaluated to determine their eligibility for listing in the CRHR or NRHP would be evaluated to determine their historical significance. Evaluation studies would be conducted and documented according to applicable laws, regulations, guidelines, and professional standards.
APM CR-3a. Evaluate Significance of Potentially Eligible Archaeological Resources	Evaluate the significance of archaeological resources potentially eligible for CRHR or NRHP listing. Evaluation of archaeological sites could include scientific excavation of a sample of site constituents sufficient to understand the potential of a site to yield information to address important scientific research questions per CRHR eligibility Criterion 4 and NRHP eligibility Criterion D. Sites with rock art would be evaluated to consider their eligibility per CRHR Criterion 1 and NRHP Criteria A, C, and D.
APM CR-3b. Evaluate Significance of Potentially Eligible Buildings and Structures	Evaluate the significance of buildings and structures potentially eligible for CRHR or NRHP listing. Evaluation would take into account engineering, aesthetic, architectural, and other relevant attributes of each property. Buildings and structures would be evaluated for historical significance per CRHR eligibility Criteria 1, 2, and 3, and NRHP Criteria A, B, and C. A report of the evaluation of each building or structure would be prepared providing a rationale for an assessment of significance consistent with professional standards and guidelines. The report would be filed with the appropriate Information Center of the California Historical Resources Information System.
APM CR-3c. Assist with Native American Consultations	If necessary, the applicant would assist BLM in consultations with Native Americans regarding traditional cultural values that may be associated with archaeological resources. Archaeological or other cultural resources associated with the project may have cultural values ascribed to them by Native Americans. The applicant would assist the BLM during consultation with Native Americans regarding Native American cultural remains.
APM CR-4. Minimize Unavoidable Impacts on Significant Cultural Resources, including Unique Archaeological Sites, Historical Resources, and Historic Properties	The applicant would make reasonable efforts to avoid adverse project effects to unique archaeological sites, historical resources, and historic properties. Nevertheless, it may not be possible to situate all proposed project facilities to completely avoid impacts on significant cultural resources. Impacts on significant cultural resources would be minimized by implementing the measures listed in APM CR-4a.
APM CR-4a. Implement Measures to Minimize Impacts on Significant Archaeological Sites	Prior to construction and during construction, the following measures would be implemented by the applicant to minimize unavoidable impacts on significant archaeological sites: • To the extent practical, all activities would minimize ground surface disturbance within the bounds of significant archaeological sites, historical resources, or historic properties. • Portions of significant archaeological sites, historical resources, or historic properties that can be avoided would be protected as environmentally sensitive areas and would remain undisturbed by construction activities. • Monitoring by qualified professionals and/or Native Americans to ensure that impacts on sites are minimized would be carried out at each affected cultural resource for the period during which construction activities pose a potential threat to the site, and for as long as there is the potential to encounter unanticipated cultural or human remains.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM CR-4a. Implement Measures to Minimize Impacts on Significant Archaeological Sites (Cont.)	• Additional archaeological studies would be carried out at appropriate sites to ascertain whether project facilities could be located on a portion of a site and cause the least amount of disturbance to significant cultural materials. • If impacts on significant archaeological (NRHP- or CRHR-eligible) sites eligible under NRHP Criterion D or CRHR Criterion 4 cannot be avoided, archaeological data recovery would be carried out in the portions of affected significant sites that would be impacted. A data recovery plan would be prepared, reviewed by the appropriate agencies, and then implemented in order to recover an adequate sample of cultural remains that can be used to address important eligibility research questions for CRHR Criterion 4 or NRHP Criterion D. Archaeological data recovery would involve scientific excavations; identification of recovered cultural and ecological remains; cataloging, scientific analysis, and interpretation of recovered materials; and preparation of a scientific technical report that describes the methods and results of the data recovery program. • Reports of any excavations at archaeological sites would be filed with the BLM and the appropriate Information Center of the California Historical Resources Information System.
APM CR-4b. Implement Measures to Minimize Impacts on Significant Buildings and Structures	Prior to construction and during construction, the applicant would implement the following measures to minimize unavoidable impacts on significant buildings and structures: • Locate proposed project facilities to minimize effects on significant buildings or structures. • If impacts on significant buildings or structures cannot be avoided, document significant architectural and engineering attributes consistent with the documentation standards of the National Park Service Historic American Buildings Survey/Historic American Engineering Record. • File reports and other documentation with the BLM, National Park Service, if appropriate, and appropriate Information Center of the California Historical Resources Information System.
APM CR-5. Prepare and Implement a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan	During construction it is possible that previously unknown archaeological or other cultural resources or human remains could be discovered. Prior to construction, the applicant would prepare a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan to be implemented if an unanticipated discovery is made. At a minimum the plan would detail the following elements: • Worker and supervisor training in the identification of cultural remains that could be found in the proposed project area, and the implications of disturbance and collection of cultural resources pursuant with the Archaeological Resources Protection Act of 1979 • Worker and supervisor response procedures to be followed in the event of an unanticipated discovery, including appropriate points of contact for professionals qualified to make decisions about the potential significance of any find • Identities of persons authorized to stop or redirect work that could affect the discovery, and their on-call contact information • Procedures for monitoring construction activities in archaeologically sensitive areas • A minimum radius around any discovery within which work would be halted until the significance of the resource has been evaluated and mitigation implemented as appropriate • Procedures for identifying and evaluating the historical significance of a discovery • Procedures for consulting Native Americans when identifying and evaluating the significance of discoveries involving Native American cultural materials

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
	• Procedures to be followed for treatment of discovered human remains per current state law and protocol developed in consultation with Native Americans.
APM CR-6. Inadvertent Discovery of Human Remains	Any human remains discovered during project activities in California would be protected in accordance with current state law, specifically Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California Public Resources Code, and Assembly Bill 2641. If human remains determined not to be Native American are unclaimed, they would be treated under the appropriate State of Nevada statutes, including but not limited to Nevada Revised Statutes Chapter 440 and the regulations of the applicable land management agency. In the event that human remains are recovered on private lands, the landholder would have the right to designate the repository for the remains if they are determined not to be Native American or if their family affiliation cannot be determined. The provisions of the Native American Grave Protection and Repatriation Act are applicable when Native American human remains are found on federal land (BLM land in California and Nevada). The discovery of human remains would be treated as defined in the Construction Monitoring and Unanticipated Cultural Resources Discovery Plan.
APM CR-7. Native American Participation	Prior to construction, BLM would consult with Native Americans identified by the NAHC as having cultural ties to particular areas of the proposed project. Native Americans would be invited to participate in significance evaluations and data recovery excavations at archaeological sites with Native American cultural remains, as well as in monitoring during project construction. Native Americans would be consulted to develop a protocol for working with each group should human remains affiliated with that group be encountered during project activities.
Geology, Soils, Minerals, and Paleontology	
APM GEO-1: Geotechnical Engineering and Engineering Geology Study	Prior to final design of substation facilities and transmission and subtransmission line tower foundations, a combined geotechnical engineering and engineering geology study would be conducted to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering practices.
APM GEO-2: Recommended Practices for Seismic Design of Substations	For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronics Engineers (IEEE) Standards Association Standard 693, "Recommended Practices for Seismic Design of Substations," which includes probabilistic earthquake hazard analysis. Other project elements would be designed and constructed in accordance with the appropriate industry standards, as well as good engineering and construction practices and methods.
APM GEO-3: Project Construction Stormwater Pollution Prevention Plan Protection Measures Regarding Soil Erosion / Water Quality	Transmission line and substation construction activities would be conducted in accordance with the soil erosion/water quality protection measures to be specified in the project construction stormwater pollution prevention plan (SWPPP). New access roads would be designed to minimize ground disturbance from grading. They would follow natural ground contours as closely as possible, and would include specific features for road drainage. Measures could include water bars, drainage dips, side ditches, slope drains, and velocity reducers. Where temporary crossings would be constructed, they would be restored and repaired as soon as possible after completion of the discrete action associated with construction of the line in the area.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM PALEO-1: Retention of Paleontologist and Preparation of a Paleontological Resource Management Plan	Prior to construction, a certified paleontologist would be retained by SCE to supervise monitoring of construction excavations and to produce a Paleontological Resource Management Plan (PRMP) for the proposed project. This PRMP would be prepared and implemented under the direction of the paleontologist and would address and incorporate APMs PALEO-2 through PALEO-8. Paleontological monitoring would include inspection of exposed rock units and microscopic examination of matrix to determine whether fossils are present. The monitor would have authority to temporarily divert grading away from exposed fossils in order to recover the fossil specimens. More specific guidelines for paleontological resource monitoring could be found in the PRMP.
APM PALEO-2: Pre-construction Paleontological Field Survey	The paleontologist and/or his or her designated representative would conduct a pre-construction field survey of the project area underlain by Tertiary rock units and older alluvium. Results of the field inventory and associated recommendations would be incorporated into the PRMP.
APM PALEO-3: Worker Environmental Awareness Program (see BIO-6, CR-2b, W-11)	A Worker Environmental Awareness Program would be provided to construction supervisors and crew for awareness of requirements regarding the protection of paleontological resources and procedures to be implemented in the event fossil remains are encountered by ground-disturbing activities.
APM PALEO-4: Construction Monitoring	Ground-disturbing activities would be monitored on a part-time or full-time basis by a paleontological construction monitor only in those parts of the project area where these activities would disturb previously undisturbed strata in rock units of moderate and high sensitivity. Quaternary alluvium, colluvium, and Quaternary landslide deposits have a low paleontological sensitivity level and would be spot-checked on a periodic basis to ensure that older underlying sediments were not being penetrated. Monitoring would not be implemented in areas underlain by younger alluvium unless these activities had reached a depth 5 feet below the present ground surface and fine-grained strata were present. Ground-disturbing activities in areas underlain by rock units of low sensitivity would be monitored on a quarter-time basis or spot-checked if fine grained strata were present.
APM PALEO-5: Recovery and Testing	If fossils were encountered during construction, construction activities would be temporarily diverted from the discovery and the monitor would notify all concerned parties and collect matrix for testing and processing as directed by the project paleontologist. In order to expedite removal of fossil-bearing matrix, the monitor may request heavy machinery to assist in moving large quantities of matrix out of the path of construction to designated stockpile areas. Construction would resume at the discovery location once the necessary matrix was stockpiled, as determined by the paleontological monitor. Testing of stockpiles would consist of screen washing small samples to determine if important fossils were present. If such fossils were present, the additional matrix from the stockpiles would be water screened to ensure recovery of a scientifically significant sample. Samples collected would be limited to a maximum of 6,000 pounds per locality.
APM PALEO-6: Monthly Progress Reports	The project paleontologist would document interim results of the construction monitoring program with monthly progress reports. Additionally, at each fossil locality, field data forms would record the locality, stratigraphic columns would be measured, and appropriate scientific samples would be submitted for analysis.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM PALEO-7: Analysis of and Preparation of Final Paleontological Resource Recovery Report	The project paleontologist would direct identification, laboratory processing, cataloging, analysis, and documentation of the fossil collections. When appropriate, and in consultation with SCE, splits of rock or sediment samples would be submitted to commercial laboratories for microfossil, pollen, or radiometric dating analysis. After analysis, the collections would be prepared for curation (see APM PALEO-8). A final technical report would be prepared to summarize construction monitoring and present the results of the fossil recovery program. The report would be prepared in accordance with SCE, Society of Vertebrate Paleontology guidelines, and lead agency requirements. The final report would be submitted to SCE, the lead agency, and the curation repository.
APM PALEO-8: Curation	Prior to construction, SCE would enter into a formal agreement with a recognized museum repository, and would curate the fossil collections, appropriate field and laboratory documentation, and final Paleontological Resource Recovery Report in a timely manner following construction.
Hazards, Health and Safety	
APM HAZ-1: Phase I ESA	A Phase I ESA would be performed at each new or expanded substation location and along newly acquired transmission or subtransmission line ROWs. The Phase I ESAs would include an electronic records search of federal, state, and local databases. The electronic records search would be contracted to a company that specializes in this type of work and that would produce a comprehensive report for the new or expanded ROW. The comprehensive report is used to identify sites in federal, state, and local government agency databases that may have the potential to impact the proposed project; based on a review of the report, any potential areas of concern along the ROW would be identified for further assessment. In addition, a Phase I ESA that is compliant with American Society for Testing Materials (ASTM) 1927-05 (ASTM 2005) would be performed on all property to be acquired. Based on the results of the Phase I ESA, additional assessment, characterization, and remediation of potential or known subsurface impacts may be conducted prior to construction activities. Such remediation could include the relocation of transmission line structures as necessary to avoid impacted areas, or the removal and disposal of impacted soils and/or groundwater according to applicable regulations.
APM HAZ-2: Hazardous Materials and Waste Handling Management Plan.	The applicant would develop programs and policies for management of hazardous materials including a Hazardous Materials and Hazardous Waste Handling Program, Construction Stormwater Pollution Prevention Plan, and procedures for Transport of Hazardous Materials, Fueling and Maintenance of Construction Equipment, Fueling and Maintenance of Helicopters, and Emergency Release Response. This Plan would be valid during project construction and operation.
APM HAZ-3: Soil Management Plan	The applicant would develop a Soil Management Plan that would provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities.
APM HAZ-4: Fire Management Plan	The applicant would implement a Fire Management Plan.
APM HAZ-5: SPCCP and Hazardous Materials Business Plan	The applicant would implement a Spill Prevention, Countermeasure, and Control Plan (SPCCP) for preventing, containing, and controlling potential releases; provisions for quick and safe cleanup and a Hazardous Materials Business Plan (HMBP) that would include hazardous waste management procedures; and emergency response procedures including emergency spill cleanup supplies and equipment. This plan would be valid during project construction and operation.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
Hydrology and Water Quality	
APM W-1: Avoid Stream Channels	Construction equipment would be kept out of flowing stream channels.
APM W-2: Erosion Control and Hazardous Material Plans	Erosion control and hazardous material plans would be incorporated into the construction bidding specifications to ensure compliance.
APM W-3: Project Design Features	Appropriate design of tower footing foundations, such as raised foundations and/or enclosing flood control dikes, would be used to prevent scour and/or inundation by a 100-year flood. Where floodplain encroachment is required by the CPUC and/or the BLM, and potential impacts require non-standard designs, hydrology/channel flow analysis would be performed.
APM W-4: Avoid Active Drainage Channels	Towers would be located to avoid active drainage channels, especially downstream of steep hillslope areas, to minimize the potential for damage by flash flooding and mud and debris flows.
APM W-5: Diversion Dikes	Diversion dikes would be required to divert runoff around a tower structure or a substation site if (a) the location in an active channel (or channels) could not be avoided; and (b) where there is a very significant flood scour/deposition threat, unless such diversion is specifically exempted by the CPUC and/or the BLM Authorized Officer.
APM W-6: Collect and Divert Runoff	Runoff from roadways would be collected and diverted from steep, disturbed, or otherwise unstable slopes.
APM W-7: Ditch and Drainage Design	Ditches and drainage devices would be designed to handle the concentrated runoff and located to avoid disturbed areas. They would have energy dissipations at discharge points that might include rip-rap, concrete aprons, and stepped spillways. Where diversion dikes are required to protect towers or other project structures from flooding or erosion, these dikes would be designed to avoid increasing the risk of erosion or flooding onto adjacent property.
APM W-8: Minimize Cut and Fill Slopes	Cut and fill slopes would be minimized by a combination of benching and following natural topography where possible.
APM W-9: Prepare and Implement an Approved SWPPP	As a part of the SWPPP, soil disturbance at tower construction sites and access roads would be the minimum necessary for construction and designed to prevent long-term erosion through the following activities: restoration of disturbed soil, re-vegetation, and/or construction of permanent erosion control structures. BMPs in the project SWPPP would be implemented during construction to minimize the risk of an accidental release.
APM W-10: Emergency Release Response Procedures	The Emergency Release Response Procedures developed pursuant to APM Haz-1 would be maintained onsite (or in vehicles) during construction of the proposed project.
APM W-11: Conduct a Worker Environmental Awareness Program (see BIO-6, CR-2b, PALEO-3)	A Worker Environmental Awareness Program (WEAP) would be conducted to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, and proper BMP implementation, to all field personnel prior to the start of construction. This training program would emphasize site-specific physical conditions to improve hazard prevention. It would include a review of all site-specific plans, including but not limited to the project's SWPPP and Hazardous Substances Control and Emergency Response Plan. The applicant would document compliance and maintain a list of names of all construction personnel who had completed the training program.
APM W-12: Properly Dispose of Hazardous Materials	All construction and demolition waste, including trash and litter, garbage, and other solid waste, would be removed and transported to an appropriately permitted disposal facility. Petroleum products and other potentially hazardous materials would be removed and transported to a hazardous waste facility permitted or otherwise authorized to treat, store, or dispose of such materials.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM W-13: Identify Location of Underground Utilities Prior to Excavation	Prior to excavation, the applicant or its contractors would locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, or other underground structures that may reasonably be expected to be encountered during excavation work.
APM W-14: Prepare or Update SPCC Plans	The applicant would prepare or update SPCC plans for substations to minimize, avoid, and/or clean up unforeseen spill of hazardous materials during facility operations.
Land Use	
APM LU-1: Aeronautical Considerations	The applicant would submit notice to FAA electronically, in accordance with FAA procedures, and as far in advance of construction as possible.
Noise	
APM NOI-1: Compliance with Local Noise Ordinances	The proposed construction would comply with local noise ordinances. There may be a need to work outside the aforementioned local ordinances to take advantage of low electrical draw periods during the nighttime hours. The applicant would comply with variance procedures requested by local authorities if required.
APM NOI-2: Construction Equipment Working Order	Construction equipment would be in good working order.
APM NOI-3: Construction Equipment Maintenance	Construction equipment would be maintained per manufacturer's recommendations.
APM NOI-4: Construction Equipment Muffled	Construction equipment would be adequately muffled.
APM NOI-5: Construction Equipment Idling Minimized	Idling of construction equipment and vehicles would be minimized during the construction.
APM NOI-6: Hearing Protection for Workers	Workers would be provided appropriate hearing protection, if necessary, as described in the Health and Safety Plan.
Public Services and Utilities	
APM PUSVC-1: Work Around High Pressure Pipelines	No mechanical equipment will be permitted to operate within 3 feet of the high-pressure pipelines, and work within 3 feet must be done by hand or as otherwise directed by the pipeline company.
APM PUSVC-2: Monitoring by Pipeline Companies	A representative of applicable owners and operators of major pipeline companies must observe the excavation around or near their facilities to ensure protection and to record pertinent data necessary for operations.
Recreation	
APM REC-1: Recreation Area Closures	When temporary short-term closures to recreational areas are necessary for construction activities, the applicant would coordinate those closures with recreational facility owners. To the extent practicable, the applicant would schedule construction activities to avoid heavy recreational use periods (e.g., holidays or tournaments). The applicant would post notice of the closure on-site 14 calendar days prior to the closure.
Socioeconomics, Population and Housing, and Environmental Justice	
	The applicant has not included any APMs related to socioeconomics, population and housing, or environmental justice for the proposed EITP.
Traffic and Transportation	
APM TRA-1: Obtain Permits	If any work requires modifications or activities within local roadway and railroad ROWs, appropriate permits will be obtained prior to the commencement of construction activities, including any necessary local permits and encroachment permits.
APM TRA-2: Traffic Management and Control Plans	Traffic control and other management plans will be prepared where necessary to minimize project impacts on local streets and railroad operations.

Table ES-3 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM TRA-3: Minimize Street Use	Construction activities will be designed to minimize work on, or use of, local streets.

Key:
ASTM = American Society for Testing Materials
BLM = Bureau of Land Management
BMP = Best Management Practices
CDFG = California Department of Fish and Game
CPUC = California Public Utilities Commission
CRHR = California Register of Historical Resources
EITP = Eldorado–Ivanpah Transmission Project
FAA = Federal Aviation Administration
GPS = Global Positioning System
HMBP = Hazardous Materials Business Plan
LST = Lattice Steel Tower
NAHC = Native American Heritage Commission
NDOW = Nevada Department of Wildlife
NRHP = National Register of Historic Places
PRMP = Paleontological Resource Management Plan
ROW = Right-of-Way
SAA = Streambed Alteration Agreement
SCE = Southern California Edison
SPCC = Spill Prevention, Control, and Countermeasure
SPCCP = Spill Prevention, Control, and Countermeasure Plan
SWPPP = Stormwater Pollution Prevention Plan
TSP = Tubular Steel Poles
USFWS = U.S. Fish and Wildlife Service
WEAP = Worker Environmental Awareness Program

ES.7 Major Conclusions

Construction of the EITP would result in a number of temporary impacts that would cease upon completion of the construction phase. Operation and maintenance of the proposed project or its alternatives could also result in potential temporary and permanent impacts.

The Draft EIR/EIS has identified significant and unavoidable adverse impacts that could result from construction, operation, and maintenance of the proposed project, including impacts on biological resources. Potentially significant adverse impacts could also occur on air quality, hydrology, and public services. Under NEPA, the proposed project would result in major, adverse, and unavoidable impacts on aesthetics and visual resources for one of the eight key observation points (KOPs) analyzed. With mitigation, impacts on aesthetics and visual resources would be less than significant under CEQA. All other EITP impacts were determined to be less than significant, or could be reduced to a less than significant level with implementation of the mitigation measures proposed in the EIR/EIS.

A list of potential impacts that could result from construction, operation, and maintenance of the proposed EITP is provided in Table ES-4 and further discussed in Sections 3.2 through 3.14.

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Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
3.2 Aesthetics and Visual Resources							
IMPACT AES-1: Adverse Impact to a Scenic Vista	Designated scenic vistas do not occur in the proposed project area. Construction would result in temporary generation of fugitive dust that would be visible within a Visual Resource Management (VRM) Class II area and from both the South McCullough Wilderness Area and the Wee Thump Joshua Tree Wilderness Area. The telecommunications Path 2, Section 1 would not be discernable as there is already an existing 500-kV transmission line in the viewshed.	Less than significant without mitigation	There are no designated scenic vistas in the vicinity of the proposed project; however, for the purposes of this analysis, the South McCullough Wilderness Area is treated as designated scenic vistas because the BLM manages these lands according to the most stringent restrictions to protect visual resources. For KOP 1 and KOP 2, no cumulative projects would be visible from this location, so no cumulative impact would occur.	Not cumulatively considerable	**APM AES-1:** Road Cut Rock Staining **APM AES-2:** Seeding and Inter-Planting **APM AES-3:** Non-Reflective Finish	NA	**Construction:** Minor adverse effects to visual resources temporarily due to construction activities. Aboveground construction– Minor, adverse, temporary effects to viewshed. Belowground construction– Temporary, moderate effects to viewshed. **O&M:** Minor, adverse, permanent effects to viewshed due to the introduction of taller towers and new structures, including the proposed Ivanpah Substation and the microwave tower. Of the eight KOP's evaluated, seved would conform with the established VRM or VRI classes and one would not conform In addition to APM AES-1 through APM AES-8, additional mitigation would be required to lessen impacts on visual resources to the greatest extent possible. Mitigation measures AES-1 and AES-2 would lessen the contrast in color and line that would be introduced by construction of the Ivanpah Substation, as shown in KOP 8.
IMPACT AES-2: Degrade Existing Visual Character or Quality	Overall, the proposed project would not result in substantial degradation of the landscape. The proposed project would conflict with VRM or VRI objectives for one of the eight Key Observation Points (KOPs). At each of these locations, the proposed project would introduce strong levels of contrast with the existing structures in the viewshed by introducing linear elements of a larger scale and more prominent color.	Less than significant with mitigation	Temporary impacts on visual resources during construction would contribute incrementally to impacts on visual resources from the cumulative projects for KOP 4, KOP 5, KOP 6, and KOP 8 by introducing new color and line into views and by altering the existing texture of the landscape. During operations and maintenance, the proposed project would result in a moderate change in the color of the landform, and a moderate contrast with existing structures in the background of KOP 8.	Cumulatively considerable (construction) Moderate impact (O&M)	**APM AES-4:** Regrade / Revegetate Construction Sites **APM AES-5:** Use Existing Access Roads **APM AES-6:** Minimize Road Modifications**.** **APM AES-7:** Dust Suppression	**MM AES-1:** Painting the Ivanpah Substation **MM AES-2:** Rock Staining near the Ivanpah Substation	See above.
IMPACT AES-3: Create a New Source of Light or Glare	Lighting would only be installed for the proposed Ivanpah Substation, which would only be required for non-routine nighttime work and be shielded to eliminate off-site light spill (APM AES-8).	Less than significant without mitigation	Project lighting would be shielded, directed downward, and used only for emergency repairs or maintenance. The project's contribution to light and glare would be infrequent.	Not cumulatively considerable	**APM AES-8:** Substation Lighting Control	NA	See above.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
3.3 Air Quality							
IMPACT AIR-1: Conflict or Obstruct the Implementation of Applicable Air Quality Plan	Construction activities would not conflict with or obstruct implementation of the Mojave Desert Planning Area Air Quality Attainment Plan. Construction emissions would be temporary and would be a small fraction of the regional emission inventory included in the plan. No long-term impacts associated with operation and maintenance are anticipated for the proposed project.	Less than significant without mitigation	This impact was not considered cumulatively significant, since construction of the proposed project would not conflict with or obstruct implementation of the Mojave Desert Planning Area Air Quality Attainment Plan.	Not cumulatively considerable	The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulation	N/A	**Construction:** Short-term, moderate impacts on ambient air quality. Construction emissions would be a very small fraction of the regional emissions. The project could not conflict with or obstruct implementation of California or Nevada SIPs. **O&M:** No long-term impacts associated with operation and maintenance would occur.
IMPACT AIR-2: Temporary Ambient Air Quality Impacts Caused by Construction Activities Would Violate or Contribute Substantially to an Air Quality Violation	The estimated average daily emissions of $PM_{2.5}$, PM_{10}, and NO_X from project construction activities would exceed the Mojave Desert Air Quality Management District (MDAQMD) daily significance thresholds. The comparison of average daily emissions to significance thresholds was based on conservative assumptions about daily equipment use. Impacts would be limited to the duration of project construction; long-term and operational impacts would not occur. Implementation of MM AIR-1and MM AIR-2 would reduce potential impacts, but would not likely reduce emissions from construction activities to below the MDAQMD daily significant thresholds.	Potentially significant	Foreseeable projects could exceed the daily construction emission thresholds for the same or different criteria pollutants as the EITP. The emissions would be localized to those locations under construction. These temporary cumulative increases in criteria pollutants could lead or contribute to violations of ambient air quality standards. Mitigation measures are not expected to reduce emissions from project construction activities to below the MDAQMD daily significance thresholds.	Cumulatively considerable (construction only)	The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulation	**MM AIR-1:** Low-emission Construction Equipment. **MM AIR-2:** Enhanced Dust Control Measures	**Construction:** Short-term, moderate impacts on ambient air quality. $PM_{2.5}$, PM_{10}, and NO_X emissions would temporarily exceed MDAQMD daily significant thresholds, even with MM AIR-1 and MM AIR-2. **O&M:** No long-term impacts associated with operation and maintenance would occur.
IMPACT AIR-3: Temporary Emission Increases of NOx, VOCs, and PM_{10} during Construction Would Contribute to a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Non-Attainment Area	Project construction would occur in an area designated non-attainment for ozone and PM_{10}. The estimates of average daily emissions of PM_{10} and NO_X from project construction activities exceed the Mojave Desert Air Quality Management District (MDAQMD) daily significant thresholds. The comparison of average daily emissions to significance thresholds was based on conservative assumptions about daily equipment use. Mitigation measures MM AIR-1 and MM AIR-2 would be implemented to reduce potential impacts, but these mitigation measures would not likely reduce PM_{10} and NO_X emissions from construction activities to below the MDAQMD daily significant thresholds.	Potentially significant	The estimated average daily emissions would exceed MDAQMD daily construction emission significance thresholds for NO_x, PM_{10}, and $PM_{2.5}$. This threshold would not necessarily be exceeded daily, but it could be, if all components of the proposed project were to be constructed simultaneously. In addition, increases in PM_{10}, NO_x, and VOCs from reasonably foreseeable future projects could contribute to a considerable net increase of criteria pollutants in a non-attainment area.	Cumulatively considerable (construction only)	The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulation	**MM AIR-1:** Low-emission Construction Equipment. **MM AIR-2:** Enhanced Dust Control Measures	**Construction:** Short-term, moderate impacts on ambient air quality. $PM_{2.5}$, PM_{10}, and NO_X emissions would temporarily exceed MDAQMD daily significant thresholds, even with MM AIR-1 and MM AIR-2. **O&M:** No long-term impacts associated with operation and maintenance would occur.
IMPACT AIR-4: Temporarily Expose Sensitive Receptors to Substantial Pollutant Concentrations	Diesel particulate emissions would be generated during project construction. The only receptor identified as being close to the proposed project construction area is the Desert Oasis Apartment Complex, where residents could be exposed to short-term increased pollutant concentrations. The project would not be located near schools, day care centers, hospitals, or other sensitive receptors.	Less than significant without mitigation	Although possible, it is unlikely that reasonably foreseeable future projects would have overlapping construction schedules near the Desert Oasis Apartment Complex. Even if the construction schedules overlapped, construction activities would be only for several days in the area of potential exposure; therefore, there would not be a significant cumulative impact.	Not cumulatively considerable	The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulation	N/A	**Construction:** Short-term, moderate impacts on ambient air quality. **O&M:** No long-term impacts associated with operation and maintenance would occur.
IMPACT AIR-5: Temporarily Create Objectionable Odors Due to Fuel Combustion that would Affect a Substantial Number of People	Odors created during construction from the combustion of fuel would likely not cause a perceptible odor to a substantial number of people. If perceptible, such impacts would be temporary and would be limited to the duration of the project construction period. Vehicle emissions during project operation would be minimal, so no objectionable odors are expected.	Less than significant without mitigation	As discussed above, although unlikely, the Calnev pipeline expansion could have an overlapping construction schedule at this location, but the overlap would only be for a day or two. Even if the construction schedules overlapped, construction activities would be only for several days in the area of potential exposure, there would not be a significant cumulative impact.	Not cumulatively considerable		N/A	**Construction:** Short-term, moderate impacts on ambient air quality. **O&M:** No long-term impacts associated with operation and maintenance would occur.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT AIR-6: Generate GHG Emissions That May Have A Significant Impact On The Environment	GHG emissions increases that would result during the EITP operations would not be expected to individually have a significant impact on global climate change. Therefore, the impact of the generation of GHG emissions would be less than significant.	Less than significant without mitigation	This analysis considered the proposed project's contribution to global climate change, which was determined to be less than significant. This analysis may change following the upcoming publication of the revised CEQA guidance on GHGs.	Not cumulatively considerable		N/A	**Construction:** Short-term, moderate impacts on ambient air quality. **O&M:** No long-term impacts associated with operation and maintenance would occur.
3.4 Biological Resources							
IMPACT BIO-1: Direct or indirect loss of listed or sensitive plant species, or a direct loss of habitat for listed or sensitive plant species	The proposed project would result in impacts on special-status plants. Implementation of MMs BIO-1, 2, and 3 would reduce impacts to less than significant because preconstruction surveys would identify the location of any special-status plants so they could be avoided by project activities. If plants could not be avoided, mitigation for impacts would occur in the form of salvage and/or restoration efforts for vegetation and soils.	Less than significant with mitigation	Impacts on habitat fragmentation could be significant when combined with impacts from other regional projects. The development of numerous large-scale projects would result in a substantial permanent conversion of desert habitat to industrial/commercial uses. EITP, in conjunction with other projects, would result in cumulative impacts on native vegetation communities, including cacti and yucca species, and adversely affect special management areas due to temporary and permanent habitat loss from ground disturbance and inadvertent distribution of noxious weeds. Cumulative impacts from the projects would primarily affect the desert valley vegetation, as most proposed disturbance is outside the tops of the mountain ranges.	Cumulatively considerable	**APM BIO-1:** Preconstruction Surveys **APM BIO-2:** Minimize Vegetation Impacts **APM BIO-4:** Best Management Practices **APM BIO-5:** Biological Monitors **APM BIO-6:** Worker Environmental Awareness Program **APM BIO-9:** Facility Siting **APM AES-4:** Regrade / Revegetate Construction Sites **APM AES-6:** Minimize Road Modifications **APM AES 7:** Dust Suppression	**MM BIO-1:** Preconstruction Surveys **MM BIO-2:** Reclamation Plan **MM BIO-3:** Special Status Plants Restoration and Compensation Plan	**Construction and O&M:** Adverse effects on biological resources. After mitigation, impacts on native desert vegetation and special-status plants would be minor and localized.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT BIO-2: Direct or indirect loss of listed or sensitive wildlife or a direct loss of habitat for listed or sensitive wildlife	Potential impacts on several special-status wildlife species and their habitat, including: reptiles, mammals, and birds, with potential for significant impacts to desert tortoise, desert bighorn sheep, American badger, and burrowing owl. Impacts to the desert tortoise and its habitat would be significant even after mitigation if an extensive amount of new access and/or spur roads were proposed. Implementation of MMs BIO-8 through BIO-16 would reduce impacts to less than significant, except for desert tortoise; impacts to desert tortoise and its habitat would be significant even after mitigation. If avoidance of direct and indirect impacts to wildlife were not possible, those impacts would be mitigated by species-specific measures detailed in MMs BIO-12 through BIO-16.	Potentially significant	The contribution of EITP to cumulative impacts on wildlife would be short term and limited due to the short duration of construction and the relatively small geographical extent of EITP's impact area. Cumulative impacts on biological resources could be exacerbated as a result of project schedules. Construction of multiple projects within the same time period can result in greater impacts from emissions, noise, construction equipment and vehicle traffic, and overall habitat degradation and loss. Removal of vegetation and/or long-term restoration efforts could negatively impact common and special status wildlife. If projects were to be constructed consecutively, project impacts would be reduced in intensity but prolonged in duration, resulting in adverse impacts on the life cycles of species and/or resulting in prolonged or permanent displacement of wildlife from critical habitats.	Cumulatively considerable	**APM BIO-1:** Preconstruction Surveys **APM BIO-4:** Best Management Practices **APM BIO-5:** Biological Monitors **APM BIO-6:** Worker Environmental Awareness Program **APM BIO-10:**Invasive Plant Management **APM AES-6:** Minimize Road Modifications **APM AES-8:** Substation Lighting Control **APM NOI-4:** Construction Equipment Muffled **APM NOI-5:** Construction Equipment Idling Minimized **APM W-12:** Properly Dispose of Hazardous Materials	**MM BIO-8:** Reduce Night Lighting **MM BIO-9:** Cover Steep-walled Trenches or Excavations During Construction **MM BIO-10:** Biological Monitors **MM BIO-11:** Water Usage **MM BIO-12:** Desert Tortoise Impacts Reduction Measures **MM BIO-13:** Desert Bighorn Sheep Impacts Reduction Measures **MM BIO-14:** American Badger Impacts Reduction Measures **MM BIO-15:** Migratory Birds and Raptors Impacts Reduction Measures **MM BIO-16:** Burrowing Owl Impacts Reduction Measures	**Construction and O&M:** Adverse effects on biological resources. Direct and indirect impacts to wildlife would be reduced to minor and localized. Impacts on desert tortoise due to construction of the project would be adverse, moderate, both short term and long term, and localized.
IMPACT BIO-3: Temporary and permanent losses of native vegetation communities	Potential impacts on sensitive desert vegetation communities, including cacti and yucca species. Implementation of MMs BIO-1 through BIO-3 would reduce impacts to less than significant with the use of preconstruction surveys, avoidance techniques, and post-construction restoration.	Less than significant with mitigation	EITP and other reasonably foreseeable future projects have the potential to have an adverse cumulative impact on populations and individuals of rare plant species such as Mojave milkweed, desert pincushion, Parish's club-cholla, white-margined beardtongue, rosy two-tone beardtongue, and Aven Nelson phacelia that occur within the cumulative effects area. However, each of these projects have provided recommended mitigation measures such as avoidance, salvage, restoration, and compensation to reduce impacts to special status plants to less than significant. Over the cumulative effects area, the EITP would have a negligible contribution to cumulative impacts to special status plant populations.	Not cumulatively considerable	**APM BIO-1:** Preconstruction Surveys **APM BIO-2:** Minimize Vegetation Impacts **APM BIO-4:** Best Management Practices **APM BIO-5:** Biological Monitors **APM BIO-6:** Worker Environmental Awareness Program **APM BIO-9:** Facility Siting **APM BIO-10:** Invasive Plant Management	**MM BIO-1:** Preconstruction Surveys **MM BIO-2:**Reclamation Plan **MM BIO-3:** Special Status Plants Restoration and Compensation	**Construction and O&M:** Adverse effects on biological resources. After mitigation implementation, impacts on native desert vegetation and special-status plants would be minor and localized.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT BIO-4: Introduction of invasive, non-native, or noxious plant species	Potential impacts on sensitive vegetation and wildlife communities if invasive, non-native, or noxious plant species were introduced and/or spread within the project area. Implementation of MM BIO-4 would reduce impacts to less than significant with implementation of a rigorous Invasive Management Plan..	Less than significant with mitigation	Cumulative impacts on sensitive vegetation and wildlife communities would result if invasive, non-native, or noxious plant species were introduced and/or spread within the geographic extent area. The contribution of EITP to these cumulative impacts would be short term and limited due to the short duration of construction and the relatively small geographical extent of EITP's impact area.	Not cumulatively considerable	**APM BIO-1:** Preconstruction Surveys **APM BIO-2:** Minimize Vegetation Impacts **APM BIO-4:** Best Management Practices **APM BIO-5:** Biological Monitors **APM BIO-6:** Worker Environmental Awareness Program **APM BIO-9:** Facility Siting **APM BIO-10:** Invasive Plant Management	**MM BIO-4:** Model Invasive Plant Management Plan on the BLM Las Vegas Office DRAFT Weed Plan	**Construction and O&M:** Adverse effects on biological resources. After mitigation implementation, impacts on native desert vegetation and special-status plants would be minor and localized.
IMPACT BIO-5: Adverse effects on drainages, riparian areas, and wetlands	Potential impacts on jurisdictional waters, drainages, and wetlands. Implementation of MMs BIO-5 through BIO-7 would reduce impacts to less than significant level. The applicant would perform a jurisdictional determination to identify drainages and wetlands located within the proposed project area. These areas would then be avoided. If avoidance were not possible, drainage crossings would be engineered to reduce degradation and impacts and restoration and compensation measures would be implemented.	Less than significant with mitigation	Cumulative impacts from all projects on these resources could be significant. The contribution of EITP to these cumulative impacts would be short term and limited due to the short duration of construction and the relatively small geographical extent of EITP's impact area.	Not cumulatively considerable	**APM BIO-2:** Minimize Vegetation Impacts **APM BIO-3:** Avoid Impacts on State and Federal Jurisdiction Wetlands **APM BIO-4:** Best Management Practices **APM BIO-9:** Facility Siting **APM HAZ-2:** Hazardous Materials and Waste Handling Management **APM HAZ-5:** SPCCP and Hazardous Materials Business Plan **APM W-1:** Avoid Stream Channels **APM W-2:** Erosion Control and Hazardous Material Plans **APM W-4:** Avoid Active Drainage Channels **APM W-9:** Prepare and Implement and Approved SWPPP	**MM BIO-5:** Jurisdictional Delineation **MM BIO-6:** Drainage Crossings Design **MM BIO-7:** Mitigation Monitoring Plan for Affected Jurisdictional Areas	**Construction and O&M:** Adverse effects on biological resources.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT BIO-6: Direct or indirect loss of migratory wildlife species, corridors, or nursery sites	Potential impacts to the movement corridors, migratory paths, or critical nursery sites for certain species, such as desert bighorn sheep, large reptiles, wild burro, and desert tortoise. Critical habitat found within the EITP area would be potentially used as a movement corridor by desert tortoise. Noise and visual disturbances generated during construction, operations, and maintenance would cause stress to animals, potential death, and avoidance of known corridors or nursery sites by species. Disturbances would be relatively short term due to the linear nature of construction for the transmission and telecommunication lines. Operations and maintenance activities would likewise be short term due to the lower frequency of vehicle and equipment use. Impacts at the proposed Ivanpah Substation would be long-term, as existing natural vegetation would be replaced with impervious surfaces and permanent structures. Implementation of MMs BIO-1, BIO-8, BIO-10, and BIO-12 through BIO-16 would provide protection primarily through avoidance of sensitive movement and nursery areas.	Less than significant with mitigation	With the exception of desert tortoise, EITP contribution to cumulative impacts on wildlife species would be minor. EITP would contribute 0.001% of the future cumulative impacts on non-critical desert tortoise habitat, and 0.004% on critical habitat. The small percentage from EITP would result in a minor impact, but cumulatively, the impacts on this species could be considerable. Currently, cumulative impacts on desert tortoise are considered major and considerable.	Cumulatively considerable	**APM BIO-4:** Best Management Practices **APM BIO-5:** Biological Monitors **APM BIO-6:** Worker Environmental Awareness Program **APM BIO-7:** Avoid Impacts on Active Nests **APM BIO-8:** Avian Protection **APM BIO-9:** Facility Siting **APM BIO-11:** Desert Tortoise Measures **APM BIO-12:** Desert Bighorn Sheep Measures **APM BIO-13:** Western Burrowing Owl Measures **APM BIO-14:** Gila Monster and Chuckwalla Measures	**MM BIO-1:** Preconstruction Surveys **MM BIO-8:** Reduce Night Lighting **MM BIO-10:** Biological Monitors **MM BIO-12:** Desert Tortoise Impacts Reduction Measures **MM BIO-13:** Desert Bighorn Sheep Impacts Reduction Measures **MM BIO-14:** American Badger Impacts Reduction Measures **MM BIO-15:** Migratory Birds and Raptors Impacts Reduction Measures **MM BIO-16:** Burrowing Owl Impacts Reduction Measures	**Construction and O&M:** Adverse effects on biological resources. Direct and indirect impacts to wildlife would be reduced to minor and localized. Impacts on desert tortoise due to construction of the project would be adverse, moderate, both short term and long term, and localized. Project would have minor adverse, short- and long-term, localized impacts on Gila monster and chuckwalla. Adverse impacts to desert bighorn sheep would be localized and minor, with both short- and long-term impacts with incorporation of mitigation. Mitigation would reduce the adverse impacts on American badger to localized, minor, and short and long term. Impacts on MBTA bird species, including raptors, would be adverse, minor, short and long term, and localized. Recommended mitigation for burrowing owl would reduce impacts, which would be adverse and short and long term, to localized and minor.
IMPACT BIO-7: Conflict with the provisions of local ordinances or policies	The project could remove existing desert vegetation during construction. Impacts to stream riparian vegetation might also occur during construction. San Bernardino County requires retention of existing native desert vegetation, in particular Joshua trees, Mojave yuccas, and creosote rings. The applicant would implement APM BIO-2 and BIO-3 to reduce adverse effects. However, if sensitive desert and riparian vegetation could not be avoided, the proposed project would result in significant impacts and directly conflict with the San Bernardino County ordinances. With implementation of MMs BIO-2 and BIO-3, vegetative communities will be restored by the relocation of plants, reseeding, and/or land compensation. If communities cannot be restored, the applicant will compensate in accordance with consultation with appropriate agencies. Implementation of these measures would reduce impacts to less than significant.	Less than significant with mitigation		Not cumulatively considerable	**APM BIO-2:** Minimize Vegetation Impacts **APM BIO-3:** Avoid Impacts on State and Federal Jurisdiction Wetlands	**MM BIO-2:** Reclamation Plan **MM BIO-3:** Special Status Plants Restoration and Compensation	**Construction and O&M:** Adverse effects on biological resources.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
3.5 Cultural Resources							
IMPACT CR-1: Impacts to Cultural Resources 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H/26CK4957	Potential impacts to cultural resources would occur as a result of the proposed transmission line replacement. The applicant has conducted APM CR-1 to identify the extent of resources in the proposed project area. Further, implementation of APM CR-2, APM CR-3b, and APM CR-4b would help minimize impacts on cultural resources APM CR-4b would require documentation of the cultural resource according to the National Park Service Historic American Buildings Survey/Historic American Engineering Record standards. This documentation would be filed with the California Historical Resources Information System, the Nevada State Historic Preservation Office, and the BLM.	Less than significant without mitigation	Cumulative impacts to other known cultural resources were not considered to be significant or considerable at the cumulative level contingent on proper mitigation by all projects. If adequate measures and mitigations were implemented by all the foreseeable construction projects that could affect other known cultural resources, then there would not be cumulatively considerable impacts to known cultural resources.	Not cumulatively considerable	**APM CR-1:** Conduct Archaeological Inventory of Areas that May Be Disturbed **APM CR-2:** Avoid and Minimize Impacts on Significant Cultural Resources Wherever Feasible **APM CR-3b:** Evaluate Significance of Potentially Eligible Buildings and Structures **APM CR-4b:** Implement Measures to Minimize Impacts on Significant Buildings and Structures	N/A	**Construction:**. Direct, adverse, and permanent impact to Cultural Resources 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H)/26CK4957. **O&M:** No impacts are anticipated during this phase.
IMPACT CR-2: Impacts to Previously Unidentified Cultural Resources	Major long-term direct impacts to any subsurface unidentified cultural resources would occur as a result of disturbing the ground and altering the existing setting, as well as disturbing the context of the find and its associations with other resources in the area. Project disturbance would diminish the resource's scientific or cultural integrity. Implementation of MM CR-1, APM CR-5, APM CR-6 and would reduce potential impacts to less than significant levels. Additionally, APM CR-2 would reduce these potential impacts to less than significant levels by educating the construction crew on the penalties associated with not reporting a cultural find or of collecting artifacts from federal- or state-controlled land.	Less than significant with mitigation	Cumulative impacts to unidentified cultural resources were not found to be significant or cumulatively considerable assuming proper mitigation by all projects. Subsurface cultural resources could be unearthed by any projects developed in previously undisturbed areas. If adequate measures and mitigations were implemented by all the foreseeable construction projects, then there would not be cumulatively considerable impacts to previously unidentified cultural resources.	Not cumulatively considerable	**APM CR-1:** Conduct Archaeological Inventory of Areas that May Be Disturbed **APM CR-2:** Avoid and Minimize Impacts on Significant Cultural Resources Wherever Feasible **APM CR-5.** Prepare and Implement a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan **APM CR-6.** Inadvertent Discovery of Human Remains	**MM CR-1:** Cultural Resources Monitoring	**Construction:** Unanticipated discovery of cultural resources as a result of construction activities disturbance could also diminish its scientific or cultural integrity. **O&M:** No impacts are anticipated during this phase.
IMPACT CR-3: Unanticipated Discovery of Human Remains	No resources with human remains or features known to be likely to contain human remains were discovered during the background research or field studies for the EITP. However, potential major long-term direct impact on human remains if there were unanticipated discoveries of human remains during construction. APM CR-6 would reduce impacts on human remains as a result of inadvertent discoveries during construction activities.	Less than significant without mitigation	Cumulative impacts to human remains were not found to be significant or cumulatively considerable assuming proper mitigation by all projects. Subsurface human remains could be unearthed by any projects developed in previously undisturbed areas. If adequate measures and mitigations were implemented by all the foreseeable construction projects, then there would not be cumulatively considerable impacts to previously unidentified human remains.	Not cumulatively considerable	**APM CR-6.** Inadvertent Discovery of Human Remains	N/A	**Construction:** Unanticipated discovery of cultural resources as a result of construction activities disturbance could also diminish its scientific or cultural integrity. **O&M:** No impacts are anticipated during this phase.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
3.6 Geology, Soils, Minerals, and Paleontology							
IMPACT GEO-1: Rupture of Earthquake Fault Across the Transmission Line Route	Given the relative lack of active faults in the project area, the potential for exposure of people to fault rupture during construction of the transmission line is very low. Similarly, the potential for adverse effects of fault rupture during operation and maintenance is also unlikely during the life of the proposed project. MM GEO-2 strengthens APM GEO-1 by stating that the applicant will use the findings of the geotechnical analysis to guide engineering and design.	Less than significant without mitigation	There would not be a considerable cumulative impact to geologic resources in the cumulative effects area. Seismic impacts (groundshaking, earthquake-induced ground failure, and fault rupture) from the numerous local and regional faults are an impact of the geologic environment on individual projects or existing and would not introduce considerable cumulative impacts.	Not cumulatively considerable	**APM GEO-1:** Geotechnical Engineering and Engineering Geology Study	N/A	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.
IMPACT GEO-2: Exposure of People or Structures to Potential Adverse Effects Due to Seismic Ground Shaking	Project construction and operations and maintenance activities could impact people and structures by exposing them to adverse effects due to seismic ground shaking during construction. Due to the short nature of construction and infrequent nature of significant ground shaking in the project area, potential adverse effects to people would be less than significant without mitigation. Design considerations outlined in APM GEO-2 would further lessen the potential for adverse effects. The likelihood that people would be exposed to adverse effects during project operations and maintenance is limited; structures would be more likely to experience an impact. Any impact would be short term and localized for the proposed project, although the causative event would affect a larger region.	Less than significant without mitigation	There would not be a considerable cumulative impact to geologic resources in the cumulative effects area. Seismic impacts (groundshaking, earthquake-induced ground failure, and fault rupture) from the numerous local and regional faults are an impact of the geologic environment on individual projects or existing and would not introduce considerable cumulative impacts.	Not cumulatively considerable	**APM GEO-1:** Geotechnical Engineering and Engineering Geology Study **APM GEO-2:** Recommended Practices for Seismic Design of Substations	N/A	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.
IMPACT GEO-3: Exposure of People or Structures to Potential Adverse Effects Due to Seismic-Related Ground Failure	For most of the proposed project area, seismic-related ground failure is not expected, due to the general lack of shallow groundwater. Potential for negligible impact would be highly localized only in those areas that may be susceptible to seismic-related ground failure during construction include structures located at or near playa fringes. Under APM GEO-1, the applicant would complete a geotechnical engineering study to identify site-specific geologic conditions and potential geologic hazards prior to final engineering.	Less than significant without mitigation	There would not be a considerable cumulative impact to geologic resources in the cumulative effects area. Seismic impacts (groundshaking, earthquake-induced ground failure, and fault rupture) from the numerous local and regional faults are an impact of the geologic environment on individual projects or existing and would not introduce considerable cumulative impacts.	Not cumulatively considerable	**APM GEO-1:** Geotechnical Engineering and Engineering Geology Study **APM GEO-2:** Recommended Practices for Seismic Design of Substations	N/A	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.
IMPACT GEO-4: Exposure of People or Structures to Adverse Effects Due to Landslides	Potential impacts from construction- or operations-caused landslides on people or structures would be localized, but effects could extend over a long time. Installing, upgrading, or re-grading access roads could lead to landslides at locations where geologic conditions are conducive to this type of hazard, such as in areas on or adjacent to hill slopes. Geologic conditions would also occur in areas on or adjacent to Operation and maintenance activities could also expose people and structures to landslide hazards during the life of the project. Implementation of APM GEO-1 and MM GEO-2 would lessen potential effects to less than significant levels.	Less than significant without mitigation	There are no highly sensitive geologic formations in the project area. Therefore, there would not be a considerable cumulative impact to geologic resources in the cumulative effects area. From the available information, no reasonably foreseeable future projects indicate plans to significantly alter sensitive geologic formations. However, the available information is limited.	Not cumulatively considerable	**APM GEO-1:** Geotechnical Engineering and Engineering Geology Study	**MM GEO-1:** Monitor and Mitigate Damage to Tower Structures	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT GEO-5: Erosion of Soil at Towers and the Substation and Along Access Roads	The proposed project would impact soil by resulting in erosion at the transmission and telecommunication towers, at the substation, and along the access roads. This impact would be localized but would act over the entire construction period. Operation and maintenance on service roads would lead to continued ground disturbance that would result in sites of potential erosion, particularly in areas of hill slopes. This impact would be localized but could act over the life of the proposed project, could be significant. With the implementation of APM GEO-3 and MM W-1, impacts on soil conditions would be reduced.	Less than significant with mitigation	Structural impacts from unstable soils are an impact of the geologic environment on individual projects and would not introduce considerable cumulative impacts.	Not cumulatively considerable	**APM GEO-3:** Project Construction Stormwater Pollution Prevention Plan Protection Measures Regarding Soil Erosion / Water Quality	**MM GEO-2:** Geotechnical Engineering Study	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.
IMPACT GEO-6: Structural Failure of Towers and Substation Facility Due to Unstable Soil Conditions Resulting in Subsidence or Collapse	Ground subsidence or collapse due to groundwater withdrawal could lead to the structural failure of the transmission line and telecommunication line towers and substation facility. This adverse impact on the project, ranging from negligible to minor, could be localized to extensive, depending on the degree to which continued and/or increased groundwater withdrawal from the Ivanpah and Eldorado valleys. The likelihood of this impact could increase over time with continued and/or increased groundwater withdrawal. With implementation of MM W-2, MM GEO-1 and MM GEO-2, this impact would be reduced to a minor or less than significant level.	Less than significant with mitigation	Structural impacts from unstable soils are an impact of the geologic environment on individual projects and would not introduce considerable cumulative impacts.	Not cumulatively considerable	**APM GEO-1:** Geotechnical Engineering and Engineering Geology Study **APM GEO-2:** Recommended Practices for Seismic Design of Substations	**MM GEO-1:** Monitor and Mitigate Damage to Tower Structures **MM GEO-3:** Preparation and Implementation of SWPPP	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.
IMPACT GEO-7: Structural Failure of Towers or Substation Facility Due to Expansive Soils	The areas most prone to experience expansive soils lie within or adjacent to playas or old lake deposits with clay rich sediments. Although prior to final design a geotechnical engineering study would be performed (APM GEO-1), impacts on proposed project facilities could be significant. With the implementation of MM GEO-4, however, impacts under this criterion would be less than significant.	Less than significant with mitigation	Structural impacts from unstable soils are an impact of the geologic environment on individual projects and would not introduce considerable cumulative impacts.	Not cumulatively considerable	**APM GEO-1:** Geotechnical Engineering and Engineering Geology Study	**MM GEO-4:** Expansive Soils Mitigation	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.
IMPACT MR-1: Loss of Mineral Resource of Value to Region and the Residents of the State	The potential for mineral resources in the project vicinity is area-wide. Numerous non-metallic and metallic mineral deposits occur along or near the telecommunications line route. Proposed future activities at mines can easily avoid the proposed project area. Any identified adverse impacts at current mines are negligible. Since no specific locations for valuable mineral resources have been identified within the project area, there would be no loss of availability of a known mineral resource as a result of the proposed project.	Less than significant without mitigation	None of the reasonably foreseeable future projects in the cumulative effects area are expected to interfere with active mining operations. The proposed project would be on land designated as an energy corridor. The land is not eligible for mining, and the project would not limit any existing mining claims. Therefore, incremental impact of the proposed project on any cumulative impacts on minerals would be negligible or less than significant.	Not cumulatively considerable	N/A	N/A	**Construction:** Direct negligible impacts to minor geology and soils, generally local in extent, ranging to extensive to area wide, and acting over either short- or long-term time spans. **O&M:** No additional ground disturbance beyond the areas disturbed during construction.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT PALEO-1: Direct or Indirect Damage or Destruction of Paleontological Resources	Project-related ground disturbance could impact buried and undiscovered paleontological resources. APMs PALEO-1 through PALEO-8 would help reduce impacts on paleontological resources discovered during the preconstruction and construction phases.	Less than significant without mitigation	Paleontological resources are known to be present in the geographic area of reasonably foreseeable future projects, particularly those projects that would be located near the dry lakes. If resources were discovered during construction of these projects, they would be subject to legal requirements designed to protect them, thereby reducing impacts. Therefore, proposed project impacts combined with impacts from past, present, and reasonably foreseeable projects would not be significant and no additional mitigation measures would be necessary.	Not cumulatively considerable	**APM PALEO-1:** Retention of Paleontologist and Preparation of a Paleontological Resource Management Plan **APM PALEO-2:** Pre-construction Paleontological Field Survey **APM PALEO-3:** Worker Environmental Awareness Program **APM PALEO-4:** Construction Monitoring **APM PALEO-5:** Recovery and Testing **APM PALEO-6:** Monthly Progress Reports **APM PALEO-7:** Analysis of and Preparation of Final Paleontological Resource Recovery Report **APM PALEO-8:** Curation	N/A	**Construction:** Potential for adverse impacts on paleontological resources **O&M:** No additional ground disturbance beyond the areas disturbed during construction.
3.7 Hazards, Health, and Safety							
IMPACT HAZ-1: Create Hazards through Routine Transport, Use, or Disposal of Hazardous Materials	During construction, hazards to the public or the environment might be caused by the transport, use, or disposal of hazardous materials including (but not limited to) gasoline, diesel fuel, oil, paints, chemicals, waste oils, and construction waste. APM HAZ-2 would prevent releases of hazardous materials and waste. During operation and maintenance, hazards to the public or the environment also could be caused by the improper transport, storage, use or disposal of hazardous materials. APM HAZ-5 and MM HAZ-1 would help ensure that the applicant would minimize, avoid, and/or clean up spills of hazardous materials.	Less than significant with mitigation	Cumulative effects of hazardous materials spills and potential exposures could only occur in the immediate vicinity of the proposed project area. It is unlikely that there would an incident where multiple projects would have a hazardous materials release in close proximity to each other such that could be cumulative effects. Any release of hazardous materials would have to be remediated according to state and federal regulations.	Not cumulatively considerable	**APM HAZ-2:** Hazardous Materials and Waste Handling Management **APM HAZ-5:** SPCCP and Hazardous Materials Business Plan	**MM HAZ-1:** Worker Health and Safety and Environmental Training and Monitoring Program	**Construction:** Hazards such as accidents or spills from improper use, storage, or disposal of oil and/or hazardous materials would be minor, short term, and localized. **O&M:** The applicant would implement APM HAZ-5 to facilitate quick and safe cleanup of accidental spills of hazardous materials. Implementation of MM HAZ-1 would reduce the risk of exposure to workers and the public and minimize the potential for release of hazardous aterials.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT HAZ-2: Create Hazards through Accidental Release of Hazardous Materials into the Environment	The proposed project would not traverse any known contaminated sites, but would traverse and be in close proximity to fuel product pipelines where there could be soil contamination. Prior to any grading activities, the applicant would be required by law to use an Underground Service Alert organization to identify the location of underground utilities and pipelines. In addition, the applicant would not use APM PUSVC-1, APM PUSVC-2, APM HAZ-2 and APM HAZ-3 to reduce potential adverse effects. Implementation of MM HAZ-1 would protect the workforce during construction and operation of the EITP.	Less than significant with mitigation	Cumulative effects of hazardous materials spills and potential exposures could only occur in the immediate vicinity of the proposed project area. It is unlikely that there would an incident where multiple projects would have a hazardous materials release in close proximity to each other such that could be cumulative effects. Any release of hazardous materials would have to be remediated according to state and federal regulations.	Not cumulatively considerable	**APM PUSVC-1:** Work Around High Pressure Pipelines **APM PUSVC-2:** Monitoring by Pipeline Companies **APM HAZ-2:** Hazardous Materials and Waste Handling Management **APM HAZ-3:** Soil Management Plan	**MM HAZ-1:** Worker Health and Safety and Environmental Training and Monitoring Program	**Construction:** Hazards such as accidents or spills from improper use, storage, or disposal of oil and/or hazardous materials would be minor, short term, and localized. **O&M:** The applicant would implement APM HAZ-5 to facilitate quick and safe cleanup of accidental spills of hazardous materials. Implementation of MM HAZ-1 would reduce the risk of exposure to workers and the public and minimize the potential for release of hazardous aterials.
IMPACT HAZ-3: Expose the Public or Environment to Contaminated Soil or Groundwater	The proposed components may encounter undocumented hazardous waste sites during construction. However, the applicant has committed to conducting a Phase 1 ESA (APM HAZ-1) to identify recognized environmental conditions in the vicinity of the ROW prior to the start of construction to ensure that contaminated areas would be avoided.	Less than significant without mitigation	It is unlikely that the proposed project and other reasonable foreseeable projects would be constructed in the same location at the same time. Because any soil contamination encountered would be removed and/or remediated prior to construction, impacts of the proposed project would not combine with impacts of other projects, and there would not be a considerable cumulative effect.,	Not cumulatively considerable	**APM HAZ-1:** Phase I ESA	N/A	
IMPACT HAZ-4: Increase Safety Hazards for People Residing or Working Within Two Miles of a Public Airport or Public Use Airport	The only existing airport within the project area is the Jean Airport, 5 miles away; therefore, there would be no impact associated with existing airports within 2 miles of the proposed project. The proposed boundary for the Southern Nevada Supplemental Airport (SNSA) would be within 0.5 miles (2,640 feet) north of MP 26 of the EITP transmission line; however it is not possible to state conclusively whether the EITP would impact the future SNSA. Under APM LU-1, the applicant would notify the FAA as far in advance of construction as possible. To further reduce potential hazards associated with the future airport, the applicant will implement MM HAZ-2.	Less than significant with mitigation	The proposed EITP transmission line would be constructed within 0.5 miles of the southern boundary of the proposed Southern Nevada Supplemental Airport (SNSA) that is scheduled for completion by 2020. At this time, it is not possible to assess the cumulative potential airport risks at the proposed SNSA because insufficient information is available about SNSA and the proposed projects that would be located within 20,000 feet of the SNSA.	Unknown	**APM LU-1:** Aeronautical Considerations	**MM HAZ-2:** Consultation with FAA Regarding Final Project Design and Possible Hazard/No Hazard Determination	
IMPACT HAZ-5: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan	During construction and operation, activities that could affect traffic and emergency routes include equipment delivery necessitating lane closures and stringing lines across major and local roadways. If lane closures were necessary for construction or maintenance of the EITP, the applicant would implement APM TRA-1and APM TRA-2. The applicant would also implement BMPs, such as use of flaggers, identification of detours, and appropriate communications with stakeholders.	Less than significant without mitigation	Concurrent construction of the proposed project and ISEGS, FirstSolar, NextLight, the CalNev Pipeline Expansion Project, and DesertXpress could increase traffic congestion and flow; therefore, there could be cumulative impacts to access and use of emergency routes. Overall, a considerable increase in traffic congestion could result in a cumulative impact; however, traffic management plans would likely reduce this impact so that it would not be considerable.	Not cumulatively considerable	**APM TRA-1:** Obtain Permits **APM TRA-2:** Traffic Management and Control Plans	N/A	

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT HAZ-6: Expose People or Structures to Wildland Fires	During construction and operation of the EITP (all components), fires might be caused by combustion of native materials due to smoking, refueling, or operating vehicles and other equipment off roadways; welding; electrical arcing; or a fallen conductor. The applicant's Fire Management Plan (APM HAZ-4) establishes standards and practices that would minimize the risk of fire and, in the event of fire, provide for immediate suppression and notification.	Less than significant without mitigation	The Ivanpah Valley in California has a moderate fire risk. In Nevada, the fire risk outside of Primm is not known, although the city of Primm has a low fire risk. Concurrent construction of the foreseeable construction in California could increase the fire risks. However, each project would likely implement its own fire management program to reduce the potential risk of fires.	Not cumulatively considerable	**APM HAZ-4:** Fire Management Plan	N/A	
3.8 Hydrology and Water Quality							
IMPACT HYDRO-1: Introduction of Hazardous Contamination into Surface and Groundwater	Although the hydrology of the area would prevent any spill that occurred from migrating quickly or far and groundwater in this region is located more than 500 feet below the surface, there is the potential adverse impacts on surface and groundwater resources due to hazardous contamination during construction and operation and maintenance of the lines and substation. With proper implementation of APM HAZ-2, APM W-1, APM W-2, MM W-1 and MM W-6, the potential impact on surface water quality from erosion would be reduced to less than significant levels.	Less than significant with mitigation		Not cumulatively considerable	**APM W-2:** Erosion Control and Hazardous Material Plans **APM W-10:** Emergency Release Response Procedures **APM W-12:** Properly Dispose of Hazardous Materials **APM W-13:** Identify Location of Underground Utilities Prior to Excavation	**MM W-1:** Erosion Control Plan and Compliance with Water Quality Permits	**Construction:** Potential for the introduction of hazardous contamination into surface water resources would be minor, localized, and short term. **O&M:** Similar to those of current operations of the existing transmission line.
IMPACT HYDRO-2: Lowering of Water Table or Interference with Aquifer Recharge	Potential impacts on the local water table and on aquifer recharge processes would occur by altering surface water drainages and exceeding current groundwater withdrawal conditions. Because the source of the water to be used during construction is currently unknown, at this point the possibility that the impact on groundwater supplies could be significant must be considered. The applicant would also use water for dust suppression during construction. Depending on the quantity and sources to be used, this could decrease local groundwater supply and recharge. As part of MM W-2, the applicant would identify quantities and sources of water to be used during each phase of the proposed project. MM W-2 also sets maximum water use limits for the construction and operation phases.	Potentially significant	The capacity of the local aquifer is not currently known. The town of Primm and the Primm Valley Golf Course are drawing upon water in the Ivanpah Valley. If all the water needed to support the foreseeable projects were drawn from the local water table, there could be a considerable cumulative impact on the local water table. The proposed project's contribution would depend on the volume of water to be drawn from the local aquifer and the total amount drawn by the other foreseeable projects. Further, the area of new impervious surfaces of the proposed project would not alter groundwater recharge within the local basins, so it would not contribute to a considerable cumulative impact.	Cumulatively considerable	**APM W-3:** Project Design Features **APM W-4:** Avoid Active Drainage Channels	**MM W-2:** Water Use Plan	**Construction:** Impacts to groundwater would be minor to moderate and localized, until the water source is known. **O&M:** Similar to those of current operations of the existing transmission line.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT HYDRO-3: Increased Erosion or Siltation due to Alteration of Surface Drainage Patterns	Potential for increased erosion or siltation on site or off site due to project construction and operation and maintenance activities. Construction ground disturbance may change natural runoff patterns, thereby affecting natural erosion and siltation processes. Water used for dust suppression during construction could suspend and transport more sediment than is typically moved in the arid climate. Implementation of APM W-1, APM w-4, APM w-6, APM W-7, and APM W-8 would help minimize changes to surface drainage patterns and reduce stormwater velocity where changes would occur. In addition, MM W-1 and MM W-6 would ensure that all BMPs and county plan erosion practices are adhered to, erosion and siltation levels would be kept consistent with preconstruction conditions	Less than significant with mitigation	Past projects have altered drainage patterns by changing local topography. Each time a site is graded and developed, natural drainage features are culverted, redirected, or, in the case of small desert washes, eliminated. Insufficient data are available to be able to predict the exact nature of the cumulative alterations. The proposed project's contribution to cumulative impacts, however, would be localized and relatively small given its footprints for construction (470 acres) and operations (60 acres).	Not cumulatively considerable	**APM W-3:** Project Design Features **APM W-4:** Avoid Active Drainage Channels **APM W-5:** Diversion Dikes **APM W-6:** Collect and Divert Runoff **APM W-7:** Ditch and Drainage Design **APM W-8:** Minimize Cut and Fill Slopes	**MM W-1:** Erosion Control Plan and Compliance with Water Quality Permits	**Construction:** Minor to moderate localized impacts due to erosion and sedimentation. Special consideration due to location on active alluvial fans. **O&M:** Similar to those of current operations of the existing transmission line.
IMPACT HYDRO-4: Altered Course of Stream or River due to Modification of Surface Drainage Patterns	The proposed project could cause alteration of the course of a stream due to modification of surface drainage patterns. Construction activities causing ground disturbance and alteration of natural drainage patterns could cause a change in the hydrologic inputs to a stream, thus affecting the flow volume or route. Changes to surface contours could be permanent and could affect the stream flow over the long term. MM W-3 requires the applicant to predict any alteration in flow paths as a result of construction of the proposed project and establish a channel system to mitigate any impacts associated with altered flow paths. MM W-4 (Restoration of Dry Lake) requires the applicant to restore the lake surface to preconstruction conditions, therefore reducing this impact to less than significant levels.	Less than significant with mitigation	Past projects have altered drainage patterns by changing local topography. Reasonable foreseeable future projects that would be constructed on the floors of the Ivanpah or Eldorado valleys could also alter drainage patterns. Insufficient data are available to be able to predict the exact nature of the cumulative alterations. However, the proposed project's contribution to cumulative impacts would be localized and relatively small given its footprints for construction and operations.	Not cumulatively considerable	**APM W-1:** Avoid Stream Channels **APM W-4:** Avoid Active Drainage Channels	**MM W-3:** Onsite Flow Model and Channel System **MM W-4:** Dry Lake Restoration Plan	**Construction:** Minor to moderate localized impacts due to erosion and sedimentation. Special consideration due to location on active alluvial fans. **O&M:** Similar to those of current operations of the existing transmission line.
IMPACT HYDRO-5: Modified Runoff Characteristics, Possibly leading to Flooding or Inundation by Mudflow	The proposed project would be unlikely to cause flooding or inundation by mudflow. However, the EITP area is in a region known for active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. Construction activities causing ground disturbance could change natural runoff patterns, thereby affecting volume and flow of surface and subsurface waters and possibly affecting flooding patterns of local waterways. The applicant would implement APM W-1, APM W-4, APM W-5, APM W-6, APM W-7, and, as required by law, implement a SWPPP (APM W-9). As a part of MM W-5, the applicant would also analyze all alluvial fans in the project area to determine the most active sections. Following this analysis, proposed project components would be sited on the least active areas of the fans to reduce the possibility of floods or debris flows.	Less than significant with mitigation	EITP and other foreseeable projects would be required to take erosion and drainage control measures to reduce the potential adverse effects of flood events; therefore, the potential cumulative risks would be reduced. As long as the foreseeable projects did the appropriate hydrologic modeling to site their facilities in the areas with lowest flood risk and their structures were designed to accommodate a 100-year, 24-hour flood event, there would not be a significant cumulative impact to flood risks. However, most of the reasonably foreseeable projects have not completed their environmental analysis, so it is not possible to determine if all the proper steps will be taken	Not cumulatively considerable	**APM W-5:** Diversion Dikes **APM W-6:** Collect and Divert Runoff **APM W-7:** Ditch and Drainage Design	**MM W-5:** Historical Hydrological Model of Alluvial Fan	**Construction:** Minor to moderate localized impacts due to erosion and sedimentation. Special consideration due to location on active alluvial fans. **O&M:** Similar to those of current operations of the existing transmission line.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT HYDRO-6: Substantially Degrade Water Quality	The proposed project could degrade water quality by increasing erosion or sedimentation in surface waters or through the introduction of hazardous materials into surface waters. Potential impacts from the introduction of hazardous materials would be less than significant without mitigation. Implementation of MMs W-1, W-3, and W-6 would reduce potential impacts due to erosion and sedimentation to less than significant levels.	Less than significant with mitigation	There could be considerable cumulative impacts to public safety due to debris flow. However, the proposed project's contribution to cumulative public safety risks associated with flooding would be minor and long term. Because the proposed project would have a smaller footprint than many of the foreseeable projects in the Ivanpah and Eldorado valleys and the towers would be designed to resist scour, debris flows would be more likely to pass proposed project structures without dislodging them.	Not cumulatively considerable	**APM W-2:** Erosion Control and Hazardous Material Plans **APM W-4:** Avoid Active Drainage Channels **APM W-9:** Prepare and Implement an Approved SWPPP	**MM W-1:** Erosion Control Plan and Compliance with Water Quality Permits **MM W-3:** Onsite Flow Model and Channel System	**Construction:** Minor to moderate localized impacts due to erosion and sedimentation. Special consideration due to location on active alluvial fans. Potential for the introduction of hazardous contamination into surface water resources would be minor, localized, and short term. **O&M:** Similar to those of current operations of the existing transmission line.
IMPACT HYDRO-7: Placement of Structures within a 100-year Flood Hazard Area	Transmission line tower footings would be constructed within a 100-year flood hazard area through the Ivanpah Dry Lake. Additionally, the telecommunications line would cross through a 100-year flood hazard zone near Nipton Road. The Ivanpah Substation would not be located in a 100-year flood hazard zone. Due to the relatively flat topography of the flood hazard areas, the risk associated with this hazard would be minor. The applicant would design tower footings to withstand scour and inundation from a 100-year flood (APM W-3). This measure would ensure that flooding at tower footings would not pose a safety risk.	Less than significant without mitigation	The EITP and all other foreseeable projects with project components within a 100-year flood zone would have to undertake similar measures to reduce this potential cumulative impact. However, given the number of new structures in the area, there could be an increase in the volume of flood waters diverted. The proposed project would have only a less than significant or negligible contribution to this cumulative impact because of small role is the potential diversion of flood waters.	Not cumulatively considerable	**APM W-3:** Project Design Features **APM W-5:** Diversion Dikes		**Construction:** Minor to moderate localized impacts due to erosion and sedimentation. Special consideration due to location on active alluvial fans. Potential for the introduction of hazardous contamination into surface water resources would be minor, localized, and short term. **O&M:** Similar to those of current operations of the existing transmission line.
IMPACT HYDRO-8: Exposure to a Significant Risk of Flooding	The proposed project area is in a region with active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. However, it is unlikely that project facilities or construction equipment would actually impede or redirect a flood flow. The applicant would implement APM W-1, APM W-4, APM W-5, and APM W-7 to ensure that active drainage channels were not hindered by construction activity. As a part of MM W-5, the applicant would analyze the alluvial fans in the project area to determine the most active sections. Following this analysis, the project facilities would be sited on the least active lobes of the alluvial fans to mitigate against floods or debris flows and their inherent threat to life and property.	Less than significant with mitigation	The EITP transmission tower footings would be designed to withstand scour and inundation from a 100-year flood (APM W-3). All other foreseeable projects with project components within a 100-year flood zone would have to undertake similar measures to reduce this potential cumulative impact. However, given the number of new structures in the area, there could be an increase in the volume of flood waters diverted. The proposed project would have only a less than significant or negligible contribution to this cumulative impact because of small role is the potential diversion of flood waters.	Not cumulatively considerable	**APM W-1:** Avoid Stream Channels **APM W-4:** Avoid Active Drainage Channels **APM W-5:** Diversion Dikes **APM W-7:** Ditch and Drainage Design	**MM W-5:** Historical Hydrological Model of Alluvial Fan.	**Construction:** Minor to moderate localized impacts due to erosion and sedimentation. Special consideration due to location on active alluvial fans. **O&M:** Similar to those of current operations of the existing transmission line.
IMPACT HYDRO-9: Modify Runoff Characteristics, Possibly Leading to Flooding or Inundation by Mudflow	The proposed project area is in a region with active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. However, it is unlikely that project facilities or construction equipment would actually impede or redirect a flood flow. The applicant would implement APM W-1, APM W-4, APM W-5, and APM W-7 to ensure that active drainage channels were not hindered by construction activity. As a part of MM W-5, the applicant would analyze the alluvial fans in the project area to determine the most active sections. Following this analysis, the project facilities would be sited on the least active lobes of the alluvial fans to mitigate against floods or debris flows and their inherent threat to life and property.	Less than significant with mitigation	The EITP transmission tower footings would be designed to withstand scour and inundation from a 100-year flood (APM W-3). All other foreseeable projects with project components within a 100-year flood zone would have to undertake similar measures to reduce this potential cumulative impact. However, given the number of new structures in the area, there could be an increase in the volume of flood waters diverted. The proposed project would have only a less than significant or negligible contribution to this cumulative impact because of small role is the potential diversion of flood waters.	Not cumulatively considerable	**APM W-1:** Avoid Stream Channels **APM W-4:** Avoid Active Drainage Channels **APM W-5:** Diversion Dikes **APM W-7:** Ditch and Drainage Design	**MM W-5:** Historical Hydrological Model of Alluvial Fan.	**Construction:** Minor to moderate localized impacts due to erosion and sedimentation. Special consideration due to location on active alluvial fans. **O&M:** Similar to those of current operations of the existing transmission line.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
3.9 Land Use, Grazing Allotments, and Wild Horses and Burros							
IMPACT LU-1: Conflict with applicable Plans and Policies	The proposed project would cross various land uses in both California and Nevada: • The Boulder City Conservation Easement (BCCE, managed by Clark County and the City of Boulder City) with specific utility corridors reserved to the BLM. • Land designated as the Ivanpah Airport Environs Overlay for the Southern Nevada Supplemental Airport (SNSA). • A small area of private land in unincorporated Clark County.	Less than significant with mitigation	EITP's contribution to total grazing acreage loss to the Clark Mountain Allotment (less than half of one percent of total available). The proposed project would be routed through the BCCE. No reasonably foreseeable future project is proposed within this conservation easement, so there would not be any cumulative impacts.	Not cumulatively considerable	**APM LU-1:** Aeronautical Considerations	**MM LU-1:** Obtain Approval from Clark County and the City of Boulder City for Activities Outside of BLM-Designated Utility Corridors in the BCCE **MM HAZ-2:** Consultation with FAA Regarding Final Project Design and Possible Hazard/No Hazard Determination	**Construction:** Short-term, localized, negligible adverse impacts on the Ivanpah Dry Lake Recreation Area, the Jean/Roach Dry Lake SRMA and the Hidden Valley grazing allotment. **O&M:** Long-term, localized, negligible adverse effects on the Clark Mountain grazing allotment
3.10 Noise							
IMPACT NOI-1: Project construction noise exceeding noise levels or standards	Project construction would comply with local noise ordinances and variance procedures requested by local authorities. In addition, as part of the project, the applicant has committed to maintaining construction equipment in working order (APM NOI-2) and adhering to the manufacturer's maintenance recommendations (APM NOI -3); muffling construction equipment (APM NOI-4); and minimizing the amount of time that equipment is idled (APM NOI-5). Implementation of MM NOI-1 would ensure that noise impacts at the Desert Oasis Apartment Complex would be reduced, such that impacts would be less than significant.	Less than significant with mitigation	The estimated combined construction noise at the Primm Valley Golf Course of the proposed Ivanpah Substation, the EITP transmission line, likely noise generated from the construction of the Calnev Pipeline, ISEGS, and First Solar would be 59 dBA with pile driving at the ISEGS project and 57 dBA without pile driving. The estimated cumulative noise level does not exceed San Bernardino County's allowable noise level of 60 dBA for other commercial purposes; therefore, there would not be a considerable cumulative impact.	Not cumulatively considerable	**APM NOI-1:** Compliance with Local Noise Ordinances **APM NOI-2:** Construction Equipment Working Order **APM NOI-3:** Construction Equipment Maintenance **APM NOI-4:** Construction Equipment Muffled **APM NOI-5:** Construction Equipment Idling Minimized	**MM NOI-1:** Conduct Construction Activities during Daytime Hours	**Construction:** Temporary, minor, and localized adverse impacts at residences located at the Desert Oasis Apartment Complex due to project construction. **O&M:** No impact. Corona noise would be barely audible and would not change current conditions. Negligible adverse noise impacts due to maintenance activities.
IMPACT NOI-2: Transmission line operation and maintenance noise exceeding noise levels or standards	During the worst-case foul weather conditions, substation noise and corona noise associated with operation would be just audible. This level is less than the standards of the noise ordinances of the two applicable counties. Maintenance activities would typically occur over short timeframes up to two times per month and generate minimal noise. The applicant would use noise reduction measures to be compatible with local plans and zoning.	Less than significant without mitigation	No cumulatively considerable impacts on noise levels or standards are anticipated during operations and maintenance of the proposed EITP and other foreseeable projects in the area.	Not cumulatively considerable	N/A	N/A	**O&M:** No impact. Corona noise would be barely audible and would not change current conditions.
IMPACT NOI-3: Generate groundborne vibration or groundborne noise that exceeds 75 vdb during construction	Construction activities may generate groundborne vibration and noise. At the nearest residential receptor (the Desert Oasis Apartment Complex, a distance of .01 miles from the line), the vibration level generated by the greatest source of construction vibration (loaded truck) would temporarily exceed 75 VdB; however, this would occur during daytime hours and be short-term and temporary.	Less than significant without mitigation	Concurrent construction of the proposed EITP and other foreseeable projects could increase, but could also have no affect on, the level of groundborne vibration and noise at the Desert Oasis Apartment Complex. Insufficient data are currently available to calculate the level. However, the combined impact of future projects could only be for a day or two at the nearest receptor. Because of the short duration and as long as construction of all projects was limited to daytime hours, the cumulative impact would be less than significant.	Not cumulatively considerable	N/A	N/A	**Construction:** Temporary, minor, and localized adverse impacts at residences located at the Desert Oasis Apartment Complex due to project construction.
IMPACT NOI-4: Groundborne vibration or groundborne noise due to operations	During worst-case foul weather conditions, substation noise and the corona noise associated with operation would be considerably less than existing noise levels. The sum of the existing noise levels at the nearest sensitive receptor and the modeled maximum corona noise levels during foul weather would result in 47 dBA; therefore, no perceptible increase would occur and operation of the proposed project.	Less than significant without mitigation	No cumulatively considerable impacts due to groundborne vibration or groundborne noise are expected during operations and maintenance of the proposed EITP and other foreseeable projects in the area.	Not cumulatively considerable	N/A	N/A	**O&M:** No impact.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT NOI-5: Cause a substantial temporary increase in ambient noise levels in the project vicinity	Construction noise would not be anticipated to exceed 78 dBA at the closest sensitive receptor (Desert Oasis Apartment Complex). Any increases in ambient noise levels due to construction activities in the project vicinity would be short-term, intermittent, and temporary. With the implementation of MM NOI-1, and with additional noise minimization procedures (MM NOI-2 through MM NOI-5) implemented as needed, construction of the proposed project would result in a less than significant impact under this criterion.	Less than significant with mitigation	The cumulative impact from reasonably foreseeable future project development within 2 miles of receptors near Primm Valley Golf Club in California and the Desert Oasis Apartment Complex in Primm, Nevada would be equivalent to the direct impact from the proposed project, which was evaluated as minor, short term, and localized, and less than significant because of its duration.	Not cumulatively considerable	**APM NOI-2:** Construction Equipment Working Order **APM NOI-3:** Construction Equipment Maintenance **APM NOI-4:** Construction Equipment Muffled **APM NOI-5:** Construction Equipment Idling Minimized **APM NOI-6:** Hearing Protection for Workers	**MM NOI-1:** Conduct Construction Activities during Daytime Hours **MM NOI-2:** Relocate Stationary Construction Equipment **MM NOI-3:** Turn off Idling Equipment **MM NOI-4:** Notify Adjacent Residences **MM NOI-5:** Install Acoustic Barriers	**Construction:** Temporary, minor, and localized adverse impacts at residences located at the Desert Oasis Apartment Complex due to project construction. **O&M:** No impact. Corona noise would be barely audible and would not change current conditions. Negligible adverse noise impacts due to maintenance activities.
3.11 Public Services and Utilities							
IMPACT PUSVC-1: Emergency services needed in response to an accident or other emergency incident associated with the proposed project	Although demand for emergency services may increase temporarily during construction, existing emergency service providers and facilities would be sufficient to handle any incidents that may occur. The applicant would implement APM HAZ-4, APMTRA-2, APM TRA-3, APM PUSVC-1, and APM PUSVC-2, which would help ensure that emergency response services would not be affected. To further mitigate impacts MM HAZ-1 requires the applicant to prepare a Health and Safety Plan and conduct a worker safety and environmental training program.	Less than significant without mitigation	Concurrent construction of multiple reasonably foreseeable future construction projects, such as ISEGS and DesertXpress, could increase demands on emergency services, but each project would likely take steps to minimize its demand on these services. Therefore, concurrent construction of multiple projects would not likely create a significant cumulative impact on emergency services, and there would not be a considerable cumulative impact.	Not cumulatively considerable	**APM HAZ-4:** Fire Management Plan **APM TRA-2:** Traffic Management and Control Plans **APM TRA-3:** Minimize Street Use **APM PUSVC-1:** Work Around High Pressure Pipelines **APM PUSVC-2:** Monitoring by Pipeline Companies	**MM HAZ-1:** Worker Health and Safety and Environmental Training and Monitoring Program **MM PUSVC-2:** Notification of Utility Service Interruption	**Construction** **Emergency Services:** Short term and negligible adverse impacts **Hazardous Waste:** Short term and negligible adverse impacts **Wastewater:** Short term and negligible adverse impacts **Water usage:** Short term adverse **Operation:** Emergency response needs are expected to be similar to existing needs in the project area, and the applicant has included a number of security design features to ensure negligible impacts on police services due to the new Ivanpah Substation.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

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IMPACT PUSVC-2: Project construction temporarily increases water use, and project operation contributes to increased long-term water consumption	The applicant has estimated that between 30.6 and 38.3 acre feet per annum would be needed for the construction phase of the transmission line. Because there is a limited water supply in the proposed project area, the applicant would implement MM W-2 (Water Use Plan) to sets maximum water use limits for the construction and operation phases. Because the source of the water to be used during construction is currently unknown, at this point the possibility that the impact on groundwater supplies could be significant must be considered.	Potentially Significant	There could be a cumulatively significant impact on local water use, depending on the water sources. At this time, there is insufficient data available to calculate the cumulative water usage of the all the reasonably foreseeable future projects; therefore, the proposed project's contribution to the cumulative impact cannot be estimated. Mitigation (MM PUSVC-C-1) is necessary to decrease the potential cumulative impact.	Cumulatively considerable	N/A	**MM W-2:** Water Use Plan **MM PUSVC-C-1:**The applicant will demonstrate to the BLM and CPUC that the supplier of the water to be used for the proposed project has an adequate supply such that the existing local public and private water usages are not altered.	**Construction** **Emergency Services:** Short term and negligible adverse impacts **Hazardous Waste:** Short term and negligible adverse impacts **Wastewater:** Short term and negligible adverse impacts **Water usage:** Short term adverse **Operation:** Emergency response needs are expected to be similar to existing needs in the project area, and the applicant has included a number of security design features to ensure negligible impacts on police services due to the new Ivanpah Substation.
IMPACT PUSVC-3: Solid waste generated during construction of the project exceeds landfill requirements	Approximately 26% (140 tons) of the total construction waste would be would be disposed in landfills. Existing solid waste facilities have adequate capacity to accommodate project-related solid wastes. With the implementation of MM PUSVC-1, potential impacts on landfills would be less than significant.	Less than significant with mitigation	All of the reasonably foreseeable future projects would contribute solid waste to landfills in either California or Nevada. The total solid waste from each project that goes to a landfill would be reduced. There would not be a significant cumulative impact on the capacity of local landfills as long as all of the projects adhered to local policies and regulations related to recycling.	Not cumulatively considerable	N/A	**MM PUSVC-1:** Construction Waste Disposal Plan	**Construction** **Emergency Services:** Short term and negligible adverse impacts **Hazardous Waste:** Short term and negligible adverse impacts **Wastewater:** Short term and negligible adverse impacts **Water usage:** Short term adverse **Operation:** Emergency response needs are expected to be similar to existing needs in the project area, and the applicant has included a number of security design features to ensure negligible impacts on police services due to the new Ivanpah Substation.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT PUSVC-4: Solid waste generated during construction of the project results in noncompliance with federal, state, or local statutes, regulations, or policies	Implementation of MM PUSVC-1 would ensure compliance with local policies regarding solid waste management, impacts.	Less than significant with mitigation	There would not be a significant cumulative impact on the capacity of local landfills as long as all of the projects adhered to local policies and regulations related to recycling.	Not cumulatively considerable	N/A	**MM PUSVC-1:** Construction Waste Disposal Plan	**Construction** **Emergency Services:** Short term and negligible adverse impacts **Hazardous Waste:** Short term and negligible adverse impacts **Wastewater:** Short term and negligible adverse impacts **Water usage:** Short term adverse **Operation:** Emergency response needs are expected to be similar to existing needs in the project area, and the applicant has included a number of security design features to ensure negligible impacts on police services due to the new Ivanpah Substation.
3.12 Recreation							
IMPACT REC-1: Disruption of Access to Existing Recreation Opportunities	Construction of the transmission line would temporarily restrict access to several trail segments in the Jean/Roach Dry Lake Recreation Area. With implementation of APM REC-1, recreational facility closures would be coordinated with facility owners and construction would be scheduled to avoid heavy recreational use periods. Additionally, implementation of MM REC-1 would require the applicant to locate extra workspace areas outside of Recreation Areas, limiting construction activities to the construction ROW.	Less than significant with mitigation	If the EITP and other foreseeable projects in the area had overlapping construction schedules, there could be a considerable short-term cumulative impact to the Jean/Roach Lake SRMA because each would temporarily restrict access to trails. Based on the duration of construction in the Jean/Roach Lake SRMA, EITP would have a minor short-term contribution or less than significant with mitigation to cumulative impacts to recreation in the Jean/Roach Lake SRMA.	Not cumulatively considerable	**APM REC-1:** Recreation Area Closures	**MM REC-1:** Limit Construction Workspace in Wildlife and Recreational Areas	**Construction:** minor, short term, localized, and negligible impacts from construction activities. **O&M:** No impact.
3.13 Socioeconomics, Population and Housing, and Environmental Justice							
No Impact	Construction of the EITP would cause a negligible increase compared with the size of the regional population, and no impact would result. Permanent employees required for operation and maintenance activities would be similar to current levels of staffing for the existing line. Project construction, operations and maintenance would not substantially increase the demand for housing or directly or indirectly induce population growth in the area. Similarly, project activities would not displace existing housing or people, or necessitate relocation or the construction of replacement housing elsewhere.	No Impact	Concurrent construction of the reasonably foreseeable future projects would result in a beneficial cumulative impact on the local and regional economy and tourism, and could decrease unemployment during periods of construction. Reasonably foreseeable future projects, in conjunction with the EITP, would result in cumulative impacts to air, noise, public services, and traffic that may effect low-income populations in Primm, Nevada. However, these impacts would not disproportionately affect these communities, and therefore would not result in a cumulative environmental justice impact.	Not cumulatively considerable	N/A		**Construction:** negligible, short-term, beneficial impact on the region's economy, area incomes, and the region's labor force. **O&M:** negligible impacts on labor, minority and low-income populations, and the tourism industry.

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
3.14 Traffic and Transportation							
IMPACT TRANS-1: Traffic Load and Capacity	Less than significant impacts on existing traffic load and capacity, as a limited number of vehicles over a short period would be used for construction. Implementation of APM TRA-1 and APM TRA-2 would contribute to reduction of impacts associated with construction traffic. Impacts on northbound I-15 during the Friday afternoon commute would be short term and less than significant. Use of helicopters of during construction and operations could also increase the volume of air traffic in the area and potential air traffic conflicts could occur. Potential air traffic conflicts would be reduced to less than significant levels with implementation of MM TRANS-2 and MM HAZ-2.	Less than significant with mitigation	The contribution of the proposed project's impact to traffic and transportation would be minor. However, the proposed project's incremental effect could result in a considerable cumulative impact. The exact number of vehicles to be added by the EITP and other foreseeable during concurrent construction cannot be determined with the available information. The proposed project would contribute a maximum of 200 vehicles over an 18-month period and would minimize impacts through use of a Traffic Management Plan.	Cumulatively considerable	**APM TRA-2:** Traffic Management and Control Plans	N/A	**Construction:** Direct minor adverse traffic impacts due to project construction access along I 15 and SR 164/Nipton Road. Impacts would be localized at construction yards and crossing points (MP 29) along the transmission line route and would be short term. **O&M:** No impact. Maintenance activities associated with substations and transmission lines would not require additional vehicles beyond those used for current operations and maintenance procedures
IMPACT TRANS-2: Impact Level of Service Standard and Lane Closures	Less than significant impacts on existing Level of Service (LOS) standards as defined by Caltrans. A limited number of vehicles over a short period would be used for construction. Impacts on northbound I-15 during the Friday afternoon peak hours due to increased number of vehicles on the road would be short term and less than significant. Implementation of APMs TRA-1, TRA-2, and TRA-3 would contribute to reduction of impacts associated with construction traffic. The severity of the short-term impact would depend on the number of lanes closed, the duration of the closure, and the LOS conditions at the time of closure. MM TRANS-1 will limit construction activities so as not to require lane closures on peak usage hours.	Less than significant with mitigation	The contribution of the proposed project's impact to traffic and transportation would be minor. However, the proposed project's incremental effect could result in a considerable cumulative impact. With concurrent construction of the projects mentioned above the number of vehicles using I-15 would increase and would adversely impact traffic load and LOS on I-15 principally on Fridays from noon to 10 p.m. However, the exact number of vehicles to be added cannot be determined with the available information.	Cumulatively considerable	**APM TRA-1:** Obtain Permits **APM TRA-2:** Traffic Management and Control Plans **APM TRA-3:** Minimize Street Use	**MM TRANS-1:** No Lane Closures on I-15 during Friday Peak Usage	**Construction:** Direct minor adverse traffic impacts due to project construction access along I 15 and SR 164/Nipton Road. Impacts would be localized at construction yards and crossing points (MP 29) along the transmission line route and would be short term. **O&M:** No impact. Maintenance activities associated with substations and transmission lines would not require additional vehicles beyond those used for current operations and maintenance procedures
IMPACT TRANS-3: Impact Emergency Access	Emergency response providers near the proposed project area would be notified in advance about the exact location of construction, road or route closure schedules, and location of potential alternate routes, as needed. Implementation of APMs TRA-1, TRA-2, and TRA-3 would contribute to reduction of impacts associated with emergency access. Work would be coordinated with local police and traffic engineers to plan appropriate access alternatives for temporary street closures and traffic disruption, if closures were required.	Less than significant without mitigation	Emergency response providers near the proposed project area and those for other construction projects would be notified in advance about the exact location of construction and road or route closure schedules. Like the proposed project, the foreseeable projects would coordinate with local police and traffic engineers to plan appropriate access alternatives for temporary street closures and traffic disruption, if closures were required.	Not cumulatively considerable	N/A	N/A	**Construction:** Direct minor adverse traffic impacts due to project construction access along I 15 and SR 164/Nipton Road. Impacts would be localized at construction yards and crossing points (MP 29) along the transmission line route and would be short term. **O&M:** No impact. Maintenance activities associated with substations and transmission lines would not require additional vehicles beyond those used for current operations and maintenance procedures

Table ES-4 EITP Direct, Indirect, and Cumulative Effects and Mitigation Measures

Type of Impact	Summary of Impact	CEQA Significance of Impact	Potential Cumulative Impact	Cumulative Significance	Applicant Proposed Measures	Mitigation Measures	NEPA Summary
IMPACT TRANS-4: Result in a Change in Air Traffic Patterns	While the proposed project would not impact existing air traffic, use of helicopters of during operation and maintenance procedures could interfere with air traffic associated with the future SNSA. As a result, the applicant is required to implement MM TRANS-2, which requires coordination with the FAA regarding a Helicopter Flight Plan and Safety Plan. In addition, MM TRANS-2 specifies that in the event that plans for the SNSA are approved, the applicant will review the plan with the FAA at least 30 days prior to the start of SNSA construction. With the implementation of MM TRANS-2, potential air traffic conflicts would be reduced to less than significant levels.	Less than significant with mitigation	Use of helicopters of during operations and maintenance procedures could interfere with air traffic associated with the future SNSA. As a result, the applicant is required to implement MM TRANS-2, which requires coordination with the FAA regarding a Helicopter Flight Plan and Safety Plan. Additionally, helicopter use during maintenance procedures is common for linear projects. Calnev Pipeline requires helicopter use and other existing transmission lines may also use helicopters in the cumulative impact area. If the SNSA is constructed, use of helicopters during operations could contribute to a cumulative impact; however, given the infrequency that helicopters would be used for the EITP, the EITP's contribution to this impact would be negligible.	Not cumulatively considerable.	N/A	**MM Trans-2:** Helicopter Flight Plan and Safety Plan	**Construction:** No Impact. There would be no impact on existing air traffic **O&M:** Direct, minor, adverse and Localized. Helicopter usage associated with operation and maintenance of the transmission line could interfere with air traffic associated with the proposed Southern Nevada Supplemental Airport.

Key:
APM = Applicant Proposed Measure
BLM = Bureau of Land Management
CARB = California Air Resources Board
CO = Carbon monoxide
CO_2e = Carbon dioxide equivalent
EITP = Eldorado–Ivanpah Transmission Project
ESA = Environmental Site Assessment
GHG = Greenhouse gas
KOP = Key observation point
LOS = Level of Service (quantifies the congestion level on a particular roadway or intersection)
MDAQMD = Mojave Desert Air Quality Management District
MM = Mitigation measure
N/A = Not available
NEPA = National Environmental Policy Act
NO_X = Nitrogen Oxides
O&M = Operation and Maintenance
PM_{10} = Particulate Matter
$PM_{2.5}$ = Fine Particulate Matter (2.5 micrometers in diameter and smaller)
ROW = Right-of-way
SFS = Stateline Fault System
SIP = State Implementation Plan (relative to air criteria pollutants)
SNSA = Southern Nevada Supplemental Airport
VdB = Vibration decibel
VOC = Volatile organic compound
VRI = Visual Resource Inventory
VRM = Visual Resource Management Class (VRM Class II objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low)
WEAP = Worker Environmental Awareness Program

1. Introduction

On May 28, 2009, Southern California Edison (SCE, or the applicant) submitted an application (A.09-05-027) to the California Public Utilities Commission (CPUC) for a Certificate of Public Convenience and Necessity (CPCN) to construct and operate the Eldorado–Ivanpah Transmission Project (EITP, or the proposed project). Because the project would be located primarily on lands managed by the U.S. Department of the Interior (DOI) Bureau of Land Management (BLM), the applicant also filed a right-of-way (ROW) application with the BLM for a grant pursuant to Title V of the Federal Land Policy and Management Act. In compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act of 1969 (NEPA), as amended, the CPUC and the BLM have prepared this Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) to provide to both agencies' decision-makers and the public detailed information about the environmental impacts of the project, reasonable alternatives to the project, and ways to mitigate or avoid the project's adverse environmental impacts. The CPUC determined that an EIR would be required under CEQA due to anticipated significant impacts; the BLM determined that an EIS would be an appropriate level of analysis since it was not able to determine without additional evaluation whether the environmental impacts would be significant under NEPA.

This EIR/EIS describes and evaluates the environmental impacts that are expected to result from construction and operation of the applicant's proposed EITP, and presents recommended mitigation measures that, if adopted, would avoid or minimize many of the significant environmental impacts identified. In accordance with CEQA and NEPA requirements, this EIR/EIS also identifies alternatives to the proposed project (including the No Project Alternative) that could avoid or minimize significant environmental impacts associated with the project as proposed by the applicant and evaluates the environmental impacts associated with these alternatives. Specifically, the information contained in this EIR/EIS will be considered by the BLM and the CPUC in their respective deliberations on potential approval of the ROW grant and the CPCN. This EIR/EIS may also be considered by other applicable permitting agencies.

1.1 Overview of the Core Proposed Project, Alternatives, and the Whole of the Action / Cumulative Action

1.1.1 The Core Proposed Project Evaluated Under CEQA/NEPA

This section presents an overview of the project, as proposed by the applicant, and all alternatives considered in this EIR/EIS, including the No Project Alternative. The core project includes the transmission upgrades and associated transmission infrastructure and the alternatives included in the application submitted by SCE to the CPUC and the BLM. This document also includes information on related projects, or "the whole of the action / cumulative action," as described below in Section 1.1.2. A complete description of the project and its alternatives is given in Chapter 2. Figure 1-1 depicts the proposed project and its alternatives. The proposed project would include the following components:

- **Powerlines**
  - **Eldorado–Ivanpah Transmission Line**
  - **Subtransmission Line**
  - **Distribution Line**
- **Substations**
  - **New Ivanpah Substation**
  - **Eldorado Substation Upgrades**

- **Telecommunication System**

Alternatives to the proposed project were developed in accordance with CEQA and NEPA requirements. Before filing the application, the applicant consulted with both the CPUC and the BLM through a pre-filing process, and a number of alternatives were developed at that time. Additionally, the CPUC and the BLM performed an independent and thorough review of all the information submitted with the application to develop an exhaustive list of reasonable alternatives and alternatives that would reduce one or more significant impacts. This process included a review of surveys, studies, and applicable planning documents for the region and a meeting with the California Independent System Operator (CAISO) on September 28, 2009, to discuss reliability standards and transmission system planning.

Alternatives to the proposed project include transmission line routing alternatives and telecommunications alternatives, as depicted in Figure 1-1. A number of additional alternatives were considered early in the environmental review process but were eliminated from further consideration based on a preliminary analysis of both system alternatives and technology alternatives. Alternatives carried forward are considered in an equivalent level of detail and with an equivalent level of analysis.

In addition to the proposed project, as described above, the alternatives carried forward for analysis in this document include the following:

- **Parallel to Los Angeles Department of Water and Power (LADWP) Corridor Alternative (Transmission Alternative A)**
- **North of Eldorado Alternative (Transmission Alternative B)**
- **North Dry Lakes Reroute Alternative (Transmission Alternative C)**
- **South Dry Lakes Reroute Alternative (Transmission Alternative D)**
- **South Dry Lakes Bypass Alternative (Transmission Subalternative E)**
- **Golf Course Telecommunication Alternative**
- **Mountain Pass Telecommunication Alternative**

Other alternatives were considered but eliminated from further consideration based on a preliminary analysis of potential environmental impacts, feasibility, and ability to meet the basic project objectives outlined below in Section 1.2.4. These alternatives and the rationale for their elimination are discussed in detail in Appendix A-1, Alternatives Screening Report.

1.1.2 Additional Projects Considered in this EIR/EIS

Under both CEQA and NEPA, the lead agency must assess all environmental impacts that would occur as a result of the proposed project or action; both CEQA and NEPA stipulate that this assessment is not limited only to the project components as defined in a single permit application. As described below in Section 1.2, the EITP would facilitate the interconnection of renewable generation sources into the California grid in compliance with California's Renewables Portfolio Standard (RPS). In the interest of full disclosure and to allow agency decision-makers to reach an informed decision on whether to permit the EITP, information on the environmental effects of related renewable generation projects is included in this document.

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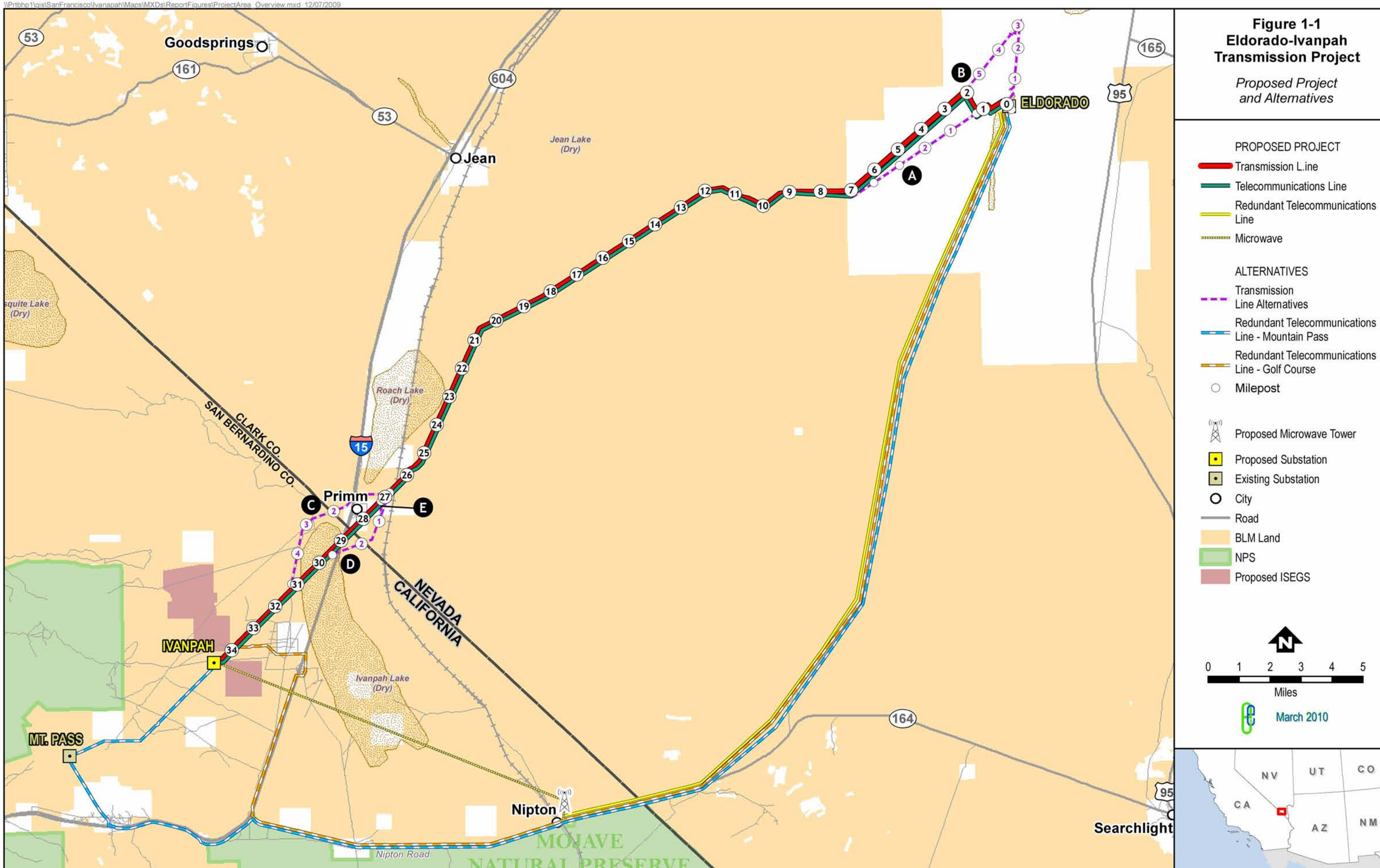

Figure 1-1
Eldorado-Ivanpah Transmission Project
Proposed Project and Alternatives

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However, because many of the renewable generation projects in the Ivanpah Valley Area are being developed, applied for, and analyzed under CEQA and/or NEPA concurrently with the proposed EITP, their status and the level of publicly available information varies. For this reason, the level of detail and the consideration under CEQA and NEPA varies in this document. The Ivanpah Solar Electric Generating System (ISEGS) project is discussed in Chapters 2 and 3 of this document as part of the "whole of the action" under CEQA and as a "cumulative action" under NEPA. The ISEGS project is discussed because of geographical proximity and the overlapping schedules of the ISEGS project and EITP, and because of contractual terms within signed agreements between the applicant and BrightSource Energy, Inc. (BrightSource) the solar developer for ISEGS, and the EITP applicant and another electric service provider. Background information on CEQA and NEPA requirements and on the CPUC and BLM determination that ISEGS constitutes part of the "whole of the action" and a "cumulative action," respectively, is provided below.

Other renewable generation projects planned in the Ivanpah Valley Area would likely connect to the EITP as well, including the projects listed in Table 1-1. Unlike the ISEGS project, these projects are not considered part of the whole of the action under CEQA or as a cumulative action under NEPA due to their speculative nature, the lack of publicly available information on their environmental effects, and the lack of a signed Power Purchase Agreement (PPA) with any electric service provider as of December 31, 2009. These projects are instead discussed in Chapter 5: Cumulative Scenario and Impacts.

Table 1-1 Ivanpah Dry Lake Area New Generation Interconnection Requests

CAISO Queue Position	Type	Size (MW)	Area of Interconnection[1]
CAISO Queue #126	Wind	1,500	Eldorado Substation
CAISO Queue #233	Solar Thermal	200	Ivanpah Substation 230-kV
Total Continuing Under LGIP Serial Approach		**1,700**	
CAISO Queue # 205	Solar Thermal	300	Eldorado 220-kV Switchyard
CAISO Queue #467	Solar Thermal	230	Eldorado–Ivanpah 230-kV Line
CAISO Queue #488	Solar Thermal	92	Eldorado Substation 230-kV
CAISO Queue #497	Solar Thermal	6	New Ivanpah Substation 115-kV
CAISO Queue #498	Solar Thermal	20	New Ivanpah Substation 115-kV
CAISO Queue #499	Solar Thermal	40	New Ivanpah Substation 115-kV
CAISO Queue #500	Solar Thermal	960	Eldorado Substation 500-kV
CAISO Queue #502	Solar Photovoltaic	270	Eldorado–Ivanpah 230-kV Line
CAISO Queue #503	Solar Photovoltaic	500	Eldorado–Ivanpah 230-kV Bus
Total Continuing Under Transitional Queue Cluster Approach		**2,418**	
Grand Total Interconnection Requests		**4,118**	

Source: CAISO 2010.
Notes:
[1]Area of interconnection is identified by the developer as part of the interconnection request. Inconsistencies in naming conventions for substations and transmission lines reflect differences in naming conventions between developers.
Key:
CAISO = California Independent System Operator
kV = kilovolt
MW = megawatt

1.1.2.1 CEQA Whole of the Action

Under CEQA, a "project" is defined as "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment" (CEQA Guidelines 15378(a)). The CEQA Guidelines also state that the "project" may require several discretionary approvals by governmental agencies and that each separate governmental approval does not necessarily constitute a separate project (CEQA Guidelines 15378(c)).

As discussed below in Section 1.2, the objective for the proposed project is to connect renewable generation sources in the Ivanpah Valley region to the existing electrical transmission grid and to enable SCE to comply with California's RPS. In the vicinity of the proposed Ivanpah substation there are three phases of one renewable generation project, all part of the ISEGS, under review by the BLM and the California Energy Commission (CEC) under Docket 07-AFC-05. The ISEGS applicant, BrightSource, has executed PPAs with SCE and Pacific Gas and Electric (PG&E) to connect to the EITP. Based on the timing and language of the signed PPAs, and the published Final Staff Assessment/Draft Environmental Impact Statement (FSA/DEIS) for the ISEGS project (CEC and BLM 2009), the CPUC has determined that ISEGS constitutes a reasonably foreseeable physical change in the environment and should be analyzed for the EITP as part of the "whole of the action" under CEQA.

1.1.2.2 NEPA Cumulative Action

Under NEPA, related actions can be considered in an environmental document as "connected," "cumulative," or "similar" actions. NEPA regulation requires that the federal agency consider the proposed action and other "connected" or "cumulative" actions in the same EIS (40 CFR 1508.25). An agency may, but is not required to, consider other "similar" actions in the same environmental document.

"Connected" actions are closely related. Actions are connected if they (1) automatically trigger other actions that may require environmental impact statements, (2) cannot or will not proceed unless other actions are taken beforehand or simultaneously, or (3) are interdependent parts of a larger action and depend on the larger action for their justification. "Cumulative" actions have cumulatively significant impacts when viewed with other proposed actions. "Similar" actions have similarities, such as common timing or geography, with other reasonably foreseeable or proposed agency actions. These similarities provide a basis for evaluating the actions' environmental consequences together. An agency may analyze "similar" actions in the same EIS, and should do so when it is the best way to adequately assess the actions' combined impacts.

The BLM has determined that the ISEGS project constitutes a "cumulative" action for the EITP EIR/EIS. Reasons for declining to define ISEGS as a "connected" or "similar" action are given below, followed by reasons for defining ISEGS as a "cumulative" action.

The BLM has determined that the ISEGS project and the EITP are not "connected" actions because it is not the case that each depends on the other. While the ISEGS project at full build-out would depend on the EITP because the existing transmission line (without the EITP proposed line and substation upgrades) would provide insufficient transmission capacity for the power generated by all phases of the ISEGS project, the EITP would not depend on the ISEGS project. BLM has received a number of applications for additional power generation projects in both California and Nevada that could tie into the EITP, including those listed in Table 1-1, below. Therefore, the EITP is needed for planned renewable development in the Ivanpah Valley area even if the ISEGS project is not constructed.

The BLM has also determined that the ISEGS project is not "similar" to the EITP, for several reasons. First, the EITP EIS addresses transmission and its effects, and the ISEGS EIS addresses power generation and its effects. Second, while the two projects would be close to each other geographically, their timing would not be the same (although it could overlap). Third, the projects are in different phases of review. The ISEGS project is supported by an FSA/DEIS, prepared jointly by the CEC and the BLM. For FSAs in general, the CEC prepares a CEQA equivalent document that involves taking staff testimony and public comments before ultimate decision-making by the CEC. As of December 31, 2009, the ISEGS FSA/DEIS had been published and the process of taking staff testimony and public comments had begun. In contrast, no information had been published until now for the EITP; this EIS is the first publicly available information on the environmental effects of the EITP. Fourth, the EITP is under the jurisdiction of a separate and distinct state agency (the CPUC, as opposed to the CEC for the ISEGS project). Fifth, the BLM will make distinct federal ROW decisions for each of the projects; if issued, the ROW grants will be to separate applicants.

As stated above, under the circumstances presented, the BLM has determined that the ISEGS proposal qualifies as a cumulative action to the proposed EITP. The ISEGS FSA/DEIS indicates that the ISEGS project would result in significant impacts. Given the proximity in location and the overlapping schedules of the EITP and the ISEGS project, it is reasonable to assume that the EITP, when considered in combination with ISEGS, would contribute to cumulatively significant impacts. A cumulative action differs from a cumulative impact in that it is considered to be part of the scope of the action; pursuant to U.S. Council on Environmental Quality (CEQ) regulation (40 CFR 1508.25(a)(2)), the ISEGS project will be discussed as part of the action within this EIS. Based on the existence of specific contractual terms within three signed PPA and the quantity and quality of information available on the ISEGS project, the CPUC and the BLM determined that the EITP will be discussed in this document as part of the Whole of the Action (pursuant to CEQA) and as a cumulative action (pursuant to NEPA).

1.1.2.3 Incorporation by Reference of the ISEGS FSA/DEIS

CEQA Guidelines 15150(a) state that an EIR "may incorporate by reference all portions of another document which is a matter of public record and which is generally available to the public." Similarly, under NEPA, CEQ regulations (1502.21) direct agencies to incorporate material into an EIS by reference "when the effect will be to cut down on bulk without impeding agency and public review of the action." These CEQ regulations specify that "the incorporated material shall be cited in the statement and its content briefly described." Because ISEGS is already undergoing environmental review with the CEC and the BLM, this EIR/EIS will not reevaluate the environmental impacts of the ISEGS project. Rather, this EIR/EIS will summarize the findings of the ISEGS FSA/DEIS. However, in the interest of fully disclosing the environmental impacts of the "Whole of the Action / Cumulative Action," this document assesses not only the effects of the EITP but the effects of the EITP combined with the effects of the ISEGS project. Therefore, all the potential effects of the EITP, the ISEGS project, and the combined effects of the two projects will be disclosed; the public and the agencies will be informed, and the agencies will be assisted in making their decisions using the best information available.

A complete description of the ISEGS project components, location, and construction is included in the "Whole of the Action / Cumulative Action" subsection of Chapter 2, "Project Description." This information reflects the original ISEGS project layout for which BrightSource applied; subsequent revisions included a reduced project footprint and layout alternative. This document takes the more conservative approach of including the larger project footprint in an effort to disclose the greatest possible environmental effects of the ISEGS project. Information on the environmental setting (baseline), applicable regulations, and environmental impacts of ISEGS are discussed under the "Whole of the Action / Cumulative Action" subsection for each resource evaluated in Chapter 3, "Affected Environment / Environmental Impacts."

1.2 Purpose, Need, and Objectives

This section discusses the purpose, need, and objectives of the proposed project as required for CEQA and NEPA documents to facilitate an analysis of reasonable alternatives. CEQA and the CEQA Guidelines require a clearly written statement of objectives to guide the lead agency in developing a reasonable range of alternatives and aid decision-makers in preparing findings or a statement of overriding considerations. CEQA specifies that the statement of objectives should include the underlying purpose of the project (Section 15126.6(a)). NEPA guidance published by the CEQ states that the purpose and need "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed action" (40 CFR §1502.13).

1.2.1 Applicant's Objectives

Under Sections 210 and 212 of the Federal Power Act (16 United States Code [USC] § (i) and (k)) and Sections 3.2 and 5.7 of CAISO's Tariff, the applicant is obligated to interconnect and integrate power generation facilities into its electric transmission system. This requirement includes renewable power in additional to traditional generation sources.

As stated by the applicant, the purpose of the proposed project is to interconnect and deliver up to 1,400 megawatts (MW) of solar energy that is expected to be developed at the Ivanpah Valley area. The existing Eldorado substation and regional transmission lines cannot accommodate the additional power that would be generated by the anticipated solar projects in the Ivanpah Valley. The applicant has proposed to construct the EITP to connect planned renewable energy sources to the CAISO-controlled transmission grid. The CAISO plans and approves transmission interconnections and maintains an Interconnection Request Queue of generation projects that have requested access to the transmission grid. The EITP would also improve line reliability such that it would comply with North American Electric Reliability Corporation (NERC) standards.

The applicant identified the following additional objectives for the project in the Proponent's Environmental Assessment (PEA):

1. Reliably interconnect new solar generation resources in the Ivanpah Valley area and help the applicant and other California utilities comply with California's RPS in an expedited manner
2. Comply with all applicable reliability planning criteria required by NERC, the Western Electricity Coordinating Council (WECC), and the CAISO
3. Construct facilities in an orderly, rational, and cost-effective manner to maintain reliable electric service by minimizing service interruptions during construction
4. Maximize the use of existing transmission line ROWs to minimize effects on previously undisturbed land and resources
5. Minimize environmental impacts through selection of routes, tower types, and locations
6. Where existing ROW is not available, use the shortest feasible route that minimizes environmental impacts
7. Meet project needs in a cost-effective and timely manner

Table 1-1 lists the planned solar and wind energy projects in the Ivanpah Valley area by position in the CAISO queue. Projects in the CAISO queue have requested to connect to the CAISO-controlled electric grid; for each of these projects, the CAISO conducts an interconnection study, which includes analyses of issues such as short circuit/fault duty, steady state (thermal and voltage), and stability (CAISO 2008). CAISO is transitioning to a new interconnection review and approval process. Interconnection requests filed prior to June 2, 2008, are processed according to the Large Generator Interconnection Procedures (LGIP) serial study process; interconnection requests filed after that date must be submitted during one of two annual Queue Cluster Windows. Table 1-1 includes projects under the traditional sequential process as well as projects included under the cluster queue process.

1.2.2 Background Information

As noted above, the purpose of the proposed EITP is to reliably interconnect new solar generation sources in the Ivanpah Valley area in compliance with California's RPS. To allow for a better understanding of the purpose and objectives of the EITP, the following discussion provides background information on the RPS and renewable generation development, SCE's obligation to provide transmission capacity for renewable energy sources, and needed improvements to SCE's transmission system.

California Renewables Portfolio Standard

Senate Bill 1078, passed in 2002, established the California RPS, which requires utilities such as the applicant to increase sales of electricity produced by renewable energy sources including solar facilities by a minimum of 1 percent per year, with a goal of 20 percent of total sales by the year 2017. However, the CPUC, the CEC, and the California Power Authority adopted the Energy Action Plan (EAP), which pledged that the agencies would meet an accelerated goal of 20 percent by the year 2010. As a result, the California Senate passed Senate Bill 107 to be consistent with the EAP, and accelerated the implementation of the RPS, requiring utilities to meet the goal of 20 percent renewable energy generation by 2010. The Ivanpah Valley area has been identified as having high potential for solar resource development. The proposed project would allow the applicant to increase its percentage of renewable resources in its energy portfolio and aid the State of California in reaching the goals of the RPS.

Currently, CPUC jurisdictional load-serving entities, including SCE, obtain approximately 13.7 percent of their delivered energy from renewable resources ["load" is electricity demand]. The CPUC has approved PPAs totaling over 7,000 MW, primarily new generation facilities in the CAISO interconnection queue. With the addition of 7,000 MW of renewable generation, CPUC jurisdictional entities would achieve the 20 percent RPS target (CAISO 2009).

California Integrated Energy Policy Report

According to the CEC 2008 Integrated Energy Policy Report (IEPR) Update, the Consortium for Electric Reliability Technology Solutions/Electric Power Group (CERTS/EPG) presented the results of a study on transmission and operations issues related to renewable integration to the IEPR staff at a July 23, 2008, workshop. In their presentation, CERTS/EPG reported that California must integrate 20,000 MW of new renewable energy to meet the statewide 33 percent renewables target by 2020. By 2030, this amount would expand to 23,000 MW, since the overall demand for energy is expected to continue to grow (CEC 2008).

Renewable Energy Transmission Initiative Report

The Renewable Energy Transmission Initiative (RETI) report identifies a conceptual statewide transmission grid, as well as renewable energy zones both within and outside of California, with the goal of expediting development and approval of transmission infrastructure for renewable energy. The RETI report was prepared by a committee composed of the CPUC, the CEC, the CAISO, and publicly owned utilities (CPUC et al. 2009).

The report establishes and ranks California Renewable Energy Zones (CREZs) based on a combination of factors, including generation potential, permitting feasibility, interconnection points into the grid, and the cost of generation and transmission. Phase 2 of the report, published in September 2009, evaluates potential renewable energy generation from outside California, including Nevada (CPUC 2009). The EITP would be located in the Mountain Pass CREZ.

Executive Order 13212

Executive Order 13212, dated May 18, 2001, mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."

Energy Policy Act of 2005

The federal Energy Policy Act (EPAct) of 2005 requires the DOI, the BLM's parent agency, to approve at least 10,000 MW of renewable energy on public lands by 2015. Currently, proposed renewable energy projects amounting to 1,900 MW of electricity are on file with the BLM for the Ivanpah Valley area. Many of these are noted in Table 1-1. The EITP would allow for the transmission and distribution of energy from these renewable generation facilities. Based on the federal policies noted above, the BLM is obligated to consider the EITP proposal expeditiously to accommodate the potential increase in power generation that, if approved, would come on line after 2010.

Section 368 of the Energy Policy Act

Section 368 of the EPAct requires the DOI, in conjunction with the departments of agriculture (USDA), energy (DOE), commerce (DOC), and defense (DOD), to designate pipeline and electric transmission corridors for the 11 contiguous western states and establish procedures to expedite the review of projects that would be located within established energy corridors. Section 368 specifically notes the need for upgraded and expanded electric transmission infrastructure in the western United States to improve reliability, relieve congestion, and improve the capacity of nationwide electric transmission.

In response to Section 368 of the EPAct, the BLM and the DOE prepared the West-wide Energy Corridor Programmatic Environmental Impact Statement (WWEC PEIS) with the USDA, Forest Service, DOD, and the U.S. Fish and Wildlife Service (USFWS) participating as cooperating agencies (BLM and DOE 2009). The report establishes energy corridors on public lands in the western United States and serves as an amendment to existing management plans, including the California Desert Conservation Area (CDCA) Plan (BLM 1980) and the Las Vegas Resource Management Plan (RMP; BLM 1988). Corridors established by the WWEC PEIS were developed by federal agency staff and informed by the comments and suggestions of the public. The corridors met specific criteria, including location on federal lands, ability to establish connectivity with the energy grid, feasibility, legal and regulatory compliance, and compatibility with local BLM land use plans.

The Final WWEC PEIS reviewed a number of documents to establish the need for expansion of and improvements to the existing western electricity grid and to discuss the particular difficulties of reliably meeting the increasing electricity demands in the western United States. The WWEC PEIS cited the Western Governor's Association in recognizing that supply centers in the western United States are often located far from load centers (such as cities) and in discussing the difficulty of transmission planning when multiple agencies and/or states are involved. The difficulty of planning and permitting long-distance transmission was also discussed in the North American Electricity Reliability Corporation (NERC) forecasts, which highlighted the deficiencies of the existing transmission infrastructure, particularly in constrained areas such as California, and stressed that the need for long-distance transmission is of particular importance for renewable energy resources and for California's ability to meet its RPS (discussed above in Section 1.2.2). The WWEC PEIS also cited the DOE's National Electric Transmission Congestion Study, which was prepared in response to Section 1221(a) of the EPAct and analyzed the transmission grid to determine locations where reliability and capacity were being impacted by congestion. The report cited several factors as contributing to congestion, including increased energy demands and lack of planning and investment in the transmission grid over the past decade. The only critical congestion area in the western United States identified by the DOE study was southern California (DOE 2006).

Secretarial Order 3285

Secretarial Order 3285, issued by the Secretary of the Interior on March 11, 2009, establishes the policy of "encouraging the production, development, and delivery of renewable energy" as one of the DOI's "highest priorities."

1.2.3 State Purpose and Need

Pursuant to Article XII of the Constitution of the State of California, the CPUC is charged with regulation of investor-owned public utilities, including SCE. The CPUC is the lead state agency for CEQA compliance in evaluating the project and is responsible for issuing a decision on the applicant's CPCN application. The purpose of this EIR is to disclose any environmental impacts associated with the proposed project and its alternatives and to assist the agency in determining whether to issue a CPCN for the EITP.

The need for the proposed project is driven by state requirements for the interconnection and distribution of renewable energy. The CEC has identified lack of transmission infrastructure as a barrier to accessing remote renewable energy resources (CEC 2007).

1.2.4 Federal Purpose and Need

The BLM's purpose and need for the EITP is to respond to SCE's application under Title V of the Federal Land Policy and Management Act (FLPMA; 43 USC 1761) for a ROW grant to construct, operate and decommission a 230-kilovolt (kV) transmission line, substation, and associated infrastructure in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to SCE for the proposed EITP. The decision the BLM will make is whether or not to grant a ROW, and if so, under what terms and conditions.

Land Use Plan Conformance

The majority of the EITP would be located on federal land managed by the BLM. All actions approved or authorized by the BLM must conform to the existing land use plan where one exists (43 CFR 1610.5-3, 516 DM 11.5).The land use plans applicable to the project are the BLM CDCA Plan of 1980, as amended, and the Las Vegas RMP of 1998, as amended.

The EITP would be in conformance with both applicable BLM land use plans. The CDCA Plan includes an Energy Production and Utility Corridor Element, which designates a regional network of utility planning corridors. Within California, the proposed project would replace an existing ROW within established energy corridors that allow for electrical transmission of 161-kV and above. The project is in conformance with the Las Vegas RMP Record of Decision as it states that all public lands within the planning area, except as stated in RW-1-c through RW-1-g, are available at the discretion of the agency for ROWs under the authority of the Federal Land Policy Management Act. The location of the proposed project in relation to established energy corridors is shown in Figure 1-2.

Because the transmission systems are an allowable use of the land in established energy corridors, the proposed project does not conflict with any applicable land use plans. Additionally, as described above, the proposed project would be in conformance with WWEC PEIS, which amended the CDCA Plan and the Las Vegas RMP.

Other Agency Plans. For portions of the proposed project or its alternatives that would be located on land managed by local agencies, all applicable plans, policies, and regulations are discussed in Section 3.9, "Land Use," of this document, as well as within other resource sections, as applicable.

1.2.5 Joint State and Federal Objectives

Based on the content of the PEA and related federal and state objectives, the CPUC and the BLM have abridged the objectives for the proposed project to the following:

1. To connect renewable energy sources in the Ivanpah Valley area in compliance with Executive Order 13212, EPAct, the Federal Power Act, California Senate Bill 1078, and California Senate Bill 107;
2. To improve reliability in compliance with applicable standards, including NERC, WECC, CAISO, and SCE standards; and
3. To maximize the use of existing ROW and designated utility corridors to minimize impacts on environmental resources.

1.3 Other Agency Use of the EIR/EIS

Several other agencies will rely on information in this environmental document to inform them in their decisions regarding issuance of specific permits related to project construction or operation. On the state level, agencies such as the California and Nevada Departments of Transportation, California Department of Fish and Game (CDFG), the

Nevada Division of Wildlife, Regional Water Quality Control Boards, the Department of Conservation and National Resources, and the California and Nevada Offices of Historic Preservation will be involved in reviewing and/or approving the proposed project. In addition to the BLM, federal agencies with potential reviewing and/or permitting authority include the U.S. Army Corps of Engineers (USACE), the USFWS, the Advisory Council on Historic Preservation (ACHP), and the Occupational Safety and Health Administration (OSHA).

No local discretionary (e.g., use) permits are required because the CPUC has preemptive jurisdiction over the construction, maintenance, and operation of the applicant's facilities in California. The applicant would still have to obtain all ministerial building and encroachment permits from local jurisdictions, and the CPUC's General Order (GO) 131-D requires the applicant to comply with local building, design, and safety standards to the greatest degree feasible to minimize project conflicts with local conditions. The CPUC's authority, however, does not preempt special districts, such as the Mojave Desert Air Quality Management District or other state agencies or the federal government.

In Nevada, construction of a utility facility, defined as a transmission line that is 200 kV or more, requires a permit by the Public Utilities Commission of Nevada (PUCN) under the Utility Environmental Protection Act (UEPA) according to Nevada Revised Statutes (NRS) 704.820 through 704.900. However, replacement of an existing facility with a like facility, as determined by the PUCN, does not constitute construction of a utility facility (NRS 704.865).

Federal, state, and local permits and approvals would be required before construction and operation of the project. A list of the major permits, approvals, and consultations required is presented in Table 1-2. The applicant would be responsible for obtaining all permits and approvals required to implement the project.

1.4 Overview Permitting and Environmental Review Process

1.4.1 Permitting Process

The applicant has filed an application for a CPCN with the CPUC as well as an application for a ROW grant from the BLM. This section describes the permitting processes of the respective agencies.

1.4.1.1 CPUC Process

Under California Public Utilities (PU) Codes Section 1001 et seq., investor-owned utilities such as SCE are required to obtain a permit from the CPUC for construction of certain specified infrastructure, including transmission lines over 50 kV and substations. Due to the size and components of the proposed transmission line, the proposed project requires a CPCN. Application for a CPCN triggers two concurrent processes: an environmental review pursuant to CEQA, and the review of project need and costs pursuant to PU Code Sections 1001 et seq. and GO 131-D.

The process of environmental review includes preparation of this document. The process of project costs and need review includes the following procedures and milestones: allowing parties to respond to or protest an application, conducting a pre-hearing conference, publishing a scoping memo, conducting public participation hearings, filing testimony, conducting evidentiary hearings, and publishing briefs. The results of both processes are considered in the CPUC's proposed and final decisions.

1.4.1.2 BLM Process

The proposed ROW application must satisfy the requirements of both the FLPMA and NEPA. FLPMA provides BLM's primary management direction to administer the public lands under multiple use and sustained yield principles based on land use allocations made in comprehensive land use plans. For the subject lands, BLM developed land use plans under FLPMA to identify which lands within the CDCA and in Nevada are appropriate for transmission line ROWs. The BLM will use the NEPA process to evaluate the direct, indirect, and cumulative impacts of the specific proposal and a range of reasonable alternatives. BLM is also required to make a land use conformity determination. This analysis is explained in more detail in Section 3.9 of this document, "Land Use."

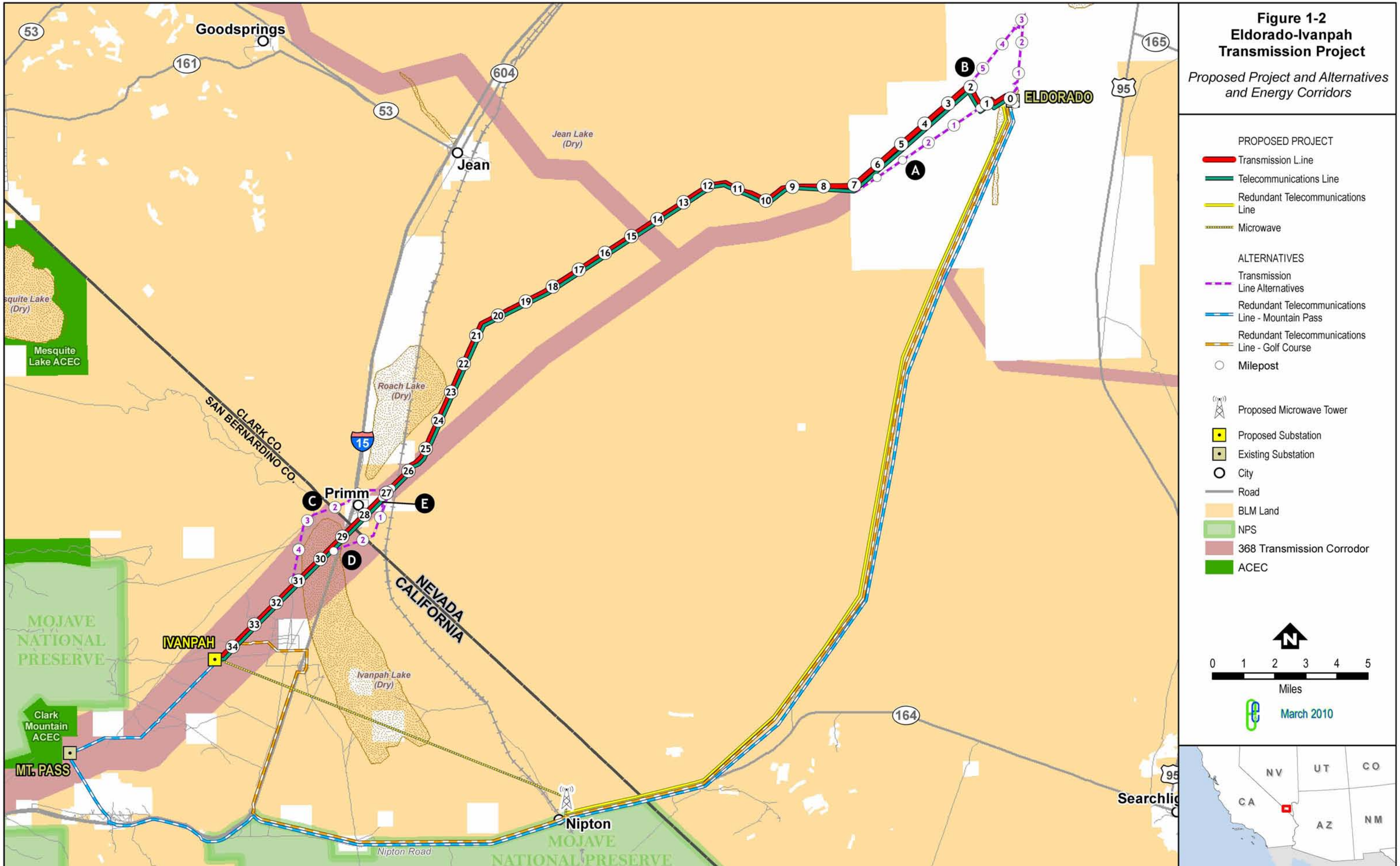
Goodsprings
Jean
Jean Lake (Dry)
Primm
Nipton
Searchlight
ELDORADO
IVANPAH
MT. PASS
Mesquite Lake (Dry)
Mesquite Lake ACEC
Roach Lake (Dry)
Ivanpah Lake (Dry)
Clark Mountain ACEC
MOJAVE NATIONAL PRESERVE
CLARK CO.
SAN BERNARDINO CO.
NEVADA
CALIFORNIA
Nipton Road
A
B
C
D
E
Figure 1-2
Eldorado-Ivanpah Transmission Project
Proposed Project and Alternatives and Energy Corridors
PROPOSED PROJECT
Transmission Line
Telecommunications Line
Redundant Telecommunications Line
Microwave
ALTERNATIVES
Transmission Line Alternatives
Redundant Telecommunications Line - Mountain Pass
Redundant Telecommunications Line - Golf Course
Milepost
Proposed Microwave Tower
Proposed Substation
Existing Substation
City
Road
BLM Land
NPS
368 Transmission Corrodor
ACEC
0 1 2 3 4 5
Miles
March 2010
NV
UT
CO
CA
AZ
NM

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Table 1-2 Major Permits, Approvals, and Consultations

Agency	Required Permit or Approval	Agency Action
Federal Agencies		
Bureau of Land Management	Right-of-Way Grant	Consider granting rights-of-way for portions of the proposed project that would encroach on BLM-administered lands.
	Notice to Proceed	Following issuance of the right-of-way grant and approval of the Construction Operation and Maintenance Plan, consider issuance of a Notice to Proceed with development and mitigation activities.
Advisory Council on Historic Preservation	Section 106 Consultation, National Historic Preservation Act	Has the opportunity to comment if the proposed project may affect cultural resources that are either listed on or eligible for listing on the National Register of Historic Places.
United States Fish and Wildlife Service	Compliance with California and federal Endangered Species Acts and the U.S. Fish and Wildlife Service; Section 7 consultation and biological opinion	Consider lead agency's finding of impact on federally listed or proposed species. Provide Biological Opinion if the proposed project is likely to adversely affect federally listed or proposed species or their habitats.
	Fish and Wildlife Coordination Act	Provide comments to prevent loss of and damage to wildlife resources.
U.S. Army Corps of Engineers	Clean Water Act §404 permit (nationwide or individual)	Consider issuance of a Clean Water Act §404 permit (nationwide or individual) for discharge of dredged or fill material for construction of the transmission line across rivers, streams, and wetlands. Consider issuance of a Nationwide Permit #12 (Utility Line Activities) or Nationwide Permit #18 (Minor Discharges).
Federal Aviation Administration	Hazard/No Hazard Determination (14 CFR Part 77)	Issue a hazard/no hazard determination for any structure over 200 feet or within 20,000 feet of a public airport.
California State Agencies		
California Public Utilities Commission	Certificate of Public Convenience and Necessity	Consider issuing a Certificate of Public Convenience and Necessity to construct and operate the project.
California Department of Fish and Game	Compliance with California and Federal endangered species acts and similar regulatory requirements; development of final biological opinions by the California Department of Fish and Game, the Nevada Department of Wildlife, and the U.S. Fish and Wildlife Service	Review the proposed project for potential impacts to state-listed species.
	California Native Plant Protection Act	Review of mitigation agreement and mitigation plan for plants listed as rare.
	Streambed Alteration Agreement (Section 1603 of the California Fish and Game Code)	Consider issuance of Section 1603 Streambed Alteration Agreement for crossing of any lake or stream or other drainages by trenching.
California Regional Water Quality Control Board (Santa Ana Region 8;	Section 401 Water Quality Certification Permit	Consider approval of certification of activities related to dredge and fill materials.

Table 1-2 Major Permits, Approvals, and Consultations

Agency	Required Permit or Approval	Agency Action
Colorado River Basin Region 7)	National Pollutant Discharge Elimination System (NPDES) Permit or Report of Waste Discharge (RWD)	Consider issuance of a National Pollutant Discharge and Elimination System permit or Report of Waste Discharge permit for discharge of hydrostatic test water or construction dewatering to surface waters or onto dry lands, respectively.
California State Water Resources Control Board	General Construction Activity Storm Water Permit for construction activities on a project of 5 acres or larger	Consider authorization for stormwater discharges to surface waters, pursuant to a General Construction Activities Permit for Construction.
	Temporary permit to use appropriate water	Consider issuance of temporary permit for use of water from a surface stream or other body of water for use in dust suppression or project maintenance activities.
California Department of Transportation	Encroachment Permit	Consider issuance of permits for any activities affecting state highways or within highway easements, including placement of transmission lines across, within, under, or over statement highway rights-of-way.
California State Historic Preservation Office	Section 106 Consultation, NHPA	Consult with the BLM, the applicant, appropriate land management agencies, and others regarding proposed project activities that may affect cultural resources.
Mojave Desert Air Quality Management District	Dust Control Plan	Consider issuance of temporary permit for construction activities causing fugitive dust.
Nevada State Agencies		
Nevada Department of Wildlife	Compliance with Nevada Revised Statutes and regulations that affect wildlife issues	Authorization for certain special status and protected species (e.g., desert tortoise).
Nevada Department of Transportation	Encroachment Permit	Consider issuance of permits for any activities affecting state highways or within highway easements, including placement of transmission lines across, within, under, or over statement highway rights-of-way.
Nevada Department of Environmental Protect ion, Water Pollution Control Board	National Pollutant Discharge Elimination System Permit or Report of Waste Discharge	Consider issuance of NPDES Permit or RWD for discharge of water used for dust suppression or operation to surface waters or onto dry lands.
Public Utilities Commission of Nevada	Utilities Environmental Permitting Act for installation of a major utility in the State of Nevada	The PUCN is not involved at this stage of the process but the CPUC will be consulting with the PUCN on the project.

The BLM review process includes the following steps: the applicant files an application and Plan of Development; the BLM conducts an analysis under NEPA to disclose impacts and mitigation; the BLM publishes a Draft EIS and allows a 45-day comment period; the BLM responds to comments in a Final EIS; and the BLM publishes a Record of Decision with decision to approve, approve with mitigation, or deny the application. The opportunities for public comment during this process are described below.

1.4.2 Opportunities for Public Review and Comment

This section outlines the opportunities for public review and comment on the Draft EIR/EIS. The CPUC and the BLM rely on public input to help identify key issues, develop a range of alternatives, refine the environmental analysis, and develop appropriate mitigation. Figure 1-3 shows an overview of the environmental review process and highlights opportunities for public involvement.

1.4.2.1 Agency and Public Scoping

Following publication of the Notice of Preparation and the Notice of Intent on July 23 and July 27, 2009, respectively, the EITP 30-day public scoping period began. The scoping period officially closed on August 26, 2009, 30 days after the publication of the Notice of Intent. Comments made during the scoping period were submitted at the scoping meetings and via facsimile, mail, or email. These comments were incorporated into this Draft EIR/EIS, as noted throughout the document.

During this 30-day scoping period, the CPUC and the BLM also engaged a number of public agencies. A detailed report on the public participation and agency notification is included in Chapter 7, "Consultation and Coordination."

1.4.2.2 Comments on the Draft EIR/EIS

In accordance with CEQA (CEQA Guidelines 15087) and NEPA (CEQ Guidelines 40 CFR 1056.9), publication of this Draft EIR/EIS initiated a 45-day public review and comment period. During this public review period, a public meeting will be held to receive public comment on the Draft EIR/EIS. Public meetings will be announced at least 14 days in advance through mailings and news releases. Comments on the Draft EIR/EIS will be considered in the Final EIR/EIS, and may be submitted at the public meeting or via facsimile, mail, or email. Contact information for commenting on this document is as follows:

Mail: Eldorado–Ivanpah Transmission Project
c/o Ecology and Environment, Inc.
130 Battery Street, Suite 400
San Francisco, CA 94111

Email: Ivanpah@ene.com

Phone: 877-478-4686
Fax: 415-981-0801

More information can be found on the EITP website: www.cpuc.ca.gov/environment/info/ene/ivanpah/ivanpah.html.

Correspondence related to review of the Draft EIR/EIS and public hearing will be included as an appendix to the Final EIR/EIS. Substantive comments received on this Draft EIR/EIS will be considered in finalizing the document, and responses to comments will be provided in an appendix to the Final EIR/EIS.

1.5 Reader's Guide to the Document

This section identifies the organization of the EIS/EIR and specifies the surveys and information used in its preparation.

1.5.1 Organization of the EIR/EIS

The EIR/EIS is organized as follows:

Executive Summary: A summary of the description of the proposed project, alternatives, the environmental impacts of the project, and mitigation measures developed to minimize or avoid significant impacts.

1. Introduction: An overview description of the project, including alternatives; an explanation of the purpose of, need for, and objectives of the project; an explanation of agency roles and usage of the document; an overview of the joint CEQA/NEPA process; and a guide for public usage and understanding of the document.

2. Description of Alternatives and the Proposed Project: A detailed description of the proposed project and all alternatives, including the No Project Alternative.

3. Affected Environment/Environmental Analysis: For each resource area, a detailed description of the existing, affected environment; a description of all applicable regulations; an analysis of the impact of the project and all alternatives; a discussion of mitigation measures that would reduce or avoid impacts; an analysis of the environmental impacts of the "Whole of the Action" pursuant to CEQA; and an analysis of the environmental impacts of the "Cumulative Action" pursuant to NEPA.

4. Comparison of Alternatives: An explanation of the screening process used to develop the alternatives considered in the document and eliminate alternatives not carried forward in the environmental analysis, and a comparative discussion of the proposed project and all alternatives.

5. Cumulative Analysis: An analysis of the project's potential to contribute to cumulatively significant impacts.

6. Other Environmental and Regulatory Considerations: A discussion of the project's compliance with applicable federal regulations and policies and an analysis of other considerations, including long-term and growth-inducing impacts.

7. Consultation and Coordination: An overview of the public consultation process, including agency consultation, and a list of technical staff involved in the preparation of the document.

8. References: Bibliographical information for the sources cited in the document.

1.5.2 Surveys, Studies, and Other Documents Referenced in the EIR/EIS

This EIR/EIS was prepared using information provided by the applicant as well as information contained in technical reports and studies conducted to provide an environmental baseline against which to measure the potential environmental impact of the EITP. This EIR/EIS also notes the applicable laws, policies, and plans that were reviewed in assessing the project's regulatory compliance.

The applicant submitted a PEA with the application to the CPUC on May 28, 2009. The PEA included the applicant's purpose and need and a detailed description of the proposed project and all alternatives considered by the applicant. The environmental analysis portion of the PEA assesses impacts on 15 resource areas that are expected in an EIR/EIS. In addition to the information included in the PEA, the applicant has submitted responses to specific questions asked by the BLM and the CPUC, including requests for additional information or requests to clarify information already submitted.

Technical reports were prepared to facilitate the analyses of certain issues and resources: aesthetics, air quality, biological, geological, minerals and soils, hydrology and water quality, noise, and cultural resources. Because of the level of technical detail in these reports, they have been referenced in the resource sections and included as appendices to the document.

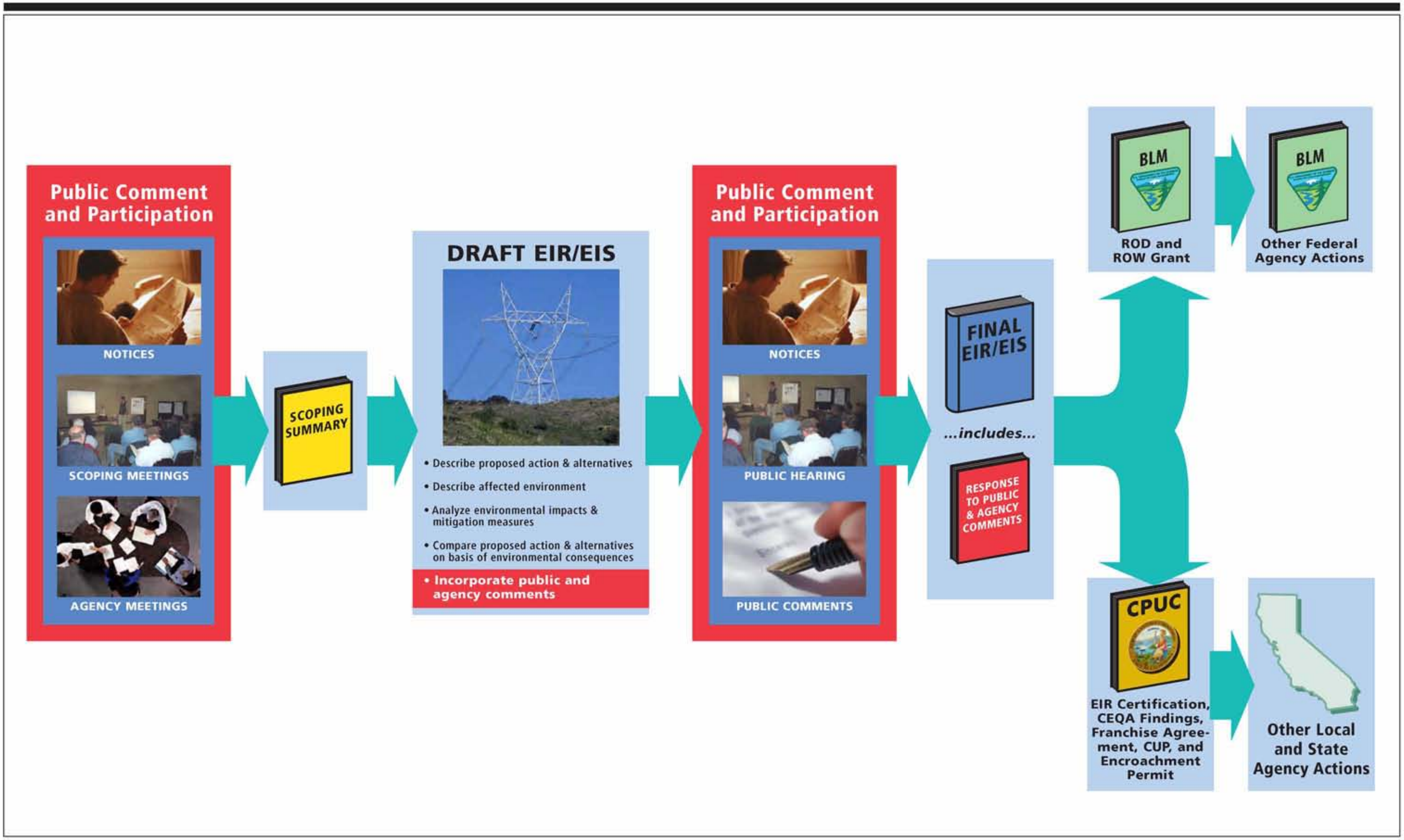

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Figure 1-3

Opportunities for Public Review and Comment

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Each of the resource sections also includes a description of all applicable regulations. These include any federal, state, or local laws, plans, or policies relevant to the resource area. For example, Section 3.4, "Biological Resources," provides an overview of the CDCA Plan, the BLM's plan for the portion of the project that would be in California, and the Las Vegas RMP, which is the plan for the portion of the project that would be in Nevada. Section 3.4 also considers any applicable Multiple Species Habitat Conservation Plans, the federal Endangered Species Act, the Clean Water Act, the Migratory Bird Treaty Act, the California Endangered Species Act, and the CDFG code, including the California Native Plant Protection Act. All federal, state, and local plans policies and regulations are publicly available.

For the Whole of the Action / Cumulative Action analysis within this document, the CPUC and the BLM incorporated the analysis performed by the CEC and the BLM for the ISEGS project. The ISEGS FSA/DEIS was published November 4, 2009. This document is the CEC functional equivalent of a CEQA document and satisfies the NEPA requirements of the BLM. Because this document was prepared using the format and criteria designed by the CEC to fulfill CEQA, there may be some differences in methodology, significance criteria, and overall organization of resource areas between this document and the CEC and BLM analysis of the ISEGS project. For example, the ISEGS FSA/DEIS analyzes impacts on soil and water together, whereas this EIR/EIS contains a hydrology and water quality analysis that is separate from the geology, soils, minerals, and paleontology analysis. Additionally, there are differences in style and approach between the two documents. For example, the ISEGS FSA/DEIS contains Conditions of Certification, which are similar to the mitigation measures required in this document; one key difference between the two is that the Conditions of Certification include compliance with applicable laws (such as water quality standards). For the analysis of the environmental impacts of the EITP, compliance with laws is considered required and, in most instances, compliance with applicable laws is not included as mitigation. However, despite any differences between the two documents, the CPUC and the BLM will not re-analyze the environmental impacts of the ISEGS project within this document, but will include them in Chapter 5 of this document for disclosure purposes and to assist the agencies in their decision making process.

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2. Description of Proposed Project and Alternatives

2.1 Introduction

This chapter describes in detail the Eldorado–Ivanpah Transmission Project (EITP) proposed by Southern California Edison (SCE; the applicant) and its alternatives. The purpose of the proposed project is to provide the transmission facilities necessary to interconnect with and deliver up to 1,400 megawatts (MW) of energy from renewable sources that is expected to be generated in the Ivanpah Valley area in compliance with federal and state requirements discussed in Chapter 1.

The proposed project would involve several types of transmission upgrades to connect renewable energy generated in the Ivanpah Valley area to the transmission grid controlled by the California Independent Service Operator (CAISO). A new 230/115-kilovolt (kV) Ivanpah Substation, a double-circuit 230-kV transmission line between the existing Eldorado Substation and the Ivanpah Dry Lake area to replace the existing 115-kV line, and a telecommunication system would be constructed. The reliability of the existing 115-kV transmission line would also be improved in compliance with the North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) planning criteria, the NERC reliability standards, and the applicant's standards. An overview map showing the location of the proposed project components and alternatives is provided in Figure 2-1.

Technical information about the proposed project in this chapter was provided by the applicant. All numbers referring to mileage, land disturbance, equipment, schedule, and workforce are based on preliminary engineering completed by the applicant in the Proponent's Environmental Assessment (PEA) as part of Application A.09-05-027, submitted on May 28, 2009, to the California Public Utilities Commission (CPUC).

In addition to considering the project as proposed by SCE, this Draft EIR/EIS analyzes the potential environmental impacts of a number of alternatives to the proposed project. The Bureau of Land Management (BLM) and the CPUC identified a full range of reasonable alternatives to systematically analyze and screen alternatives. The alternatives considered during the screening process include those proposed by the applicant as part of the design of the proposed project, those proposed by the lead agencies as part of environmental review, and ideas for potential alternatives suggested by agencies and the public during the 30-day EITP scoping period that began after publication of the Notice of Preparation and the Notice of Intent for the project. A total of 18 alternatives were analyzed in four major categories: system, transmission line routing, telecommunication, and technology. Alternatives that were determined to meet the CEQA/NEPA criteria agreed upon by the CPUC and the BLM were retained for full analysis in the Draft EIR/EIS.

This chapter first provides general transmission system information (Section 2.1.2) and further describes the proposed project (Section 2.2), starting with an overview of the core project features, including the different transmission lines, substations, and telecommunication system. In addition, it describes related renewable energy projects, as part of the CEQA Whole of the Action approach. Section 2.3 describes the major features of the EITP alternatives, including routing, telecommunication, and technology, and explains their selection as a result of the alternatives screening process. Sections 2.4 and 2.5 describe the construction techniques and operation and maintenance activities applicable to the proposed project and its alternatives. Lastly, Section 2.6 introduces the cumulative projects in the area to be further analyzed in Chapter 5 of this Draft EIR/EIS.

2.1.1 Transmission System Background Information

This section contains general information on transmission systems and defines technical terms used throughout this document. It is intended to help the non-technical reader understand the description of the proposed project and its alternatives by explaining how transmission systems operate and defining transmission system components.

2.1.1.1 Electric Transmission Systems Overview

Electric transmission systems deliver electricity to consumers from power generating facilities. Delivering large quantities of power from remote locations such as the Ivanpah Valley area to high-consumption developed areas requires several steps. High-voltage transmission lines deliver the electricity from the generating facility to a transmission substation. The transmission substation contains transformers, which lower the voltage of the electricity and distribute the power through numerous lower-voltage subtransmission lines. Subtransmission lines then deliver the power to distribution substations, which further lower the voltage and distribute the power through distribution lines to individual consumers (Figure 2-2).

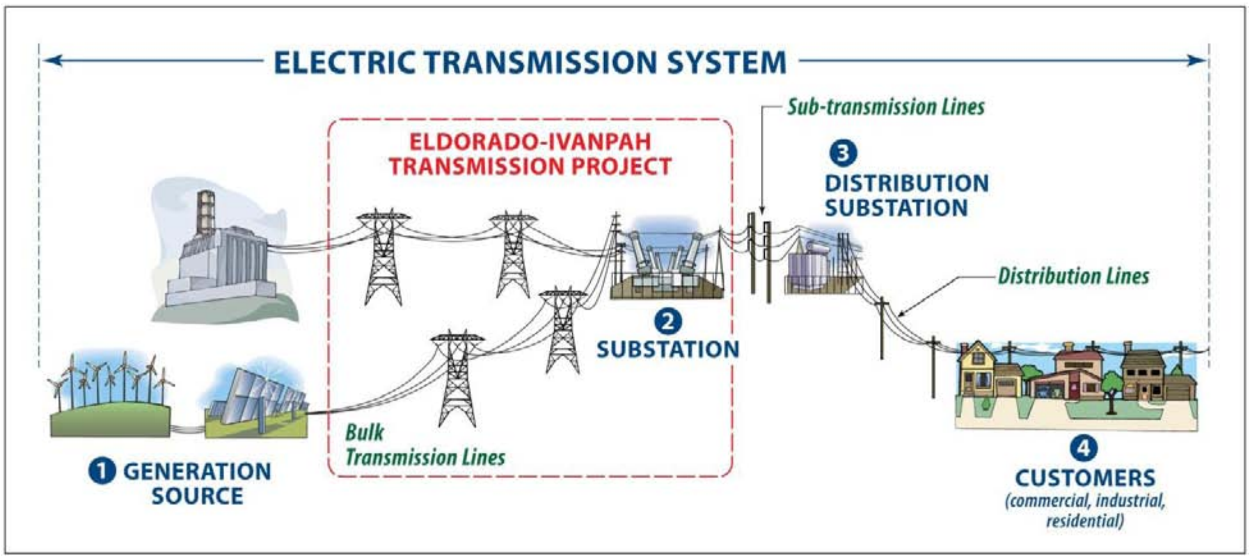

Figure 2-2 Electric Transmission System

Transmission systems also have a telecommunication component, which facilitates communication between substations and allows substations to be monitored for system safety and reliability. Safety and reliability standards require two redundant telecommunication paths, physically separated from each other, so that if the integrity of one path is compromised, the substations will be able to maintain communication. Telecommunication paths can be installed aboveground or in underground ducts, or they can use microwave towers.

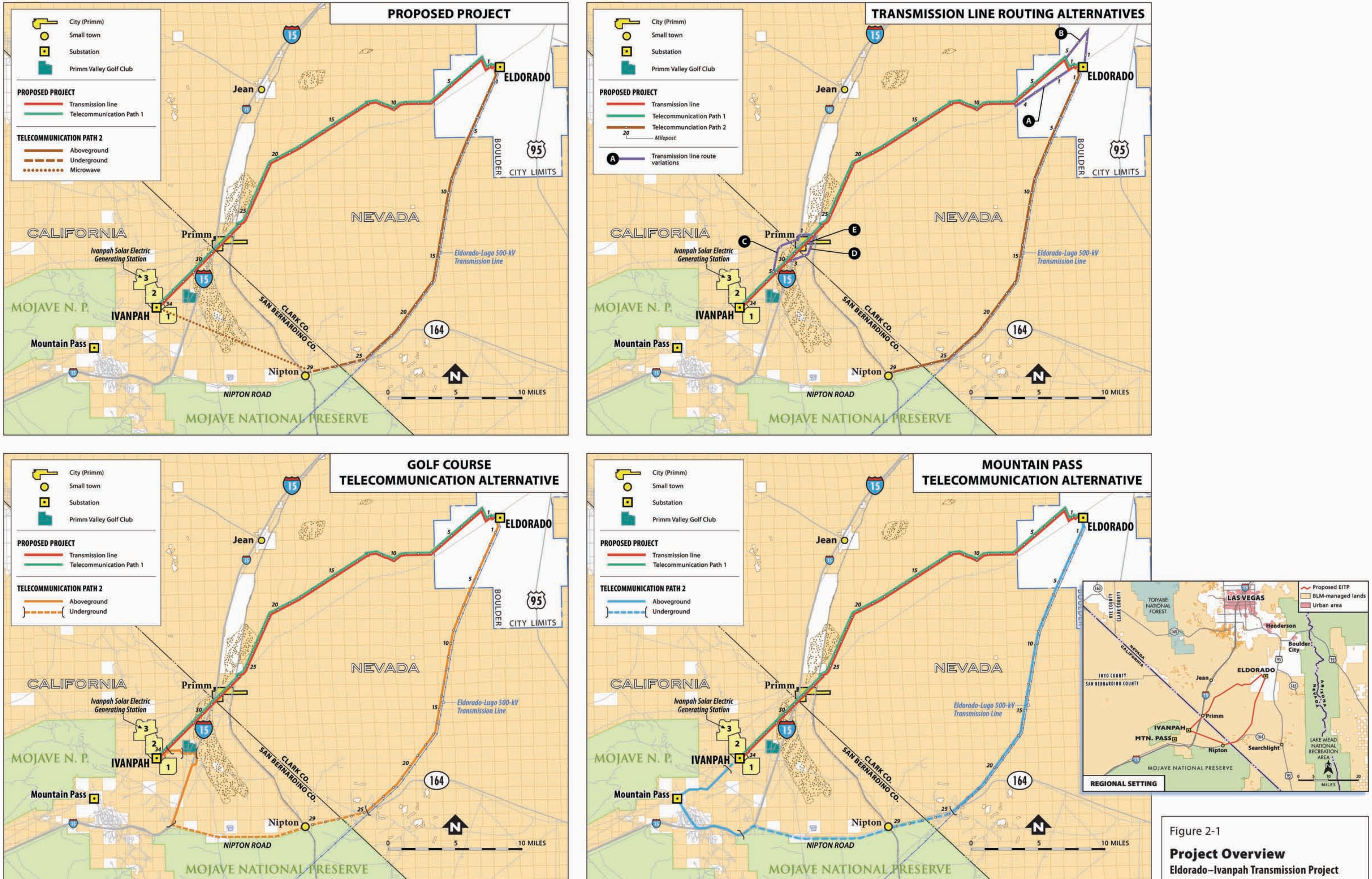

Figure 2-1

Project Overview

Eldorado–Ivanpah Transmission Project

2.1.1.2 Transmission System Components

Structures

Transmission lines can be installed underground in ducts or strung overhead on transmission structures. Underground transmission line installation is not proposed for this project. To select the appropriate structure for a transmission line, a number of factors are considered, including the technical feasibility of installing the structure in different terrains, the space available for the footprint of the structure, and aesthetic regulations or concerns. A single transmission line can be constructed on multiple types of structures. The structures discussed in this document include the following (see Section 2.2.1.3 for more detail):

- Lattice Steel Towers (LSTs), which consist of a steel framework that is bolted or welded together.
- Tubular Steel Poles (TSPs), which are hollow steel poles consisting of one or two pieces welded together.
- H-frame Structures, which can be constructed with a lattice steel structure or with tubular steel. They have two separate footprints as opposed to the standard single foundation.

Conductors and Insulators

Conductors are wires that carry the electrical current. They typically consist of many aluminum wires wrapped around a steel core for reinforcement, and are strung along the transmission structures from generation facility to substation or substation to distribution station or distribution station to electricity consumer.

To prevent the electrical current from transferring to the transmission structures, conductors are connected to transmission structures via glass, porcelain, polymer, or silicon insulators. Electrical current can flow freely through metal; non-metal insulators serve as a buffer between the aluminum and steel conductors and the steel transmission structures. The two common types of insulators are:

- Horizontal post-type insulators, which extend perpendicular to the transmission structure and support the conductor on the side of the structure.
- Suspension-type insulators, which suspend the conductor below the top of the structure.

Ground Wires

Ground wires, also called “shield wires” or “earth wires,” are placed on the tops of transmission structures above the conductors to guard against lightning strikes. Accordingly, they are also called overhead ground wires. Ground wires may also contain a fiber optic communication line so that a signal can be directed to a nearby substation if a problem occurs along a portion of the line; this type of cable is called an optical ground wire.

Circuits

Transmission lines consist of multiple conductors along which the electrical current flows; these are called circuits. Alternating current (AC) power transmission lines generally use a three-phase system for each circuit. The three-phase system consists of three conductors that carry electric current at the same frequency and different time cycles, thus providing power transfer capacity. Each phase typically consists of only one wire, but may contain two or more bundled conductors.

Transmission structures can be designed to support either single circuits or double circuits. Single-circuit structures are typically used for voltages up to 200 kV and can help reduce unwanted side effects such as noise and radio interference (Figures 2-5 and 2-8). Double-circuit structures support two circuits, each circuit consisting of three phases. Each phase typically consists of two or more conductors, to increase the line’s capacity for voltages over 200 kV (Figure 2-4).

2.2 Description of the Proposed Project

2.2.1 Core Project Description (NEPA/CEQA)

2.2.1.1 Project Overview and Location

The core project includes the transmission upgrades and associated transmission infrastructure and the alternatives included in the application submitted by SCE to the CPUC and the BLM. The applicant proposes to construct, operate, and maintain new and upgraded transmission facilities to deliver electricity from several solar energy facilities proposed to be built in the Ivanpah Valley area. The upgraded transmission lines would extend approximately 35 miles from southern Clark County, Nevada, to northeastern San Bernardino County, California. Approximately 28 miles of the project are in Nevada and 7 are in California (Figure 2-3, Table 2-1). The proposed project would include the following components:

- **Powerlines**
  - **Eldorado–Ivanpah Transmission Line –** A new double-circuit 230-kV transmission line, approximately 35 miles long, would be constructed between the existing Eldorado Substation in Nevada and the proposed Ivanpah Substation in California. It would replace a portion of the existing 115-kV transmission line that runs from Eldorado through Baker, Cool Water, and Dunn Siding to Mountain Pass[1]. The existing 115-kV transmission line that runs west of the proposed Ivanpah Substation to Mountain Pass Substation would remain unchanged.
  - **Subtransmission Line –** A proposed 600- to 800-foot-long addition to an existing 115-kV subtransmission line from a connection point on the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV line would connect the proposed Ivanpah Substation to the existing 115-kV subtransmission system.
  - **Distribution Lines –** A 1-mile extension of the existing Nipton 33-kV distribution line would be constructed with underground circuitry to provide light and auxiliary power to the proposed Ivanpah Substation. In addition, a new 4,300-foot segment from the existing Nipton 12-kV distribution line would be built to provide power to a proposed microwave telecommunications site.
- **Substations**
  - **Ivanpah Substation –** The proposed substation would be located in California near Primm, Nevada, and would serve as a connector hub for solar energy generated in the Ivanpah Valley area. The substation would include a mechanical and electrical equipment room and a microwave tower.
  - **Eldorado Substation –** Changes inside the existing Eldorado Substation would be made to accommodate the new Eldorado–Ivanpah 230-kV transmission line.
- **Telecommunication System**
  - Existing overhead ground wire would be replaced with optical ground wire on an approximately 25-mile section of the existing Eldorado–Lugo 500-kV transmission line.

[1] The Public Utilities Commission of Nevada (PUCN) has determined that the replacement of an existing facility with a like facility does not constitute construction of a utility facility (NRS 704.865).

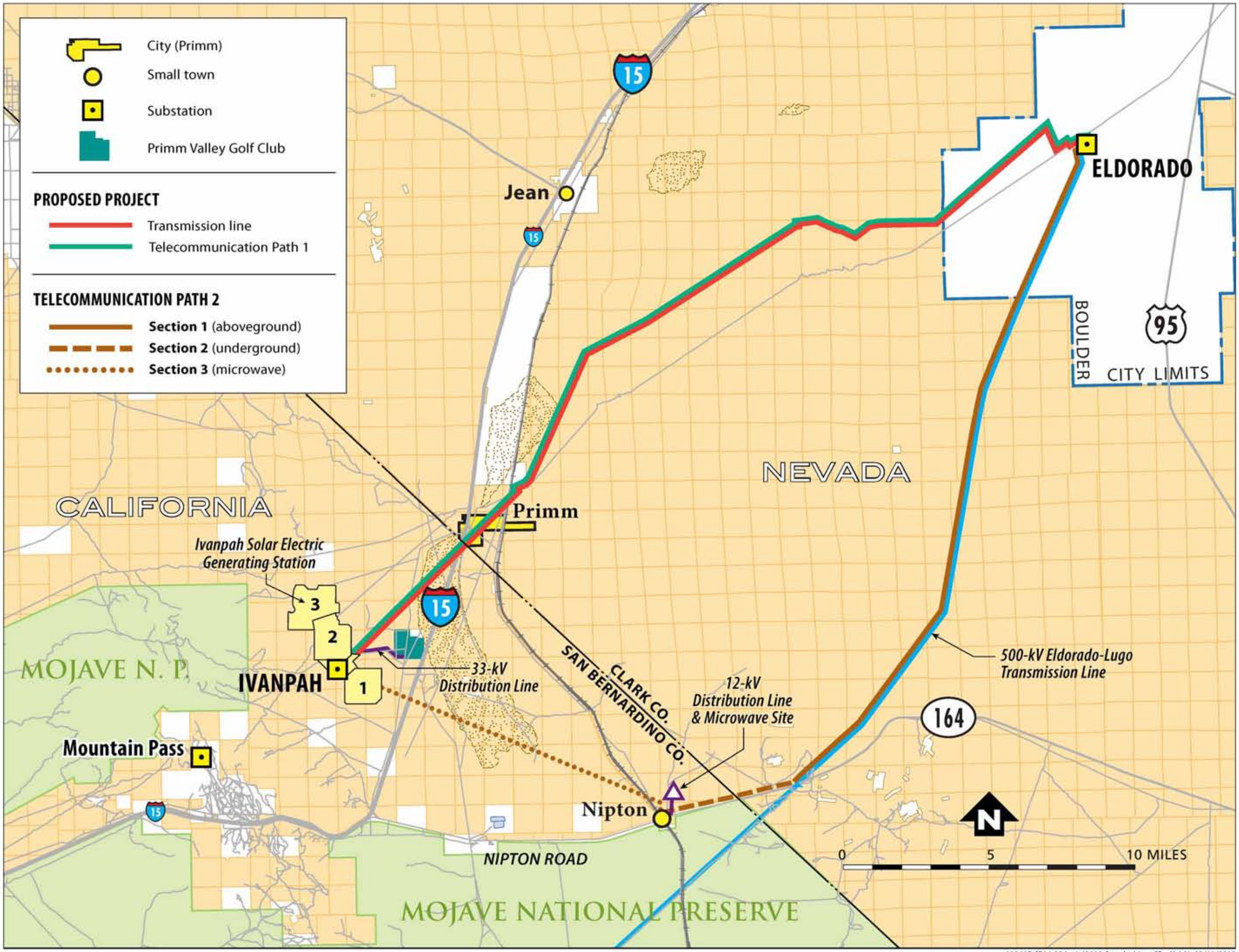

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Figure 2-3 **Proposed Project**

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- A 4.8-mile-long underground duct from the Eldorado–Lugo 500-kV transmission line to a proposed communication site in Nipton, California, would be installed.
- A microwave path (approximately 12 miles) between Nipton and the proposed Ivanpah Substation would be installed that would consist of two 180-foot-tall communication towers.
- A communications room would be installed in the mechanical and electrical equipment room (MEER) at the new Ivanpah Substation to house communication equipment.
- Telecommunication equipment would be installed at the Eldorado Substation.

Table 2-1 Summary of EITP Components

EITP Major Components		Features	Location/ Extension
Powerlines	Eldorado–Ivanpah Transmission Line	Double-circuit 230-kV line replacing a portion of the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line	Nevada; 28 miles California; 7 miles
	Subtransmission Line	Single-circuit 115-kV line connecting the Ivanpah Substation to the existing system	California; 600 to 800 feet
	Distribution Lines	Single-circuit 33-kV and 12-kV lines to provide power to Ivanpah Substation	California; 33-kV line: 1 mile 12-kV line: 4,300 ft
Substations	Ivanpah Substation	Connector hub for solar energy generated in the Ivanpah Valley area. Major components: • 230-kV and 115-kV switchracks • Mechanical and electrical equipment room • Microwave tower	California (near Primm, Nevada); 1,650 by 1,015 feet
	Eldorado Substation Upgrades	Extension of the existing yard to install two 230-kV line positions to accommodate the new double-circuit line.	Nevada (14 miles from Boulder City)
Telecommunication System	Fully diverse and redundant telecommunication paths: • optical ground wire • Combined optical ground wire and microwave	Support the SPS under specific outage contingencies, and the operation and monitoring of the substation and transmission line equipment. Overhead optical ground wire path: • Path 1: Overhead optical ground wire along the Eldorado–Ivanpah alignment • Path 2, Section 1: Overhead optical ground wire along the Eldorado–Lugo transmission line. Combined optical ground wire and microwave path: • Path 2, Section 2: Underground duct between Eldorado–Lugo 500-kV line and a new communication site in Nipton, California • Path 2, Section 3: Microwave telecommunication path between Nipton and the Ivanpah Substation.	Path 1 (overhead) Nevada; 28 miles California; 7 miles Path 2, Section 1 (overhead) Nevada; 25.5 miles Path 2, Section 2 (underground) California; 4.8 miles Path 2, Section 3 (microwave) California; 12 miles
	Communication facilities: • Telecommunication facilities at Eldorado Substation • Communication Room (MEER) at Ivanpah Substation	Support the SPS under specific outage contingencies, and the operation and monitoring of the substation and transmission line equipment.	

Key: kV = kilovolt; SPS = Special protection system

Construction of the EITP components would also involve the temporary use of areas and facilities on public and private lands for equipment and material storage, structure assembly and erection, conductor pulling and tensioning, helicopter landing, and other uses. A complete description of the construction activities is provided in Section 2.4.

2.2.1.2 Existing System

The applicant would construct, operate, and maintain new and upgraded transmission facilities to deliver electricity from expected solar generation development in the Ivanpah Valley area (mostly under BLM jurisdiction) to accommodate projected load growth in the applicant's service area. The applicant's existing transmission system includes various low and high voltage lines and facilities that are part of the WECC Path 49 (East of River) and Path 46 (West of River), linking Southern California to Arizona and Southern Nevada. In addition, other utility companies, such as the Los Angeles Department of Water and Power (LADWP) and NV Energy, operate and maintain AC and direct current (DC) transmission facilities within the proposed project location.

The proposed project and its alternatives would be located on BLM land and private lands and would generally follow the applicant's right-of-way (ROW) for the Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line. The proposed EITP 230-kV transmission line would head generally west from Eldorado Substation (14 miles from Boulder City, Nevada) and cross below the following existing transmission lines:

- LADWP Eldorado–McCullough (500 kV)
- LADWP Mead–Victorville (287 kV)
- LADWP McCullough–Victorville 1 (500 kV)
- LADWP McCullough–Victorville 2 (500 kV)
- LADWP Intermountain–Adelanto (500 kV), and
- Nevada Power Powerline (115 kV).

The applicant operates several electric power transmission and distribution facilities near the EITP locations (west of the California/Nevada border). These facilities consist of a single-circuit 115-kV line that connects three substations located between the Cool Water Substation (San Bernardino County) and the Eldorado Substation (Clark County): Dunn Siding Substation (1 MW), the Baker Substation (9 MW), and the Mountain Pass Substation (3 MW). The applicant's studies indicate that the capacity of the existing 115-kV line is limited to a maximum output of 80 MW.

2.2.1.3 Components of the Proposed Project

<u>Powerlines</u>

Eldorado–Ivanpah Transmission Line

The route of the proposed EITP 230-kV transmission line would begin at the existing Eldorado Substation, head north, and then head west following the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line corridor, as shown in Figure 2-3. This existing 115-kV transmission line corridor is 70 to 100 feet wide. Construction and operation of the proposed 230-kV line would require widening the applicant's existing 115-kV transmission line corridor to a 130-foot-wide ROW, while a 250-foot ROW would be required at specific locations, as indicated in Table 2-2. These widened ROW areas would be mainly required for five major utility transmission line crossings below existing LADWP transmission lines. Transmission lines and other major existing utilities crossings along the proposed project 230-kV transmission line are shown in Figure 2-3a.

Table 2-2 250-Foot-Wide ROW Locations

Location	Between MPs
1	MP 0 and MP 1
2	MP 1 and MP 2
3	MP 7 and MP 8
4	MP 12 and MP 13
5	MP 25 and MP 26

The proposed project transmission line route would generally follow the Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line corridor, with six major deviations along the proposed 35-mile length. The segments where the proposed project would deviate from the existing 115-kV ROW are summarized in Table 2-3.

Table 2-3 Major Deviations from the Existing ROW

Location (Milepost)	Distance from Existing ROW (miles)
7	> 1
11	> 1
12	> 1
25	> 1
25–26	> 1
34–35	> 1

Transmission structures for the proposed transmission line would consist primarily of LSTs (Figure 2-4); however, at the crossings, side-by-side steel H-frame structures would be used (Figure 2-5). Existing transmission lines might need to be modified at crossings.

Transmission Line Routing Description

The proposed 230-kV transmission line route would exit the northern side of the Eldorado Substation and follow the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line within existing designated utility corridors within private lands administered by BLM. In the proximity of the Eldorado Substation, there is one segment of approximately 3,000 feet – granted by BLM - that connects two designated utility corridors and would require authorization by the City of Boulder. At the end of this segment (milepost [MP] 2.1), the line would turn to the southwest and run for approximately 5 miles within the existing 115-kV transmission line corridor. At MP 7, the proposed route would turn west and immediately cross below the existing LADWP Intermountain–Adelanto 500-kV DC transmission line. The applicant would evaluate additional survey information to determine the optimum crossing alignment at this crossing location (Figure 2-3b).

After the first major utility crossing, the proposed 230-kV transmission line would follow the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line corridor west for approximately 3.6 miles until MP 10.7, where it would cross again under the Intermountain–Adelanto 500-kV DC transmission line (Figure 2-3b). To provide adequate space to fit the transmission tower structures necessary to cross under the Intermountain–Adelanto 500-kV DC transmission line, and to avoid multiple crossings at sharp angles, the applicant would reroute a 0.4-mile-long section of the 230-kV line on the northern side of this proposed crossing.

The proposed 230-kV line would then parallel the LADWP Intermountain–Adelanto 500-kV DC transmission line for approximately 0.9 miles and then would turn to the south and cross under the same 500-kV DC transmission line, at a location with adequate space to widen the ROW from 130 to 250 feet. It would then turn west and rejoin the existing ROW.

The line would continue southwest for approximately 13 miles (MPs 24 and 25) before new additional utility crossings, at LADWP's McCullough–Victorville No. 1 and No. 2 500-kV transmission lines, the Nevada Power 115-kV transmission line, and the applicant's Mead–Victorville 287-kV transmission line. The applicant would select crossing locations with adequate space to widen the existing ROW to the required width (250 feet). Following these three major crossings, the proposed EITP 230-kV transmission line would continue within the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line corridor for another 7.8 miles to finish at the proposed Ivanpah Substation site.

Sections of the proposed EITP transmission line route, especially the segment between MP 24 and 28.5, would be located near or within the Ivanpah Airport Environs Overlay and would abut the proposed Southern Nevada Supplemental Airport (SNSA) site around MP 26. The SNSA is currently under environmental review; however, the applicant would be required to consult with the Federal Aviation Administration (FAA) on lighting of EITP structures and any additional safety recommendations, in compliance with FAA Part 77 regulations (see Section 3.7, "Hazards, Health, and Safety").

Transmission Structures and Lines

The proposed EITP 230-kV transmission line would consist of 258 galvanized transmission structures that would support a double-circuit transmission line (two arrays of conductors) at the top. Each circuit would be composed of three phases (three separate cables), each phase consisting of two conductors with a cross section of 1,590 kilo circular mils (kcmil; a circular area with an approximately 1.26-inch diameter).[2] The conductors are commonly made of aluminum strands with internal steel reinforcement. In addition, the proposed transmission structures would have an optical ground wire and suspended single polymer insulators installed at the top, to provide protection and to support telecommunication.

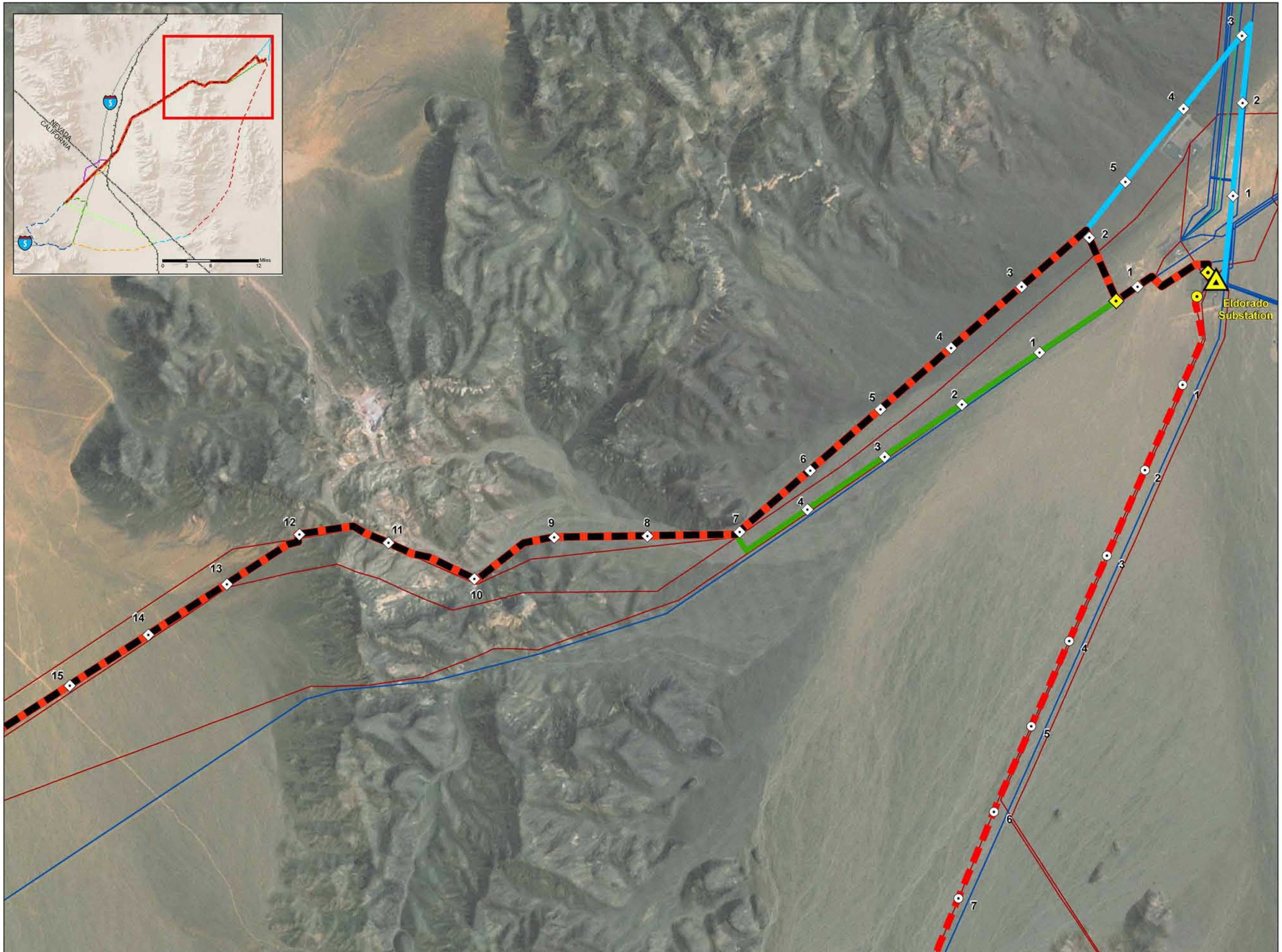
LST and steel H-frame structures (Figures 2-4 and 2-5, respectively) would be the main types of transmission structures used for the proposed project, as shown in Table 2-4. The proposed structures' heights are comparable to the heights of the structures used for the surrounding existing utilities. Where needed, the applicant would reduce structure heights to cross other utilities while maintaining proper clearances. These new structures would replace approximately 250 of the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV line structures (Table 2-5).

Table 2-4 Estimated Number and Type of Proposed New Transmission Structures

Type of Structure	Height (feet)	Number
Double-Circuit Lattice Steel Towers	110 to 180	216
Single-Circuit H-Frame Structures	45 to 75	42
TOTAL		**258**

Source: SCE 2009

[2] A circular mil (cmil) is a standard unit used in electrical systems for referring to the area of the cross section of larger conductor sizes. A mil is 0.001 inch. One cmil is equal to the area of a circle with a 1 mil diameter (Blume 2007). One kcmil is equal to one thousand cmils.



Legend

230-kV Transmission Line
- Proposed Route
- Alternative A
- Alternative B
- Milepost (Numbered)
- Milepost 0 (New Line)

Telecommunications Facilities
- Path 1
- Path 2: Section 1
- Milepost (Numbered)
- Milepost 0 (New Line)

Utilities
- Existing Substation
- Existing 500kV Transmission Line
- Existing 230kV Transmission Line
- Existing 69kV Transmission Line

0 0.5 1 2
Miles

Figure 2-3a

EITP
Major Utility Crossings
(Map 1 of 5)

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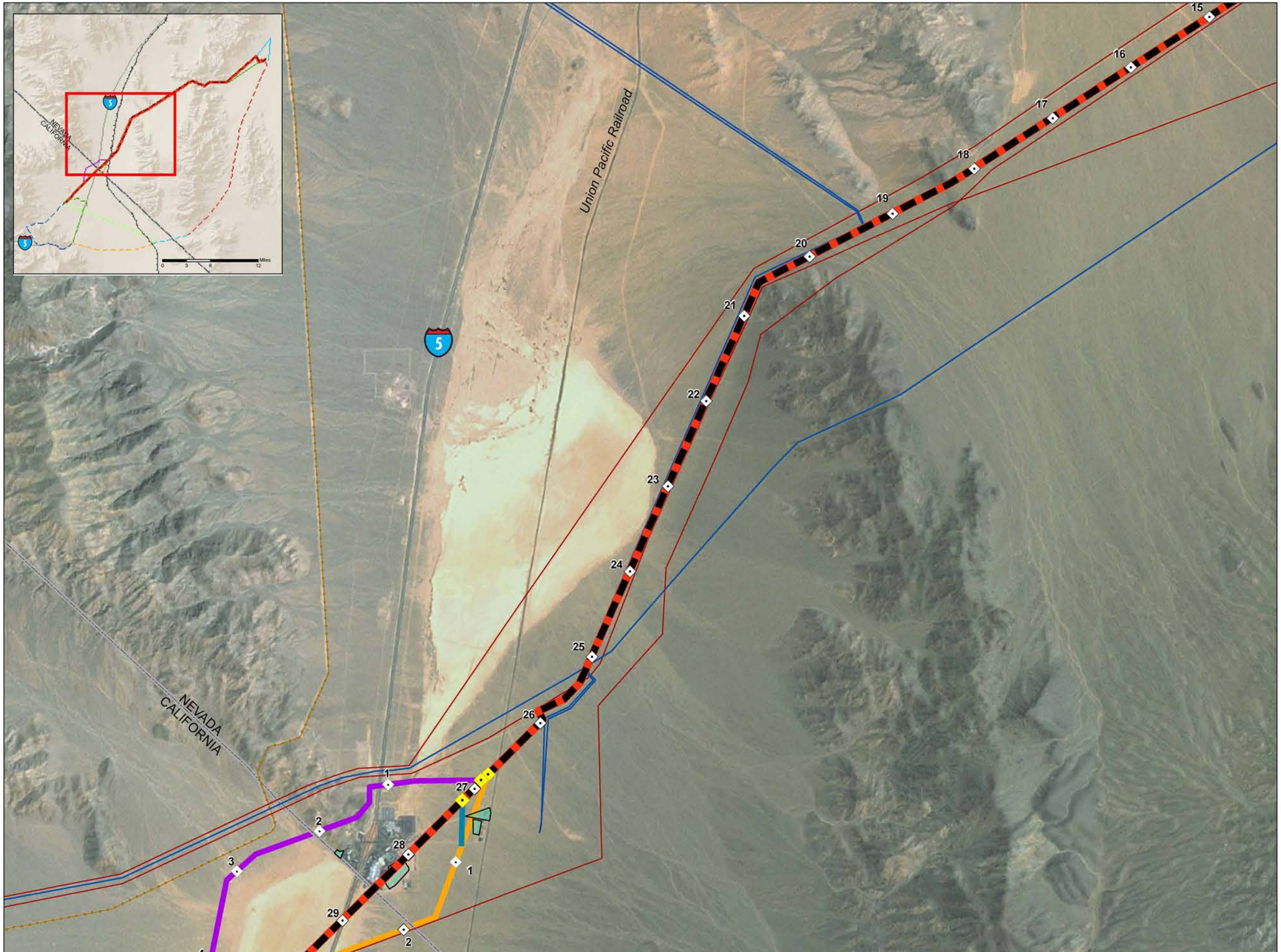

Legend

230-kV Transmission Line

Proposed Route

Alternative C

Alternative D

Alternative E

Milepost (Numbered)

Milepost 0 (New Line)

Telecommunications Facilities

Path 1

Utilities

Existing 500kV Transmission Line

Existing 230kV Transmission Line

Natural Gas Pipeline

Laydown Area

N

0 0.5 1 2

Miles

Figure 2-3a

EITP
Major Utility Crossings

(Map 2 of 5)

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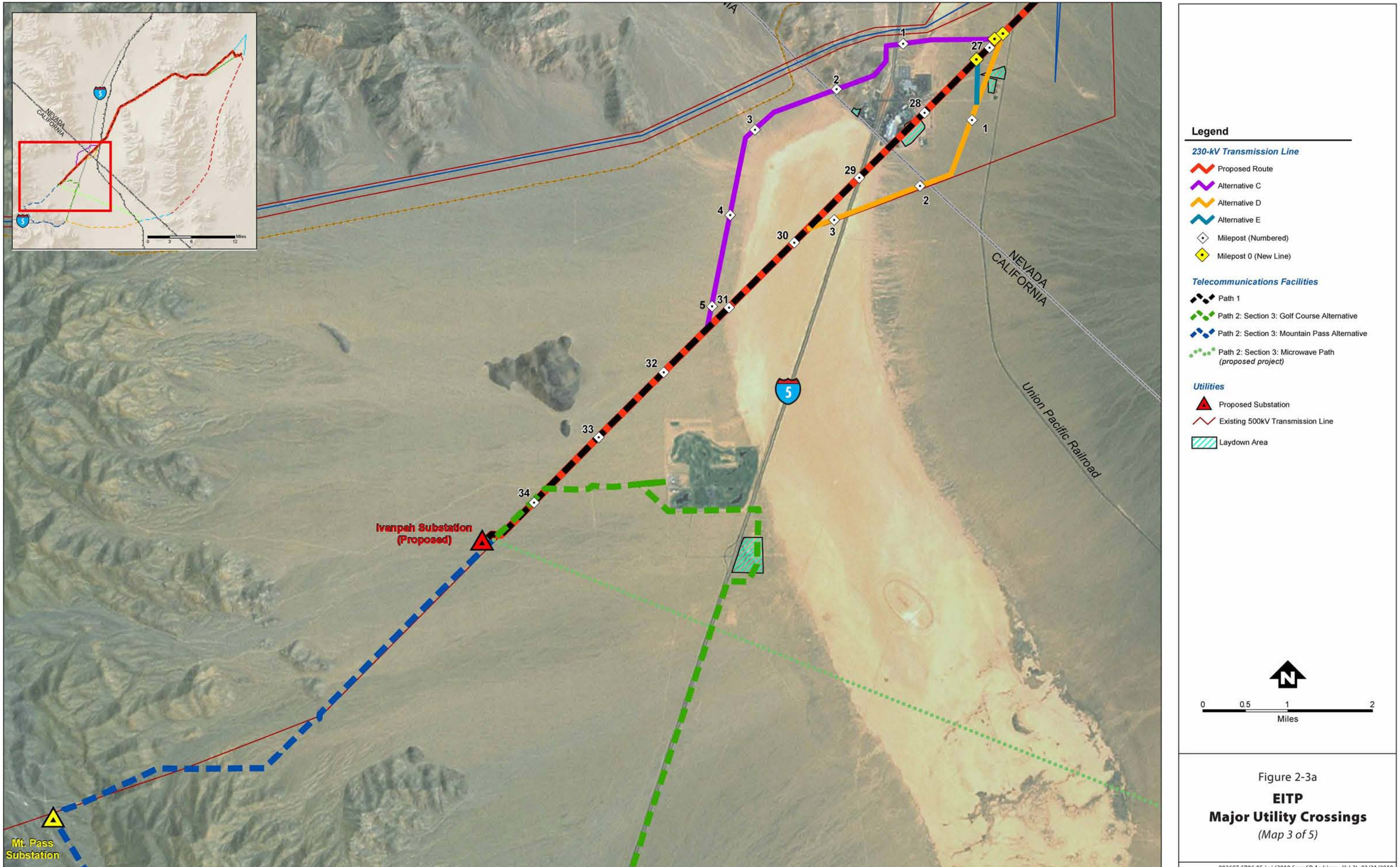

Figure 2-3a

EITP
Major Utility Crossings
(Map 3 of 5)

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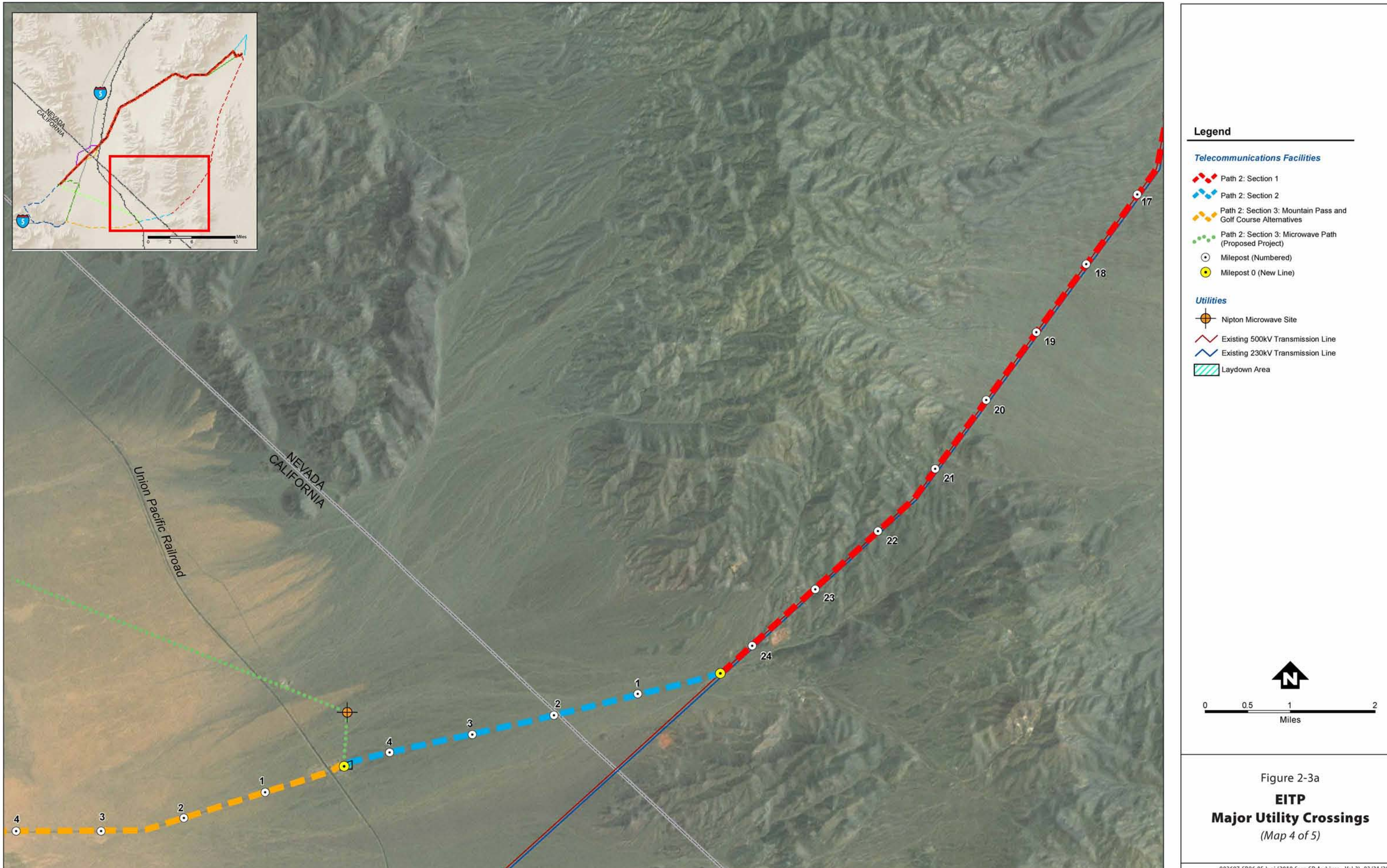

Figure 2-3a

EITP
Major Utility Crossings
(Map 4 of 5)

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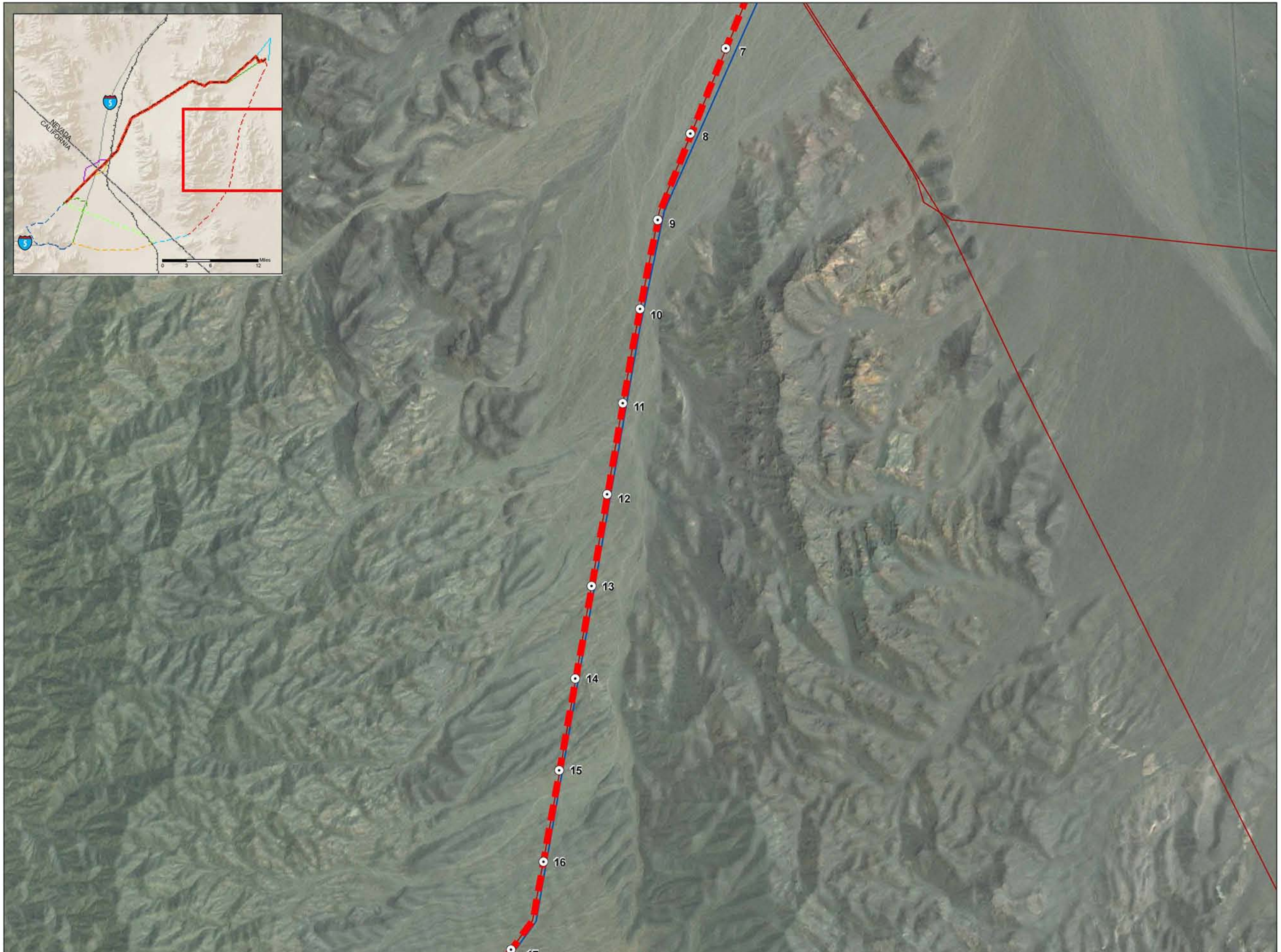

Legend

Telecommunications Facilities

Path 2: Section 1

Milepost (Numbered)

Utilities

Existing 500kV Transmission Line

Existing 230kV Transmission Line

N

0 0.5 1 2

Miles

Figure 2-3a

EITP

Major Utility Crossings

(Map 5 of 5)

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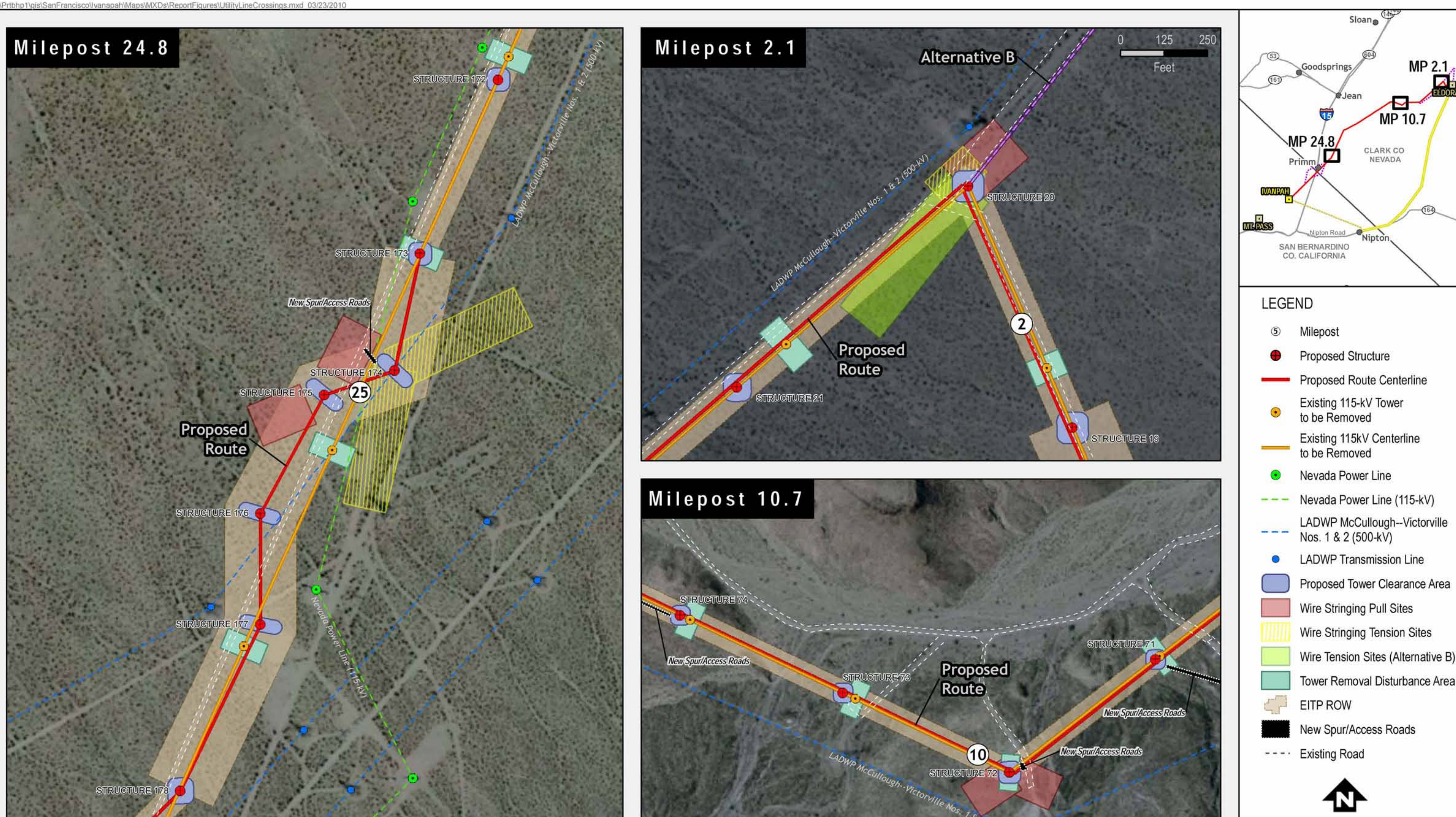

Figure 2-3b
Proposed Project
230-kV transmission Line
Routing Description

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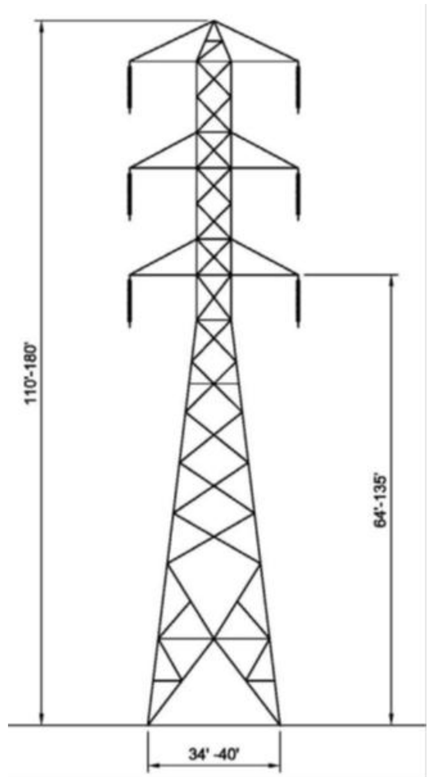


Figure 2-4 Double-Circuit 230-kV Lattice Steel Tower

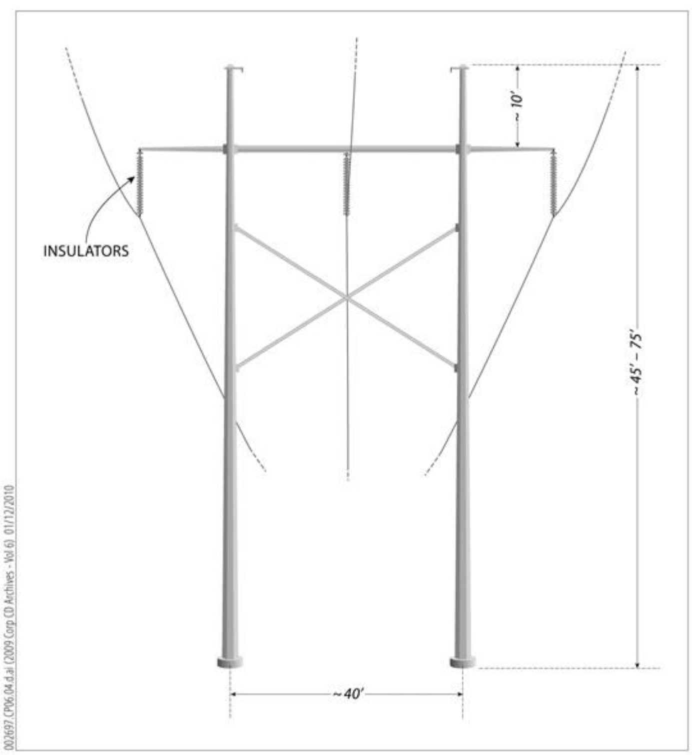


Figure 2-5 Single-Circuit 230-kV H-Frame Structure

Table 2-5 Existing 115-kV Transmission Structures to be Replaced by the Proposed Project

Type of Structure	Number
Lattice H-frame suspension dead end towers	150
Associated concrete footings	1
Lattice H-frame with two storm guys	2
Associated concrete footings	4
Lattice H-frame with four storm guys	19
Associated concrete footings	26
Lattice H-frame with six storm guys	5
Associated concrete footings	1
Four-legged lattice structures	13
Wood pole H-frame structures set in CMP	23
Wood pole structures set in CMP	5
Single steel cable hardware	1
TOTAL	**250**

Source: SCE 2009
Key:
CMP = corrugated metal pipe
kV = kilovolt

As mentioned above, sections of the proposed EITP 230-kV transmission line, especially between MPs 24 and 28.5, would be close or within the Ivanpah Airport Environs Overlay for the SNSA, currently under environmental review. Therefore, the applicant is required to consult with the FAA on lighting of the proposed transmission structures and additional safety recommendations, in compliance with FAA Part 77 regulations (see Section 3.7, “Hazards, Health, and Safety”).

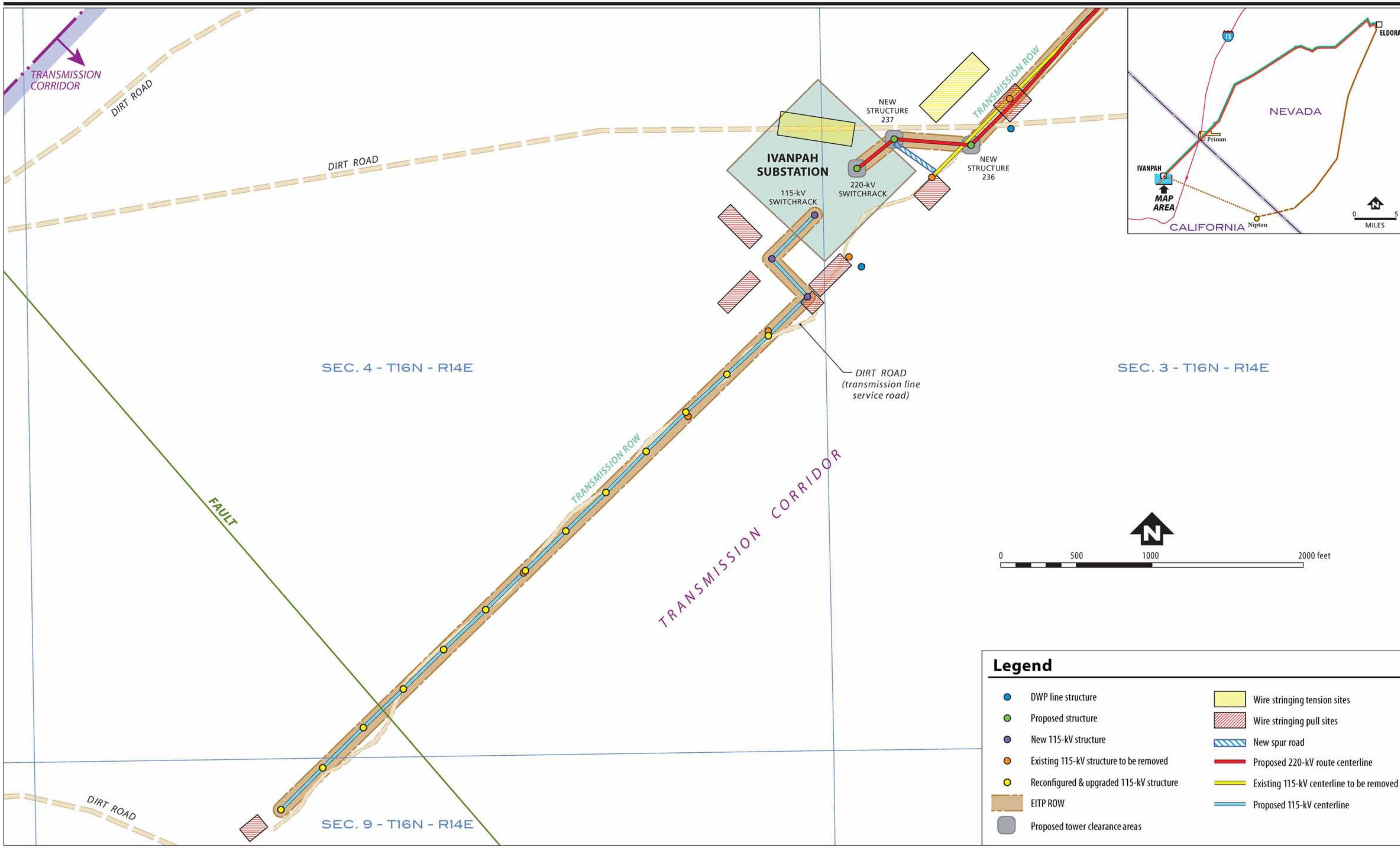
California and Nevada Electrical Standards

At MP 28.5 (near tower 195), the new 130-foot ROW would cross from Clark County, Nevada, into San Bernardino County, California. All of the transmission line located within California would be designed to General Order 95 standards. All of the transmission line located within Nevada would be designed to National Electric Safety Code standards.

Subtransmission Line

A new 600- to 800-foot section of 115-kV line would be strung from a connection point at MP 34 on the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV line to a new rack position at the proposed Ivanpah Substation, to create the Cool Water–Baker–Dunn Siding–Mountain Pass–Ivanpah 115-kV subtransmission line (Figure 2-6).

Seven existing H-frame lattice structures would be removed and replaced with one TSP and six lightweight steel (LWS) H-frames (Figures 2-7 and 2-8). Six additional LWS H-frames would be installed between these structures. The structures would be approximately 60 to 75 feet tall and span 150 to 450 feet, depending on the local topography. In addition, approximately 300 feet of new spur roads would be required to access these structures.



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Ecology and Environment, Inc.

Figure 2-6 **115-kV Subtransmission Line Location**

EITP Draft EIR/EIS

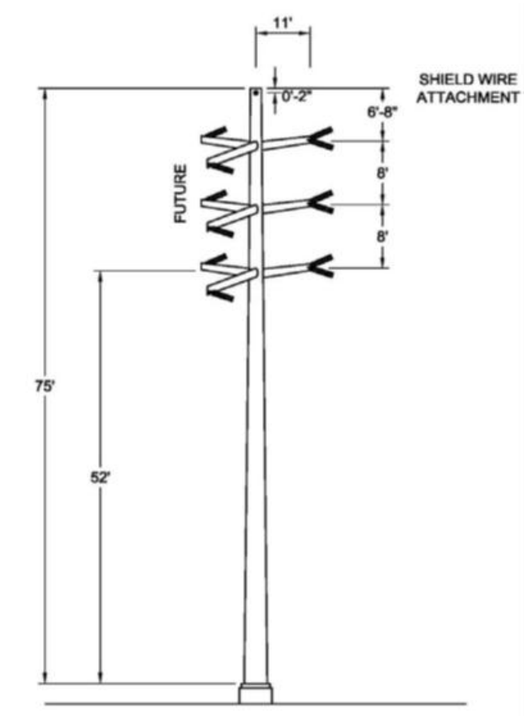


Figure 2-7 Single-Circuit 115-kV Tubular Steel Pole

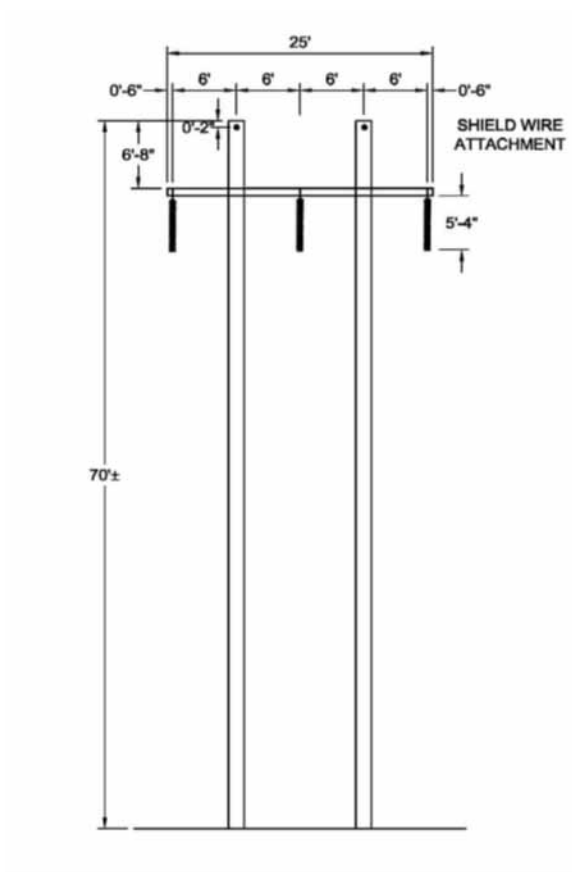


Figure 2-8 Single-Circuit 115-kV Light Weight Steel H-Frame

The existing conductors would be removed and replaced with approximately 654 Aluminum Conductor Steel Reinforced (ACSR) conductors with two 3/8-inch high-strength galvanized shield wires. The new Cool Water–Baker–Dunn Siding–Mountain Pass–Ivanpah 115-kV subtransmission line would have one conductor per phase and three phases per circuit.

Distribution Lines

A 33-kV distribution line would be installed to provide reliable lighting and power service to the new Ivanpah Substation. This component would consist of approximately 1 mile of new underground 33-kV circuitry and two new Remote Control Switches that would be installed adjacent to Densmore Drive at the California state line, near Primm, Nevada. One of the switches would be located south of the Ivanpah Substation and the second would be located next to the Primm Valley Golf Club's Desert Course.

In addition, approximately 4,300 feet of a new 12-kV overhead line would be installed between the town of Nipton and the new microwave site proposed to be located northeast of Nipton. A transformer would be installed on this overhead line connecting to the microwave site using an underground duct. The line would be installed along the side of an existing unnamed dirt road.

Access Roads

The applicant has proposed constructing an access road along the transmission line that would be used to haul construction materials overland to the project site. The road system proposed includes spur roads to individual towers where the access road would need to deviate from the transmission line due to topographic constraints. The access and spur road system would be maintained over the life of the facility to be used for maintenance of the transmission line. In general, access and spur roads are dirt roads that are at least 14 feet wide (7 feet from the road centerline). Access roads follow the transmission ROW. Spur roads branch from access roads toward the transmission structures and would be an average of 200 feet long.

Existing access roads would be used to construct the project, but some might require improvements or upgrades to allow passage of construction vehicles. There are approximately 35 miles of existing main access roads. In addition, longer or slightly wider spur roads might be needed at some locations. Depending on the site, spur roads might require grading or need to be re-developed. Approximately 1.2 miles of new spur roads would be required for the proposed project route, disturbing approximately 2.1 acres.

It is anticipated that most of the spur roads constructed to accommodate new construction would be left in place to facilitate future action for operations and maintenance purposes. Roads would be used by maintenance crews and to inspect or maintain the transmission structures. These roads would be restored after construction by removing loose rock and slide material to construct dikes, fill washouts, or flatten fill slopes, and by filling or repairing all washouts, ruts, and irregularities. The roads would be maintained to facilitate drainage and use by construction and maintenance equipment.

Access and spur roads would be leveled so that grades would not exceed 12 percent. Grades of approximately 14 percent would be permitted if they would not exceed 40 feet in length and were located more than 50 feet from curves or other excessive grades. All curves would have a curvature radius not less than 50 feet (measured at the center line of the usable road surface). All dead-end spur roads over 500 feet long would include a Y-type or circle-type turnaround.

Substations

Ivanpah Substation

The proposed 230/115-kV Ivanpah Substation would be located 6.1 miles west of the California-Nevada border. The proposed substation site (Figure 2-9) area would be approximately 1,650 by 1,015 feet (38.5 acres), located within the proposed Ivanpah Solar Generating System (ISEGS) project area (see Section 2.2.2) and would consist of a 885-by-850-foot fenced area containing the transformer banks and lines, a 10-foot perimeter buffer surrounding the transformer banks, and two 1,015-by-400-foot areas (9 acres each) containing cut and fill slopes that would flank the fenced area on the east and west. Ground disturbance in these areas would be limited to that needed for construction and access to the structures/poles located within the areas.

The Ivanpah Substation would be a 1,120–megavolt ampere (MVA) facility to be developed in two stages or configurations based on projected electrical transmission demand. The initial configuration would include three 280-MVA 230/115-kV transformer banks, five 230-kV and four 115-kV lines, and associated switchracks. The final substation configuration would include four 280-MVA 230/115-kV transformer banks, eight 230-kV lines, and fourteen 115-kV lines.

In addition, a 24-foot-wide paved road, fencing, areas for future 115-kV and 230-kV switchrack capacitor banks, and an emergency generator would be installed as part of the Ivanpah Substation facility. A 180-foot microwave tower and 65-by-55-foot MEER would also be installed in the southern central area of the substation site.

Upgrades to Eldorado Substation

The existing Eldorado Substation is approximately 14 miles southwest of Boulder City, Nevada. The project would require two 230-kV line positions at the Eldorado Substation to terminate the new Ivanpah No. 1 and No. 2 230-kV transmission lines. Installation of the two positions would require that the existing 230-kV switchyard be extended 165 feet to the west within the existing substation fence. No surface grading would be required for the extension. Upgrades to existing 230-kV circuit breakers and 500-kV series capacitors might also be required. An existing 230/115-kV transformer bank would be removed.

Telecommunication System

The proposed telecommunication system, as shown in Figure 2-3, would consist of two different and redundant telecommunication paths and related facilities and equipment. This telecommunication system would allow the EITP components to operate under a Special Protection System (SPS), as required by the WECC and NERC Planning Standards (WECC 2006). An SPS detects abnormal conditions within the electric transmission system and takes corrective actions to provide an acceptable system performance, including changes in demand, generation, or system configuration to maintain system stability, acceptable voltages, and other desirable conditions.

Redundant Telecommunication Paths

WECC and NERC guidelines on SPS, also known as Remedial Action Schemes, require full redundancy—two separate and identical communication schemes or paths—to detect and alarm when essential components fail or critical functions of the transmission system are not operational, to avoid a thermal overload and/or voltage collapse of the transmission system. The purpose of redundancy is to allow removal of one circuit scheme following a failure or to allow maintenance while keeping full capability in service with the remaining scheme (WECC 2006). In addition, WECC requires redundant telecommunication circuits to be on geographically distinct routes where practical, as long as they are not subjected to the same common mode outage risk factors.

To meet the WECC requirements, the project would include construction, operation, and maintenance of two fully redundant and geographically separated telecommunication paths, Paths 1 and 2. Path 1 would be along the proposed 230-kV EITP transmission line, and Path 2 (Section 1) would be along the existing 500-kV Eldorado–Lugo transmission line. Both telecommunication paths would require installation of optical ground wire, which would provide the same grounding protection function as the overhead ground wire (protect against lightning strikes and provide ground return for faults along the transmission line) and would also provide a communication circuit via a fiber cable embedded inside the wire. The optical ground wire segments would be located at the upper section of Path 1 and Path 2 tower structures.

Telecommunication Path 1

Path 1 would require installation of approximately 35 miles of new OPGH, approximately 0.7 inches in diameter, along the new Eldorado–Ivanpah 230-kV transmission line.

Telecommunication Path 2

Path 2 would comprise three sections. In Section 1, an existing overhead ground wire would be replaced with new optical ground wire on an approximately 25-mile section of the existing Eldorado–Lugo 500-kV transmission line. In Section 2, approximately 5 miles of fiber optic cable would be installed in an underground duct from the Eldorado–Lugo transmission line to the town of Nipton. Section 3 would provide microwave telecommunication transmission from a new communication site proposed to be located in Nipton to the proposed Ivanpah Substation.

Section 1

The Path 2, Section 1 route would extend from the Eldorado Substation to a 500-kV tower (MP 152, tower 2) of the existing Eldorado–Lugo 500-kV transmission line near the intersection of Highway 164 and the 500-kV ROW. Approximately 25 miles of the existing Eldorado–Lugo 500-kV transmission line would have one of the two existing 0.5-inch steel overhead ground wires replaced with optical ground wire.

Approximately 45 of the existing structures along this route would require some form of structural modification, at either the static peak or the mid to upper body or both, to accommodate the replacement of the overhead ground wire with optical ground wire. The exact number of structures and the specific type of modifications would be determined when final engineering had been completed. All construction work for the structure modifications would be performed within the existing access road and ROW.

Section 2

The Path 2, Section 2 route would extend in an underground duct from the Eldorado–Lugo 500-kV transmission line tower (M152-T2) to the town of Nipton. Tower M152-T2 is approximately 4.8 miles east of the town of Nipton, on the north side of Highway 164. The Path 2, Section 2 route would parallel Nipton Road on the north side in an underground duct that would be installed along a new roadside ROW. According to the applicant's general construction practice, the underground fiber duct would be installed approximately 3 feet from the edge of the Highway 164 pavement.

Section 3

A communication site northeast of the town of Nipton would be built to maintain an approximately 180-foot-tall microwave tower. The communication site would be approximately 100 by 100 feet. The Path 2, Section 3 fiber cable would extend from the town of Nipton in an underground duct that would terminate at the communication site. At the Ivanpah Substation, another microwave tower (also approximately 180 feet tall) would be built to link to the Nipton microwave tower. In addition, 4,300 linear feet of the 12-kV overhead distribution line would be extended from the existing 12-kV Nipton line ROW to the proposed microwave site to provide electrical service. The applicant anticipates that only one pole with conductor span would need to be replaced.

Source: ***Plot Plan for P.E.A.,*** Southern California Edison, June 17, 2008

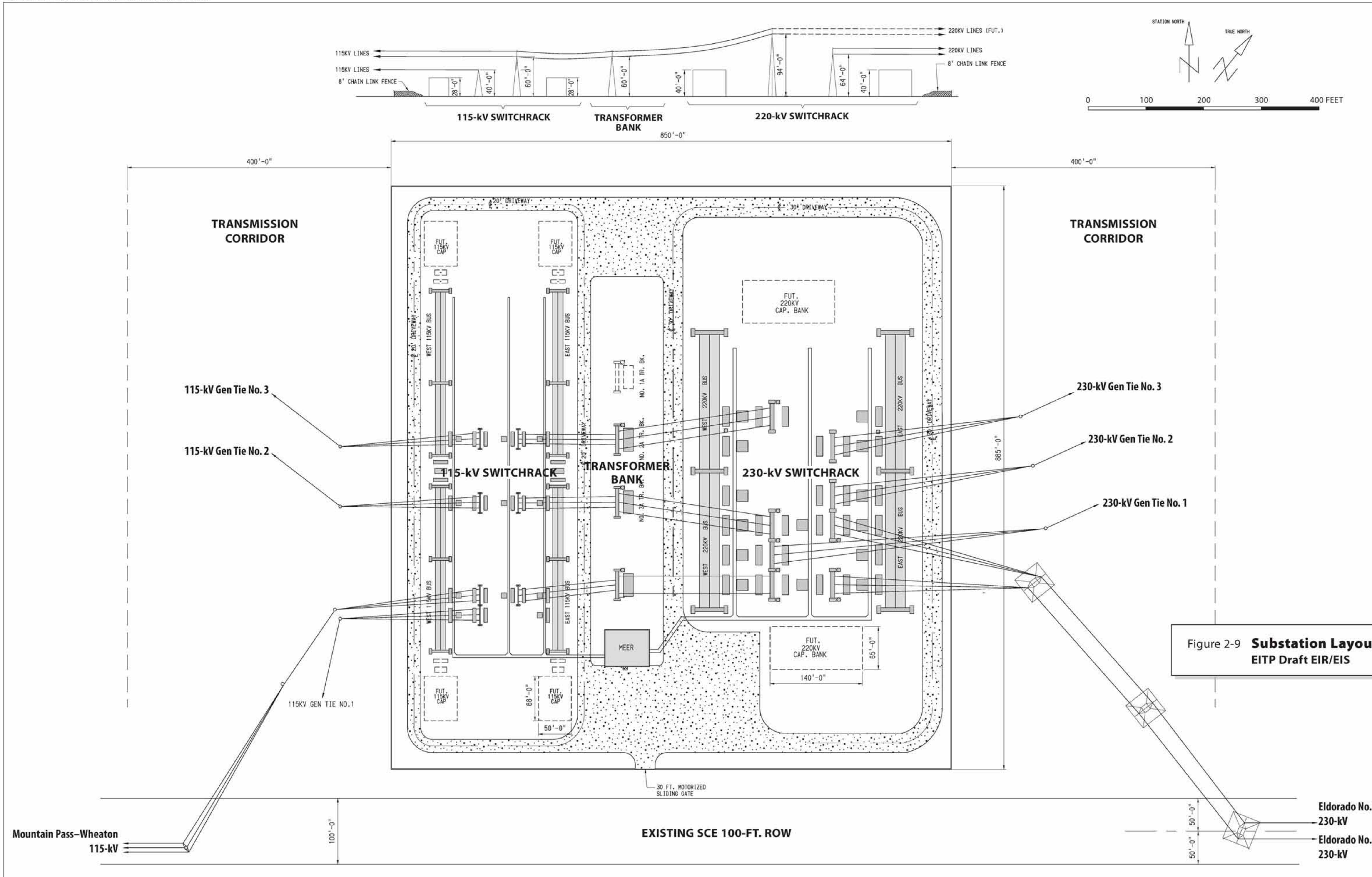


Figure 2-9 **Substation Layout**
EITP Draft EIR/EIS

Telecommunication at the Eldorado Substation

New telecommunication infrastructure would be installed in the Eldorado Substation to provide a protective relay circuit, a supervisory control and data acquisition (SCADA) circuit, data services, and telephone services to the Ivanpah Substation.

2.2.2 Whole of the Action Description (CEQA)/Cumulative Action (NEPA)

As discussed in Section 1.1.2, under both CEQA and NEPA, the lead agency is required to assess all environmental impacts that would occur as a result of the proposed project or action; both CEQA and NEPA stipulate that assessment is not limited to only the project components as defined in a single permit application.

Under CEQA, “project” is defined as “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment” (CEQA Guidelines 15378(a)). The CEQA Guidelines also state that the “project” may require several discretionary approvals by governmental agencies and that each separate governmental approval does not necessarily constitute a separate project (CEQA Guidelines 15378(c)).

Under NEPA, related actions can be considered in an environmental document as connected actions, cumulative actions, or similar actions. BLM has determined that the ISEGS project constitutes a cumulative action, as explained in Section 2.2.2.1 (below) and Section 1.1.2.2, “NEPA Cumulative Action.” NEPA regulation requires that the federal agency consider in the same environmental impact statement the proposed action and other connected or cumulative actions (40 CFR 1508.25). An agency may, but is not required to consider other similar actions in the same environmental document.

This section presents a “whole of the action” description, which comprises a summary of renewable energy projects proposed to be developed in the Ivanpah Valley area that would be directly related to the proposed project. Because many of the renewable generation projects in the Ivanpah Valley area are being developed, applied for, and analyzed under CEQA and/or NEPA concurrently with the proposed EITP, their status and the level of publicly available information varies. For this reason, the level of detail and the consideration under CEQA and NEPA varies.

2.2.2.1 Additional Related Renewable Energy Projects

As defined in Section 1.2, the purpose and need for the EITP is to connect renewable generation sources in the Ivanpah Valley area to the existing electrical transmission grid, and to enable SCE to comply with California’s Renewables Portfolio Standard (RPS). To date, three proposed renewable generation projects are directly related to the proposed EITP and currently under review for discretionary approvals by governmental agencies. These projects – Ivanpah 1, 2 and 3 - are all part of the ISEGS, a proposed solar-thermal electricity generation facility located on public lands managed by the BLM in San Bernardino County, California. The ISEGS project is currently under review at the BLM and the CEC under Docket 07-AFC-05, and has executed Purchase Power Agreements (PPA) with electric utilities, including the applicant, to connect the proposed solar generation to the proposed EITP facilities.

The following subsections describe the features described in the Final Staff Assessment / Draft EIS (FSA/DEIS) of the ISEGS project conducted by the CEC and BLM (Application for Certification 07-AFC-5; CEC and BLM 2009). A Supplemental DEIS was published on 4/16/2010.

The BLM has determined that the ISEGS proposal qualifies as a cumulative action to the EITP. The ISEGS FSA/DEIS concludes that the ISEGS project would result in significant impacts. Given the geographical proximity and the overlapping schedules of the EITP and the ISEGS project, it is reasonable to assume that the EITP, when considered in combination with ISEGS, would contribute to cumulatively significant impacts. A cumulative action differs from a cumulative impact in that it is considered to be part of the scope of the action; pursuant to CEQ regulation (40 CFR 1508.25(a)(2)), the ISEGS project will be discussed as part of the action within this EIS.

The BLM has determined that the ISEGS project is not a connected action. While the ISEGS project at full build-out would be dependent on the EITP because the existing transmission line without the EITP proposed line and substation upgrades would provide insufficient transmission capacity for the power generated by all phases of the ISEGS project, the EITP is not dependent on the ISEGS project. Based on planned renewable development in the Ivanpah Valley area, there is need for the EITP even if ISEGS is not constructed.

2.2.2.2 ISEGS Project Overview

The ISEGS project would consist of a solar-concentrating thermal power plant and related facilities proposed by BrightSource Energy, Inc.,[3] to be located in the Ivanpah Valley area in San Bernardino County, California. The proposed ISEGS site would be 6.1 miles west of the California/Nevada border.

The proposed ISEGS solar thermal power plant would comprise fields of heliostat mirrors that would transfer solar energy into boilers located on centralized power towers. Each mirror would track the sun throughout the day and reflect the solar energy to several receiver boilers. Steam turbine generators would receive steam from the receiver boilers to produce electricity. The solar field and power generation equipment would operate each morning after sunrise and shut down in the evening when insolation drops.

The applicant proposes to develop the ISEGS project in three phases designed to generate a total of 400 MW of electricity:

- Ivanpah 1 (southernmost site) – 100-MW capacity, approximately 914 acres
- Ivanpah 2 (middle site) – 100-MW capacity, approximately 921 acres
- Ivanpah 3 (northern site) – 200-MW capacity, approximately 1,836 acres

The ISEGS total project footprint is estimated to be 4,073 acres. All three phases would share an administration building, an operation and maintenance building, and the Ivanpah Substation, which would be located in between Ivanpah 1 and 2 and would require approximately 25 additional acres. Additional facilities, including re-routing of an access road (Colosseum Road, also known as Densmore Road), and natural gas, water, and transmission lines would require an additional 56 acres, while an additional 321 acres would be needed for construction staging activities.

2.2.2.3 ISEGS Project Components

The proposed ISEGS project would comprise three major components: three solar power plants (Ivanpah 1, 2, and 3), transmission system interconnections, and telecommunication facilities. These major components are summarized below.

<u>Solar Power Plants</u>

Each of the proposed ISEGS power plants would consist of three major components: heliostats mirrors, solar power towers, and power blocks. Related facilities and utilities for the proposed solar power plant would include a natural gas pipeline, water supply and discharge, air pollution control and fire protection, and access and maintenance roads.

Heliostats

[3] Specifically, the ISEGS project has been proposed by Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC, all subsidiaries of BrightSource Energy, Inc.

A heliostat consists of two mirrors placed in portrait position. The ISEGS project design calls for one heliostat field per phase, with up to 214,000 heliostat units for all the project phases; however, some of them may not be constructed. Each mirror would be 7.2 feet high by 10.5 feet wide, providing a reflective surface of 75.6 square feet per mirror. The heliostats would be connected to each other with communication cables strung aboveground. The communications cables would transmit signals from a control system to direct the movement of each heliostat to track the movement of the sun.

Solar Power Towers

The ISEGS project would require seven 459-foot-tall power towers, one each for Ivanpah 1 and 2 and five for Ivanpah 3. Each solar power tower would be a metal structure designed to support a solar power boiler and efficiently move high-quality steam through a steam turbine-generator (STG) at its base. The height of the power towers allows heliostats from significant distances to accurately reflect sunlight to the receiving boiler. The receiving high-efficiency boiler is positioned on top of the power tower and converts the concentrated energy of the sun reflected from the heliostats into superheated steam. The boiler's tubes are coated with a material that maximizes energy absorbance.

The power tower support structure would be approximately 393 feet high. The receiving boiler, which sits on top of the support structure, would be approximately 66 feet tall, including the added height for upper steam drum and protective ceramic insulation panels. Additionally, a lightning pole, required by the FAA, would extend above the top of the towers approximately 10 feet.

The central power tower of Ivanpah 3 would include a power block with one STG that would receive steam from five separate power tower boilers. Steam from these solar power tower boilers would be conveyed by an aboveground pipeline.

Power Blocks

Each power block would be located in the approximate center of each of the three solar thermal power plant areas. The power block would include a solar power tower, a receiver boiler, an STG set, air-cooled condensers, and other auxiliary systems, including:

- Natural gas-fired start-up boiler and associated air pollution control system
- Feed-water heaters
- De-aerator
- Emergency diesel generator
- Diesel fire pump
- A 250,000-gallon raw water tank for plant use and fire fighting
- A water treatment system

Related Equipment and Facilities

Natural gas pipeline

When solar conditions were insufficient, the steam produced by solar heat would be supplemented by burning natural gas to heat a partial load of water in the boiler. Each power plant would include a natural gas-fired start-up boiler to provide additional heat for plant start-up and during temporary cloud cover.

Natural gas would be supplied to the site through a new 6-mile-long distribution pipeline ranging from 4 to 6 inches in diameter. The line would run east along the northern edge, and then south along the eastern edge of Ivanpah 3 to a metering station. From there, a supply line would extend northwest into the Ivanpah 3 power block. The main pipeline would continue along the eastern edge of Ivanpah 2 to another metering station at the southeast corner of Ivanpah 2. A branch supply line would extend northwest into the center of the Ivanpah 2 power block. From that location, the pipeline would follow the paved access road past the administration/warehouse building to the Ivanpah 1 power block. A new tap metering station of approximately 100 feet by 150 feet would be located at the Kern River Gas Transmission pipeline. From there, the pipeline would extend 0.5 miles south to the northern edge of Ivanpah 3.

Water supply

Water would be required to support operations (process water for the steam system, wash water for the heliostats, and potable water for domestic water needs). Groundwater would be supplied from one of two wells that would be constructed at the northwest corner of Ivanpah 1 within the proposed construction logistics area. Each of the three power blocks would be connected to the groundwater wells by underground water pipelines.

The ISEGS applicant estimates that project water consumption would not exceed a maximum of 100 acre-feet per year for all three solar plants combined. The water would primarily be used for washing heliostats and to replace boiler feed-water blow-down. A water treatment system would be used, consisting of activated carbon filters, de-ionization media, and a mixed-bed polisher.

Each power plant would have a 250,000-gallon raw water storage tank. Approximately 100,000 gallons would be usable for plant process needs and 150,000 gallons would be reserved for fire protection. Demineralized water would be stored in a 25,000-gallon storage tank. Boiler feed-water make-up water would be stored in another 25,000-gallon tank.

Air Pollution Control Practices

Air pollution emissions from the combustion of natural gas in the start-up boiler would be controlled using best available control technologies and practices, such as low-nitrogen-oxide (NO_x) burners for NO_x control and burner and control adjustments based on oxygen continuous monitoring, operator training, and proper maintenance. Particulate and volatile organic compounds (VOCs) emissions would also be minimized by using natural gas as fuel.

Fire Protection

The fire protection system would protect personnel and limit property loss and plant downtime in the event of a fire. All fire protection systems would be focused on the power blocks, administration/warehouse building, and other areas of active operations. The primary source of fire protection water would be the raw water storage tank to be located in each power block. Approximately 150,000 gallons from each tank would be reserved for fire protection. The project would not include any specific facilities to address potential wildland fires.

Access and Maintenance Roads

Access to the ISEGS project site would occur from the Yates Well Road exit from I-15 to Colosseum Road (also known as Densmore Road). Colosseum Road would be paved to a 30-foot wide, two lane road for a distance of 1.9 miles from the Primm Valley Golf Club to the ISEGS facility entrance. The road would be re-routed around the southern end of Ivanpah 2 before re-joining the current road to the west of the proposed facility.

Within the heliostat fields, maintenance roads would be established concentrically around the power blocks to provide access for heliostat washing and maintenance. The roads would be established between every other row of heliostats. An additional maintenance road would be established on the inside perimeter of the boundary fence.

Within each project area, a diagonal dirt road would be established to provide access to the concentric maintenance roads and the power blocks. Off-highway recreational vehicle trails currently authorized by BLM that run through the ISEGS site would be re-located outside of the ISEGS project boundary fence.

Transmission System Interconnection and Upgrades

The ISEGS project would deliver power from Ivanpah 1, 2, and 3 via three separate 115-kV transmission generation tie lines to the proposed Ivanpah Substation, which would be located in the common construction logistics area between Ivanpah 1 and 2, and constructed and operated as part of EITP (Section 2.2.1.3). Each of the ISEGS power plants would have a switchyard with a step-up transformer to increase the 13.8-kV generator output voltages to 115 kV. Each switchyard would connect to the Ivanpah Substation. The existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV line would loop in and out through the newly built Ivanpah Substation to interconnect the ISEGS project to the SCE's transmission grid.

Telecommunication Facilities

The proposed Ivanpah Substation would also require the installation of new telecommunication infrastructure to provide protective relay circuit and a supervisory control and data acquisition circuit together with data and telephone services. The telecommunication path from Ivanpah Substation to the local carrier facility interface at Mountain Pass area consists of approximately eight miles of fiber optic cable to be installed overhead on existing poles and through new underground conduits to be constructed in the substation and telecom carrier interface point. The fiber cable would be installed on the existing 12-kV distribution line poles.

2.2.2.4 ISEGS Project Construction

The ISEGS project construction would take place over approximately 48 months, following the sequence below (subject to change):

- Construction logistics area
- Ivanpah 1 and other shared facilities
- Ivanpah 2
- Ivanpah 3

The construction logistics area would be used temporarily for staging contractor equipment and trailers, assembly yards, storing materials, equipment laydown and wash, construction personnel parking, and assembling heliostats. It would be located between Ivanpah 1 and 2 and would comprise approximately 377.5 acres. Following construction, most of the area would undergo site closure, rehabilitation, and revegetation based on an approved plan.

The facilities to be shared by all three plants would be constructed during the first plant construction phase. Prior to construction, geotechnical testing, heliostat installation tests, and heliostat load tests would be performed in each of the three plants.

Stormwater Management

The ISEGS project site is located on an alluvial fan that acts as an active stormwater conveyance between the Clark Mountain Range to the west and Ivanpah Dry Lake to the east. The ISEGS project would include a low-impact development stormwater design and management system, which attempts to minimize disruption to natural stormwater flow pathways by minimizing the areas of direct removal of vegetation, the areas of grading and leveling, and the amount of active management of stormwater in engineered channels, ponds, and culverts.

Fencing

The outer perimeter of each power plant, the substation, and the administrative building would be surrounded by a security fence, which would be constructed of 8-foot-tall galvanized steel chain link with barbed wire at the top, as required.

Tortoise barrier fence would also be installed in accordance with the U.S. Fish and Wildlife Service (USFWS) guidelines in Recommended Specifications for Desert Tortoise Exclusion Fencing. The tortoise fence would consist of galvanized welded wire. The fence would be installed to a depth of 12 inches. It would extend 22 to 24 inches above the ground surface and be integrated with the security fence.

Some ISEGS-related activities would also occur outside of the project fence, on land not included within the proposed ROW. These would include inspection and maintenance of the fence, underground utility repairs, maintenance of drainage systems, and possible installation of new stormwater drainage systems. In addition to these activities, a roadway would need to be maintained outside of the ISEGS project fence to allow vehicle and equipment access.

Waste Management

Solid waste generated during the ISEGS project construction would include approximately 280 tons of scrap wood, concrete, steel/metal, paper, glass, scrap metals, and plastic waste. All non-hazardous waste would be recycled to the extent possible and non-recyclable waste would be collected and disposed in a Class III solid waste disposal facility. Hazardous wastes would be recycled to the extent possible and disposed in a Class I or II waste facility, as appropriate.

2.2.2.5 ISEGS Operation and Maintenance

The ISEGS project operations would be supported by a variety of operational, maintenance, and monitoring activities. Operational activities within the proposed power blocks would include transmission of water and natural gas and operation of process equipment, including the natural gas-fired start-up boiler, the air emission control system, the steam turbine generator, the air-cooled condensers, and other auxiliary equipment.

Routine maintenance activities would include washing heliostat mirrors on a bi-weekly rotating basis. Washing would require the use of a truck-mounted pressure washer. Maintenance would also include removing vegetation that could interfere with mirror movement to a height of 12 to 18 inches, managing weeds, and using soil binders and weighting agents (chemicals that agglomerate and retain soil particles for erosion control) to minimize fugitive dust accumulation on the mirrors as a result of winds or vehicle traffic.

All operational wastes produced at ISEGS would be properly collected, treated, and disposed of at a Class I or II waste facility, as appropriate. Wastes would include process and sanitary wastewater, nonhazardous waste, and hazardous waste, both liquid and solid. A septic system for sanitary wastewater would be located at the administration building/operations and maintenance area between Ivanpah 1 and 2. Portable toilets would be placed in the power block areas of each of the three solar facilities and pumped by a sanitary service provider. Process wastewater from all equipment, including the boilers and water treatment equipment, would be recycled.

Hazardous materials used during operations and maintenance activities would include paints, epoxies, grease, transformer oil, and caustic electrolytes (battery fluid). Several methods would be used to properly manage and dispose of hazardous materials and wastes. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in large storage tanks, while most other chemicals would be stored in smaller returnable delivery containers. All chemical storage areas would be designed to contain leaks and spills in concrete containment areas.

2.2.2.6 ISEGS Decommissioning

The ISEGS project estimated lifetime is 50 years. Following this estimated period, the project owner would perform site closure activities to meet federal and state requirements for the rehabilitation of the site after decommissioning. Decommissioning and restoration would be subject to many of the same environmental protection plans required for construction, including an approved Closure, Revegetation, and Rehabilitation Plan. Under this plan, the ISEGS applicant would remove all aboveground structures and facilities to a depth of 3 feet below grade and transport them off site for recycling or disposal. Concrete, piping, and other materials existing below 3 feet in depth would be left in place. Areas that had been graded would be restored to original contours. Succulent plant species would be salvaged prior to construction, transplanted into windrows, and maintained for later transplanting following decommissioning. Shrubs and other plant species would be revegetated by collecting seeds and re-seeding following decommissioning.

2.3 Project Alternatives

Both NEPA and CEQA require governmental decision-makers to consider the identification and assessment of reasonable alternatives that could avoid or minimize the adverse impacts of a proposed project or action. Under CEQ regulations, federal agencies are required to explore and evaluate all reasonable alternatives to a proposed action in order to provide a clear basis for choice among options by the decision-makers and the public (Title 40 CFR Sec.1502.14). Likewise, Sections 15126.6(c) and 15.126.6(d) of the CEQA Guidelines emphasize selecting a reasonable range of feasible alternatives and assessing them adequately to allow for a comparative analysis.

In accordance with CEQA and NEPA, this Draft EIR/EIS presents a reasonable range of alternatives but does not consider every possible alternative. Discussion focuses on alternatives that could substantially avoid or lessen adverse project effects. The selected range of alternatives is intended to facilitate meaningful discussion among decision-makers and the public. In addition, this Draft EIR/EIS considers the No Project / No Action Alternative.

The CPUC and the BLM evaluated 18 potential alternatives or combinations of alternatives to determine a reasonable range of alternatives that would meet the following CEQA/NEPA requirements: feasibility, consistency with project objectives and purpose and need, and potential to eliminate adverse environmental effects. The project alternatives were organized into four major categories: (1) system, (2) transmission line routing, (3) telecommunication path routing, and (4) technology.

Section 2.3.1 below summarizes the alternative screening process. Section 2.3.2 describes those alternatives that were carried forward for analysis in the EIR/EIS, including the No Project Alternative. Section 2.3.3 briefly describes alternatives considered but not carried forward for analysis. Lastly, Section 2.3.4 introduces the agencies' preferred alternative for the Draft EIR/EIS. Further environmental impact analysis and comparison of alternatives carried forward in this Draft EIR/EIS are provided in Chapter 3 and Chapter 4.

2.3.1 Alternatives Screening Process

This section summarizes the information presented in Appendix A-1 of this Draft EIR/EIS. The alternatives evaluated during the screening process were identified through the CEQA/NEPA scoping process, through applicant consultation with the CPUC and the BLM early in the planning process, and through supplemental studies and consultations conducted by the CPUC and the BLM as part of the environmental review process. The alternatives considered in the screening analysis (Table 2-6) were (1) identified by the applicant as part of the PEA, (2) requested by the CEQA lead agency (the CPUC) or the NEPA lead agency (the BLM), or (3) identified by the general public and other agencies during the 30-day public scoping period in accordance with CEQA and NEPA requirements.

Table 2-6 Alternatives Considered in the Screening Analysis

Category	Alternative
System	Non-transmission System (System Alternative 1)
	Reconductoring (System Alternative 2)
	Lower Voltage – New 115-kV Transmission Line (System Alternative 3)
	Higher Voltage – New 500-kV Transmission Line (System Alternative 4)
	Single Circuit – New 230-kV Transmission Line (System Alternative 5)
Transmission Line Routing	Parallel to Los Angeles Department of Water and Power (Transmission Alternative Route A)
	North of Eldorado (Transmission Alternative Route B)
	North Dry Lakes Reroute (Transmission Alternative Route C)
	South Dry Lakes Reroute (Transmission Alternative Route D)
	South Dry Lakes Bypass (Transmission Subalternative Route E)
	New ROW (Transmission Alternative Route F)
Telecommunication	Golf Course Telecommunication Alternative
	Mountain Pass Telecommunication Alternative
	Microwave-only Telecommunication Alternative
Technology	Composite Core Conductor (Tech 1 – Alternative to Standard Core Conductor)
	Painted Structures (Tech 2 – Alternative to Galvanized Structures)
	Underground Construction (Tech 3 – Alternative to Overhead)
	Use of Tubular Steel Poles (Tech 4 – Alternative to LST)

Key:
kV = kilovolt
LST = Lattice steel tower

2.3.1.1 Alternatives Screening Methodology

The alternatives screening process consisted of the following steps:

- **Step 1 –** Clarify the description of each alternative to facilitate comparison
- **Step 2 –** Evaluate the advantages and disadvantages of each alternative compared with the proposed project, based on the following CEQA/NEPA criteria and requirements:
  - Project Objectives, Purpose, and Need: Does the alternative accomplish all or most of the basic project objectives as agreed upon by the CPUC and the BLM? Does the alternative meet the BLM's and the CPUC's statements of purpose and need?
  - Feasibility: Is the alternative feasible from an economic, environmental, legal, social, and technological standpoint? Are there any conflicts between the alternative and the objectives of federal, regional, state, and local land use plans, policies, or regulations for the area concerned?
  - Environmental Effects: Does the alternative avoid or substantially lessen any significant effects of the proposed project, or, conversely, would the alternative create significant effects potentially greater than those of the proposed project?
- **Step 3 –** Based on the results of Step 2, alternatives that met the CEQA/NEPA criteria were retained for full analysis in the Draft EIR/EIS. Alternatives that did not meet the CEQA/NEPA criteria were eliminated from further consideration.

2.3.1.2 Summary of Screening Results

As a result of the alternatives screening process, seven of the initial 18 alternatives were carried forward for detailed analysis in the Draft EIR/EIS. Each alternative was described in detail and a determination was made based on the advantages and disadvantages identified as part of the alternatives screening process. The results for each criterion are summarized below. Table 2-7 summarizes the results of the whole alternatives screening process. Table 2-8 compares alternatives that were carried forward for analysis in this Draft EIR/EIS with the proposed project.

Table 2-7 Results of the Alternatives Screening Process

Category	Alternatives	Retained for Further Analysis	Not Carried Forward
System	Non-transmission System (System Alternative 1)		X
	Reconductoring (System Alternative 2)		X
	Lower Voltage – New 115-kV Transmission Line (System Alternative 3)		X
	Higher Voltage – New 500-kV Transmission Line (System Alternative 4)		X
	Single Circuit – New 230-kV Transmission Line (System Alternative 5)		X
Transmission Line Routing	Parallel to Los Angeles Department of Water and Power (Transmission Alternative Route A)	X	
	North of Eldorado (Transmission Alternative Route B)	X	
	North Dry Lakes Reroute (Transmission Alternative Route C)	X	
	South Dry Lakes Reroute (Transmission Alternative Route D)	X	
	South Dry Lakes Bypass (Transmission Subalternative Route E)	X	
	New ROW (Transmission Alternative F)		X
Telecommunication	Golf Course Telecommunication Alternative	X	
	Mountain Pass Telecommunication Alternative	X	
	Microwave-only Telecommunication Alternative		X
Technology	Composite Core Conductor (Tech 1 – Alternative to Standard Core Conductor)		X
	Painted Structures (Tech 2 – Alternative to Galvanized Structures)		X
	Underground Construction (Tech 3 – Alternative to Overhead)		X
	Use of Tubular Steel Poles (Tech 4 – Alternative to LST)		X

Key:
kV = kilovolt
LST = Lattice steel tower

Criterion 1: Project Objectives, Purpose, and Need

Several of the alternatives are modifications to the applicant's proposed transmission line route or telecommunication paths. All the transmission route variations would meet the basic project objectives, purpose, and need, as would most of the telecommunication paths alternatives. Other alternatives to the proposed transmission system and technology would involve different project components, techniques, or materials. Although some of the technology alternatives would meet the objectives, purpose, and need, their implementation might not be feasible, or they would result in environmental impacts either the same as or more significant than those of the other alternatives.

Table 2-8 Comparison of Retained Alternatives with the Proposed Project

Category	Alternatives	• Preliminary Environmental Comparison with the Proposed Project	
		• Advantages	• Disadvantages
Transmission Line Routing	Parallel to Los Angeles Department of Water and Power (Transmission Alternative Route A)	• Eliminates several transmission crossovers near Eldorado Substation • Located within BLM-designated utility corridor • Reduces impacts to cultural resources • Reduces impacts to intermittent streams	• Potential for greater habitat disturbance. The construction area west of Eldorado Substation consists of an undisturbed desert habitat • Potential for greater impact to tortoise habitat, other wildlife, rare plant species, and desert vegetation
	North of Eldorado (Transmission Alternative Route B)	• Reduces impacts to cultural resources • Reduces impacts to intermittent streams due to fewer crossings • Located within BLM-designated utility corridor	• Requires 5.3 miles of new transmission line ROW • Greater potential for ground disturbance from new transmission line ROW
	North Dry Lakes Reroute (Transmission Alternative Route C)	• Avoids crossing Ivanpah Dry Lake • Reduces visual impacts compared with the proposed project; existing transmission line would be removed and relocated and it would not be visible from nearby residential use • Reduces impacts to paleontological resources • Reduces impacts to intermittent streams due to fewer crossings	• Potential for greater impacts to desert tortoise and its habitat. This alternative has a higher quality desert tortoise habitat than does the proposed route • Potential for greater impacts to cultural resources associated with disturbance of Arrowhead Trail Highway • Requires 5.3 miles of new 130-foot ROW north of the Ivanpah Dry Lake and Primm, Nevada
	South Dry Lakes Reroute (Transmission Alternative Route D)	• Reduces overall transmission footprint on the Ivanpah Dry Lake • Reduces visual impacts compared with the proposed project; existing transmission line would be removed and relocated and it would not be visible from nearby residential use • Reduces potential for the presence of other sensitive wildlife or plant species occurring within the limits of this alternative • Reduces impacts to intermittent streams	• Potential for greater impacts to cultural resources • Potential for greater ground disturbance for new access roads • Requires approximately 3.3 miles of new ROW

Table 2-8 Comparison of Retained Alternatives with the Proposed Project

Category	Alternatives	• Preliminary Environmental Comparison with the Proposed Project	
		• Advantages	• Disadvantages
		due to fewer crossings	
	South Dry Lakes Bypass (Transmission Subalternative Route E)	• Similar to those identified for Alternative D	• Similar to those identified for Alternative D
Telecommunication	Golf Course Telecommunication Alternative	• Potentially reduces visual impacts for certain portions of the telecommunication line that would be located underground	• Potential for greater ground disturbance and impacts to paleontological resources due to underground construction • Underground construction has potential for greater impacts to sensitive habitat and to cultural and paleontological resources
	Mountain Pass Telecommunication Alternative	• Potentially reduces visual impacts for certain portions of the telecommunication line that would be located underground or out of line-of-sight of sensitive resources	• Greater potential for ground disturbance and impacts to paleontological resources due to underground construction • Potential for greater construction-related hazards due to transport, use, or disposal of hazardous materials and for upsets or accidents involving releases of hazardous materials

Key:
LST = Lattice steel tower
ROW = right-of-way

Criterion 2: Feasibility

The alternatives vary in their ability to meet economic, environmental, legal, social, and technical feasibility criteria. Technical feasibility issues were primarily related to physical constraints, such as engineering/design limitations for construction on steep slopes. Other alternatives had legal feasibility issues related to consistency with regulatory standards for operational reliability.

Criterion 3: Environmental Effects

Environmental impacts of each alternative were compared to evaluate overall ability to reduce or avoid significant effects. In some cases, an alternative might reduce or eliminate a proposed project effect but create a new significant impact in a different resource area.

2.3.2 Alternatives Fully Analyzed in the Draft EIR/EIS

This section summarizes alternatives that were carried forward for analysis in the Draft EIR/EIS, including the No Project Alternative. For alternatives that were eliminated from Draft EIR/EIS consideration, Appendix A-1 explains in detail the rationale for elimination.

2.3.2.1 Transmission Line Routing Alternatives

The alternatives carried forward for analysis that were minor route variations to the proposed transmission line route are called the Transmission Alternatives (Figure 2-10). 6Two of the Transmission Alternatives are near the existing Eldorado Substation and are designed to avoid an area not designated as a BLM utility corridor. Although this area contains the ROW for the existing 115-kV line, because it falls outside of a BLM-designated corridor, the applicant would need to obtain Clark County and City of Boulder City approval to widen the ROW to the 100 or 130 feet required for the upgraded 230-kV line. The alternatives have therefore been designed to parallel existing transmission ROW within the officially designated corridors.

The other three Transmission Alternatives are near Primm, Nevada, and are designed to avoid potential impacts to Ivanpah Dry Lake. All the Transmission Alternatives diverge from the proposed transmission line route for a portion of the route, but are not an entire project alternative. Major existing utilities that would cross the transmission route alternatives are shown in Figure 2-3a.

Parallel to LADWP Line Segment (Transmission Alternative Route A)

The Eldorado–Ivanpah 230-kV Transmission Alternative Route A (Figure 2-11) would begin at the Eldorado Substation. The line would leave the substation heading north, and then immediately would head west to join the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass ROW. The line would proceed generally west on a 130-foot ROW and cross three LADWP transmission lines (McCullough–Victorville No. 1, 500 kV; McCullough–Victorville No. 2, 500 kV; and Mead–Victorville, 287 kV) to the north before heading west again.

The route would then cross the LADWP 500-kV transmission line (Marketplace–Adelanto). Transmission Alternative Route A would continue west for approximately 5.0 miles on a new ROW, and then turn north for approximately 1,000 feet before crossing the LADWP Marketplace–Adelanto 500-kV transmission line again and joining the proposed project route at MP 7.

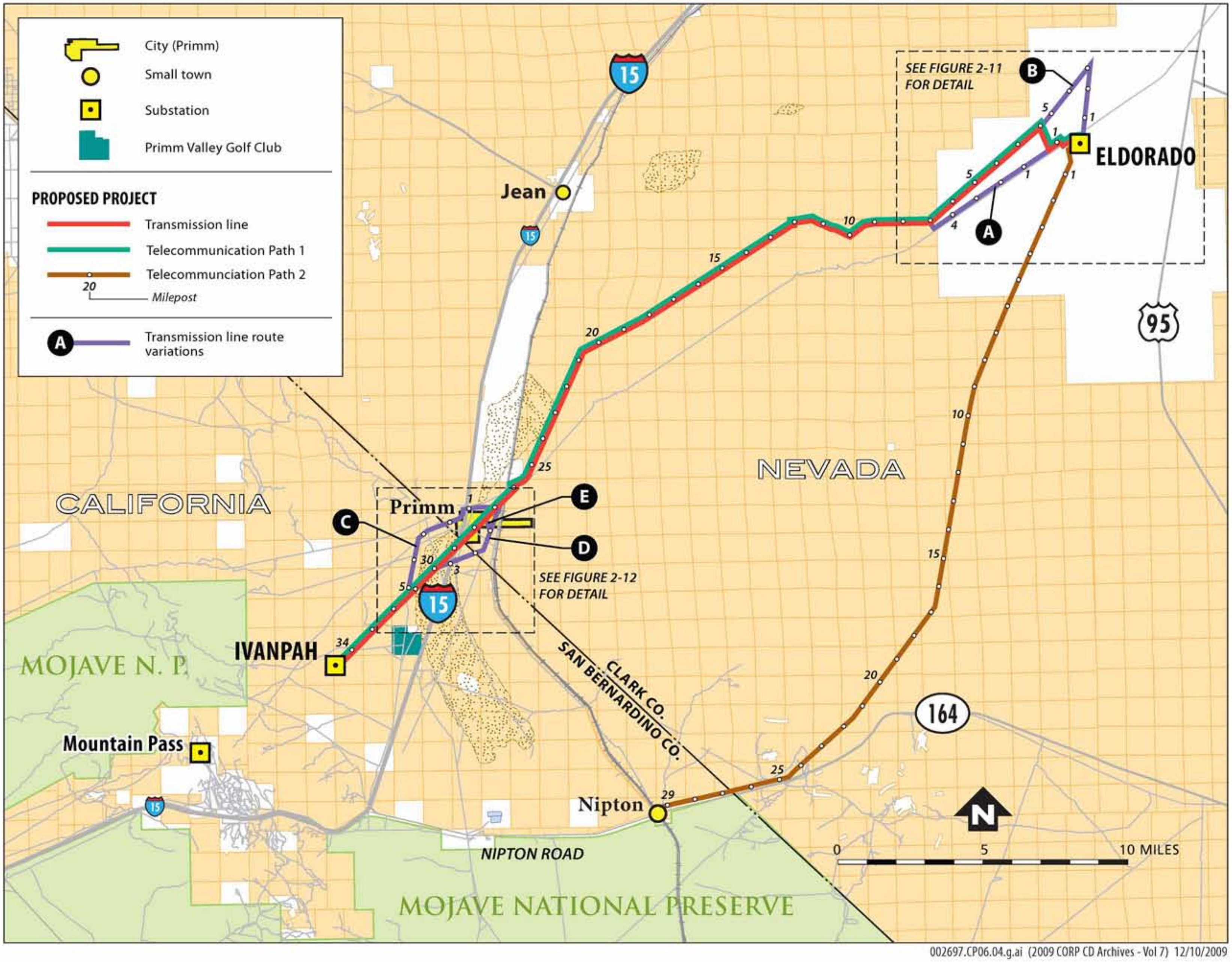
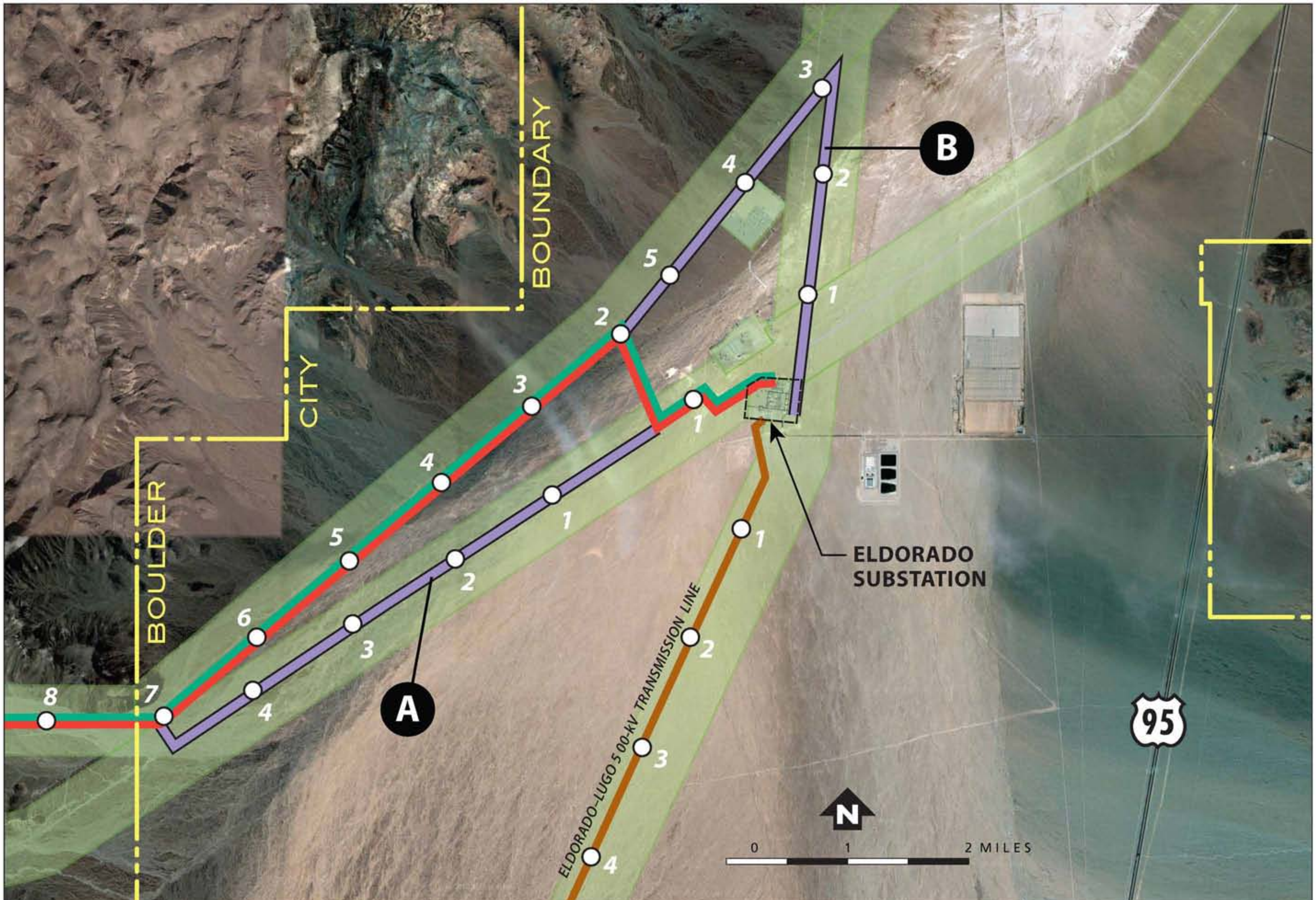


Figure 2-10

Transmission Line Routing Alternatives



Legend

- Transmission line
- Telecommunication Path 1
- 20 Milepost
- E Transmission line route variations
- BLM-designated energy ROW corridors
- Telecommunication Path 2, Section 1

Figure 2-11

Transmission Line Routing Alternatives A and B

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The purpose of this alternative is to bypass a segment of the proposed project route where the proposed project would deviate from designated transmission corridors and would cross an approximately 0.8-mile segment within the Boulder City Conservation Easement. Although this 0.8-mile ROW currently contains the existing 115-kV line, as stated above, it falls outside of the BLM-designated corridors. Therefore, the applicant may need to obtain Clark County and City of Boulder City approval to widen the ROW to the 100 to 130 feet required for the upgraded 230-kV line. Transmission Alternative Route A would bypass this segment by heading north from the Eldorado Substation following existing designated transmission corridors.

North of Eldorado (Transmission Alternative Route B)

Transmission Alternative Route B (Figure 2-11) would begin at the Eldorado Substation. The line would exit the substation to the north and parallel the Eldorado–Mead 230-kV transmission line on existing ROW for approximately 2.5 miles before turning southwest. The route would continue southwest for approximately 2.8 miles and re-join the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line ROW at MP 2 of the proposed route. This alternative would require numerous, difficult transmission crossings, and several of these overhead utility lines would require modification or relocation to accommodate passage of the Transmission Alternative Route B transmission line.

Similar to Transmission Alternative Route A, the purpose of Transmission Alternative Route B is to bypass a segment of approximately 0.8 miles where the proposed project would deviate from existing designated transmission corridor and would cross lands administered by the City of Boulder (Boulder City Conservation Easement). Transmission Alternative Route B was created to bypass these segments by heading southwest from the Eldorado Substation to join the existing ROW.

North Dry Lakes Reroute (Transmission Alternative Route C)

Transmission Alternative Route C (Figure 2-12) would begin at the Eldorado Substation and follow the proposed route to the point where the line reaches the northeastern edge of the Ivanpah Dry Lake (MP 27, tower 185). Transmission Alternative Route C would then continue west and southwest on new 130-foot ROW around Ivanpah Dry Lake for approximately 5.3 miles before rejoining the proposed project route at MP 32, tower 218. Transmission Alternative Route C was developed to minimize potential impacts to the Ivanpah Dry Lake.

South Dry Lakes Reroute (Transmission Alternative Route D)

Transmission Alternative Route D (Figure 2-12) would parallel the existing LADWP Marketplace–Adelanto 500-kV transmission line as it crosses through the Ivanpah Dry Lake. This route would reduce the overall transmission footprint, since the EITP towers would follow to the extent feasible the existing LADWP 500-kV ROW. Transmission Alternative D begins at the Eldorado Substation and follows the proposed route until it approaches the northeastern edge of the Ivanpah Dry Lake (MP 27, tower 184). Transmission Alternative D would then continue south and then southwest on a new 130-foot ROW around Primm for approximately 3.3 miles before rejoining the proposed project route at MP 30, tower 203.

South Dry Lakes Bypass (Transmission Subalternative Route E)

Transmission Subalternative Route E is a subalternative to Transmission Alternative Route D. Subalternative E would use a shorter length of new 130-foot ROW (approximately 0.25 miles shorter than Alternative D) from MP 27 of the proposed EITP transmission line to the corridor that would parallel the existing LADWP Marketplace–Adelanto 500-kV transmission line. As would Transmission Alternative D, this route would reduce the overall transmission footprint, since the EITP towers would follow to the extent feasible the existing LADWP 500-kV ROW. Transmission Subalternative Route E would proceed south from MP 27 for approximately 1 mile and then follow the route proposed for Transmission Alternative D (Figure 2-12).

2.3.2.2 Telecommunication Alternatives

The two alternatives to the proposed telecommunication system are the Golf Course Telecommunication Alternative and the Mountain Pass Telecommunication Alternative. These alternatives include additional undergrounded segments and installation of telecommunication wires along existing distribution lines. The telecommunication alternatives were designed to minimize potential visual impacts of an aboveground microwave tower. Both alternatives would follow the same path as the proposed telecommunication route until the town of Nipton, California.

Telecommunication Alternative (Golf Course)

The Golf Course Telecommunication Alternative route would extend from Nipton to the point on the north side of Nipton Road where it intersects with I-15. This alternative would consist of a combination of all-dielectric self-supporting fiber cable installed on existing Nipton 33-kV wooden distribution lines and underground in new duct banks (Figure 2-13).

Approximately 1 mile of all-dielectric self-supporting fiber cable would be installed overhead on an existing Nipton 33-kV distribution line immediately west of Nipton, on the north side of Nipton Road. Pole replacement for this alternative is not anticipated; however, the detailed project engineering design process might indicate that pole replacement would be necessary. From the westernmost pole on the Nipton line before it crosses Nipton Road to the south, fiber optic cable would be installed in a new underground duct along the north side of Nipton Road in new roadside ROW to the intersection of Nipton Road and I-15. The underground cable length for this segment would be approximately 9 miles.

From the I-15–Nipton Road junction, the Golf Course Telecommunication Alternative route would parallel I-15, running north on an existing Nipton 33-kV distribution line and crossing I-15 near the Primm Valley Golf Course. This alternative route would cross the Primm Valley Golf Course in a new underground duct (Figure 2-13), then continue on an existing Nipton 33-kV distribution line to a point approximately 1 mile north of the Ivanpah Substation. The telecommunication line would then be installed in a new underground duct for approximately 1 mile to the Ivanpah Substation. The entire route from the I-15 junction to the Ivanpah Substation would be approximately 10 miles.

Telecommunication Alternative (Mountain Pass)

The Mountain Pass Telecommunication Alternative route would extend from Nipton to the point on the north side of Nipton Road where it intersects with I-15. This alternative would consist of all-dielectric self-supporting fiber cable installed on existing Nipton 33-kV wooden distribution lines and underground in new duct banks (Figure 2-14).

Approximately 1 mile of all-dielectric self-supporting fiber cable would be installed overhead on an existing Nipton 33-kV distribution line immediately west of Nipton, on the north side of Nipton Road. Pole replacement for this alternative is not anticipated; however, the detailed project engineering design process might indicate that pole replacement would be necessary. From the westernmost pole on the Nipton line before it crosses Nipton Road to the south, fiber optic cable would be installed in a new underground duct along the north side of Nipton Road in new roadside ROW to the intersection of Nipton Road and I-15. The underground cable length for this segment would be approximately 9 miles.

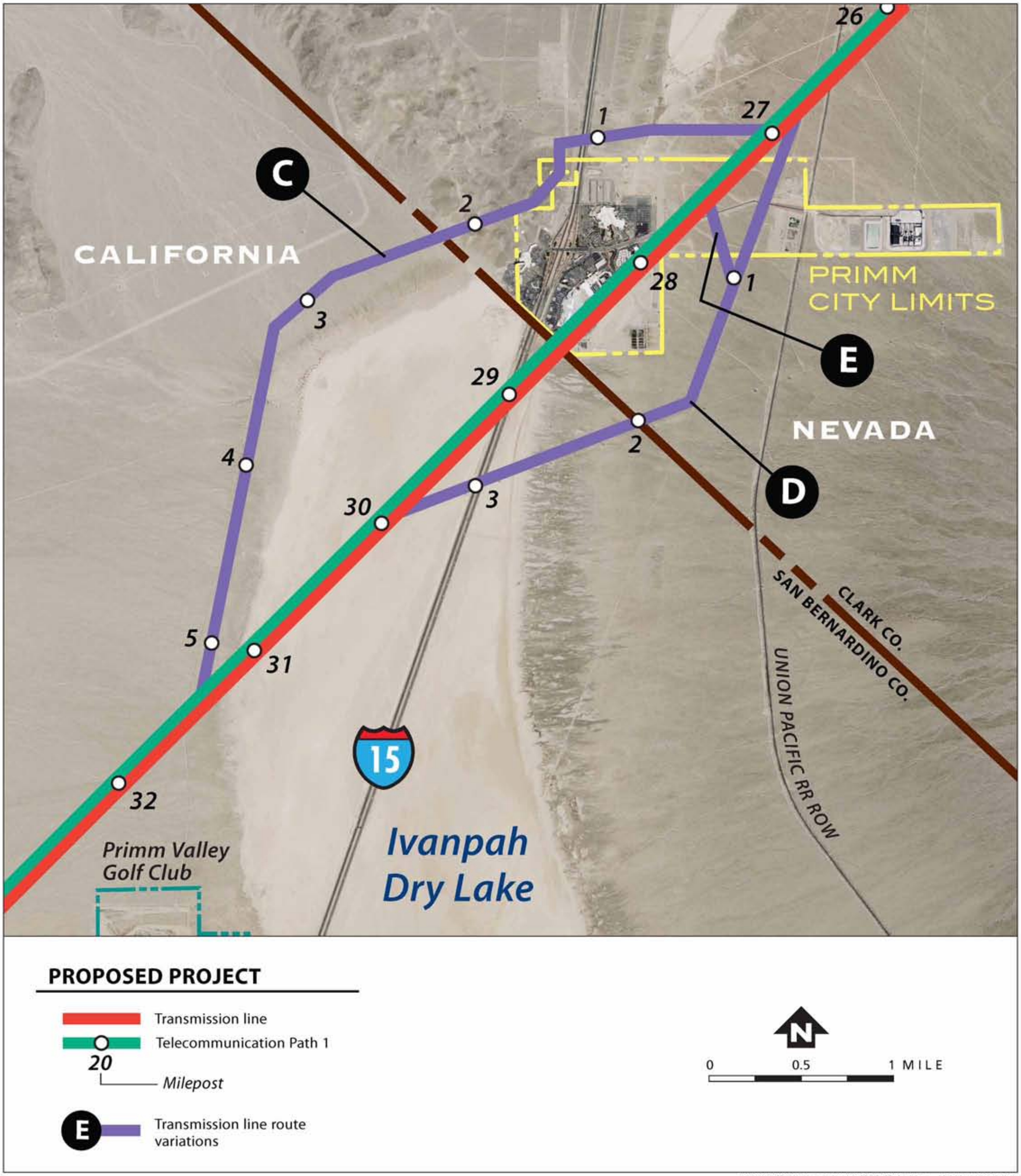

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Figure 2-12

Transmission Line Routing Alternatives C, D and E

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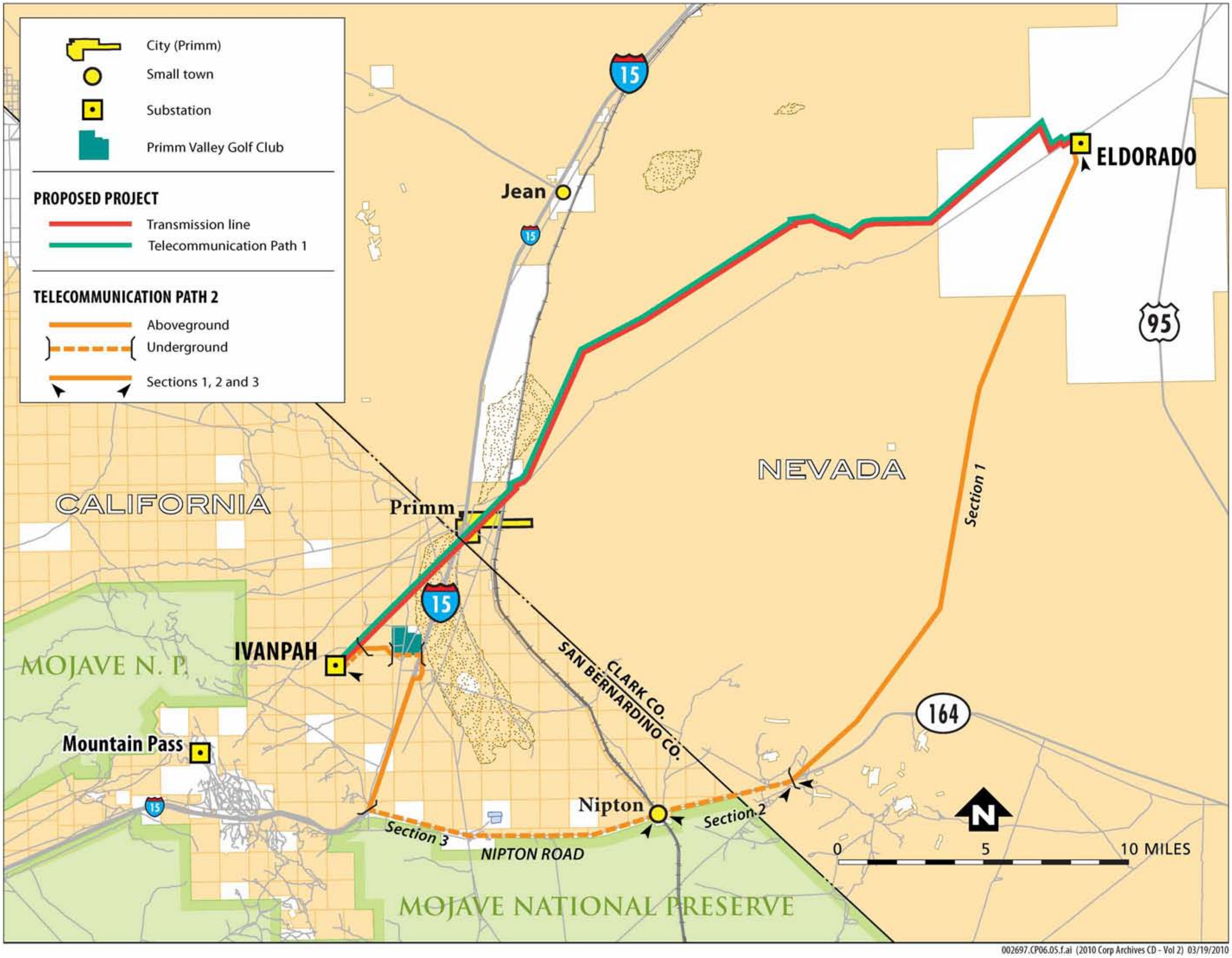

Figure 2-13 **Golf Course Telecommunication Alternative**

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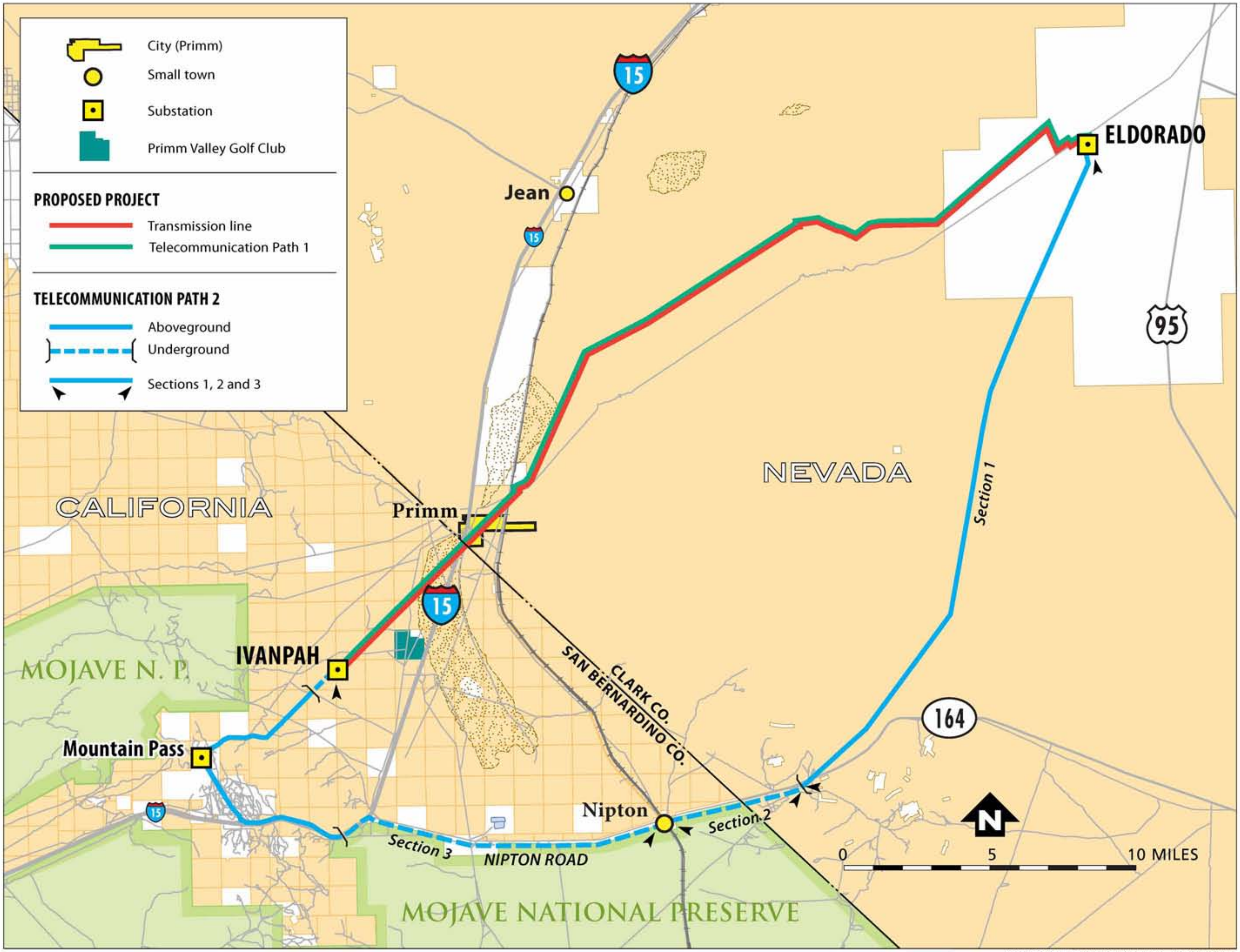

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Figure 2-14 **MOUNTAIN PASS TELECOMMUNICATION ALTERNATIVE**

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From the I-15 junction point, the route would parallel I-15 in an underground duct for approximately 1.0 mile and then would exit the underground duct and be strung on an existing Nipton 33-kV distribution line. The alternative route would then continue west to the town of Mountain Pass, then north to the Mountain Pass Substation. From there, the cable route would proceed northeast on an existing Nipton 33-kV distribution line to the Ivanpah Substation. The route would enter the proposed Ivanpah Substation from the south via approximately 500 feet of underground conduit that would be installed from the last Nipton 33-kV distribution line pole to the substation. The Mountain Pass Telecommunication route, from the I-15 junction point to the Ivanpah Substation, would be approximately 15.0 miles.

Communication Enclosure at the Mountain Pass Substation

Dedicated communication enclosures would be included within the Mountain Pass Substation (6.0 miles southwest of the Ivanpah Substation) to house communication equipment. The communication equipment would be needed to repeat (re-generate) optical signals from/to Eldorado via telecommunication Path 2, Section 3. The enclosures would be equipped with an AC electrical power interface, batteries and battery chargers, air conditioners, and conduits for connection to fiber optic cables from distribution pole lines.

2.3.2.3 No Project / No action Alternative

The No Project Alternative / No Action alternative considers the environmental impacts if the proposed project and its alternatives are not built. Under this alternative, none of the activities or potential environmental impacts described in Chapter 3 would occur. Analysis of the No Project Alternative and the corresponding No Action Alternative is required by CEQA and NEPA, respectively, to allow federal (BLM) and state (CPUC) decision-makers to compare the impacts of the project and its alternatives with the impacts of not approving the project. A CPUC No Project decision would be the denial of the CPCN application filed by SCE. A BLM No Action decision would be the denial of the ROW application filed by SCE.

Under the No Project / No Action alternative, the objectives of the proposed project would not be accomplished. The electrical transmission system proposed to connect renewable energy sources in the Ivanpah Valley area would not be constructed. Therefore, the applicant and other California utilities might not be able to comply with the provisions of Executive Order 13212, the Energy Policy Act of 2005, the Federal Power Act, California Senate Bill 1078, or California Senate Bill 107.

The applicant would continue to operate and maintain the existing 115-kV transmission structures and the existing Eldorado Substation. The applicant would also continue to use existing access and spur roads for operations and maintenance.

The applicant is required to interconnect and integrate power generation facilities into its electric system, under Sections 210 and 212 of the Federal Power Act (16 U.S.C. § 824 (i) and (k)) and Sections 3.2 and 5.7 of the CAISO's Tariff. Further, state mandates require the applicant to increase its percentage of renewable generation sources in its overall energy portfolio. As of November 2009, a total of 68 applications had been submitted for solar and wind energy projects on BLM lands near the Ivanpah Valley and Eldorado Valley areas. CAISO has also identified other projects in the area that are in planning stage and for which applications are expected in the future. While many of these projects may not be constructed due to environmental issues discovered during the environmental review process or due to funding or legal issues, it is reasonable to assume that some of these projects will be approved and constructed.

The existing transmission system in the Ivanpah Valley area cannot support the interconnection of these renewable generation projects planned for the Ivanpah Valley area. With the proposed transmission system, the applicant would be able to connect some of the planned renewable generation projects in the Ivanpah Valley area to the existing CAISO-controlled grid, which would help the applicant meet the renewable generation goals set by the state.

Under the No Project Alternative / No Action , the following events or actions (scenarios) related to electric generation and transmission could be reasonably expected to occur in the foreseeable future:

- As currently conceived, solar projects proposed in the Ivanpah Valley area would be postponed or cancelled. Applicants for certain projects planned in the area have stated their intention to connect to an upgraded 230-kV transmission network, and it can be reasonably assumed that other planned projects in the area have the same intention. These proposed renewable energy projects would have to find alternate means to connect to the existing transmission system without compromising system reliability.
- The California RPS[4], which requires retail sellers of electricity to increase their sales share produced by renewable energy sources to 20% by 2010, might not be achieved without access to renewable energy from the Ivanpah Valley. While access to renewable energy from the Ivanpah Valley could be provided via other methods, the location of the existing SCE transmission corridor in relation to the planned renewable generation projects in the Ivanpah Valley area make it a likely candidate for providing access to the CAISO-controlled grid.
- Other renewable energy resources would need to be identified and transmission studies would need to be conducted to connect these newly identified sources to the transmission grid. This could delay SCE's, and other utilities', ability to reach the RPS goal of 20% renewable generation sources by 2010.
- If the generation projects currently planned (mentioned above) were approved and constructed, transmission providers such as the applicant, Pacific Gas and Electric, or the LADWP would be required to accommodate the power load by upgrading existing transmission infrastructure or building new transmission facilities along a different alignment, and/or developers of solar and wind generation facilities would need to build their own transmission facilities to connect to the existing grid. These renewable generation facilities could also connect with a transmission system that serves customers outside of California.
- If the proposed transmission system is not constructed, the planned renewable generation facilities would need to find alternative means for transmitting their power to load centers and customers. This alternative might not meet the objectives outlined by the CPUC and the BLM. Specifically, under the No Project Alternative, access to the CAISO-controlled grid might but might not be provided to solar generation projects planned for the Ivanpah Valley area, because these projects might not be constructed or could connect to transmission systems that service customers outside of California.
- Under the No Project Alternative, the applicant would need to identify alternate renewable generation sources to meet the state RPS goals. This could result in delaying the applicant's ability to comply with the RPS mandate and, depending on the alternate sources identified, could result in greater environmental impacts than the proposed project as they might require creation of a new ROW or might require ground disturbance in previously undisturbed areas.

Further, if the proposed transmission system is not developed but the planned renewable generation facilities are developed, an alternative method for connecting renewable generation facilities in the Ivanpah Valley area would need to be developed. It is possible that other electrical utilities with transmission facilities in the area, such as LADWP, might purchase some of the power from the developers and integrate the electricity into its system. Another possibility is the development of a private transmission line, which would connect renewable generation projects to the grid. Currently, these options are not planned and have not been analyzed for environmental impacts; however, because the proposed project would involve only the replacement of an existing transmission line within an existing ROW, it is reasonable to assume that these alternatives could result in greater impacts than the proposed project because they might require the creation of new ROW or might require ground disturbance in previously undisturbed areas.

[4] The Renewable Portfolio Standard—regulated by the CPUC—was established in 2002 under Senate Bill 1078 and accelerated in 2006 under Senate Bill 107.

2.3.3 Alternatives Considered but Eliminated from Further Analysis

This section briefly describes the alternatives that will not be considered for further environmental analysis in this Draft EIR/EIS and the basis for those determinations, as a result of the alternatives screening process. These alternatives are not evaluated in detail in this Draft EIR/EIS. Detailed descriptions of these alternatives and explanations for their elimination are provided in Appendix A-1.

System Alternatives

Non-Transmission System Alternative (System Alternative 1)

This alternative would not meet the project's purpose, need, or objectives since it would not interconnect solar resources in the Ivanpah Dry Lake area with the SCE transmission system. In addition, new sources of in-basin generation would need to be identified, evaluated, and built. Transmission upgrades may also be required to integrate new in-basin generation sources into the transmission system. These new sources of in-basin generation would result in site-specific impacts associated with construction and operation of new power plants. This could result in air quality, biology, cultural resources, land use, noise, and visual impacts, among others.

Reconductoring Alternative (System Alternative 2)

The use of reconductoring would avoid and/or lessen construction-related environmental impacts identified for the proposed project because it would replace low capacity conductors on the existing towers. However, this alternative would not meet the purpose, need, and objectives because it would not provide sufficient capacity. It also would not meet the project objective of interconnecting planned solar resources in the Ivanpah Dry Lake area with the existing grid. Operations impacts would be similar to impacts of existing conditions.

Lower Voltage Alternative – New 115-kV Transmission Line (System Alternative 3)

This alternative would not meet the project purpose, need, and objectives because it would not interconnect or integrate new generation resources (up to 1,400 MW) expected to be developed in the Ivanpah Dry Lake area. It would also not meet the objective of maximizing the use of existing ROW and corridors. Construction-related impacts would be similar to those of the proposed project if new poles would be installed.

Higher Voltage Alternative – New 500-kV Transmission Line (System Alternative 4)

This alternative would not meet the project purpose, need, and objectives. It would require a wider ROW to accommodate the 500-kV transmission line. Additionally, there would be the potential for greater visual impacts than those of the proposed project because existing transmission structures would be replaced with structures that are taller, wider, and bulkier than those of the proposed project.

230-kV Single Circuit Transmission Line

This alternative would not meet the project purpose and need. It would only provide capacity for interconnecting a maximum of 1,500 MW. It would not meet the purpose and need of providing transmission capacity of 1,400 MW.

Transmission Line Route Alternatives

New ROW for 230-kV Transmission Line Alternative (Transmission Alternative F)

This alternative would not meet the purpose and need of providing transmission capacity for 1,400 MW. It would require new ROW that is 2,000 feet away from the existing SCE 100-foot corridor. In addition, this alternative would have the potential for greater land disturbance due to the need of a wider ROW, and greater impacts to sensitive resources for any area that is undisturbed and undeveloped.

Telecommunication Alternatives

Microwave Tower Only (Microwave Telecommunication Alternative)

This alternative would meet the project purpose and need, but would not meet the project objective of minimizing environmental impacts. The use of multiple microwave towers for telecommunications would avoid the use of overhead or underground wires, reducing the potential for visual impacts compared with the proposed project. However, this alternative would also have the potential for greater ground disturbance and impacts to sensitive biological, cultural, visual, and other resources from the construction of six new microwave towers.

Technology Alternatives

Composite Core Conductor Alternative (Technology Alternative 1)

This alternative meets the project purpose and need. However, the composite core is more expensive and fragile than the standard core conductor. Moreover, implementation of this alternative would not meet the project objective of providing reliability.

Painted Structures Alternative (Technology Alternative 2)

This alternative would meet the project purpose and need, but only partially meets the project objectives. Although this alternative would reduce aesthetic impacts, this effect would only be temporary; the aesthetic quality may be reduced over time as structures are exposed to weather, and paint may peel or chip and become unsightly. Repainting structures would increase safety concerns associated with mobilizing personnel and equipment, since repainting of structures might be needed over the life of the project. In addition, painting would take longer and increase potential for spills, hazards, and air quality impacts. Increased air quality impacts and exposure to hazardous materials would occur due to the release of volatile organic compounds and/or spills during the painting process.

Underground Construction (Technology Alternative 3)

Underground construction would meet the project purpose and need; however, it would only meet some of the project objectives. Undergrounding would not minimize environmental impacts and construction could take longer. Although this alternative would reduce visual impacts and potential impacts on avian species due to electrocution, it would require greater land disturbance due to construction activities, and greater potential for long-term impacts to air quality, biological resources, traffic, noise, and geology/soils (erosion) due to higher incidence of maintenance problems or system failures, which would require excavation to replace underground cables.

All Tubular Steel Poles Alternative (Technology Alternative 4)

This alternative would meet the project purpose and need. However, the use of TSPs for all transmission structures would not be technically feasible for 230-kV double circuit systems, and therefore would have special manufacturing and construction requirements. Additionally, the use of TSPs would have the potential for greater disturbances of habitat, soils, and surface water, cultural and paleontological resources, and hazardous waste due to construction activities.

2.3.4 Identification of the Environmentally Superior Alternative (CEQA) / Preferred Alternative (NEPA)

CEQA Guidelines require identification of the environmentally superior alternative. If the No Project Alternative is environmentally superior, it requires identification as a superior alternative among all of those considered (California Code of Regulations [CCR], Title 14 §15126.6(e)(2)). The rationale and supportive information for the selection of the environmentally superior alternative under CEQA is provided in Chapter 4, “Comparison of Alternatives.”

Under Title 40 CFR Section 1502.14(e), lead federal agencies are required to "identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference." In determining which alternative is preferred, lead federal agencies consider both the "environmentally preferable alternative" and the "agency preferred alternative." The "agency preferred alternative" is the alternative that the agency believes would fulfill its statutory mission and responsibilities, considering economic, environmental, technical, and other factors. Based on the conclusions of the environmental analysis, the BLM has determined that the preferred alternative is the proposed project / proposed action. The rationale and supportive information for this determination is provided in Chapter 4, "Comparison of Alternatives."

In contrast, the "environmentally preferable alternative," is the alternative that would promote the national environmental policy, as expressed in NEPA Section 101. Ordinarily, this means the alternative that would cause the least damage to the biological and physical environment; however, it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources (CEQ 1981). The environmentally preferable alternative will be identified by the BLM in the Record of Decision (ROD) for the project.

2.4 Project Construction

This section describes the main features of the construction of the proposed project and its alternatives. Since the project alternatives mainly consist of route variations of the proposed ROWs for transmission and telecommunication lines, general construction techniques and features for the alternatives would be similar to those described for the proposed project. Special considerations for specific alternatives are detailed in each subsection, as required.

Construction of each component of the proposed project and alternatives would involve a sequence of pre-construction and construction activities. Pre-construction activities include surveys, clearing, grading, and other site preparation activities and access and spur road works, as well as dismantling of existing facilities such as transmission line structures, transmission hardware, overhead ground wires, and transformer banks.

In general, construction of transmission, subtransmission, and distribution lines involves the following steps (Grigsby 2007):

- Preparing site and clearing ROW
- Framing – erecting poles, towers, or other transmission- and distribution-supporting structures, including foundations and anchors on guyed structures
- Installing conductors – pulling, stringing, and splicing conductors
- Installing optical ground wire – pulling, stringing, and splicing
- Grounding – bonding and connecting all equipment, conductors, and structures to a ground source for maximum safety at the construction sites
- Energizing – connecting the existing line in service to the new conductor
- Cleaning up and restoring the temporary disturbed sites

Additionally, construction of the proposed telecommunication system would involve overhead installation of optical ground wire and underground construction of duct banks for fiber optic cables.

2.4.1 Eldorado–Ivanpah Transmission Line Construction

The proposed Eldorado–Ivanpah 230-kV transmission line construction would require the removal of approximately 250 existing towers along 35 miles of the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line corridor. These transmission structures would be replaced by 216 new LSTs and 42 steel H-frames. Each structure would require multiple drilled, poured-in-place, concrete footings that would form the structure foundation. Construction would also include support activities, such as establishing material staging yards, and the development of access roads and spur roads.

The steps involved in the construction of the EITP would be:

- Conducting pre-construction surveys
- Establishing seven construction yards and two helicopter staging areas
- Upgrading and establishing access and spur roads
- Dismantling and removing existing 115-kV transmission facilities
- Preparing sites for the LST and H-frame structures
- Installing foundations for the LST and H-frame structures
- Assembling and erecting LST and H-frame structures
- Installing conductors (guard structures, wire stringing, pulling, tensioning, and splicing)
- Grounding
- Cleaning up and restoring the site

Pre-construction surveys

Technical pre-construction surveys would be required to complete the detailed engineering designs, to evaluate necessary erosion and other environmental controls, and to determine final locations of the proposed transmission structures. During this phase, the project design would be modified to avoid environmentally sensitive areas or to ensure structural integrity and sustainability. During the surveys, crews would locate spur road centerlines, grades, and soil boring locations. Using results from the pre-construction surveys, the applicant would make final determinations of road location curvature, cuts and fills, grades and drainage, and necessary erosion controls in accordance with design standards and practices and/or landowner requirements.

Pre-construction surveys would also result in adjustments of the size and location of the proposed excavation and tower foundation sites, depending on the type of the transmission structure (LSTs or H-frames) and the soil conditions at each site. Adjustments of the proposed excavation sites might be necessary to address excavation difficulties, avoid an environmental sensitivity, or maintain structural integrity and sustainability.

Construction Yards and Helicopter Staging Locations

Project construction would begin with establishment of approximately seven temporary construction yards and two helicopter landing sites located at strategic points along the route. Two construction yards would be in California and five in Nevada. The proposed location and current condition of each yard and landing site are listed in Table 2-9. The applicant or its contractors might use additional construction yards.

Table 2-9 Proposed Construction Yards and Helicopter Staging Locations

No.	Location	MP	Distance to ROW (miles)	Current Condition	Area (acres)(1)
CY 1	Eldorado Substation, NV	0	0	Previously disturbed	9.8
CY 2	Jean, NV	15	11.5	Previously disturbed	13.6
CY 3	Generating Station Yard, NV	27	0.4	Previously disturbed	16.5
CY 4	Primm Valley Casino Vacant Lot, NV	28	0.1	Previously disturbed	28.3
CY 5	Whiskey Pete's Casino Vacant Lot, NV	28	1.1	Previously disturbed	2.4
CY 6	BrightSource Generating Station Yard, CA	35	0	Unknown (public land)(2)	10+
CY 7	Nipton, CA (3)	n/a	4.7	Previously disturbed	2.5
HL 1	East of McCollough Pass	9	0.2	Not disturbed (4)	3.6
HL 2	West of McCollough Pass	15	0.01	Not disturbed (4)	5.7

Source: SCE 2009
Notes:
(1) Approximate areas based on current design
(2) Only Construction Yard #6 is located on public (BLM) land
(3) Construction Yard #7 is proposed for tower retrofit activities
(4) Based on aerial imagery
Key:
CY = Construction Yard
HL = Helicopter Landing site
n/a = not applicable

Each yard would be used as a reporting location for workers, and for vehicle and equipment parking and material storage. The yards would have offices for supervisory and administrative personnel. Maintenance of construction equipment would be conducted at these yards.

The number of workers reporting to any one construction yard is not expected to exceed approximately 100 workers at any time. Construction yards would range between 2 and 28 acres, depending on land availability and intended use. Construction of the Ivanpah Substation would not require a temporary laydown area outside the substation fenced area.

The applicant would arrange temporary electrical and telephone connections at the construction yards with local electrical and communication service providers. Water also would be provided by local vendors. During the peak construction period, approximately 80 private commuting vehicles and the construction vehicles/equipment would also be parked at the construction yards. Crews would load materials onto work trucks and drive to the current construction location. At the end of each day, crews would return to the yard in their work vehicles and depart in their private vehicles. Materials stored at the construction yards would include:

- Conductors
- Wood poles
- Optical ground wire cable
- Hardware
- Construction equipment
- Steel structural components
- Insulators
- Signage
- Fuel and joint compound

- Storm Water Pollution Prevention Plan (SWPPP) materials, such as straw wattles, gravel, and silt fences
- Waste materials for recycling or disposal

Due to greater efficiency and lower cost, the applicant would use conventional ground supported access construction methods for the transmission line construction. Helicopters would be mainly used during the transmission line stringing activities (sock or pilot line threading), as described further in this section. The applicant would develop a preliminary access plan and detailed engineering design to identify specific structures and/or portions of the proposed transmission line that would require helicopters as an alternate method of construction. Final location of helicopter staging areas for the proposed project would be determined with the input of the helicopter contractor and affected private landowners and land management agencies.

During stringing activities, preliminary helicopter operations would be based at the Jean Sport Aviation Center located in Jean, Nevada, and on roads adjacent to the pulling/tensioning sites. Helicopter fueling would occur at staging areas or at the local airport using the helicopter contractor's fuel truck, and would be supervised by the helicopter fuel service provider. The helicopter and fuel truck would stay overnight at a local airport, under security measures to be implemented by the applicant in coordination with the Clark County Department of Aviation (CCDOA) or at a staging area if adequate security is in place. Use of the existing Jean Sport Aviation facilities for helicopter staging and fueling would require coordination between the applicant and the CCDOA.

The size of each material or helicopter staging area would depend on the size and number of structures to be removed and installed. Staging areas would likely change as the work progressed along the transmission lines.

Access and Spur Roads

Transmission line roads are classified into two main groups: access roads and spur roads. Access roads run between tower sites and serve as a main transportation route along the transmission line ROW. Spur roads usually lead from the access roads and terminate at one or more structure sites.

Approximately 35 miles of existing main roads would need to be upgraded to support the proposed 230-kV line construction and operations. In addition, more access roads would be required for construction and maintenance of the telecommunications facilities, as well as additional access roads for connecting the project facilities to support and logistics areas, such as the road coming from Jean to the project ROW. Additionally, 1.2 miles of spur roads would be constructed to allow passage of construction vehicles to the construction sites. Upgrades and new construction might require vegetation clearing and grading based on site conditions. The new spur roads would be a minimum of 14 feet wide. It is anticipated that most of the spur roads would be left in place to access the facilities for operations and maintenance.

The existing access and spur roads might require reconstruction and maintenance prior to construction activities. Reconstruction works would include clearing, grading, and compacting the existing roads to remove potholes, ruts, and other surface irregularities to provide a smooth and dense surface capable of supporting heavy equipment. Specific locations for reconstruction works would depend on impacts of weather conditions over the existing roads and final project engineering design.

Dismantling and Removal of Existing 115-kV Transmission Facilities

The project would involve removing 208 existing 115-kV LST H-frames, 13 existing 115-kV LSTs, 23 wood pole H-frames, 6 wood poles and associated hardware (cross arms, insulators, vibration dampeners, suspension clamps, ground wire clamps, shackles, links, nuts, bolts, washers, cotter pins, insulator weights, and bond wires), and the transmission line conductor.

The applicant proposes to remove the existing 115-kV structures and conductors in the following sequence:

- Road work – Existing access roads would be used to reach structures, but some rehabilitation and grading might be necessary before removal activities were begun to establish temporary crane pads for structure removal.
- Wire-pulling locations – Wire-pulling sites would be located every 15,000 feet along the existing utility corridor, and would include locations at dead-end structures and turning points. Many of the locations used for the removal of existing 115-kV lines would be used for installation of the new 230-kV lines.
- Cable removal – A 3/8-inch pulling cable would replace the old conductor as it was removed. The cable would then be removed under controlled conditions to minimize ground disturbance, and all wire-pulling equipment would be removed. The old conductor wire would be wound onto "breakaway" reels as it was removed and would be transported to a construction yard where it would be prepared for recycling.
- Structure Removal – For each type of structure, a crane truck or rough-terrain crane would be used to support the structure during removal; a crane pad of approximately 50 by 50 feet might be required to allow a removal crane to be set up at a distance of 60 feet from the structure center line. The crane rail would be located transversely from the structure locations.
- Footing Removal – The existing LST and H-frame footings would be removed to a depth of approximately 1 to 2 feet. Holes would be filled with removed soil and compacted, and then the area would be smoothed to match the surrounding grade.

Site Preparation

Installation of the 230-kV transmission line would require construction of approximately 216 new LSTs and approximately 42 steel H-frame structures. Each LST and H-frame structure would be installed onto a flat, vegetation-free area or pad. The applicant would grade and/or clear to create a vegetation-free surface for footing construction. Grading would be conducted so that water would run in the direction of the natural drainage and ponding and/or erosion would be prevented. The graded area would be compacted and would be capable of supporting heavy vehicular traffic.

Ideally, structure laydown areas with sparse vegetation would not require vegetation clearing. The applicant would apply alternative methods such as drive and crush, mowing, and trimming of the laydown areas instead of clearing vegetation, although use of such methods might increase the risk of fire during the assembly erection process. The structure locations themselves and the 25-foot clearance area around the structures would require clearing.

The LSTs and steel H-frame structures would be assembled near the locations where they would be installed. Typically, they would be assembled in an approximately 200-by-200-foot laydown area. Depending on the condition of the area, clearing and/or grading would be necessary to prepare it for construction.

To erect either the LSTs or the steel H-frame structures, a crane pad (a flat, vegetation-free area) may need to be established within the laydown area described above. Crane pads would be located 60 feet from the centerline of each structure.

In mountainous areas, special techniques might be required to provide access for construction, assembly, erection, and wire-stringing activities during the transmission line construction. These special techniques would be used to help ensure the safety of personnel during construction activities.

Foundation Installation

Each of the 216 new LSTs and approximately 42 steel H-frame structures for this project would require multiple drilled, poured-in-place concrete footings to form the structure foundation. The size of the foundation would depend on the type of structure, soils conditions, and topography. LST foundations would consist of four concrete footings, while H-frames would have two concrete footings.

The foundation construction process would start with drilling the boreholes for each footing. The boreholes would be drilled using truck- or track-mounted drill rigs. LSTs typically require a borehole 3 to 4 feet in diameter and 20 to 45 feet deep. Steel H-frame structures typically require a borehole up to 6 feet in diameter and up to 40 feet deep. On average, each footing for an LST and steel H-frame structure would project approximately 1 to 4 feet above ground level. The actual depth of footings would depend on specific site soil conditions and topography and would be determined during final engineering; however, the maximum anticipated depth below ground surface is 45 feet.

Where excavation holes needed to be drilled in soft or loose soil or if they extended into groundwater, they would be stabilized with casings or drilling mud slurry. Mud slurry would be placed in the hole after drilling to prevent sloughing. The slurry would be pumped into the footing excavation hole. The concrete would then be pumped to the bottom of the excavation hole in a rigid pipe. As the slurry mud was displaced by the concrete, it would be pumped from the excavation hole into a vacuum truck. The drilling/slurry mud would be disposed at an approved facility, in accordance with the applicant’s waste management practices.

In areas not accessible by road, equipment and material could be deposited at structure sites using helicopters or by workers on foot, and crews could prepare the footings using hand labor assisted by hydraulic or pneumatic equipment or other methods.

Prior to drilling excavation holes in California, the applicant would contact Underground Service Alert to identify any underground utilities in the construction zone. In Nevada, a similar organization would be contacted for the same purpose.

Following excavation of the foundation footings, steel reinforced cages and stub angles would be set, survey positioning would be verified, and concrete would then be placed. Steel reinforced cages and stub angles would be assembled at laydown yards and delivered to each structure location by flatbed truck. LST foundations would require between 25 and 100 cubic yards of concrete, depending on the type of structure being constructed. H-frame structure foundations would require between 80 and 120 cubic yards of concrete.

During construction, existing concrete suppliers would be used when feasible. If no concrete suppliers exist in certain areas, a temporary concrete batch plant would be established. If necessary, the applicant would consider setting up a temporary concrete batch plant in a 2-acre site within the construction area. Equipment would include a central mixer unit (drum type); three silos for injecting concrete additives, fly ash, and cement; a water tank; portable pumps; a pneumatic injector; and a loader for handling concrete additives not in the silos. Dust emissions would be controlled by watering the area and by sealing the silos and transferring the fine particulates pneumatically between the silos and the mixers.

Structure Assembly and Erection

Structural components of the LSTs and H-frames would be bundled and shipped by rail or truck to the construction yards, and then trucked to the individual sites. LSTs and H-frames would be assembled at laydown areas at each site, and then erected and bolted to the foundations. Ground disturbance would generally be limited to the laydown areas, which would typically occupy an area of 200-by-200 feet (40,000 square feet). Vegetation would be removed and the areas would be graded.

LSTs assembly would begin with hauling and stacking the bundles of steel, using several tractors with 40-foot trailers and a rough-terrain forklift. After the steel was delivered and stacked, the construction crew would begin assembling the leg extensions, body panels, boxed sections, and bridges. The steel work would be completed by a combined erection and torquing crew with a lattice boom crane. The construction crew would install insulators and wire rollers (travelers) at this time.

For steel H-frame structures, steel work would consist of hauling the poles in sections to their designated sites using semi-trucks with 40-foot trailers and rough-terrain cranes. At the site, the poles would be set on the foundations once the concrete foundation had been cured. The poles could either be assembled into a complete structure or set one piece at a time by stacking and jacking them together. This would depend on the terrain and available equipment. Laydown areas would be established for the assembly process at each H-frame structure location.

Where road access was available, assembled sections would be lifted into place by an 80-ton crane. The crane pad would be located transversely to the structure and set up approximately 60 feet from its centerline. The crane would move along the ROW to erect subsequent structures.

For structures that would be located in terrain inaccessible to a crane, helicopters might be used for structure erection. Helicopter use is expected only in the McCullough Pass area and for line stringing. The final decision on helicopter use will be made by the applicant and the construction contractor.

The use of helicopters for the erection of structures would be conducted in accordance with the applicant's specifications and would be similar to methods detailed in Institute of Electrical and Electronic Engineers 951-1996, Guide to the Assembly and Erection of Metal Transmission Structures, Section 9, Helicopter Methods of Construction. The operations area of the helicopters would be limited to helicopter staging areas near construction locations that are considered safe locations for landing.

Final siting of staging areas would be conducted with the input of the helicopter contractor and affected private landowners and land management agencies. The size of each staging area would depend on the size and number of structures to be installed.

Conductor Installation

Wire-Stringing

Stringing includes all activities associated with installation of the transmission line conductors onto the LSTs and/or the steel H-frames, including the installation of primary conductor and optical ground wire, vibration dampeners, weights, spacers, and suspension and dead-end hardware assemblies. Insulators and stringing sheaves (rollers or travelers) are usually attached to the conductors as part of the stringing activity if the work consists of replacing conductors on existing towers (also known as reconductoring); otherwise, they are attached to the new structures during the steel erection process. Stringing conductors and optical ground wires on new transmission lines would begin once a number of structures had been erected and inspected. The dimensions of the area needed for the stringing setups associated with conductor installation depend on terrain.

Prior to stringing activities, several items used during the 115-kV conductor removal would be inspected or reinstalled, such as bucket trucks, wood pole guard structures, and temporary protective net systems used at the crossings for roads, streets, railroads, highways, or other transmission, distribution, and communication facilities.

The following four steps describe the wire stringing activities proposed by the applicant:

Step 1. Stringing the sock or pilot line – a lightweight sock line (also known as a pilot line) would be transported and installed tower to tower using a helicopter. This pilot line would be threaded structure to structure through wire rollers, which are attached to each tower insulator so the conductor can be pulled through. On average, the helicopter would operate approximately 6 hours per day during stringing operations. The operations area of the helicopter would be limited to helicopter staging areas considered safe locations for landing.

Step 2. Pulling – The sock line would be used to pull in the conductor pulling cable. The conductor pulling cable would be attached to the transmission line conductor using a special swivel joint to prevent damage to the conductor and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel. A piece of hardware known as a running board would be installed to properly feed the conductor into the roller; this device keeps the bundle conductor from wrapping during installation. The conductors would then be pulled through the length of the span by a puller machine. Another machine called a tensioner would be located at the other end of the span, near the reel of conductor. The puller and tensioner are operated together during the pulling phase to ensure that the conductor complies with technical specifications, such as maintaining the proper ground clearance.

Conductor pulling locations would occur every 15,000 to 18,000 feet on flat terrain and would be more closely spaced in rugged terrain. Wire pull locations would be selected, where possible, based on the geometry of the line as affected by changes in routing directions, changes in the terrain, and suitability of stringing and splicing equipment setups.

Step 3. Splicing, Sagging, and Dead-ending – Once each conductor is pulled through the length of the transmission line, all temporary pulling splices would be removed and replaced with permanent splices. Conductor splices would occur every 7,500 to 9,000 feet on flat terrain or more closely in rugged terrain. Once the splicing was completed, the conductor would be sagged to proper tension to avoid effects in the conductor length due to changes in temperature (conductors expand or contract with high or low temperatures). In addition, all phases to be installed between two towers would be sagged to the same tension. After splicing and sagging, conductors would be fixed to dead-end towers.

Step 4. Clipping-in and Spacers – After the conductors were fixed to dead-end towers, the conductors would be clipped in or attached to tangent structures. This process would involve removing the existing wire rollers and replacing them with final insulator hardware to secure the conductors to the insulators. Once this was complete, spacers would be attached between the conductors of each phase to maintain uniform separation.

An overhead optical ground wire would be installed on the transmission line for shielding and communication, as described in Section 2.4.5. On the EITP 230-kV transmission line, the pulling and tensioning sites would be used for both wire and optical ground wire installations, while the proposed stringing activities on the Eldorado–Lugo 500-kV line (Telecommunication Line Path 2, Section 1) would be for the optical ground wire installation only. The optical ground wire is typically installed in continuous segments, each up to 19,000 feet long, if installed in conjunction with the conductor, depending on factors including line direction, inclination, and accessibility. Following installation of the optical ground wire, the strands in each segment would be spliced together to form a continuous length from one end of the transmission line to the other.

Stringing would be conducted in accordance with the applicant's specifications, which are similar to process methods detailed in Institute of Electrical and Electronic Engineers Standard 524-2003, Guide to the Installation of Overhead Transmission Line Conductors. The applicant has developed a standard wire-stringing plan that includes a sequenced program of events starting with determination of wire pulls and equipment set-up positions, pulling times, and safety protocols needed for safe and quick installation of wire. To protect the safety of workers and the public, safety devices such as grounding, guard structures, and radio-equipped public safety roving vehicles and linemen would be in place prior to initiation of wire-stringing activities.

Guard Structures

During installation, conductors can fall. Public agencies differ on their preferred methods to protect public safety during conductor stringing operations. For major roadway and utility crossings, typically one of the following four methods is employed to protect the public:

- Erection of a highway net guard structure system
- Detour of all traffic off a highway at the crossing position
- Implementation of a controlled continuous traffic break while stringing operations are performed
- Strategic placement of special line trucks with extension booms on the highway deck

Guard structures are temporary facilities that protect underlying areas during wire stringing operations. They are designed to stop the movement of a conductor if it falls during installation. Typical guard structures are 60- to 80-foot-tall wooden poles. The number of guard poles installed on either side of a crossing varies between two and four depending on the width of the conductor being installed. Temporary nets also could be installed to protect some structures located under the transmission lines. Guard structures are usually removed once a conductor is installed. None of the other public safety methods require ground disturbance.

Based on the number of road crossings that would be needed along the proposed project route, the applicant has estimated that approximately 16 guard structures (Table 2-10) would be necessary. The exact number and type of guard structures would be field-verified upon completion of final design.

Table 2-10 Proposed Guard Structure Locations

GS #	Location of Guard Structure	Type of Guard Structure
1	West side distribution line between MPs 32 and 33	H-frame
2	East side distribution line between MPs 32 and 33	H-frame
3	South side of dirt road near MP 33	Bucket truck
4	North side of dirt road, near MP 33, crossing over distribution line	Bucket truck
5	South-bound I-15, west side of highway, near MP 29, south of state line	H-frame w/net
6	South-bound I-15 in center median, near MP 29, south of state line	H-frame w/net
7	North-bound I-15 in center median, near MP 29, south of state line	H-frame w/net
8	North-bound I-15 east side of highway, near MP 29, south of state line	H-frame w/net
9	Southwest side of Lotto Store Road, between MPs 28 and 29, at southern edge of outlet mall	H-frame
10	Northeast side of Lotto Store Road, between MPs 28 and 29, at southern edge of outlet mall	H-frame
11	Southwest side of Fashion Outlet Way, between MPs 28 and 29, at eastern edge of outlet mall	H-frame
12	Northeast side of Fashion Outlet Way, between MPs 28 and 29, at eastern edge of outlet mall	H-frame
13	South side of E. Primm Boulevard, between MPs 28 and 29	H-frame
14	North side of E. Primm Boulevard, between MPs 28 and 29	H-frame
15	West side of Union Pacific Railroad, between MPs 26 and 27	H-frame
16	East side of Union Pacific Railroad, between MPs 26 and 27	H-frame

Key:
GS = Guard Structure
MP = Milepost

Pulling and Splicing

The puller, tensioner, and splicing set-up locations associated with the proposed project would be temporary and the land would be restored to its previous condition following completion of pulling and splicing activities. The final number and locations of the puller, tensioner, and splicing sites would be determined during final engineering for the project, depending on the construction methods chosen by the applicant or its contractor. The puller, tensioner, and splicing set-up locations require level areas to allow for maneuvering the equipment. When possible, existing level areas and existing roads would be used, to minimize the need for grading and cleanup.

The minimum areas needed for pulling, tensioning, and splicing equipment setup sites would be:

- 150 by 500 feet for tensioning equipment,
- 150 by 200 feet for pulling equipment, and
- 150 by 100 feet for splicing equipment.

However, crews can work from within slightly smaller areas when space is limited.

At a splice location, the fiber cables are routed down a structure leg where the splicing occurs. The splices are housed in a splice box (typically a 3-by-3-by-1–foot metal enclosure) that is mounted to one of the structure legs some distance above the ground. On the last structure at each end of a transmission line, the overhead fiber is spliced to another section of fiber cable that runs in underground conduit from the splice box into the communication room inside the adjacent substation.

Grounding

Grounding is a general industrial safety procedure implemented for construction of electric facilities. It entails connecting to the ground all equipment, conductors, anchors, and structures within a defined work area. It can also be accomplished by fully insulating equipment and operators, and by isolating equipment and personnel (Grigsby 2007).

Grounding techniques for electric transmission facilities and equipment depend on the ability of materials to oppose the electric current flow, also known as electrical resistance. Soil resistivity and the foundation-to-ground resistance are basic criteria commonly used for grounding electrical facilities and equipment. In particular, the applicant would consider a foundation-to-ground resistance criterion (with dry soil conditions) of 30 ohms or less to be safe, for transmission structures that are located more than 700 feet from a substation. If this condition cannot be met, the applicant would install special counterpoise systems at the structure footings to reduce the resistance to safe levels. Those structures within the Ivanpah Substation boundary would be grounded to the substation ground grid.

Site Cleanup

The applicant would restore all areas that were temporarily disturbed by proposed project activities (including material staging yards, pulling and tension sites, and splicing sites) following the completion of construction. Restoration would include grading, restoring sites to original contours, and reseeding, where appropriate. In addition, all construction materials and debris would be removed from the area and recycled or properly disposed of off site. The BLM will require the applicant to mitigate by monitoring restoration for a given period after reclamation, to assure that cleanup activities were successfully completed and satisfactory reclamation was achieved.

During construction, water trucks would be used to minimize the quantity of airborne dust created by construction activities. Any damage to existing roads as a result of construction would be repaired once construction was complete.

2.4.2 Subtransmission Line Construction

At the transition point of the proposed project transmission line route going north into the Ivanpah Substation, seven existing LST H-frame structures would be removed and replaced with one single-circuit engineered TSP (Figure 2-7) and six LWS H-frames (Figure 2-8) within the existing Eldorado–Baker–Cool Water–Dunn Siding–Mountain Pass 115-kV transmission line ROW. In addition, six LWS H-frames would be installed at replaced structures to meet current requirements.

Approximately three single-circuit engineered TSPs would be installed and looped in to the proposed Ivanpah 115-kV rack position. These TSPs would require concrete footings. The LWS H-frames would be buried and backfilled with native soils. One circuit of 653.9 ACSR conductors (three phases per circuit, one conductor per phase) and two 3/8-inch high-strength shield wires would be placed on the new poles.

Construction of these structures would follow the general steps described in Section 2.4.1 for site preparation, foundation installation, structure assembly, and conductor installation. The final step in completing construction of the new 115-kV subtransmission line segment would be to energize the new conductor. To accomplish this, the existing lines in service would be de-energized and the connections to the new segment would be made.

2.4.3 Distribution Line Construction

A 33-kV distribution system would be constructed to provide auxiliary power to the Ivanpah Substation. This system would consist of approximately 1 mile of new underground 33-kV circuitry and two new Remote Control Switches (RCSs) that would be built to close the loop in the Nipton 33-kV circuit. The proposed work would be done next to Densmore Drive Road. One RCS would be south of Ivanpah Substation, and one would be next to the Primm Golf Course.

Ivanpah Substation power would be served from approximately 400 feet of new ducts and one run of cable from the Nipton 33-kV circuit to the location of the new station light and power transformer in the Ivanpah Substation. The exact location of the transformer would be determined during final engineering.

Additionally, about 4,300 feet of new 12-kV overhead distribution line would be constructed between the town of Nipton and the new microwave site northeast of Nipton. An overhead transformer would be installed with underground service to the microwave site. The line would be installed along the side of an existing dirt road.

Pole Upgrades

The telecommunication alternatives would include installation of fiber cables from Nipton to the Ivanpah Substation on the existing Nipton 33-kV distribution line wood poles. Distribution line poles would be replaced if the poles did not meet wind load requirements with the addition of fiber cable. A hole about 8 feet deep would be drilled next to the existing pole, and a new pole would be erected. The conductor would be transferred from the existing pole to the new pole. The old pole would be removed.

2.4.4 Ivanpah Substation Construction

Construction of the Ivanpah Substation would involve the following steps:

- Site preparation
- Excavation
- Substation equipment installation
- Paving
- Rock surfacing
- Spill prevention, control, and countermeasure
- Storm water pollution prevention
- Fencing and security

Site Preparation

The substation area would be a 1,650-by-1,015-foot rectangle covering approximately 38.5 acres. It would be bounded by the applicant's existing 115-kV ROW on the southeastern side and open BLM land on the other three sides, currently proposed as the ISEGS project development areas described in Section 2.2.2.

Grading of the substation site and an access road to the site would be completed as part of the scope of the ISEGS project facilities described in Section 2.2.2.2 and would include grading of the 885-by-850-foot substation site and the 10-foot perimeter buffer. In addition, the ISEGS scope would grade the following areas at the substation site: the entire 17-acre substation pad, the cut and fill side slopes to blend the existing terrain with the new pad, and an earthen berm along the upslope pad boundaries to protect the substation from storm water runoff. In addition, the substation access roads and surface flow diversion/control measures would be graded and installed as part of the ISEGS project.

Two transmission line access areas would be included within the proposed substation site, approximately 1,015 by 400 feet (approximately 9 acres) each. These areas would provide room for the 115-kV and 230-kV transmission lines to turn into the station from the adjacent ROWs.

Land disturbance for the EITP substation construction would be limited to the actual structure erection locations, staging/pulling areas, and unpaved access roads. Other site preparation activities would include:

- Final grading
- Installation of approximately 3,500 feet of 8-foot-high perimeter fence with barbed wire surrounding the entire substation pad and one 30-foot-wide rolling gate
- Installation of a new conductor ground grid to cover the entire pad

Excavation

After the substation site was graded, excavation would be required to install below-grade facilities, including a ground grid, trenches, and equipment and structure foundations. The design of the substation ground grid would be based on soil resistivity measurements collected during a geotechnical investigation that would be conducted prior to construction. Approximately 145 foundations of various sizes would be constructed throughout the substation pad to support equipment and steel structures. In addition, a network of partially buried concrete trenches and a buried grounding grid would be installed. Excavations of these foundations and trenches would begin following the completion of grading and other yard improvements and would continue for several weeks. The estimated total volume of soil that would need to be excavated for foundation and trenches is 1,250 cubic yards; the soil would be spread on a portion of the substation property.

Substation equipment installation

Following the excavation and below-grade construction, installation of substation equipment and ancillary facilities, such as buses, capacitors, circuit breakers, transformers, steel structures, and the MEER would take place. The transformers would be delivered by heavy-transport vehicles and off-loaded on site by large cranes with support trucks.

Paving

Asphalt concrete paving would be applied to internal driveways over an aggregate base material and a properly compacted sub-grade as recommended by the geotechnical investigation during final engineering. Asphalt concrete paving would be installed after all major construction had been completed.

Rock Surfacing

All areas within the substation perimeter that were not paved or covered with concrete foundations or trenches would be covered with a 4-inch layer of untreated, ¾-inch crushed rock. This crushed rock layer would provide a safe work environment in those areas of the substation not previously insulated or electrically grounded. The rock would be applied to the finished grade surface after all construction had been completed.

Spill Prevention, Control, and Countermeasures Plan

It is estimated that the proposed substation would store more than 1,320 gallons of transformer oil, requiring the development and implementation of a Spill Prevention, Control, and Countermeasures (SPCC) plan. The quantity of oil contained in any one of the planned 230/115-kV transformers would exceed the quantity above which the plan is required by law. The facility would be designed so the transformers would have secondary containment that would comply with all applicable regulations.

Storm Water Pollution and Prevention Plan

An SWPPP would be developed and implemented to prevent the potential discharge of contaminants and to prevent erosion during construction. The SWPPP would define areas where hazardous materials such as concrete would be stored; where trash would be placed; where rolling equipment would be parked, fueled, and serviced; and where construction materials such as reinforcing bars and structural steel members would be staged.

Erosion control during grading of the unfinished site and during subsequent construction would be in place and monitored as specified by the SWPPP. A siltation basin would be established to capture silt and other materials that might otherwise be carried from the site by rainwater surface runoff. Approximately 20 percent of the completed substation would consist of impervious materials such as concrete foundations and asphalt concrete paving.

Fencing and security

As described in Section 2.2.2.2, the entire substation area would be enclosed by perimeter gates and fencing. Perimeter fencing would conform to the applicant's requirements for electrical substations and have a minimum height of 8 feet above the adjacent finished grade to the outside of the substation. All perimeter fences and gates would be fitted with barbed wire. A motion sensing system would be attached to the perimeter fence to detect attempted unauthorized entry. Additionally, as part of the mitigated ISEGS Ivanpah 3 project (according to the FSA Amendment of March 2010), tortoise barrier fence would also be installed in accordance with the USFWS Recommended Specifications for Desert Tortoise Exclusion Fencing.

2.4.5 Telecommunication System Installation

Contractors would construct the telecommunication system. The applicant would be responsible for administration and inspection. During some stages of the proposed project, multiple locations would be under construction simultaneously. This could involve independent construction teams. Modifications of the existing Eldorado–Lugo 500-kV towers might include reinforcing or extending the structure body, installing horizontal diaphragms, and reinforcing structure legs. The applicant would develop detailed engineering drawings and procedures for fabrication and installation for each of the structure modifications.

The modifications to be performed on each structure would be identified by bundles. Each bundle would contain those components necessary to complete the required modifications, such as new steel angles to form back-to-back angles to the existing leg diagonals, redundant braces to the longitudinal and transverse faces, oblique braces between leg diagonals, and a new horizontal diaphragm. New redundant members would also be designed and installed at the ground peaks to support the optical ground wire clip-in hardware. The loading capacity of the upgraded structures would be able to support the loads for the new optical ground wire installation and meet the requirements of CPUC General Order 95 (State of California) and the National Electric Safety Code (State of

Nevada). Final structure modification and associated construction activities would be determined once final engineering was completed by the contractor.

Optical Ground Wire Installation

For proposed project communications, optical ground wire segments would be installed on both the EITP 230-kV transmission line structures (Telecommunication Path 1), and along 25 miles of the Eldorado–Lugo 500-kV transmission line (Telecommunication Path 2, Section1). Optical ground wire installation would be performed in the same manner as the conductor installation, as described in Section 2.4.1. Optical ground wire is typically installed in continuous segments, each up to 19,000 feet long, depending on various factors including line direction, inclination, and accessibility. For Telecommunication Path 1, the pulling and tensioning sites would be the same as those proposed for the 230-kV conductor installation. For Telecommunication Path 2, the stringing activities on the existing Eldorado–Lugo 500-kV line would be conducted for the optical ground wire installation only.

Following installation of the optical ground wire, the strands in each segment would be spliced together to form a continuous length from one end of the transmission line to the other. At a splice structure, the fiber cables would be routed down the structure leg where the splicing would occur. The splices would be housed in a splice box (typically a 3-by-3-by-1–foot metal enclosure) mounted to one of the structure legs some distance above the ground.

Distribution line poles would be replaced if a pole did not meet wind load requirements with addition of fiber cable. Replacing a distribution line pole requires a five-person crew, one pole trailer truck, one pole digger truck, and one crew truck. An approximately 30-by-40-foot work area is required for the work. A hole about 8 feet deep would be drilled next to the existing pole, and a new pole would be erected. A conductor would be transferred from the existing pole to the new pole and the old pole would be cut or removed.

Underground Installation

Following installation of the optical ground wire, on the last tower at each end of a transmission line, the overhead fiber would be spliced to another section of fiber cable that would run in underground conduit from the splice box into the communication room inside the adjacent substation. To install the fiber optic cable in existing and new underground conduits, a high-density polyethylene smooth-wall innerduct would be used to facilitate installation and to protect and help identify the cable. The innerduct would be installed first inside the conduit, and then the fiber optic cable would be installed inside the innerduct.

Connecting the optical ground wire with the substation would require several steps. The splice box would be mounted 20 to 30 feet above ground on the last transmission structure to the substation fence line. About 25 feet of 5-inch vertical riser conduit would be installed to reach the splice box from the ground. A trench about 3 feet deep and 1.5 feet wide would be dug from the structure to the substation fence line. A 5-inch conduit would be placed inside the trench from the structure to the substation fence line. A layer of slurry would be poured over the conduit for additional protection, and the dug-up soil would be used to backfill the trench.

At the substation fence line, the conduit would be connected to a trench inside the substation. Optical fiber nonconducting riser-type fiber cable would be pulled from the substation MEER to the splice box located on the last transmission structure. After the optical ground wire and optical fiber nonconducting riser-type cables were spliced, the splice case would be placed inside the substation site. About 40 by 60 feet of work area, two splice trucks with pulling equipment, and a four-person crew would be required for the underground cable installation. In addition, a three-person crew would be required to complete the fiber optic splicing.

Fiber Optic Cable Installation

The overhead fiber optic cable would be installed by attaching cable to structures in a manner similar to that described above for the transmission line stringing. Installation would involve attaching the cable to cross arms on distribution poles. This would require the use of a bucket truck. One four-person crew and two trucks would be used. A crew can install up to 2,000 feet of cable and complete three splices in 1 day.

Overhead fiber optic cable stringing includes all activities associated with the installation of cables onto cross arms on existing wood pole structures. This activity includes installation of vibration dampeners and suspension and dead-end hardware assemblies. Stringing sheaves (rollers or travelers) are attached during the framing process. As part of the applicant's standard wire stringing plan, the fiber optic installation would follow a sequenced program of events starting with determination of the number of cable pulls and cable pulling equipment set-up positions, pulling locations, times, and safety protocols needed for safe and quick cable installation.

Fiber optic cable pulls typically occur every 10,000 to 20,000 feet over flat or mountainous terrain. Fiber optic cable splices are required at the ends of each cable pull. Fiber optic cable pulls are the length of any given continuous cable installation process between two selected points along the existing overhead or underground structure line. Fiber optic cable pulls are selected, where possible, based on availability of pulling equipment and designated dead-end structures at the ends of each pull, geometry of the line as affected by points of inflection, terrain, and suitability of fiber optic cable stringing and splicing equipment set ups. The dimensions of the area needed for stringing setups vary depending on the terrain; however, a typical stringing setup is 40 by 60 feet. Where necessary due to space limitations, crews can work from within a smaller area.

Installation of Microwave Tower and Communication Site

An approximately 100-by-100-foot area would be required for constructing each new communication site. Chain link fencing would be installed around the communication site perimeter. A typical communication site consists of a communication building, microwave tower, and generator/fuel tank. A typical communication building is either a block wall-type building to be constructed on site or a prefabricated building delivered to the site. Prefabricated buildings are set on a concrete foundation using a crane. The typical building size is 36 by 12 feet; the building consists of a generator room and an equipment room. The generator room houses an emergency backup generator and manual/automatic AC switch equipment. Dimensions of the communication building would be determined during final engineering design.

Microwave equipment, DC power equipment, and other telecommunication equipment would be installed in the MEER. A separate concrete pad with a 10-foot separation from the communication building would be constructed for fuel tank installation.

The required area for a typical free-standing, four-legged lattice steel communication tower is 25 by 25 feet. For the proposed project, the tower would be built outside the communication room or next to the MEER within the substation. Concrete footings would be installed to support the tower. Heavy equipment needed for construction would include ready-mixed concrete trucks for the footings and a crane for tower erection and antenna installation. Tractor-trailer vehicles would be used to transport steel tower components. A six- to eight-person crew might be on site at any given time for tower construction and antenna installation.

Construction of the new communication site would take approximately 6 months and would consist of the following steps:

- Prepare site
- Erect temporary fencing
- Set the foundations
- Install prefabricated building, fuel tanks, and emergency generator
- Erect the antenna tower (where necessary)

- Install telecommunication equipment and/or antennas
- Erect permanent fencing
- Clean up the site

2.4.6 Land Disturbance

Both temporary and permanent land disturbance would be associated with the EITP construction activities. Temporarily disturbed areas would be restored after construction and would be mainly associated with construction yards, laydown areas, and areas for tower assembly and erection. Permanent disturbance would occur primarily in the footprints of new structures (lattice towers, poles, H-frames, microwave towers), substation sites, access and spur roads, and other proposed permanent components. The following subsections present detailed tables indicating land disturbance estimates associated with the construction, operation, and maintenance of the proposed project and its alternatives.

2.4.6.1 Proposed Project

The estimated land disturbances associated with the proposed project are summarized in Tables 2-11 to 2-14. All temporary and permanent land disturbance estimations are based on the preliminary engineering design features presented by the applicant. Estimated total land disturbance from all the applicable proposed project components is approximately 466 acres during construction, with a permanent disturbance of 51 acres. Land disturbance would occur at each structure foundation site and also along new or restored access and spur roads. During grading on roads and at the substation sites, and during excavations at the proposed underground construction areas, soil and vegetation would be disturbed by trucks and other mobile equipment.

Table 2-11 230-kV Transmission Line Estimated Land Disturbance

Project Feature	Quantity	Each Disturbed Area (L x W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Remove existing lattice steel H-frame (1)	208	150 feet x 75 feet	53.7	53.7	0.0
Remove existing lattice steel structure (1)	13	150 feet x 75 feet	3.4	3.4	0.0
Remove existing wood H-frame (1)	23	100 feet x 75 feet	4.0	4.0	0.0
Remove existing wood pole (1)	6	100 feet x 75 feet	1.0	1.0	0.0
Construct new lattice steel suspension structure (2)	178	200 feet x 200 feet	163.5	137.6	25.9
Construct new lattice steel dead-end structure (2)	35	200 feet x 200 feet	32.1	25.6	6.5
Construct new lattice steel heavy dead-end structure (2)	3	200 feet x 200 feet	2.8	2.2	0.6
Construct new tubular steel double H-frame (3)	21	200 feet x 200 feet	19.3	15.4	3.9
115-kV conductor removal and 230-kV conductor and optical ground wire stringing setup area – puller (4)	23	200 feet x 150 feet	15.8	15.8	0.0
115-kV conductor removal and 230-kV conductor and optical ground wire stringing setup area – tensioner (4)	24	500 feet x 150 feet	41.3	41.3	0.0
230-kV conductor splicing setup areas (4)	12	150 feet x 100 feet	4.1	4.1	0.0
New access roads (5)	0.0 miles	Miles x 14 feet	0.0	0.0	0.0
New spur roads (5)	1.2 miles	Miles x 14 feet	2.4	0.0	2.4
El Dorado Substation material and	1	9.8 acres	9.8	9.8	0.0

Table 2-11 230-kV Transmission Line Estimated Land Disturbance

Project Feature	Quantity	Each Disturbed Area (L x W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
equipment staging area					
Jean, Nevada – material and equipment staging area	1	13.6 acres	13.6	13.6	0.0
General Construction Yard – material and equipment staging area	1	16.5 acres	16.5	16.5	0.0
Primm Valley Casino vacant lot – material and equipment staging area	1	28.3 acres	28.3	28.3	0.0
Whiskey Pete's Casino vacant lot – material and equipment staging area	1	2.4 acres	2.4	2.4	0.0
ISEGS construction station – material and equipment staging area	1	10 acres	10.0	10.0	0.0
Total (6)			**424.0**	**386.1**	**39.3**

Notes:

(1) Includes removing existing conductor, tearing down existing structure, and removing foundation 2 feet below ground surface.

(2) Includes installing foundation, assembling and erecting structure, installing conductor and optical ground wire. Area to be restored after construction. The portion of ROW within 25 feet of the lattice steel structure to remain cleared of vegetation would be permanently disturbed for each structure (suspension = 0.145 acre; dead-end = 0.187acre; heavy dead-end = 0.188 acres).

(3) Includes assembling and erecting structure, installing conductor and optical ground wire; area to be restored after construction includes a portion of ROW within 25 feet of the tubular steel double H-frame to remain cleared of vegetation; 0.185 acres would be permanently disturbed for each tubular steel double H-frame.

(4) Based on 9,000-foot conductor reel lengths, number of circuits, and route design.

(5) Quantity of this item is provided in linear miles, based on the expected length of road (in miles) and a road width of 14 feet.

(6) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based on final engineering and review.

Table 2-12 Subtransmission Line Estimated Land Disturbance

Project Feature	Quantity	Each Disturbed Area (L x W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Remove existing lattice steel H-frame and construct new TSP (1) (2)	1	200 feet x 100 feet	0.5	0.4	0.1
Remove existing lattice steel H-frame and construct new LWS H-frame (1)(3)	6	200 feet x 100 feet	2.8	2.4	0.4
Construct new tubular steel pole (2)	3	200 feet x 100 feet	1.4	1.2	0.2
Construct new LWS H-frame (1)(3)	6	200 feet x 100 feet	2.8	2.4	0.4
Total (4)			**7.3**	**6.3**	**1.0**

Notes:

(1) Includes removing existing conductor, tearing down existing structure, and removing foundation 2 feet below ground surface.

(2) Includes assembling and erecting structure, installing conductor and shield wire. Area to be restored after construction. The portion of ROW within 25 feet of the TSP would remain cleared of vegetation. Approximately 0.057 acres would be permanently disturbed for each TSP.

(3) Includes structure assembly and erection, conductor, and shield wire installation. Area to be restored after construction. Portion of ROW within 25 feet of the LWS H-frame to remain cleared of vegetation. Approximately 0.067 acres would be permanently disturbed for each LWS H-frame.

(4) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based on final engineering and review for the project.

Key: LWS = lightweight steel; TSP = tubular steel pole

1

Table 2-13 Distribution Line Loop Estimated Land Disturbance

Project Feature	Quantity	Each Disturbed Area (L x W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Underground trench/duct for conduit (1)	1	2,600 feet x 1.5 feet	0.09	0.09	0.00
Underground manhole installation	2	10 feet x 15 feet	0.01	0.01	0.00
Work area for underground manholes pulling area	2	40 feet x 60 feet	0.11	0.11	0.00
Work area pulling of 3/8 mile of 1/0 ACSR pole line construction	3	40 feet x 60 feet	0.17	0.17	0.00
Total			**0.37**	**0.37**	**0.00**

Note:
(1) Underground trench is approximately 1.5 feet wide at most and 2,600 feet long from the existing transformer to the proposed new underground dip pole. All construction is along existing paved and dirt roads at the perimeter of the Primm Valley Golf Course.
Key: ACSR = Aluminum Conductor Steel Reinforced

2

Table 2-14 Telecommunication System Estimated Land Disturbances

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Telecommunication Path 1					
Underground trench/duct for fiber entrance to Eldorado Substation (1)	1	500 feet x 1.5 feet	0.02	0.02	0.00
Underground trench/duct for fiber entrance to Ivanpah Substation (1)	1	500 feet x 1.5 feet	0.02	0.02	0.00
Work area outside Eldorado Substation	1	40 feet x 60 feet	0.06	0.06	0.00
Work area outside Ivanpah Substation	1	40 feet x 60 feet	0.06	0.06	0.00
Subtotal Estimated Path 1			**0.14**	**0.16**	**0.00**
Telecommunication Path 2, Section 1					
Retrofit existing lattice steel structure (2)	45	150 feet x 150 feet	23.2	12.5	10.7
optical ground wire stringing setup area – tensioner (3)	9	50 feet x 100 feet	1.0	1.0	0.0
optical ground wire stringing setup area – puller (4)	9	50 feet x 100 feet	1.0	1.0	0.0
Nipton – material and equipment staging area	1	~ 2.5 acres	2.5	2.5	0.0
Subtotal Estimated Path 2, Section 1			**27.8**	**17.0**	**10.7**
Telecommunication Path 2, Section 2					
Work area at 500-kV tower M172	1	40 feet x 80 feet	0.07	0.07	0.00
4.8-mile underground fiber cable duct (5)	1	6.8 feet x 25,200 feet	3.93	3.93	0.00
Underground vaults	21	6 feet x 6 feet	0.02	0	0.02
Work area for underground vaults and fiber pulling area	5	40 feet x 60 feet	0.28	0.28	0.00
Subtotal Estimated Path 2, Section 2			**4.30**	**4.28**	**0.02**

Table 2-14 Telecommunication System Estimated Land Disturbances

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Telecommunication Path 2, Section 3					
Building new microwave communication site	1	100 feet x 100 feet	0.23	0	0.2
Placing 0.7 miles of fiber optic cable	1	6.8 feet x 3,700 feet	0.58	0.58	0.0
Work area for underground vaults and fiber pulling area	2	40 feet x 60 feet	0.11	0.1	0.0
Subtotal Estimated Path 2, Section 3			**0.92**	**0.69**	**0.2**
Total			**33.2**	**22.1**	**11.0**

Notes:
(1) Underground trench is approximately 1.5 feet wide, at most 500 feet long from the last structure to the substation fence line.
(2) Includes structure assembly and erection, and optical ground wire installation. Area to be restored after construction. The existing portion of ROW within 25 feet of the lattice steel structure footings would remain cleared of vegetation. The 10.8 acres is pre-existing permanently disturbed area around the structure for ongoing operation and maintenance access by the applicant.
(3) Based on 20,000-foot optical ground wire reel lengths and route design.
(4) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based on final engineering and review.
(5) The calculated disturbed area is based on the trench method. The proposed trench would be 1.5 feet wide; average trenching/excavating machines have a tread width of 68 inches (5.67 feet) and 14 inches (1.17 feet) of ground clearance. The applicant would select other underground construction methods to reduce land disturbance, such as horizontal boring, if feasible.

Additionally, assembly and erection of the new LSTs, H-frames, and TSPs would require laydown areas, material and equipment staging areas, and pulling and tensioning sites. These sites might require vegetation clearing and grading to level areas prior to installation activities. Furthermore, installation of the subtransmission (115-kV) line would disturb 7.3 acres during construction and would result in a 1-acre permanent disturbance, while the proposed 33-kV distribution line segment would create a temporary disturbance of 0.37 acres.

The acreage associated with the Ivanpah Substation is analyzed in the ISEGS FSA/EIR; however, construction of the EITP components associated with the proposed substation would occur without the construction of the ISEGS project. According to the revised ISEGS land disturbance estimations (FSA Addendum), the substation area for SCE use would be 13.3 acres (CEC and BLM 2010). Upgrades to the existing Eldorado Substation would be located on expanded yards within the existing substation boundaries; therefore, no temporary or permanent land disturbance is anticipated for this project component..

Installation of overhead ground wire and optical ground wire along the proposed telecommunication paths and permanent operation and maintenance of additional facilities such as the proposed microwave communication site in Nipton would create both temporary and permanent land disturbances. Temporary disturbance for the telecommunication component would total 33.2 acres, with an estimated permanent footprint of 11 acres.

2.4.6.2 Alternatives

Temporary and permanent additional land disturbance associated with the construction, operation, and maintenance of the transmission line routing and telecommunication alternatives are presented in Tables 2-15 to 2-21. Land disturbances estimated for the subtransmission and distribution lines components would be the same as those presented in Section 2.4.6.1. In addition, Table 2-21 compares the estimated land disturbances of alternatives with those resulting from the proposed project. All temporary and permanent land disturbance estimations are based on the preliminary engineering design features presented by the applicant.

Table 2-15 Estimated Additional Land Disturbance for Transmission Line Alternative Route A

Project Feature	Quantity	Each Disturbed Area (Length X Width)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Construct new lattice steel suspension structure (1)	26	200 feet x 200 feet	23.9	20.1	3.8
Construct new lattice steel dead-end structure (1)	3	200 feet x 200 feet	2.8	2.2	0.6
Construct new lattice steel heavy dead-end structure (1)	1	200 feet x 200 feet	0.9	0.7	0.2
Construct new tubular steel double H-frame (2)	2	200 feet x 200 feet	1.8	1.5	0.3
230-kV conductor and optical ground wire stringing setup area – puller (3)	2	200 feet x 150 feet	1.4	1.4	0.0
230-kV conductor and optical ground wire stringing setup area – tensioner (3)	3	500 feet x 150 feet	5.2	5.2	0.0
230-kV conductor splicing setup areas (3)	2	150 feet x 100 feet	0.7	0.7	0.0
New access roads (4)	0 miles	Miles x 14 feet wide	0.0	0.0	0.0
New spur roads (4)	2 miles	Miles x 14 feet wide	6.8	0.0	6.8
Total (5)			**43.4**	**31.8**	**11.6**

Notes:

(1) Includes foundation installation, structure assembly and erection, conductor installation, and optical ground wire installation. Area to be restored after construction. Portion of ROW within 25 feet of the lattice steel structure to remain cleared of vegetation would be permanently disturbed for each lattice steel structure (suspension = 0.145 acres; dead-end = 0.187 acres; heavy dead-end = 0.188 acres).

(2) Includes structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the tubular steel double H-frame to remain cleared of vegetation; 0.185 acres would be permanently disturbed for each tubular steel double H-frame.

(3) Based on 9,000-foot conductor reel lengths, number of circuits, and route design.

(4) Quantity of this item is provided in linear miles, based on the expected length of road (in miles) and a road width of 14 feet.

(5) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based upon final engineering and review.

Table 2-16 Estimated Additional Land Disturbance for Transmission Line Alternative Route B

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Construct new lattice steel suspension structure (1)	24	200 feet x 200 feet	22.0	18.6	3.4
Construct new lattice steel dead-end structure (1)	6	200 feet x 200 feet	5.5	4.4	1.1
Construct new lattice steel heavy dead-end structure (1)	3	200 feet x 200 feet	2.8	2.2	0.6
Construct new tubular steel double H-frame (2)	12	200 feet x 200 feet	11.0	8.8	2.2
230-kV conductor and optical ground wire stringing setup area – puller (3)	14	200 feet x 150 feet	9.6	9.6	0.0

Table 2-16 Estimated Additional Land Disturbance for Transmission Line Alternative Route B

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
230-kV conductor and optical ground wire stringing setup area – tensioner (3)	14	500 feet x 150 feet	24.1	24.1	0.0
230-kV conductor splicing setup areas (3)	0	150 feet x 100 feet	0.0	0.0	0.0
New access roads (4)	0 miles	Miles x 14 feet wide	0.0	0.0	0.0
New spur roads (4)	0.6 miles	Miles x 14 feet wide	0.6	0.0	0.6
Total Estimated (5)			**75.7**	**67.7**	**8.0**

Notes:
(1) Includes foundation installation, structure assembly and erection, conductor and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the lattice steel structure to remain cleared of vegetation would be permanently disturbed for each lattice steel structure (suspension = 0.145ac; dead-end = 0.187ac; heavy dead-end = 0.188ac).
(2) Includes structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the tubular steel double H-frame to remain cleared of vegetation; 0.185 acres would be permanently disturbed for each tubular steel double H-frame.
(3) Based on 9,000-foot conductor reel lengths, number of circuits, and route design.
(4) Quantity of this item is provided in linear miles, based on the expected length of road (in miles) and a road width of 14 feet.
(5) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based on final engineering and review.

Table 2-17 Estimated Additional Land Disturbance for Transmission Line Alternative Route C

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Construct new lattice steel suspension (1)	25	200 feet x 200 feet	23.0	19.3	3.7
Construct new lattice steel dead-end structure (1)	8	200 feet x 200 feet	7.3	5.9	1.4
Construct new lattice steel heavy dead-end structure (1)	1	200 feet x 200 feet	0.9	0.7	0.2
Construct new tubular steel double H-frame (2)	0	200 feet x 200 feet	0.0	0.0	0.0
230-kV conductor and optical ground wire stringing setup area – puller (3)	4	200 feet x 150 feet	2.8	2.8	0.0
230-kV conductor and optical ground wire stringing setup area – tensioner (3)	4	500 feet x 150 feet	6.9	6.9	0.0
230-kV conductor splicing setup areas (3)	1	150 feet x 100 feet	0.3	0.3	0.0
New access roads (4)	1 mile	Miles x 14 feet wide	1.7	0.0	1.7

Table 2-17 Estimated Additional Land Disturbance for Transmission Line Alternative Route C

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
New spur roads (4)	0.7 miles	Miles x 14 feet wide	0.8	0.0	0.8
Total Estimated (5)			**43.7**	**35.9**	**7.8**

Notes:
(1) Includes foundation installation, structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the lattice steel structure to remain cleared of vegetation would be permanently disturbed for each lattice steel structure (suspension = 0.145 acres; dead-end = 0.187 acres; heavy dead-end = 0.188 acres).
(2) Includes structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the tubular steel double H-frame to remain cleared of vegetation; 0.185 acre would be permanently disturbed for each tubular steel double H-frame.
(3) Based on 9,000-foot conductor reel lengths, number of circuits, and route design.
(4) Quantity of this item is provided in linear miles, based on the expected length of road (in miles) and a road width of 14 feet.
(5) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based on final engineering and review.

Table 2-18 Estimated Additional Land Disturbance for Transmission Line Alternative Route D

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Construct new lattice steel suspension structure (1)	18	200 feet x 200 feet	16.5	13.9	2.6
Construct new lattice steel dead-end structure (1)	3	200 feet x 200 feet	2.8	2.2	0.6
Construct new lattice steel heavy dead-end structure (1)	0	200 feet x 200 feet	0.0	0.0	0.0
Construct new tubular steel double H-frame (2)	0	200 feet x 200 feet	0.0	0.0	0.0
230-kV conductor and optical ground wire stringing setup area – puller (3)	2	200 feet x 150 feet	1.4	1.4	0.0
230-kV conductor and optical ground wire stringing setup area – tensioner (3)	2	500 feet x 150 feet	3.4	3.4	0.0
230-kV conductor splicing setup areas (3)	0	150 feet x 100 feet	0.0	0.0	0.0
New access roads (4)	0 miles	Miles x 14 feet wide	0.0	0.0	0.0
New spur roads (4)	0.4 miles	Miles x 14 feet wide	0.3	0.0	0.3
Total Estimated (5)			**24.4**	**20.9**	**3.5**

Notes:
(1) Includes foundation installation, structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the lattice steel structure to remain cleared of vegetation would be permanently disturbed for each lattice steel structure (suspension = 0.145 acres; dead-end = 0.187 acres; heavy dead-end = 0.188 acres).
(2) Includes structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the tubular steel double H-frame to remain cleared of vegetation; 0.185 acre would be permanently disturbed for each tubular steel double H-frame.
(3) Based on 9,000-foot conductor reel lengths, number of circuits, and route design.
(4) Quantity of this item is provided in linear miles, based on the expected length of road (in miles) and a road width of 14 feet.
(5) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based on final engineering and review.

Table 2-19 Estimated Additional Land Disturbance for Transmission Line Subalternative Route E

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Construct new lattice steel suspension structure (1)	15	200 feet x 200 feet	13.8	11.6	2.2
Construct new lattice steel dead-end structure (1)	4	200 feet x 200 feet	3.7	2.9	0.8
Construct new lattice steel heavy dead-end structure (1)	0	200 feet x 200 feet	0.0	0.0	0.0
Construct new tubular steel double H-frame (2)	0	200 feet x 200 feet	0.0	0.0	0.0
230-kV conductor and optical ground wire stringing setup area – puller (3)	2	200 feet x 150 feet	1.4	1.4	0.0
230-kV conductor and optical ground wire stringing setup area – tensioner (3)	2	500 feet x 150 feet	3.4	3.4	0.0
230-kV conductor splicing setup areas (3)	0	150 feet x 100 feet	0.0	0.0	0.0
New access roads (4)	0 miles	Miles x 14 feet wide	0.0	0.0	0.0
New spur roads (4)	0.4 miles	Miles x 14 feet wide	0.3	0.0	0.3
Total Estimated Disturbance (5)			**22.5**	**19.3**	**3.2**

Notes:

(1) Includes foundation installation, structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the lattice steel structure to remain cleared of vegetation would be permanently disturbed for each lattice steel structure (suspension = 0.145 acres; dead-end = 0.187 acres; heavy dead-end = 0.188 acres).

(2) Includes structure assembly and erection, conductor installation, and optical ground wire installation; area to be restored after construction; portion of ROW within 25 feet of the tubular steel double H-frame to remain cleared of vegetation; 0.185 acres would be permanently disturbed for each tubular steel double H-frame.

(3) Based on 9,000-foot conductor reel lengths, number of circuits, and route design.

(4) Quantity of this item is provided in linear miles, based on the expected length of road (in miles) and a road width of 14 feet.

(5) The disturbed acreage calculations are estimates based on the applicant's preferred area of use for the described project feature, the width of the existing ROW, or the width of the proposed ROW. These estimations are based on preliminary design information and are subject to revision based on final engineering and review.

Table 2-20 Estimated Additional Land Disturbance for the Golf Course Telecommunication Alternative

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
First Segment – Nipton to I-15					
9-mile underground fiber cable duct (1)	1	6.8 feet x 47,250 feet	7.38	7.38	0.00
Underground vaults	48	6 feet x 6 feet	0.04	0.00	0.04
Work area for underground vaults and fiber-pulling area	10	40 feet x 60 feet	0.55	0.55	0.00
Work area for fiber pulling of 1 mile of all-dielectric self-supporting pole line construction	1	40 feet x 60 feet	0.06	0.06	0.00
Subtotal Estimated First Segment			**8.02**	**7.99**	**0.04**

Table 2-20 Estimated Additional Land Disturbance for the Golf Course Telecommunication Alternative

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
Second Segment – I-15 to Ivanpah Substation (Golf Course)					
1-mile underground fiber cable duct (1)	1	6.8 feet x 5,280 feet	0.82	0.82	0.00
Underground vaults	6	6 feet x 6 feet	0.00	0.00	0.01
Work area for underground vaults and fiber pulling area	1	40 feet x 60 feet	0.06	0.06	0.00
Work area for fiber pulling of 12 miles of all-dielectric self-supporting pole line construction	12	40 feet x 60 feet	0.66	0.67	0.00
Subtotal Estimated Second Segment			**1.55**	**1.54**	**0.01**
Total Estimated Disturbance			**9.57**	**9.53**	**0.05**

Note:
(1)The calculated disturbed area is based on the trench method. The proposed trench would be 1.5 feet wide; average trenching/excavating machines require a tread width of 68 inches (5.67 feet) and 14 inches (1.17 feet) of ground clearance. The applicant would select other underground construction methods to reduce land disturbance, such as horizontal boring, if feasible.

Table 2-21 Estimated Additional Land Disturbance for the Mountain Pass Telecommunication Alternative

Project Feature	Quantity	Each Disturbed Area (L X W)	Acres Disturbed during Construction	Acres Temporarily Disturbed	Acres Permanently Disturbed
First Segment – Nipton to I-15					
9-mile underground fiber cable duct (1)	1	6.8 feet x 47,250 feet	7.38	7.38	0.00
Underground vaults	48	6 feet x 6 feet	0.04	0.00	0.04
Work area for underground vaults and fiber pulling area	10	40 feet x 60 feet	0.55	0.55	0.00
Work area for fiber pulling of 1 mile of all-dielectric self-supporting pole line construction	1	40 feet x 60 feet	0.06	0.06	0.00
Subtotal Estimated First Segment			**8.02**	**7.99**	**0.04**
Second Segment – I-15 to Ivanpah Substation (Mountain Pass Substation)					
1-mile underground fiber cable duct (1)	1	6.8 feet x 5,280 feet	0.82	0.82	0.00
Underground vaults	6	6 feet x 6 feet	0.00	0.00	0.00
Work area for underground vaults and fiber pulling area	1	40 feet x 60 feet	0.06	0.01	0.05
Work area for fiber pulling of 8 miles of all-dielectric self-supporting pole line construction	8	40 feet x 60 feet	0.44	0.44	0.00
Subtotal Estimated Second Segment			**1.33**	**1.27**	**0.05**
Total Estimated Disturbance			**9.35**	**9.26**	**0.09**

Note:
(1)The calculated disturbed area is based on the trench method. The proposed trench would be 1.5 feet wide and a tread width of 68 inches (5.67 feet) and 14 inches (1.17 feet) of ground clearance for average trenching/excavating machines. The applicant would select other underground construction methods to reduce land disturbance, such as horizontal boring, if feasible.

Table 2-22 Summary of Land Disturbances and Comparison between Alternatives

Project Feature	Proposed Route	Transmission Line Alternative Route A	Transmission Line Alternative Route B	Transmission Line Alternative Route C	Transmission Line Alternative Route D	Transmission Line Subalternative Route E
Permanent Land Disturbance (acres)						
Transmission line ROW (1)	36.8	35.5	41.3	37.9	36.9	37.0
New ROW (route alternatives only)	N/A	4.9	7.3	5.3	3.2	2.9
Access roads	0	0	0	1.7	0	0
Spur roads	2.4	6.8	0.6	0.8	0.3	0.3
Ivanpah Substation (2)	0	0	0	0	0	0
Eldorado Substation (3)	0	0	0	0	0	0
115-kV subtransmission line	1.0	1.0	1.0	1.0	1.0	1.0
33-kV distribution line	0.0	0.0	0.0	0.0	0.0	0.0
Telecommunication system (3)	11.0	11.0	11.0	11.0	11.0	11.0
Project with Microwave Path (4)	**51.2**	**59.2**	**61.2**	**57.7**	**52.4**	**52.2**
Golf Course Alternative (5)	**51.3**	**59.3**	**61.3**	**57.8**	**52.5**	**52.3**
Mountain Pass Alternative (6)	**51.3**	**59.3**	**61.3**	**57.8**	**52.5**	**52.3**
Temporary Land Disturbance (acres)						
Transmission line construction (1)	242.9	273.7	305.0	286.6	282.0	282.0
Alternate route segments	N/A	24.5	34.0	25.9	16.1	14.5
Construction yards and pulling and tensioning sites	141.8	149.1	175.5	151.8	146.6	146.6
Ivanpah Substation (2) (3)	0	0	0	0	0	0
115-kV subtransmission line	7.3	7.3	7.3	7.3	7.3	7.3
33-kV distribution line	0.4	0.4	0.4	0.4	0.4	0.4
Telecommunication system (3)	22.1	22.1	22.1	22.1	22.1	22.1
Project with Microwave Path (4)	**414.9**	**477.1**	**544.3**	**494.1**	**474.5**	**472.9**
Golf Course Alternative (5)	**424.2**	**486.4**	**553.6**	**503.4**	**483.8**	**482.2**
Mountain Pass Alternative (6)	**424.4**	**486.6**	**553.8**	**503.6**	**484.0**	**482.4**

Notes:
(1) Does not include overlapping area between structure removal and new structure installation.
(2) Grading and other ground-disturbing activities of the Ivanpah Substation site would be approved under the ISEGS project, currently under environmental review.
(3) Telecommunication equipment to be installed within the existing fence line. Areas occupied by facilities installed within existing substation and communications site properties are not included in estimates.
(4) Includes proposed Telecommunication Line Path 1 and Path 2 Sections 1, 2, and 3 (Microwave Path).
(5) Golf Course Telecommunication Alternative: Path 1 and Path 2 Sections 1 and 2 and Golf Course segment.
(6) Mountain Pass Telecommunication Alternative: Path 1 and Path 2 Sections 1 and 2 and Mountain Pass segment.

2.4.7 Construction Workforce and Equipment

The proposed project would be managed by the applicant's Project Management Organization using both the applicant's and contract personnel. The estimated number of workers per project component is summarized in Table 2-23. A detailed list of personnel and equipment required for each phase of construction of the proposed project and its alternatives are presented in Appendix A-2. At some stages of the proposed project, multiple locations would be under construction simultaneously. This might involve independent construction teams working at different locations along the proposed project. According to the applicant, no more than four crews would be building four distinct transmission structures at a time during a maximum period of 7 days. Installing an LST would take 7 days to complete (from laying the foundation to erecting the tower), while the same process would last 5 days for installing a TSP.

Table 2-23 Construction Workforce Required for the Proposed Project

Project Component	Summary of Construction Activities	Total Estimated Workforce	Estimated Schedule (days)
230-kV transmission line	Conducting pre-construction surveys Establishing construction yards and helicopter landing areas Conducting road work Installing guard structures Removing existing conductors, structures, foundations, and wood poles Installing lattice steel towers and H-frames Installing conductor Removing guard structures Restoring temporary construction areas and roads	209	1,257
115-kV subtransmission line	Conducting pre-construction survey Conducting road work Removing existing H-frame poles and foundations Installing tubular steel poles	69	35
33-kV distribution line	Trenching Installing overhead line Installing underground cable	20	73
Ivanpah Substation	Conducting pre-construction survey Grading substation site Installing civil and electrical components	22	175
Telecommunication System	***Path 1*** Installing optical ground wire	3	30
	Path 2, Section 1 Establishing construction yards Conducting road work Retrofitting existing towers Removing existing overhead ground wire Installing optical ground wire Restoring temporary construction areas and roads	49	200
	Path 2, Section 2 Trenching Pulling/installing underground fiber optic cable Installing underground duct	12	76
	Path 2, Section 3 – Proposed Project Installing microwave site Trenching Pulling/installing underground fiber optic cable Installing underground duct	16	20
	Path 2, Section 3 – Golf Course Alternative Trenching Pulling/installing underground fiber optic cable Installing underground duct Installing all-dielectric self-supporting cable	24	153
	Path 2 – Section 3 – Mountain Pass Alternative Trenching Pulling/installing underground fiber optic cable Installing underground duct Installing all-dielectric self-supporting cable	28	230

2.4.8 Construction Schedule

The applicant's targeted operating date is July 2013. Work activities would commence upon approval of the proposed project by the CPUC, the BLM, and other permitting agencies. Construction is currently scheduled to commence in the last quarter of year 2011 and to take approximately 19 months to complete, including time for inspection and testing (Figure 2-15).

ID		Task Name	Duration	Start	Finish
1		**Project Engineering**			
2		Preliminary Engineering	9.65 mons	Mon 3/1/10	Wed 12/22/10
3		Final Engineering	12 mons	Wed 12/22/10	Tue 12/27/11
4		**Procurement**			
5		Substation Equipment Procurement (s/ Advance Approval)	29 mons	Tue 8/18/09	Thu 1/26/12
6		**Construction**			
7		Substation Construction	16 mons	Mon 12/26/11	Tue 4/30/13
8		Transmission/Subtransmission Construction	16 mons	Mon 12/26/11	Tue 4/30/13
9		IT/Telecom Construction	12 mons	Thu 4/26/12	Tue 4/30/13
10		Testing	3 mons	Wed 5/1/13	Wed 7/31/13
11		Operations Start Date	0 days	Wed 7/31/13	Wed 7/31/13

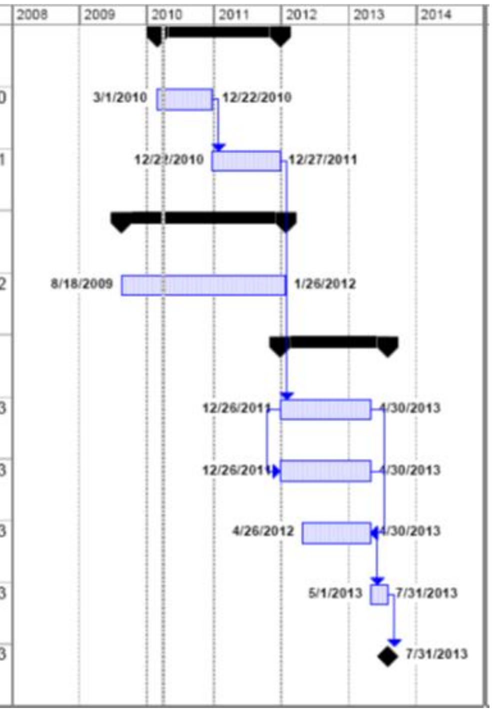

Figure 2-15 EITP High-Level Project Schedule

To facilitate renewable energy interconnections, efforts will be made to accelerate the operating date through shorter agency decision time and compressed procurement and construction schedules. In populated areas, the applicant would post notices on the ROW or at other sites where the public would be affected by construction activities. Notices would be posted approximately 1 month prior to commencing work. At ROW ingress and egress points, postings would be placed along the ROW and at work sites approximately 2 weeks prior to the closing of public access.

2.4.9 Hazardous Materials and Waste Management

The applicant would apply waste management procedures to control and prevent potential environmental, health, and safety issues during project construction. All handling and disposal of hazardous waste would be in accordance with applicable federal, state, and local laws. The following subsections describe the major types of materials to be managed and the general procedures for spill control and storage of hazardous materials anticipated to be handled during the proposed project and alternatives construction activities.

Types of Hazardous Materials

A Hazardous Materials Business Plan would be put in place to control the different types of hazardous materials that are anticipated to be used during the construction activities. These materials would include:

- Transformer oil
- Dielectric fluids
- Fuels (diesel, gas)
- Lube oils and grease
- Used oil
- Solvents, coatings, and paints
- Compressed gas
- Propane
- Sulfur hexafluoride (dielectric medium)

Other hazardous materials could include the equipment and structures that would be removed as part of the proposed construction activities, as described below and in Section 2.2.2. The applicant would develop Hazardous Materials Business Plans for proper control of health and safety concerns. The hazardous materials controls proposed by the applicant would include Material Safety Data Sheets labeling, classification, storage, usage information, incidental spill cleanup, recycling, and waste management.

Transformer Removal

The proposed upgrades at Eldorado Substation would require removal of the existing 230/115-kV transformer, which would be placed in emergency stock or salvaged for reuse. Transformer removal would involve a sequence of activities: (1) oil testing for PCB identification, (2) oil removal and disposal/recycle by specialized contractors, (3) disconnection of all primary and secondary conductors, (4) installation of cap plates to cover bushings mount holes on transformers, (5) removal of all hazardous materials from control cabinets, (6) removal of welded end bed plates, and (7) transportation and shipping to emergency stock or salvage storage room.

Structure Removal

A list of structures and line hardware that would be removed from the existing 115-kV system to construct the proposed Eldorado–Ivanpah transmission line is given in Table 2-5. The structures and hardware would be disassembled into manageable pieces or sections and placed into roll-off boxes or bins for transportation to an approved salvage contractor. Wooden poles and H-frames would be collected in separate containers and transported to an approved disposal facility.

Spill Response

The construction contractor would supply spill response kits and contact information in case of accidents. The applicant's transmission and distribution environmental and safety specialists would provide assistance for further evaluation and support. If substantial spills occurred, the applicant would also involve environmental response contractors. Prevention methods during refueling would minimize any impacts; these methods would include using trained personnel, observing operations, and using refueling pads.

Waste Management

Hazardous materials and solid waste would be stored in accordance with regulatory requirements and applicable standard procedures, such as the applicant's Salvage Services Manual and Waste Management Plan. The applicant would use proper storage cabinets and designated areas at substations, construction yards, and laydown areas. Waste identification, characterization, profiling, packaging, labeling, and transportation to proper disposal sites would be implemented in compliance with the applicant's waste management procedures. Additionally, the applicant would have contracts in place with approved waste contractors and landfill disposal sites prior to commencement of construction activities.

2.5 Operation and Maintenance Procedures

After construction of all project components, the applicant would operate and maintain project facilities and equipment in accordance with the applicant's standard operational procedures and applicable federal and state regulations. The proposed project components would be unstaffed; continuous operations and monitoring would be provided through control and communication systems. Routine maintenance of the proposed project (and alternatives) would occur at least once a year and would involve activities and features related to project components, as described below.

2.5.1 Powerlines

Recurring maintenance activities of the proposed transmission, subtransmission, and distribution lines would occur at least once per year. These inspection and maintenance activities would include the following:

- Routine line patrols by both aircraft and truck
- Routine, patrol-identified structure and wire maintenance
- Routine line washing
- Routine, patrol-identified earth and sand abatement from footings
- Routine ROW road maintenance

The frequency of routine inspection and maintenance activities would depend on several variables, including the length of the line and weather effects. If the magnitude of repairs identified by routine patrols were substantial, other specialized employees such as surveyors, engineers, clerical personnel, and technicians would be added to maintenance crews, as required, to address any unique problem that might arise such as substantial storm damage or vandalism. Routine inspection and maintenance personnel categories would include senior patrolman, foreman, lead lineman, journeyman lineman, apprentice, groundman, helicopter pilot, equipment operator, and laborer.

The entire proposed transmission line corridor would be patrolled at least annually. The patrols would alternate between helicopter and truck. In the first year, the corridor would be patrolled by helicopter, which would take approximately 1 day (8 hours) to accomplish. The next year, a truck patrol would take 5 days. Increases in pollution and population density in the vicinity of the proposed transmission line corridor could lead the applicant to increase the patrol frequency. These additional patrols would be performed by helicopter or patrol truck.

During a typical patrol, a helicopter would fly at or near the elevation of the support for the conductor. In populated areas, patrols would fly at higher elevations or away from the centerline of the transmission lines to avoid flying close to houses or penned animals. In cases where flying near a populated area could not be avoided, the patrolman would use gyrobinoculars to increase the inspection distance between the structures and the helicopter to the greatest extent possible. In rural areas, unless designated otherwise, proximity to the ground would not be restricted except for safety and environmental reasons.

Helicopter operations would be supported by local airports, such as the Jean Sport Aviation Center and the proposed Southern Nevada Supplemental Airport (currently in planning phase; see Chapter 5). Before any helicopter operations would occur for the EITP operations and maintenance, the applicant would be required to coordinate with the CCDOA and/or the FAA.

Approximately 15 years after the initial operational date, maintenance on the proposed transmission line would be expected to increase. Initial additional corridor maintenance would be due principally to weather and vandalism to the new line. As insulators and steel aged on the line, the frequency of lattice steel structure hardware maintenance activities such as bolt torquing would increase.

2.5.2 Substations

Considering the EITP's specific features and the typical climate conditions of the proposed project area (desert), the Ivanpah Substation would require 14 visits per year for operational activities, and 20 to 25 visits per year for maintenance.

Operation of the Ivanpah Substation would require use of electric, fuel, transportation, solid waste, and communication services. Electric service would be provided by the two distribution systems described in Section 2.2.1.3. Leased and internal phone communication line services would be also required. In addition, an emergency backup generator would be placed at the microwave communication site; it would store 499 gallons of fuel.

Currently, the applicant does not anticipate the need for a permanent water supply at the Ivanpah Substation during operations. The applicant is evaluating options for a portable or permanent self-contained restroom facility for use during operation and maintenance activities. Either restroom facility would have a self-contained holding tank and the wastewater would be disposed of by contract service personnel. During construction, the site would be serviced by portable restroom facilities and the wastewater would be disposed of weekly or more frequently depending on the number of construction personnel and usage. The physical location and type (portable or permanent) of self-contained restroom facilities would be determined during final engineering.

Solid waste handling and disposal procedures at the substation sites would be conducted as specified in the applicant's Waste Disposal Plan, the Salvage Services Manual, and the Waste Management Manual. In addition, the applicant would have contracts in place with approved waste contractors and landfill disposal sites prior to commencement of construction activities.

Hazardous materials that might be used during operations and maintenance at the project substations would include transformer oil, dielectric fluids used in capacitors, fuels (diesel and gas), lube oils and grease, used oil, propane, sulfur hexafluoride (SF_6) gas, compressed gases such as argon and nitrogen, and solvents, coatings, and paints. Additionally, any piece of equipment or structure removed as part of operations and maintenance might be hazardous waste. The applicant would manage, control, and dispose of all potentially hazardous materials generated as a result of project operations and maintenance in accordance with applicable regulatory requirements and standard procedures.

Specialized personnel would visit the new Ivanpah Substation to conduct routine maintenance activities. Current regular maintenance activities at the existing Eldorado Substation would also continue after the proposed upgrades. Other visits to the substation might be required to support repairs, outages, and other related work activities as required by maintenance, testing, and engineering personnel. The applicant would mobilize vehicles from other locations to the Ivanpah Substation for both routine and emergency maintenance activities, as required.

2.5.3 Telecommunication System

Maintenance personnel would conduct routine maintenance for the proposed telecommunication equipment and facilities, including the microwave communication site, the emergency generator, and the MEER at the Ivanpah Substation. Other visits to the telecommunication facilities would be necessary if repairs were needed, there were equipment or network faults, or other related work was needed.

Routine maintenance to the telecommunication facilities at the Ivanpah Substation would be performed once a year. In addition, the following maintenance activities would be performed once a year at the proposed microwave site in Nipton:

- Telecom equipment
- Propane tank refuel (contractor)
- Air-conditioning service (contractor)
- Building maintenance (contractor)

2.5.4 Decommissioning

A transmission system's lifetime usually exceeds 80 years with proper maintenance. As mentioned above, approximately 15 years after the operational date, the frequency of maintenance on the proposed line would be expected to increase. In addition, the applicant would implement a regular program to replace damaged structure hardware.

The applicant would maintain the project over its lifetime in accordance with the timeframe to be established by the BLM in the ROW grant. The BLM typically grants a 30 year ROW with a right of renewal for generation and transmission facilities. Within a reasonable time following termination of the BLM ROW grant, the applicant would prepare a removal and restoration plan prior to decommissioning of the facilities. The removal and restoration plan would address removal of the applicant's facilities from the permitted area and any requirements for habitat restoration and revegetation. The removal and restoration plan would then be approved by the BLM before implementation.

2.6 Cumulative Projects

Based on the requirements of both CEQA and NEPA, this Draft EIR/EIS includes a cumulative impact analysis in Chapters 5 and 6. NEPA (40 CFR Section 1508.7) defines a cumulative impact as "the impact on the environment which results from the incremental impact of the project when added to other past, present, and reasonably foreseeable future actions." Under CEQA, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." The discussion of cumulative impacts presented in Chapter 5 is based on whether incremental effects of a project combined with the effects of other projects are considered as "cumulatively considerable."

The analysis of cumulative impacts is based on a number of variables including geographical and time boundaries, features of each project under consideration, and characteristics of each resource. Actions considered as part of the cumulative analysis provided in this Draft EIR/EIS include those projects that are reasonably foreseeable and that would be constructed or commence operation during the proposed project timeframe. Based on these criteria, projects included in the cumulative analysis comprise the following categories:

- Completed projects

- Projects approved and under construction
- Projects approved but not yet under construction
- Projects proposed but not yet approved

A detailed list of projects by several economic sectors is presented in Chapter 5. Main development sectors include renewable energy, utilities, mining, recreation, and restoration and conservation. Potentially significant adverse impacts resulting from the contribution of cumulative actions would be required to be reduced, avoided, or minimized through the application of mitigation measures.

2.7 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) to avoid or minimize impacts of the proposed EITP or its alternatives on environmental resources. These APMs are part of the EITP and are distinguished from mitigation measures for potentially significant impacts under CEQA and NEPA. If the proposed EITP (or any of its alternatives) is approved, the applicant will implement the APMs listed in Table 2-24 regardless of whether potential significant impacts were identified during the environmental analysis under this EIR/EIS.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
Aesthetics	
APM AES-1: Road Cut Rock Staining	Where new roads are required in the South McCullough Mountains to access new or existing transmission and subtransmission towers, the applicant would consult with the BLM regarding feasible methods to treat the exposed rock to match the overall color of the adjacent weathered rock.
APM AES-2: Seeding and Inter-Planting	Where new roads are required in the South McCullough Mountains to access new or existing transmission and subtransmission towers, road cuts would be treated by seeding and/or inter-planting into the disturbed areas to restore the area to an appearance that would blend back into the overall landscape context.
APM AES-3: Non-Reflective Finish	LSTs and TSPs would be constructed of steel that was galvanized and treated at the factory to create a dulled finish that would reduce reflection of light off of the tower members. As appropriate to the environment, the galvanized coating would also be treated to allow the towers to blend into the backdrops. Non-specular transmission cable would be installed for the new transmission line to minimize conductor reflectivity.
APM AES-4: Regrade / Revegetate Construction Sites	Areas around new or rebuilt transmission and subtransmission structures that must be cleared during the construction process would be regraded and revegetated to restore them to an appearance that would blend back into the overall landscape context.
APM AES-5: Use Existing Access Roads	To the extent feasible, existing access roads would be used.
APM AES-6: Minimize Road Modifications**.**	Widening and grading of roads would be kept to the minimum required for access by proposed project construction equipment.
APM AES-7: Dust Suppression	During the construction period, dust suppression measures would be used to minimize the creation of dust clouds potentially associated with the use of the access roads.
APM AES-8: Substation Lighting Control	The substation lighting would be designed to be manually operated only when required for non-routine nighttime work. The lighting would be directed downward and shielded to eliminate offsite light spill at times when the lighting might be in use.
Air Quality	
	The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulation.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
Biological Resources	
APM BIO-1: Preconstruction Surveys	Preconstruction biological clearance surveys would be conducted by qualified biologists to identify special-status plants and wildlife.
APM BIO-2: Minimize Vegetation Impacts	Every effort would be made to minimize vegetation removal and permanent loss at construction sites. If necessary, native vegetation would be flagged for avoidance.
APM BIO-3: Avoid Impacts on State and Federal Jurisdiction Wetlands	Construction crews would avoid impacting the streambeds and banks of streams along the route to the extent possible. If necessary, an SAA would be secured from the CDFG. Impacts would be mitigated based on the terms of the SAA. No streams with flowing waters capable of supporting special-status species would be expected to be impacted by the proposed project.
APM BIO-4: Best Management Practices	Crews would be directed to use Best Management Practices (BMPs) where applicable. These measures would be identified prior to construction and incorporated into the construction operations.
APM BIO-5: Biological Monitors	Biological monitors would be assigned to the project in areas of sensitive biological resources. The monitors would be responsible for ensuring that impacts on special-status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors would flag the boundaries of areas where activities would need to be restricted in order to protect native plants and wildlife or special-status species. Those restricted areas would be monitored to ensure their protection during construction.
APM BIO-6: Worker Environmental Awareness Program	A Worker Environmental Awareness Program (WEAP) would be prepared. All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project. The WEAP training would include a review of the special-status species and other sensitive resources that could exist in the project area, the locations of sensitive biological resources and their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained.
APM BIO-7: Avoid Impacts on Active Nests	SCE would conduct project-wide raptor and nesting bird surveys and remove trees or other vegetation, if necessary, outside of the nesting season (nesting season in the project area is late February to early July). If vegetation or existing structures containing a raptor nest or other active nest needed to be removed during the nesting season, or if work was scheduled to take place in close proximity to an active nest on an existing transmission or subtransmission tower or pole, SCE would coordinate with the USFWS, CDFG, and/or the NDOW as appropriate to obtain written verification prior to moving the nest.
APM BIO-8: Avian Protection	All transmission and subtransmission towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006).
APM BIO-9: Facility Siting	Final tower and spur road locations would be adjusted to avoid sensitive biological resources to the greatest extent feasible.
APM BIO-10: Invasive Plant Management	An invasive plant management plan would be developed to reduce the potential for spreading invasive plant species during construction activities.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-11: Desert Tortoise Measures	• A field contact representative would be designated and would oversee compliance monitoring activities and coordination with authorizing agency(s). Compliance activities would at a minimum include conducting preconstruction surveys, assuring proper removal of desert tortoise, staffing biological monitors on construction spreads, and upholding all conditions authorized. The field contact representative would also oversee all compliance documentation including daily observation reports, non-compliance and corrective action reports, and final reporting to any authorized agency upon project completion. • All work area boundaries associated with temporary and permanent disturbances would be conspicuously staked, flagged, or marked to minimize surface disturbance activities. All workers would strictly limit activities and vehicles to the designated work areas. • Crushing/removal of perennial vegetation in work areas would be avoided to the maximum extent practicable. • All trash and food items generated by construction and maintenance activities would be promptly contained and regularly removed from the project site(s) to reduce the attractiveness of the area to common ravens. • Pets would not be allowed in working areas unless restrained in a kennel. • Where possible, motor vehicles would be limited to maintained roads and designated routes. • Vehicle speed within the project area, along ROW maintenance routes, and along existing access roads would not exceed 20 miles per hour. Speed limits would be clearly marked and all workers would be made aware of these limits. • Constructed road berms would be less than 12 inches in height and have slopes of less than 30 degrees. • Construction monitoring would employ a designated field contact representative, authorized biologist(s), and qualified biologist(s) approved by the BLM during the construction phase. At a minimum, qualified biologist(s) would be present during all activities in which encounters with tortoises could occur. A qualified biologist is defined as a person with appropriate education, training, and experience to conduct tortoise surveys, monitor project activities, provide worker education programs, and supervise or perform other implementing actions. An authorized biologist is defined as a wildlife biologist who has been authorized to handle desert tortoises by the USFWS or CDFG. A field contact representative is defined as a person designated by the project proponent who is responsible for overseeing compliance with desert tortoise protective measures and for coordination with agency compliance officer(s). • Preconstruction clearance surveys would be conducted within 48 hours of initiation of site-specific project activities, following USFWS protocol (USFWS 1992). The goal of a clearance survey is to find all tortoises on the surface and in burrows that could be harmed by construction activities. Surveys would cover 100% of the acreage to be disturbed. All potential tortoise burrows within 100 feet of construction activity would be marked. Tortoise burrows would be avoided to the extent practicable, but would be excavated if they would be crushed by construction activities.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-11: Desert Tortoise Measures (Cont.)	• Any tortoise found on the surface would be relocated to less than 1,000 feet away. Tortoises would be handled carefully following the guidelines given in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1999). Tortoises would be handled with new latex gloves each time to avoid transmission of disease, and handlers would especially note guidelines for precautions to be taken during high-temperature periods. • If a potential tortoise burrow were required to be excavated, the biologist would proceed according to the guidelines given in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1999). Tortoises removed from burrows would be relocated to an artificial burrow (Desert Tortoise Council 1999). The entrance of the artificial burrow would be blocked until construction activities in the area were over (Desert Tortoise Council 1999). • For activities conducted between March 15 and November 1 in desert tortoise habitat, all activities in which encounters with tortoises might occur would be monitored by a qualified or authorized biologist. The biologist would be informed of tortoises relocated during preconstruction surveys so that he or she could watch for the relocated tortoises in case they attempted to return to the construction site. The qualified or authorized biologist would watch for tortoises wandering into the construction areas, check under vehicles, examine excavations and other potential pitfalls for entrapped animals, examine exclusion fencing, and conduct other activities to ensure that death or injuries of tortoises was minimized. • No overnight hazards to desert tortoises (e.g., auger holes, trenches, pits, or other steep-sided depressions) would be left unfenced or uncovered; such hazards would be eliminated each day prior to the work crew and biologist leaving the site. Large or long-term project areas would be enclosed with tortoise-proof fencing. Fencing would be removed when restoration of the site was completed. • Any incident occurring during project activities which was considered by the biological monitor to be in non-compliance with the mitigation plan would be documented immediately by the biological monitor. The field contact representative would ensure that appropriate corrective action was taken. Corrective actions would be documented by the monitor. The following incidents would require immediate cessation of the construction activities causing the incident, including (1) imminent threat of injury or death to a desert tortoise; (2) unauthorized handling of a desert tortoise, regardless of intent; (3) operation of construction equipment or vehicles outside a project area cleared of desert tortoise, except on designated roads; and (4) conducting any construction activity without a biological monitor where one was required. If the monitor and field contact representative did not agree, the federal agency's compliance officer would be contacted for resolution. All parties could refer the resolution to the federal agency's authorized officer. • All construction personnel, including subcontractors, would undergo a WEAP. This instruction would include specific desert tortoise training on distribution, general behavior and ecology, identification, protection measures, reporting requirements, and protections afforded by state and federal endangered species acts.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-11: Desert Tortoise Measures (Cont.)	• Parked vehicles would be inspected prior to being moved. If a tortoise were found beneath a vehicle, the authorized biologist would be contacted to move the animal from harm's way, or the vehicle would not be moved until the desert tortoise left of its own accord. The authorized biologist would be responsible for taking appropriate measures to ensure that any desert tortoise moved in this manner was not exposed to temperature extremes that could be harmful to the animal. • Should any desert tortoise be injured or killed, all activities would be halted, and the field contact representative and/or authorized biologist immediately contacted. The field contact representative and/or authorized biologist would be responsible for reporting the incident to the authorizing agencies. • A report to the USFWS would be produced reporting all tortoises seen, injured, killed, excavated, or handled. GPS locations of live tortoises would be reported. • The applicant would implement a Raven Management Program that would consist of: (1) an annual survey to identify any tortoise remains at the base of the towers; this information would be relayed to the BLM so that the ravens and/or their nests in these towers could be targeted for removal, (2) SCE making an annual or one time contribution to an overall raven reduction program in the California or Nevada desert, with an emphasis on raven removal in the vicinity of this project.
APM BIO-12: Desert Bighorn Sheep Measures	The applicant would consult with the BLM, USFWS, and NDOW regarding conservation measures to avoid impacts on desert bighorn sheep during construction. Project areas with the potential to impact bighorn sheep include the proposed transmission line route through the McCullough Mountains and the telecommunication route segment in the southern Eldorado Valley between the Highland Range and the Southern McCullough Mountains. Avoidance and minimization measures could include such elements as preconstruction surveys, biological monitoring, and timing construction activities to avoid bighorn sheep active seasons. Construction requiring the use of helicopters would be conducted outside of bighorn lambing season (April through October) and the dry summer months when bighorn may need to access artificial water sources north of the propose route in the McCullough Mountains (June through September).
APM BIO-13: Western Burrowing Owl Measures	Where project ground-disturbing activities would occur prior to the burrowing owl breeding season (mid-March to August), all burrows, holes, crevices, or other cavities in suitable habitat on the project, within the limits of proposed ground disturbance, would be thoroughly inspected by a qualified biologist before collapsing. This would discourage owls from breeding on the construction site. Other species using burrows would be relocated prior to collapsing burrows. If construction were to be initiated after the commencement of the breeding season and burrowing owls could be seen within areas to be affected by ground construction activities, behavioral observations would be done by a qualified biologist to determine their breeding status. If breeding were observed, the nest area would be avoided, with an appropriately sized buffer sufficient to prevent disturbance during construction activities until the chicks fledged.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM BIO-14: Gila Monster and Chuckwalla Measures	The following measures are the current NDOW construction site protocols for the Gila monster (NDOW 2005). These protocols are applicable for the Gila monster in both the Nevada and California sections of the project, and applicable for the chuckwalla in the Nevada section of the project. Through the WEAP, workers and other project personnel should (at a minimum) know how to: (1) identify Gila monsters and be able to distinguish them from other lizards such as chuckwallas and banded geckos; (2) report any observations of Gila monsters (in Nevada) to the biological monitor for notification of the NDOW; (3) be alerted to the consequences of a bite resulting from carelessness or unnecessary harassment; and (4) be aware of protective measures provided under state law. • Live Gila monsters found in harm's way on the construction site would be captured and then detained in a cool, shaded environment (<85 degrees Fahrenheit) by the project biologist or equivalent personnel until a NDOW biologist can arrive for documentation purposes. Despite the fact that a Gila monster is venomous and can deliver a serious bite, its relatively slow gait allows for it to be easily coaxed or lifted into an open bucket or box, carefully using a long handled instrument such as a shovel or snake hook (note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points). • A clean 5-gallon plastic bucket with a secure, vented lid; an 18-inch x 18-inch x 4-inch plastic sweater box with a secure, vented lid; or a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location (e.g., GPS record), date, time, and circumstances (e.g., biological survey or construction) and habitat description (vegetation, slope, aspect, and substrate) would also be provided to NDOW. • Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. In the event a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses would not be covered by NDOW. However, NDOW would be immediately notified during normal business hours. If an animal is killed or found dead, the carcass would be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, habitat, and mapped location. • Should NDOW's assistance be delayed, biological or equivalent acting personnel on site may be requested to remove and release the Gila monster out of harm's way. Should NDOW not be immediately available to respond for photo-documentation, a 35-mm camera or equivalent (5 mega-pixel digital minimum preferred) would be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures, preferably on slide film (.tif or .jpg digital format) would be provided to NDOW. Pictures would include the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
Cultural Resources	
APM CR-1: Conduct Archaeological Inventory of Areas that May Be Disturbed	Conduct an intensive archaeological inventory of all areas that may be disturbed during construction and operation of the proposed project. A complete cultural resources inventory of the project area has been conducted, details of which are contained in a technical report. Should the project substantially change and areas not previously inventoried for cultural resources become part of the construction plan, the applicant would ensure that such additional areas are inventoried for cultural resources prior to any disturbance. All surveys would be conducted and documented according to applicable laws, regulations, and professional standards.
APM CR-2: Avoid and Minimize Impacts on Significant Cultural Resources Wherever Feasible	Avoid and minimize impacts on significant or potentially significant cultural resources wherever feasible. To the extent practical, the applicant would avoid or minimize impacts on archaeological resources, regardless of its CRHR or NRHP eligibility status. This includes siting all ground-disturbing activities and other project components outside a buffer zone established around each recorded archaeological site within or immediately adjacent to the right-of-way.
APM CR-2a. Avoid Direct Impacts on Significant Cultural Resources through Project Final Design	Project Final Design would avoid direct impacts on significant or potentially significant cultural resources. To the extent practical, all ground-disturbing activities and other project components would be sited to avoid or minimize impacts on cultural resources listed as or potentially eligible for listing as, unique archaeological sites, historical resources, or historic properties.
APM CR-2b. Conduct a Preconstruction Worker Environmental Awareness Program (see BIO-6, PALEO-3, and W-11)	The program would be presented to all proposed project personnel who have the potential to encounter and alter unique archaeological sites, historical resources, or historic properties, or properties that may be eligible for listing in the CRHR or NRHP. This includes construction supervisors as well as field construction personnel. No construction worker would be involved in ground-disturbing activities without having participated in the Worker Environmental Awareness Program.
APM CR-2c. Protective Buffer Zones	Establish and maintain a protective buffer zone around each recorded archaeological site within or immediately adjacent to the right-of-way. A protective buffer zone would be established around each recorded archaeological site and treated as an “environmentally sensitive area” within which construction activities and personnel are not permitted. Monitoring would be conducted to ensure that the protective areas are maintained.
APM CR-3. Evaluate Significance of Unavoidable Cultural Resources	Evaluate the significance of all cultural resources that cannot be avoided. Cultural resources that cannot be avoided and which have not been evaluated to determine their eligibility for listing in the CRHR or NRHP would be evaluated to determine their historical significance. Evaluation studies would be conducted and documented according to applicable laws, regulations, guidelines, and professional standards.
APM CR-3a. Evaluate Significance of Potentially Eligible Archaeological Resources	Evaluate the significance of archaeological resources potentially eligible for CRHR or NRHP listing. Evaluation of archaeological sites could include scientific excavation of a sample of site constituents sufficient to understand the potential of a site to yield information to address important scientific research questions per CRHR eligibility Criterion 4 and NRHP eligibility Criterion D. Sites with rock art would be evaluated to consider their eligibility per CRHR Criterion 1 and NRHP Criteria A, C, and D.
APM CR-3b. Evaluate Significance of Potentially Eligible Buildings and Structures	Evaluate the significance of buildings and structures potentially eligible for CRHR or NRHP listing. Evaluation would take into account engineering, aesthetic, architectural, and other relevant attributes of each property. Buildings and structures would be evaluated for historical significance per CRHR eligibility Criteria 1, 2, and 3, and NRHP Criteria A, B, and C. A report of the evaluation of each building or structure would be prepared providing a rationale for an assessment of significance consistent with professional standards and

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
	guidelines. The report would be filed with the appropriate Information Center of the California Historical Resources Information System.
APM CR-3c. Assist with Native American Consultations	If necessary, the applicant would assist BLM in consultations with Native Americans regarding traditional cultural values that may be associated with archaeological resources. Archaeological or other cultural resources associated with the project may have cultural values ascribed to them by Native Americans. The applicant would assist the BLM during consultation with Native Americans regarding Native American cultural remains.
APM CR-4. Minimize Unavoidable Impacts on Significant Cultural Resources, including Unique Archaeological Sites, Historical Resources, and Historic Properties	The applicant would make reasonable efforts to avoid adverse project effects to unique archaeological sites, historical resources, and historic properties. Nevertheless, it may not be possible to situate all proposed project facilities to completely avoid impacts on significant cultural resources. Impacts on significant cultural resources would be minimized by implementing the measures listed in APM CR-4a.
APM CR-4a. Implement Measures to Minimize Impacts on Significant Archaeological Sites	Prior to construction and during construction, the following measures would be implemented by the applicant to minimize unavoidable impacts on significant archaeological sites: • To the extent practical, all activities would minimize ground surface disturbance within the bounds of significant archaeological sites, historical resources, or historic properties. • Portions of significant archaeological sites, historical resources, or historic properties that can be avoided would be protected as environmentally sensitive areas and would remain undisturbed by construction activities. • Monitoring by qualified professionals and/or Native Americans to ensure that impacts on sites are minimized would be carried out at each affected cultural resource for the period during which construction activities pose a potential threat to the site, and for as long as there is the potential to encounter unanticipated cultural or human remains. • Additional archaeological studies would be carried out at appropriate sites to ascertain whether project facilities could be located on a portion of a site and cause the least amount of disturbance to significant cultural materials. • If impacts on significant archaeological (NRHP- or CRHR-eligible) sites eligible under NRHP Criterion D or CRHR Criterion 4 cannot be avoided, archaeological data recovery would be carried out in the portions of affected significant sites that would be impacted. A data recovery plan would be prepared, reviewed by the appropriate agencies, and then implemented in order to recover an adequate sample of cultural remains that can be used to address important eligibility research questions for CRHR Criterion 4 or NRHP Criterion D. Archaeological data recovery would involve scientific excavations; identification of recovered cultural and ecological remains; cataloging, scientific analysis, and interpretation of recovered materials; and preparation of a scientific technical report that describes the methods and results of the data recovery program. • Reports of any excavations at archaeological sites would be filed with the BLM and the appropriate Information Center of the California Historical Resources Information System.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM CR-4b. Implement Measures to Minimize Impacts on Significant Buildings and Structures	Prior to construction and during construction, the applicant would implement the following measures to minimize unavoidable impacts on significant buildings and structures: • Locate proposed project facilities to minimize effects on significant buildings or structures. • If impacts on significant buildings or structures cannot be avoided, document significant architectural and engineering attributes consistent with the documentation standards of the National Park Service Historic American Buildings Survey/Historic American Engineering Record. • File reports and other documentation with the BLM, the National Park Service, if appropriate, and appropriate Information Center of the California Historical Resources Information System.
APM CR-5. Prepare and Implement a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan	During construction it is possible that previously unknown archaeological or other cultural resources or human remains could be discovered. Prior to construction, the applicant would prepare a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan to be implemented if an unanticipated discovery is made. At a minimum the plan would detail the following elements: • Worker and supervisor training in the identification of cultural remains that could be found in the proposed project area, and the implications of disturbance and collection of cultural resources pursuant with the Archaeological Resources Protection Act of 1979 • Worker and supervisor response procedures to be followed in the event of an unanticipated discovery, including appropriate points of contact for professionals qualified to make decisions about the potential significance of any find • Identities of persons authorized to stop or redirect work that could affect the discovery, and their on-call contact information • Procedures for monitoring construction activities in archaeologically sensitive areas • A minimum radius around any discovery within which work would be halted until the significance of the resource has been evaluated and mitigation implemented as appropriate • Procedures for identifying and evaluating the historical significance of a discovery • Procedures for consulting Native Americans when identifying and evaluating the significance of discoveries involving Native American cultural materials • Procedures to be followed for treatment of discovered human remains per current state law and protocol developed in consultation with Native Americans.
APM CR-6. Inadvertent Discovery of Human Remains	Any human remains discovered during project activities in California would be protected in accordance with current state law, specifically Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California Public Resources Code, and Assembly Bill 2641. If human remains determined not to be Native American are unclaimed, they would be treated under the appropriate State of Nevada statutes, including but not limited to Nevada Revised Statutes Chapter 440 and the regulations of the applicable land management agency. In the event that human remains are recovered on private lands, the landholder would have the right to designate the repository for the remains if they are determined not to be Native American or if their family affiliation cannot be determined. The provisions of the Native American Grave Protection and Repatriation Act are applicable when Native American human remains are found on federal land (BLM land in California and Nevada). The discovery of human remains would be

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
	treated as defined in the Construction Monitoring and Unanticipated Cultural Resources Discovery Plan.
APM CR-7. Native American Participation	Prior to construction, BLM would consult with Native Americans identified by the NAHC as having cultural ties to particular areas of the proposed project. Native Americans would be invited to participate in significance evaluations and data recovery excavations at archaeological sites with Native American cultural remains, as well as in monitoring during project construction. Native Americans would be consulted to develop a protocol for working with each group should human remains affiliated with that group be encountered during project activities.
Geology, Soils, Minerals, and Paleontology	
APM GEO-1: Geotechnical Engineering and Engineering Geology Study	Prior to final design of substation facilities and transmission and subtransmission line tower foundations, a combined geotechnical engineering and engineering geology study would be conducted to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering practices.
APM GEO-2: Recommended Practices for Seismic Design of Substations	For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronics Engineers (IEEE) Standards Association Standard 693, “Recommended Practices for Seismic Design of Substations,” which includes probabilistic earthquake hazard analysis. Other project elements would be designed and constructed in accordance with the appropriate industry standards, as well as good engineering and construction practices and methods.
APM GEO-3: Project Construction Stormwater Pollution Prevention Plan Protection Measures Regarding Soil Erosion / Water Quality	Transmission line and substation construction activities would be conducted in accordance with the soil erosion/water quality protection measures to be specified in the project construction stormwater pollution prevention plan (SWPPP). New access roads would be designed to minimize ground disturbance from grading. They would follow natural ground contours as closely as possible, and would include specific features for road drainage. Measures could include water bars, drainage dips, side ditches, slope drains, and velocity reducers. Where temporary crossings would be constructed, they would be restored and repaired as soon as possible after completion of the discrete action associated with construction of the line in the area.
APM PALEO-1: Retention of Paleontologist and Preparation of a Paleontological Resource Management Plan	Prior to construction, a certified paleontologist would be retained by SCE to supervise monitoring of construction excavations and to produce a Paleontological Resource Management Plan (PRMP) for the proposed project. This PRMP would be prepared and implemented under the direction of the paleontologist and would address and incorporate APMs PALEO-2 through PALEO-8. Paleontological monitoring would include inspection of exposed rock units and microscopic examination of matrix to determine whether fossils are present. The monitor would have authority to temporarily divert grading away from exposed fossils in order to recover the fossil specimens. More specific guidelines for paleontological resource monitoring could be found in the PRMP.
APM PALEO-2: Pre-construction Paleontological Field Survey	The paleontologist and/or his or her designated representative would conduct a pre-construction field survey of the project area underlain by Tertiary rock units and older alluvium. Results of the field inventory and associated recommendations would be incorporated into the PRMP.
APM PALEO-3: Worker Environmental Awareness Program (see BIO-6, CR-2b, W-11)	A Worker Environmental Awareness Program would be provided to construction supervisors and crew for awareness of requirements regarding the protection of paleontological resources and procedures to be implemented in the event fossil remains are encountered by ground-disturbing activities.
APM PALEO-4: Construction Monitoring	Ground-disturbing activities would be monitored on a part-time or full-time basis by a paleontological construction monitor only in those parts of the project area where these activities would disturb previously undisturbed strata in rock units of

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
	moderate and high sensitivity. Quaternary alluvium, colluvium, and Quaternary landslide deposits have a low paleontological sensitivity level and would be spot-checked on a periodic basis to ensure that older underlying sediments were not being penetrated. Monitoring would not be implemented in areas underlain by younger alluvium unless these activities had reached a depth 5 feet below the present ground surface and fine-grained strata were present. Ground-disturbing activities in areas underlain by rock units of low sensitivity would be monitored on a quarter-time basis or spot-checked if fine grained strata were present.
APM PALEO-5: Recovery and Testing	If fossils were encountered during construction, construction activities would be temporarily diverted from the discovery and the monitor would notify all concerned parties and collect matrix for testing and processing as directed by the project paleontologist. In order to expedite removal of fossil-bearing matrix, the monitor may request heavy machinery to assist in moving large quantities of matrix out of the path of construction to designated stockpile areas. Construction would resume at the discovery location once the necessary matrix was stockpiled, as determined by the paleontological monitor. Testing of stockpiles would consist of screen washing small samples to determine if important fossils were present. If such fossils were present, the additional matrix from the stockpiles would be water screened to ensure recovery of a scientifically significant sample. Samples collected would be limited to a maximum of 6,000 pounds per locality.
APM PALEO-6: Monthly Progress Reports	The project paleontologist would document interim results of the construction monitoring program with monthly progress reports. Additionally, at each fossil locality, field data forms would record the locality, stratigraphic columns would be measured, and appropriate scientific samples would be submitted for analysis.
APM PALEO-7: Analysis of and Preparation of Final Paleontological Resource Recovery Report	The project paleontologist would direct identification, laboratory processing, cataloging, analysis, and documentation of the fossil collections. When appropriate, and in consultation with SCE, splits of rock or sediment samples would be submitted to commercial laboratories for microfossil, pollen, or radiometric dating analysis. After analysis, the collections would be prepared for curation (see APM PALEO-8). A final technical report would be prepared to summarize construction monitoring and present the results of the fossil recovery program. The report would be prepared in accordance with SCE, Society of Vertebrate Paleontology guidelines, and lead agency requirements. The final report would be submitted to SCE, the lead agency, and the curation repository.
APM PALEO-8: Curation	Prior to construction, SCE would enter into a formal agreement with a recognized museum repository, and would curate the fossil collections, appropriate field and laboratory documentation, and final Paleontological Resource Recovery Report in a timely manner following construction.
Hazards, Health and Safety	
APM HAZ-1: Phase I ESA	A Phase I ESA would be performed at each new or expanded substation location and along newly acquired transmission or subtransmission line ROWs. The Phase I ESAs would include an electronic records search of federal, state, and local databases. The electronic records search would be contracted to a company that specializes in this type of work and that would produce a comprehensive report for the new or expanded ROW. The comprehensive report is used to identify sites in federal, state, and local government agency databases that may have the potential to impact the proposed project; based on a review of the report, any potential areas of concern along the ROW would be identified for further assessment. In addition, a Phase I ESA that is compliant with American Society for Testing Materials (ASTM) 1927-05 (ASTM 2005) would be performed on all property to be acquired. Based on the results of the Phase I ESA, additional assessment, characterization, and remediation of potential or known

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
	subsurface impacts may be conducted prior to construction activities. Such remediation could include the relocation of transmission line structures as necessary to avoid impacted areas, or the removal and disposal of impacted soils and/or groundwater according to applicable regulations.
APM HAZ-2: Hazardous Materials and Waste Handling Management.	The applicant would develop programs and policies for management of hazardous materials including a Hazardous Materials and Hazardous Waste Handling Program, Construction Stormwater Pollution Prevention Plan, and procedures for Transport of Hazardous Materials, Fueling and Maintenance of Construction Equipment, Fueling and Maintenance of Helicopters, and Emergency Release Response. This plan would be valid during project construction and operation.
APM HAZ-3: Soil Management Plan	The applicant would develop a Soil Management Plan that would provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. This plan would be valid during project construction and operation.
APM HAZ-4: Fire Management Plan	The applicant would implement a Fire Management Plan.
APM HAZ-5: SPCCP and Hazardous Materials Business Plan	The applicant would implement a Spill Prevention, Countermeasure, and Control Plan (SPCCP) for preventing, containing, and controlling potential releases; provisions for quick and safe cleanup and a Hazardous Materials Business Plan (HMBP) that would include hazardous waste management procedures; and emergency response procedures including emergency spill cleanup supplies and equipment.
Hydrology and Water Quality	
APM W-1: Avoid Stream Channels	Construction equipment would be kept out of flowing stream channels.
APM W-2: Erosion Control and Hazardous Material Plans	Erosion control and hazardous material plans would be incorporated into the construction bidding specifications to ensure compliance.
APM W-3: Project Design Features	Appropriate design of tower footing foundations, such as raised foundations and/or enclosing flood control dikes, would be used to prevent scour and/or inundation by a 100-year flood. Where floodplain encroachment is required by the CPUC and/or the BLM, and potential impacts require non-standard designs, hydrology/channel flow analysis would be performed.
APM W-4: Avoid Active Drainage Channels	Towers would be located to avoid active drainage channels, especially downstream of steep hillslope areas, to minimize the potential for damage by flash flooding and mud and debris flows.
APM W-5: Diversion Dikes	Diversion dikes would be required to divert runoff around a tower structure or a substation site if (a) the location in an active channel (or channels) could not be avoided; and (b) where there is a very significant flood scour/deposition threat, unless such diversion is specifically exempted by the CPUC and/or the BLM Authorized Officer.
APM W-6: Collect and Divert Runoff	Runoff from roadways would be collected and diverted from steep, disturbed, or otherwise unstable slopes.
APM W-7: Ditch and Drainage Design	Ditches and drainage devices would be designed to handle the concentrated runoff and located to avoid disturbed areas. They would have energy dissipations at discharge points that might include rip-rap, concrete aprons, and stepped spillways. Where diversion dikes are required to protect towers or other project structures from flooding or erosion, these dikes would be designed to avoid increasing the risk of erosion or flooding onto adjacent property.
APM W-8: Minimize Cut and Fill Slopes	Cut and fill slopes would be minimized by a combination of benching and following natural topography where possible.
APM W-9: Prepare and Implement an Approved SWPPP	As a part of the SWPPP, soil disturbance at tower construction sites and access roads would be the minimum necessary for construction and designed to prevent long-term erosion through the following activities: restoration of disturbed soil, re-vegetation, and/or construction of permanent erosion control structures. BMPs in

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
	the project SWPPP would be implemented during construction to minimize the risk of an accidental release.
APM W-10: Emergency Release Response Procedures	The Emergency Release Response Procedures developed pursuant to APM Haz-1 would be maintained onsite (or in vehicles) during construction of the proposed project.
APM W-11: Conduct a Worker Environmental Awareness Program (see BIO-6, CR-2b, PALEO-3)	A Worker Environmental Awareness Program (WEAP) would be conducted to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, and proper BMP implementation, to all field personnel prior to the start of construction. This training program would emphasize site-specific physical conditions to improve hazard prevention. It would include a review of all site-specific plans, including but not limited to the project's SWPPP and Hazardous Substances Control and Emergency Response Plan. The applicant would document compliance and maintain a list of names of all construction personnel who had completed the training program.
APM W-12: Properly Dispose of Hazardous Materials	All construction and demolition waste, including trash and litter, garbage, and other solid waste, would be removed and transported to an appropriately permitted disposal facility. Petroleum products and other potentially hazardous materials would be removed and transported to a hazardous waste facility permitted or otherwise authorized to treat, store, or dispose of such materials.
APM W-13: Identify Location of Underground Utilities Prior to Excavation	Prior to excavation, the applicant or its contractors would locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, or other underground structures that may reasonably be expected to be encountered during excavation work.
APM W-14: Prepare or Update SPCC Plans	The applicant would prepare or update SPCC plans for substations to minimize, avoid, and/or clean up unforeseen spill of hazardous materials during facility operations.
Land Use	
APM LU-1: Aeronautical Considerations	The applicant would submit notice to FAA electronically, in accordance with FAA procedures, and as far in advance of construction as possible.
Noise	
APM NOI-1: Compliance with Local Noise Ordinances	The proposed construction would comply with local noise ordinances. There may be a need to work outside the aforementioned local ordinances to take advantage of low electrical draw periods during the nighttime hours. The applicant would comply with variance procedures requested by local authorities if required.
APM NOI-2: Construction Equipment Working Order	Construction equipment would be in good working order.
APM NOI-3: Construction Equipment Maintenance	Construction equipment would be maintained per manufacturer's recommendations.
APM NOI-4: Construction Equipment Muffled	Construction equipment would be adequately muffled.
APM NOI-5: Construction Equipment Idling Minimized	Idling of construction equipment and vehicles would be minimized during the construction.
APM NOI-6: Hearing Protection for Workers	Workers would be provided appropriate hearing protection, if necessary, as described in the Health and Safety Plan.
Public Services and Utilities	
APM PUSVC-1: Work Around High Pressure Pipelines	No mechanical equipment will be permitted to operate within 3 feet of the high-pressure pipelines, and work within 3 feet must be done by hand or as otherwise directed by the pipeline company.
APM PUSVC-2: Monitoring by Pipeline Companies	A representative of applicable owners and operators of major pipeline companies must observe the excavation around or near their facilities to ensure protection and to record pertinent data necessary for operations.

Table 2-24 Applicant Proposed Measures

Applicant Proposed Measure	Description
Recreation	
APM REC-1: Recreation Area Closures	When temporary short-term closures to recreational areas are necessary for construction activities, the applicant would coordinate those closures with recreational facility owners. To the extent practicable, the applicant would schedule construction activities to avoid heavy recreational use periods (e.g., holidays or tournaments). The applicant would post notice of the closure on-site 14 calendar days prior to the closure.
Socioeconomics, Population and Housing, and Environmental Justice	
	The applicant has not included any APMs related to socioeconomics, population and housing, or environmental justice for the proposed EITP.
Traffic and Transportation	
APM TRA-1: Obtain Permits	If any work requires modifications or activities within local roadway and railroad ROWs, appropriate permits will be obtained prior to the commencement of construction activities, including any necessary local permits and encroachment permits.
APM TRA-2: Traffic Management and Control Plans	Traffic control and other management plans will be prepared where necessary to minimize project impacts on local streets and railroad operations.
APM TRA-3: Minimize Street Use	Construction activities will be designed to minimize work on, or use of, local streets.

Key:
ASTM = American Society for Testing Materials
BLM = Bureau of Land Management
BMP = Best Management Practices
CDFG = California Department of Fish and Game
CPUC = California Public Utilities Commission
CRHR = California Register of Historical Resources
EITP = Eldorado–Ivanpah Transmission Project
FAA = Federal Aviation Administration
GPS = Global Positioning System
HMBP = Hazardous Materials Business Plan
LST = Lattice Steel Tower
NAHC = Native American Heritage Commission
NDOW = Nevada Department of Wildlife
NRHP = National Register of Historic Places
PRMP = Paleontological Resource Management Plan
ROW = Right-of-Way
SAA = Streambed Alteration Agreement
SCE = Southern California Edison
SPCC = Spill Prevention, Control, and Countermeasure
SPCCP = Spill Prevention, Control, and Countermeasure Plan
SWPPP = Stormwater Pollution Prevention Plan
TSP = Tubular Steel Poles
USFWS = U.S. Fish and Wildlife Service
WEAP = Worker Environmental Awareness Program

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3. Environmental Analysis

3.1 Introduction to Environmental Analysis

Chapter 3 describes existing (baseline) environmental conditions within the proposed project area by resource/factor and evaluates potential impacts on these resources that could result from activities associated with the proposed project and its alternatives. The environmental resource issues examined in sections within this Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) are as follows:

- Aesthetics and Visual Resources;
- Air Quality and Greenhouse Gases;
- Biological Resources;
- Cultural Resources;
- Geology, Soils, Minerals, and Paleontology;
- Hazards, Health, and Safety;
- Hydrology and Water Quality;
- Land Use, Grazing Allotments, and Designated Areas;
- Noise and Vibration;
- Public Services and Utilities;
- Recreation;
- Socioeconomics, Population and Housing, and Environmental Justice; and
- Traffic and Transportation

The environmental analysis for each resource topic includes a discussion of all issues raised during the public scoping period from July 27, 2009, to August 26, 2009. The analysis also reflects comments and suggestions made through consultation with federal, state, and local agencies, including the United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and National Historic Preservation Council (NHPC) for both California and Nevada. Also presented by resource topic are Applicant Proposed Measures (APMs) and mitigation measures for identified impacts.

Each Chapter 3 resource section includes the following subsections:

- Environmental Setting;
- Applicable Laws, Regulations, and Standards;
- Impact Analysis, including the following: NEPA Impact Criteria, CEQA Impact Criteria, Methodology, Applicant Proposed Measures, Proposed Project, and all Alternatives;
- Mitigation Measures; and
- Whole of the Action / Cumulative Action (emphasizing Ivanpah Solar Electric Generating System [ISEGS] project)

The analysis of potential cumulative effects in conjunction with other past, planned, or reasonably foreseeable projects is described in Chapter 5, "Cumulative Scenario and Impacts."

3.1.1 Regulatory Framework

Existing laws, regulations, and standards may affect the proposed project in terms of its location, duration, footprint, discharges, and work practices. Laws and regulations may also specify permits and benchmarks necessary for project authorization or evaluation and necessitate agency consultation. Laws, regulations, and permits may come from federal, state, or local bodies and agencies. Sections 3.2 through 3.14 identify applicable laws and regulations for each resource topic; additionally, Table 1-2 in Section 1.2 of this document identifies major permits, approvals, and consultations that would typically be required for a project of this nature.

3.1.1.1 State and Federal Requirements for the EIR/EIS

This document has been prepared to comply with the California Environmental Quality Act (CEQA), the State Guidelines (California Code of Regulations, Title 14, Section [§] 15000 et seq.), the National Environmental Policy Act (NEPA) of 1969, and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500–1508).

3.1.1.2 Information Requirements under CEQA and NEPA

State regulations implementing CEQA (CEQA Guidelines §15222) strongly encourage cooperation with the lead federal agency in preparation of a joint environmental document. Federal regulations implementing NEPA (40 CFR 1502(b)) encourage cooperation and preparation of joint federal and state environmental documents to reduce duplication. This document was designed to satisfy the requirements of both CEQA and NEPA; where possible, the discussion of potential impacts on each environmental resource area under CEQA and NEPA was combined. For example, each resource section contains one consolidated existing setting section. However, there are differences in the requirements of, approach to, and terminology used under CEQA and under NEPA, as described below. Because of these differences, while redundancy was avoided to the greatest extent possible, priority was placed on fulfilling the requirements of both the state and federal acts.

Although information requirements are not specifically prescribed, NEPA requires a project description. Section 1502.14(b) of the CEQ regulations requires “substantial treatment of each alternative considered in detail including the proposed action.” This regulation does not dictate an amount of information to be provided, but rather prescribes a level of treatment, which may in turn require varying amounts of information, to facilitate a comparison of the project as proposed and its alternatives.

The analysis of each environmental resource area begins with an examination of the existing physical environmental conditions that may be affected by the proposed project. The effects of the project are defined as changes to the existing environmental conditions that are attributable to project construction, components, or operation. The analysis for each environmental resource area then offers a comparative analysis for each of the project alternatives, including the No Project Alternative.

The State CEQA Guidelines §15125(a) state in part:

> An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published … from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. The description of the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed project and its alternatives.

In reference to alternatives, the State CEQA Guidelines §15126.6(a) state:

> An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.

Due to the similarity in information requirements for both NEPA and CEQA, the existing conditions setting, which describes the environmental conditions that may be affected by the project, serves both purposes. However, because NEPA requires a comparison of alternatives to facilitate agency decision-making and CEQA requires an analysis of only those alternatives that would substantially lessen one or more significant impacts, the analysis of alternatives differs in this section under NEPA and CEQA.

If information is incomplete or unavailable, NEPA permits this uncertainly; 43 CFR 1502.22(b) states that the EIS must include: (1) a statement that such information is incomplete or unavailable, (2) a statement of the relevance of the incomplete or unavailable information in evaluating reasonably foreseeable significant adverse impacts on the human environment, (3) a summary of existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's evaluation of such impacts based on theoretical approaches or research methods generally accepted in the scientific community. The State CEQA Guidelines discuss forecasting in §15144: "Drafting an EIR or preparing a Negative Declaration necessarily involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can." However, §15145 of the State CEQA Guidelines states: "If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." Instances where information is incomplete or unavailable are noted in the document.

3.1.2 Organization of the Environmental Analysis

The contents of each resource area subsection are described below. Depending on the nature of a resource, organization and content within each subsection may vary, but each section was written to satisfy the requirements of NEPA and CEQA. These sections assess and disclose the impacts of the project and its alternatives to all required and potentially impacted resources in the project area.

3.1.2.1 Environmental Setting

A consolidated environmental setting section serves the purposes of both NEPA and CEQA for each resource area discussed in this chapter. The environmental setting of the project area is described using information from literature reviews, fieldwork, and input from appropriate federal, state, and local agencies. Understanding these conditions (such as existing air quality, population growth trends, and recreational opportunities) allows for characterization and anticipation of the proposed project’s impacts, and forms a basis for the environmental analysis. Sources for the literature reviews included published technical reports, internet resources, data from government sources, aerial photographs, and information provided by the applicant. Where existing information on the project area was insufficient or outdated or where surveys or studies were specifically required by jurisdictional agencies, surveys and studies were conducted to determine the existing environmental conditions. This work included geotechnical, cultural resources, biological, visual, and wetland delineation surveys.

3.1.2.2 Applicable Laws, Regulations, and Standards

This subsection outlines the applicable laws, regulations, and standards for each resource area. All applicable federal and state laws, regulations, and standards are summarized and their applicability to the project explained. It is assumed in the analysis that the applicant will fully comply with all applicable regulations, will prepare any required plans, and will obtain any necessary permits or waivers.

Applicable local laws, regulations, and standards are included in this subsection as well; however, pursuant to California law and CPUC General Order 131D, public utilities such as Southern California Edison (SCE) are generally not subject to local discretionary action jurisdiction (Section XVI.B). CPUC General Order 131D specifically requires public utilities to consult with local agencies on land use issues, but ultimately the CPUC has the authority to permit public utility projects. This information is included for disclosure purposes. Instances where SCE may fail to comply with local laws, regulations, and standards are noted in the analysis of impacts.

3.1.2.3 Impact Analysis

NEPA Impact Criteria

In accordance with NEPA and the BLM NEPA Handbook H-1790-1 (2008), this document considers the environmental effects of the project and its alternatives. Under NEPA, an EIS is prepared when the proposed action is expected to result in significant environmental effects (BLM 2008). The intent of the environmental analysis is to provide a scientific and analytic basis for comparing the proposed project and its alternatives (40 CFR 1502.16). Impacts are quantified to the extent possible. Determination of an impact's significance is derived from standards set by regulatory agencies at the federal, state, and local levels; knowledge of the effects of similar past projects; professional judgment; and plans and policies adopted by government agencies.

To facilitate comparison of alternatives, impacts are described in terms of context, intensity, and duration. *Context* refers to the geographic area of impact, which varies with the physical setting of the activity and the nature of the resource being analyzed. *Intensity* refers to the severity of the impact. *Duration* refers to how long the impact may last, and may be either short or long term:

- Short term – effects that occur during the construction phase
- Long term – effects caused during the construction and/or operations phases that remain longer than these phases

In determining the significance of an impact under NEPA, the impact is classified as adverse or beneficial and then rated negligible, minor, moderate, or major. Generally, these terms are defined as follows:

- Negligible effects may or may not cause observable changes to baseline conditions; regardless, they do not alter the baseline conditions;
- Minor effects cause observable and temporary or short-term changes to baseline conditions in a relatively small area, but they do not alter baseline conditions in the long term;
- Moderate effects cause observable and short-term change to baseline conditions, and/or they alter baseline conditions in the long-term; and
- Major effects cause observable and substantial long-term changes to baseline conditions.

CEQA Impact Criteria

Significance criteria, as set forth in the CEQA Appendix G Environmental Checklist (Association of Environmental Professionals [AEP] 2009) and CPUC policy, are identified in this EIR/EIS for each environmental resource area. The significance criteria serve as a benchmark for determining whether a project would result in significant adverse environmental impacts when evaluated against the baseline or existing environmental conditions. Issues that were raised during the scoping process are also addressed in the relevant resources subsection throughout this EIR/EIS.

Under the CEQA criteria, potential impacts are assessed by the agency and determined to be either no impact, a less than significant impact, an impact that is less than significant with mitigation, or a significant impact. As under NEPA, determination of an impact's significance is derived from standards set by regulatory agencies on the federal, state, and local levels; knowledge of the effects of similar past projects; professional judgment; and plans and policies adopted by governmental agencies.

Methodology

This subsection describes the methodology used to determine whether and how the project and its alternatives would affect the resource. All documents reviewed, all calculations performed, and any databases, maps, or sources of information used in assessing the impact on a particular resource are described here.

Applicant Proposed Measures

The applicant has incorporated a number of measures and procedures to avoid or reduce impacts on specific environmental resources into the description of the proposed project. In the assessment of the impacts, these measures have been assumed to be part of the project, and are not included as CPUC- or BLM-required mitigation measures; however, implementation of each APM will be monitored through a Mitigation and Monitoring Program (MMP). The APMs that are intended to reduce the potential impacts in a particular resource area (such as air quality or biology) are listed in the section addressing that area.

Proposed Project

The assessment of the environmental impacts of the proposed project considers both the construction and the operation and maintenance phases of the project. The following project components are considered in the analysis of impacts on each resource:

- Powerlines, including the 35-mile 230-kV transmission line, the 1-mile 115-kV subtransmission line extension, and the approximately 1-mile segments of 12-kV and 33-kV distribution;
- Substations, including the new Ivanpah Substation and upgrades to the existing Eldorado Substation; and
- The telecommunication system, including Path 1 along the proposed transmission route and the redundant Path 2 that combines overhead optical groundwire (OPGW), undergrounded OPGW, and a microwave path.

Alternatives

Under NEPA and CEQA, a reasonable range of alternatives must be considered. NEPA requires consideration of a "reasonable" number of alternatives. In determining the scope of alternatives, the emphasis is on "reasonable." "Reasonable" alternatives include those that are practical and feasible from a technical and economic standpoint and by using common sense (CEQ 40 Questions; #1). The information must be sufficient to enable reviewers and decision-makers to evaluate and compare alternatives.

State CEQA Guidelines §15126.6(a) provides, in part, that "an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project."

Impacts from alternatives are compared with those of the proposed project to determine their relative environmental merit and feasibility. The following alternatives, as described in Chapter 2, are analyzed in this chapter:

- The No Project / No Action Alternative
- Transmission Alternative Route A
- Transmission Alternative Route B
- Transmission Alternative Route C
- Transmission Alternative Route D
- Transmission Subalternative Route E
- The Golf Course Telecommunication Alternative
- The Mountain Pass Telecommunication Alternative

3.1.2.4 Mitigation Measures

The APMs, as described above, are considered a part of the project. If an analysis concludes the possibility of a potentially significant impact exists even after APMs are considered, both NEPA and CEQA require specific actions. Under CEQA, the analysis establishes the impact significance and determines additional required mitigation. Mitigation measures that are specified by the lead agencies to reduce any potential significant environmental impacts remaining after project modification are identified by the prefix “MM,” for example, MM VIS-1 denotes the first mitigation measure listed for visual resources.

Both §1508.20 of the CEQ regulations for implementing NEPA and the State CEQA Guidelines §15370 define mitigation as:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action;

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;[1]

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and

(e) Compensating for the impact by replacing or providing substitute resources or environments.

If it is determined that impacts would remain significant after mitigation, that is, they would continue to exceed the significance criteria, further measures may be proposed, or the impact may be determined to be significant and not mitigable.

3.1.2.5 Whole of the Action / Cumulative Action

Under CEQA, “project” is defined as “the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment” (CEQA Guidelines §15378(a)). The CPUC has determined that ISEGS, which intends to connect to EITP, constitutes a reasonably foreseeable physical change in the environment and will be analyzed as part of the “whole of the action” under CEQA.

[1] CEQA Guidelines § 15370(c) substitutes the word “impacted” for “affected.”

The BLM has determined that the ISEGS proposed project qualifies as a cumulative action to the EITP proposed project. The ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) has determined that the ISEGS project would result in significant impacts; given the geographical proximity and the overlapping schedules of the proposed project and the ISEGS project, it is reasonable to assume that the proposed EITP project, when considered in combination with ISEGS, would contribute to cumulatively significant impacts. Pursuant to CEQ regulation (40 CFR 1508.25(a)(2)), the ISEGS project will be discussed as part of the action within this Draft EIR/EIS.

Information on the environmental setting (baseline), applicable regulations, environmental impacts, and mitigation measures required by the California Energy Commission (CEC) for ISEGS are discussed under this subsection for each resource evaluated in Chapter 3 for disclosure purposes and to assist agency decision-makers.

3.1.3 Underlying Assumptions

The conclusions in this document are based on the analysis of potential environmental impacts and the following assumptions:

- The applicant will comply with all applicable laws and regulations;
- The applicant will contract, construct, and operate the project as described in Chapter 2, including all APMs; and
- The applicant will implement the mitigation measures as required by the CPUC and the BLM.

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3.2 Visual Resources

This section contains a description of the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to visual resources.

3.2.1 Environmental Setting

The existing environmental setting for visual resources is described in terms of the existing landscape and potential viewers. The existing environmental setting is described broadly to provide an overall context for the region in which the proposed project would be located. Representative views of the proposed locations for project components and the proposed routes for the transmission and telecommunications lines are included to support the textual description of the existing landscape; the locations from which these photos were taken are indicated in Figure 3.2-1.

Potential viewers are described in terms of the number of viewers, duration of views, distance between the viewer and the proposed project, and viewer expectation. Viewer groups include motorists along Interstate 15, Nipton Road, and Highway 95; recreational users in the area including OHV enthusiasts, kite surfers, users of the Primm Valley Golf Course, and hunters; residents of the Desert Oasis Apartment Complex in Primm, Nevada; visitors to Primm; residents of the communities of Nipton and Mountain Pass, California; and dispersed recreationists in Wilderness Areas. Viewer expectation considers viewer activity, adjacent land uses, special management areas in the vicinity, and any federal, state, or local regulations that protect visual resources in the area (BLM Manual H-8410-1). Figure 3.4-6, in Section 3.4, "Biological Resources", shows the specially designated areas that are considered in this section's visual resources analysis. Public concern expressed about the visual impact of the proposed project is also taken into account to describe the sensitivity of viewers.

Distance zones used to discuss views are consistent with BLM standard definitions. These are foreground (0 to 1 mile), middleground (1 to 3 miles), background (3 to 5 miles), and seldom-seen views (greater than 5 miles) (BLM Manual H-8410-1). Generally, increased visual contrast within foreground distances would be more noticeable to viewers than increased visual contrast within background distances.

Based on the potential viewer groups and sensitivity of those groups, distance zones, landscape features, and consultation with the CPUC and the BLM, KOPs were selected. These KOPs represent both sensitive and typical views in the proposed project area and form the bases of the visual analysis. The locations of the KOPs are shown on Figure 3.2-1. Contrast rating forms were completed for each of the KOPs following site visits in August of 2008; the contrast rating forms are included in Appendix C. The following KOPs were used for this analysis:

- KOP 1: View of the Transmission Corridor Looking Northeast toward the McCullough Mountain Range
- KOP 2: View from the South McCullough Wilderness Area
- KOP 3: View from Interstate 15 near Jean, Nevada
- KOP 4: View from the Desert Oasis Apartments in Primm, Nevada
- KOP 5: View from Ivanpah Dry Lake, East of Interstate 15
- KOP 6: View from Interstate 15 near Primm, Nevada
- KOP 7: View from Highway 95 in the Eldorado Valley
- KOP 8: View from Highway 164 Overpass in the Ivanpah Valley

The EITP would be located in the Basin and Range province, which includes the southwestern United States and northwestern Mexico.[1] This geographic region is characterized by generally north-trending high mountain ranges and intervening dry, alluvium-filled, flat-floored valleys (NASA 1986). The proposed project extends from the Ivanpah Valley in San Bernardino, California, to the Eldorado Valley in Clark County, Nevada (Figure 3.2-1). The physical setting of the proposed project and viewer groups would vary for each proposed project component and at various locations along the transmission and telecommunication routes as described below.

3.2.1.1 Transmission Line

The proposed transmission line would replace a segment of the existing single-circuit 115-kV Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass transmission line. The transmission line would run northeast from the proposed Ivanpah Substation and would proceed across Ivanpah Valley, across Ivanpah Dry Lake, through the town of Primm, Nevada, southeast of Roach Dry Lake, north of the Lucy Gray Mountains, and across the McCullough Mountains to the existing Eldorado Substation. Ivanpah Dry Lake and Roach Dry Lake are flat, unvegetated, and light in color compared to the surrounding terrain. The town of Primm consists of numerous casinos, commercial establishments, and some housing units. The Lucy Gray, Clark, and McCullough mountain ranges are jagged, visually prominent geologic formations that form the backdrop of views from the valley floor.

Figure 3.2-2 depicts the town of Primm, the Ivanpah Valley, the Lucy Gray Mountains, and the existing transmission line route. This view is typical of views surrounding the town of Primm. The view is characterized by primarily flat terrain with diagonally inclined low hills at the edge of the view and a rough, jagged mountain range in the background. The vegetation consists primarily of medium to tall native brush with low-lying ground cover. Dark brown distribution poles and gray lattice steel towers (LSTs) are present in this view, as is the town of Primm.

Motorists driving on Interstate 15 (I-15) in California and Nevada have views of the proposed project area. The proposed project area is also visible to recreational users of the dry lakes in the region. The Primm Valley Golf Club is located approximately 0.5 miles southeast of the proposed transmission line route. The existing recreational setting and potential impacts to recreational users are discussed in detail in Chapter 3.12, “Recreation.”

Urban uses adjacent to the transmission line include casinos in Primm, Nevada; the Desert Oasis Apartment Complex in Primm, Nevada; and the Bighorn Electric Generating System east of I-15. Additionally, the transmission line would be visible from the railroad tracks that parallel I-15.

3.2.1.2 Ivanpah and Eldorado Substations

The proposed Ivanpah Substation would be located in the Ivanpah Valley, a primarily flat area with a vegetative cover of even, low-lying shrubs broken by unvegetated dry lakes. Figure 3.2-3 shows the proposed Ivanpah Substation location as seen from the Primm Valley Golf Club. The terrain in this view is generally horizontal with topographic variations and a rock outcrop visible in the middleground; the Clark Mountain Range is visible in the background. The vegetation in this view is predominantly low shrubs and ground cover, with a random distribution of medium to -tall bushes. In the middleground of the view, H-frame transmission towers and LSTs are visible; no structures are visible in the foreground or background.

[1] The Basin and Range province is a physiographic province or “surface unit,” a naturally defined region with homogeneous landforms and landscapes.

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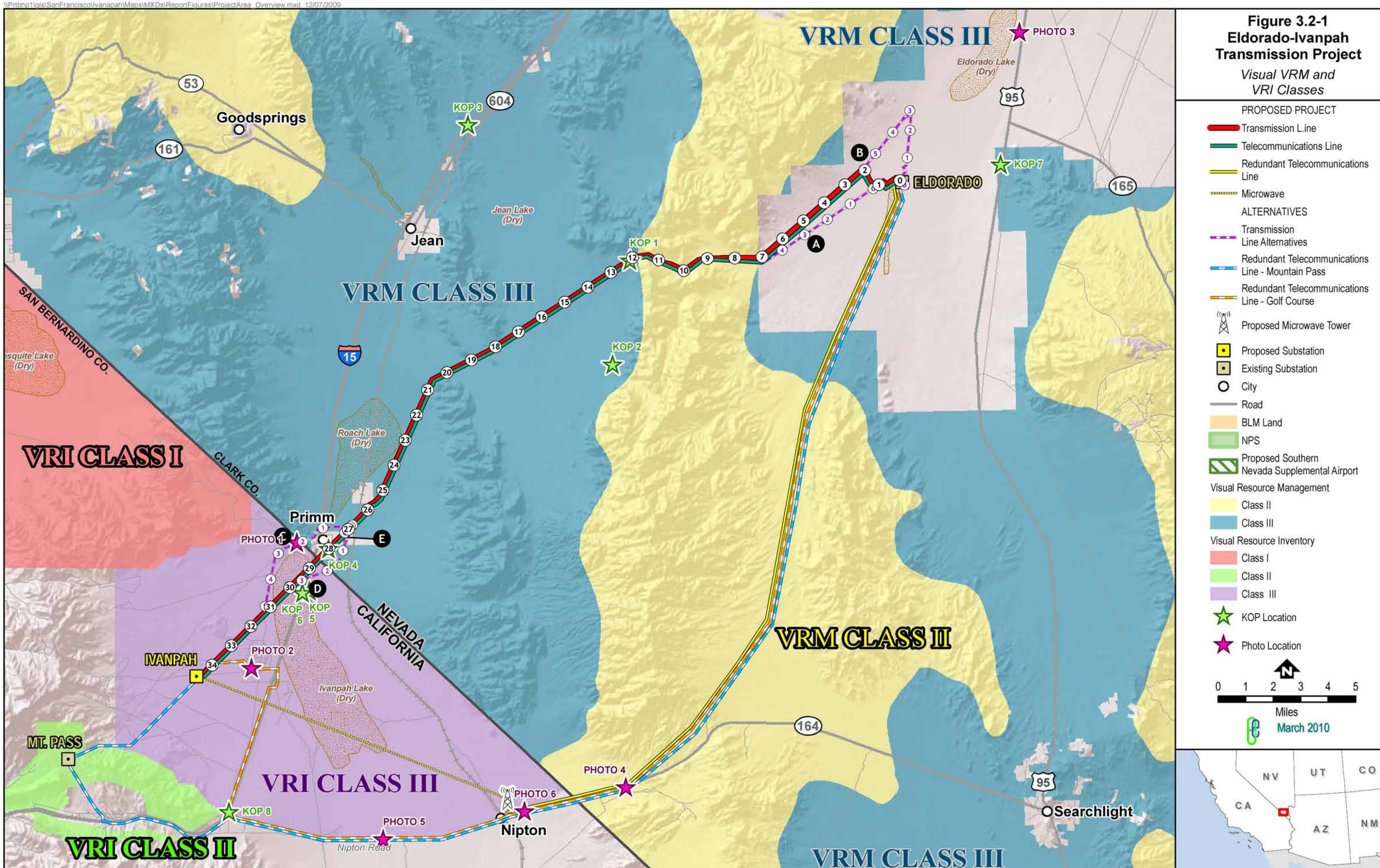

Figure 3.2-1
Eldorado-Ivanpah Transmission Project
Visual VRM and VRI Classes

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Character Photo 1 - View from a dirt road west of the city of Primm looking southeast toward the existing and proposed transmission line

Figure 3.2-2

Character Photo 1

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Character Photo 2 - View from the Primm Valley Golf Club looking west toward the site of the proposed Ivanpah Substation

Figure 3.2-3

Character Photo 2

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The Eldorado Substation is located in the Eldorado Valley, east of the McCullough Mountain Range. The Eldorado Substation is approximately 1.5 miles east of the existing Solar One facility. Figure 3.2-4 shows the existing Eldorado Substation from the Eldorado Dry Lake west of Highway 95. The view shows the predominantly flat dry lake and Eldorado Valley with the McCullough Mountain Range visible in the background. The dry lake primarily has a continuous firmly packed fractured texture; no vegetation is visible from this location. The existing Eldorado Substation and nearby solar generation facility appear indistinct from this location.

Motorists driving on I-15 in California have views of the proposed project area near the proposed location of the Ivanpah Substation. The proposed substation would be located approximately 2 miles east of the Primm Valley Golf Club. The town of Primm, Nevada, is approximately 6 miles northeast of the proposed substation site. The nearest topographical feature to the proposed Ivanpah Substation is a metamorphic outcrop west of I-15.

The existing Eldorado Substation is approximately 3.5 miles west of Highway 95 and approximately 10 miles southwest of Boulder City, Nevada.

3.2.1.3 Telecommunications Route

The proposed telecommunications line would run southwest on the existing 500-kV Eldorado–Lugo Transmission Line from the Eldorado Substation between the McCullough and Highland mountain ranges to Nipton Road, near the California-Nevada border. The terrain in this location is rough and rolling with varying changes in elevation. The vegetation visible in this view consists primarily of low-lying native shrubs and randomly spaced Joshua trees. The existing 500-kV transmission line is strung on gray angular LSTs and H-frame LSTs (Figure 3.2-5). The 500-kV transmission line is strung on the larger of the two structures visible in this photograph; at this location, the line is strung on LSTs.

The telecommunications line would then proceed underground along the northern edge of Nipton Road (Figure 3.2-6); Nipton Road forms the northern boundary of the Mojave National Preserve (MNP). A distribution line strung on wooden poles currently runs along the southern edge of Nipton Road. The town of Nipton, California is visible in the background of Figure 3.2-6.

Near the town of Nipton on the northern boundary of the MNP, a microwave tower would be constructed. Figure 3.2-7 shows the proposed microwave tower location; the town of Nipton is visible in the foreground-middleground distance zone in this photograph. The microwave tower would transmit and receive communication from a second microwave tower that would be installed within the proposed Ivanpah Substation. The terrain in this view is gently sloping away from the viewer with the predominantly flat dry lake and the New York Mountain Range visible in the background. The vegetation visible in this view consists of low-lying native shrubs with manicured vegetation visible in the middleground near the town of Nipton, California. The texture of the foreground view is rough with randomly spaced vegetation; the texture of background views includes the flat, smooth dry lake and the jagged mountain range.

The existing 500-kV Eldorado–Lugo transmission line is visible to dispersed recreational users in the South McCullough Wilderness Area, within Eldorado Valley, and from the Wee Thump Joshua Tree Wilderness Area. Motorists along Nipton Road/Highway 164 also have views of a segment of the Eldorado-Lugo transmission line near the California/Nevada border. Motorists along Nipton Road, recreational users of the MNP, and residents in the town of Nipton, have views of the proposed project area where the telecommunications route would be undergrounded and where the microwave tower would be located.

3.2.1.4 Transmission Line Minor Route Variations

There are five minor route variations to the proposed transmission line route (Figure 3.2-1). Alternative A would bypass a segment of the proposed project route between Milepost (MP) 1 and MP 7 near the Eldorado Substation. Alternative B would bypass a segment of the proposed route that runs north and south near MP 2, in Boulder City, Nevada. Alternative C would bypass the town of Primm, Nevada, and the Ivanpah Dry Lake by rerouting the transmission line north of Primm. Alternative D and E would reduce impacts to the Ivanpah Dry Lake by rerouting the line south of Primm, matching the footprint of an existing transmission line.

Figure 3.2-4 shows the existing visual setting where Alternatives A and B would be located, as described above in Section 3.2.1.2, "Ivanpah and Eldorado Substations." Viewer groups for Alternatives A and B include motorists along Highway 95, dispersed recreationists in the South McCullough Wilderness Area, and residents of Boulder City.

Figure 3.2-2 shows the existing visual setting where Alternatives C, D, and E would be located, as described above in Section 3.2.1.1, "Transmission Line." Viewer groups for Alternatives C, D, and E include motorists along I-15, recreational users of the Ivanpah Dry Lake, visitors and workers at the casinos in Primm, residents of the Desert Oasis Apartment Complex located in Primm, and workers at the Bighorn Electric Generating System.

3.2.1.5 Telecommunications Route Alternatives

There are two alternatives to the proposed telecommunications system (Figure 3.2-1). Neither alternative would include the microwave tower component of the proposed telecommunications system; rather, both alternatives would continue underground past Nipton, California, along the northern edge of Nipton Road for approximately 10 miles. The Golf Course Alternative would then proceed northwest on existing 33-kV distribution poles, with a short segment installed in underground ducts under the Primm Valley Golf Course. The Mountain Pass Alternative would continue underground for an additional mile and would then proceed west and northeast on existing 33-kV distribution lines through the town of Mountain Pass and near the existing Mountain Pass Substation. Both telecommunication alternatives would ultimately connect with the proposed Ivanpah Substation.

Figure 3.2-3 shows the existing visual setting where the Golf Course Alternative and the Mountain Pass Alternative would be located, as described above in Section 3.2.1.2. Viewer groups for the telecommunication alternatives include motorists along Nipton Road, motorists along I-15, workers and golfers at the Primm Valley Golf Club, residents of the town of Mountain Pass, and recreational users of the Ivanpah Dry Lake.

3.2.1.6 Key Observation Points

Select KOPs represent typical views of proposed project components and views from sensitive locations. Sensitive locations include areas with protected visual resources or scenic vistas or areas with a high degree of visual sensitivity such as residences or recreational areas. The sensitivity of a location takes into account the type of users, the number of users or frequency of use, public concern for maintaining visual resources, any scenic designations or management plans designed to protect visual resources, and adjacent land uses (BLM Manual H-8410-1). The process for selecting these KOPs is described in more detail in Section 3.2.3.3, "Methodology." These viewpoints are used to help establish the baseline for existing visual resources, and are later used to assess the proposed project's potential to change the visible landscape based on prepared simulations as described in Section 3.2.3.3, "Methodology." KOPs are characterized by describing the form, line, color, and texture of landforms, waterbodies, vegetation, and structures visible in the viewshed. The location of each KOP with respect to the proposed project area is shown in Figure 3.2-1.

Character Photo 2 - View from the Dry Lake west of Highway 95, looking southwest toward the Eldorado Substation

Figure 3.2-4

Character Photo 3

Character Photo 4 - View from Highway 164 looking northeast toward a portion of the proposed telecommunication system

Figure 3.2-5

Character Photo 4

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Character Photo 5 - View from Highway 164 looking east toward Nipton, California, adjacent to a portion of the proposed telecommunication system

Figure 3.2-6
Character Photo 5

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Character Photo 6 - View of the proposed microwave tower location

Figure 3.2-7

Character Photo 6

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KOP 1: View of the Transmission Corridor

KOP 1 (Figure 3.2-8) is a view of the existing Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line from within the transmission corridor. This view is oriented northeast into the McCullough Mountain Range and is representative of what would be seen from the McCullough Mountain Range. Typical recreational activities in this area include OHV use and hiking. This KOP depicts foreground and middleground views of the existing 115-kV transmission line.

KOP 1 shows the jagged and rocky terrain of the McCullough Mountain Range. The varying topography of the foreground creates an uneven horizon line that transitions from a nearly horizontal to a vertically inclining line, and then undulates to the eroded base of the mountains visible in the foreground and middleground; the background distance zone is not visible in this view due to topography. Light golden and tan soil, including randomly spaced tan, light brown, and black rock, is visible, giving the foreground a rocky and granular texture. Predominant colors of light golden to golden tan and slate gray with visible striations of warm pink and purple can be seen in the mountains located in the middleground. The land in the middleground has a smooth to granular texture; the mountains have a discontinuous, rough appearance. No water is visible in this view.

The vegetation within this view consists of irregularly rounded shrubs and ground cover with interspersed grasses, visible in the foreground and middleground. The shrubs and grasses are medium amber, gray-brown, and very light to medium sage green in color, with shrubs having a visually pointed texture and grasses a visually softer texture. Randomly spaced, irregularly shaped Joshua trees are also present in this view. The bristly-textured Joshua trees are an overall light brown and light sage green. The vegetation in this view creates a generally weak horizontal line, appearing dense in the foreground and scattered as the foreground transitions to the middleground.

The existing Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line is present in this view, as well as other transmission lines not part of the proposed project. The portion of the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line visible in this view consists of gray H-frame LSTs and associated conductors. Other overlapping medium gray LSTs and rust brown tubular steel poles (TSPs) are also present in the view.

KOP 2: View from the South McCullough Wilderness

KOP 2 (Figure 3.2-9) is a view from west of the South McCullough Wilderness looking northwest towards the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line route, the I-15, and the Spring Mountain Range. This view is representative of what would be seen from a location near the South McCullough Wilderness. Typical recreational activities in this area include OHV use and hiking, although there are no nearby trailheads or named trails in this area. This KOP depicts middleground views of the existing 115-kV transmission line.

KOP 2 shows the wide-open Ivanpah Valley and Jean Lake, framed by low mounded hills and low-lying incised mountains. While the foreground and middleground of the view are primarily horizontal, topographic variation is present in the down-sloping foreground and jagged and domed mountains in background views. The smooth, horizontal line of the valley transitions to a jagged horizontal mountain skyline. The exposed soil in the view ranges from golden tan on the valley floor to white-tan on Jean Lake; the hills and mountains range from dark brown to gray-brown, with a purple cast visible in the far mountains. Primarily sandy and rocky land is visible in the foreground, giving the valley floor a visually smooth and indistinctive texture, contrasting with the surrounding mountains and hills. No water is visible in this view.

Visually bristly, pointy shrubs and ground cover interspersed with soft mounded grasses comprise the typical vegetation visible in this view. The vegetation creates a generally weak horizontal line with colors including tan-brown, yellow-green, dark brown, and dark sage green.

The Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line is present in this view, although not distinguishable at this distance, as well as other transmission lines not part of the proposed project. The portion of the Eldorado-–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line present consists of gray H-frame LSTs, T-frame LSTs, and associated conductors. Golden tan dirt roads are also visible in this view. These diagonal and horizontal lines cross the wide open space of the Ivanpah Valley floor but do not detract from the openness of the view.

KOP 3: View from Interstate 15 near Jean, Nevada

KOP 3 (Figure 3.2-10) is a view from I-15 looking southeast toward the Union Pacific Railroad (UPRR), the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line route, Ivanpah Valley, Jean Lake, and the McCullough Mountain Range. This view is representative of what a southbound motorist on I-15 would see. The length of the view would be of short duration, a result of the speed at which a vehicle would generally be traveling. This KOP depicts seldom seen views of the existing 115-kV transmission line.

KOP 3 shows the expansive view afforded by Ivanpah Valley and Jean Lake with the McCullough Mountain Range in the background. The foreground and middleground of the view is primarily horizontal, with some topographic variation present in the foreground as it slopes toward the middleground. The horizontal line of the middleground inclines diagonally at the base of the dark slate-brown low hills located in the background of the view, transitioning into the jagged horizontal skyline of the McCullough Mountain Range. The exposed soil in the foreground is light golden tan and has a sandy to rocky texture. The middleground colors range from the golden tan of the valley floor to the light tan of the dry lake bed, appearing smooth. The smooth valley floor transitions into the visually varied mountain slopes, which are dark brown; a purple cast is present in the far mountains. No water is visible in this view.

Vegetation is visible in the foreground of this view; vegetation present in the middleground and background is indistinguishable. Irregularly rounded red-brown, yellow-green, dark brown, and dark sage-green shrubs and ground cover create a generally weak horizontal line in the foreground. These shrubs and ground cover are randomly spaced and have an overall visually bristly, pointed texture.

Although not distinguishable at this distance, the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line is present in the background of this view, as are as other transmission lines not part of the proposed project. The portion of the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line present consists of gray H-frame LSTs, T-frame LSTs, and associated conductors. Golden tan dirt roads are present and barely visible in the background of this view. The UPRR, evenly spaced dark brown distribution poles, and a low-lying brown fence are clearly visible in the foreground of this view. These diagonal and horizontal lines cross the wide open space of the Ivanpah Valley floor but do not detract from the openness of the view.

KOP 4: View from Desert Oasis Apartments in Primm, Nevada

KOP 4 (Figure 3.2-11) is a view from the Desert Oasis Apartment Complex in Primm. The photograph was taken looking southwest toward the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line route and the Clark Mountain Range. Views from this location would occur frequently for residents leaving from or returning to their homes. Residents of the Desert Oasis Apartment Complex include employees of the Primm Valley casinos and seasonal residents working on construction projects in the vicinity of Primm, Nevada. This KOP depicts foreground views of the existing 115-kV transmission line.

a) View of the Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line looking northeast toward the McCullough Mountain Range

b) Simulated view of the proposed Eldorado-Ivanpah 230-kV transmission line in the McCullough Mountain Range

Figure 3.2-8 **KOP 1 – View of the Transmission Corridor**

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a) View from west of of the South McCullough Wilderness looking northwest toward the existing Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line

b) Simulated view of the proposed Eldorado-Ivanpah 230-kV transmission line from near the South McCullough Wilderness Area

Figure 3.2-9 **KOP 2 – View from the South McCullough Wilderness Area**

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a) View of the existing Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line looking southeast from I-15 near Jean, Nevada

b) Simulated view of the proposed Eldorado-Ivanpah 230-kV transmission line looking southeast from I-15 near Jean, Nevada

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Figure 3.2-10 **KOP 3 – View from Interstate 15 Near Jean, Nevada**

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a) View of the existing Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line looking southwest from the Desert Oasis Apartment complex in Primm, Nevada

b) Simulated view of the proposed Eldorado-Ivanpah 230-kV transmission line looking southwest from the Desert Oasis Apartment complex in Primm, Nevada

Figure 3.2-11 **KOP 4 – View from Desert Oasis Apartments in Primm, Nevada**

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KOP 4 shows the perimeter of the apartment complex in the foreground with the low, weathered Clark Mountain Range visible in the background; the middleground is not visible in this view. The visible land in the foreground creates a primarily horizontal line; the mountain range in the background creates an irregular horizontal skyline with jagged elements. The exposed soil of the landscaping in the foreground ranges from light to medium brown, and the mountain range in the background appears dark brown with shale to purple tint. The visible soil in the foreground has a coarse granular dirt texture, while the mountains appear smoothly weathered with some sharp peaks. No water is visible in this view.

The vegetation in this view is primarily manicured landscape and only visible in the foreground. There is no native vegetation visible at middleground and background distances due to fencing around the apartment complex. Pointed trees and low bristly shrubs with interspersed palm trees comprise the typical vegetation in this view. An irregularly horizontal line is created by the vegetation, with colors including pine green, yellow-green, and dark green foliage, as well as brown trunks.

The Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line is visible in the foreground and runs adjacent to the Desert Oasis Apartment complex. The visible portion of the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line consists of gray H-frame LSTs, T-framed LSTs, and associated conductors. A low, tan, block wall; paved dark gray roadway; weathered white drainages and red curbing; black light poles; and terracotta apartment buildings are also visible in the foreground.

KOP 5: View from Ivanpah Dry Lake, East of Interstate 15

KOP 5 (Figure 3.2-12) is a view from the Ivanpah Lake east of I-15 looking northwest toward the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line route, I-15, the Spring Mountain Range, and the town of Primm. This view provides a representative image of what a recreational user of the Ivanpah Dry Lake would see. The duration of views for recreational users would be medium to long, depending on the nature of the recreational activity. A recreational user who remains on the dry lake for an entire day or for an extended block of time would have long views of the proposed project. A recreational user who is crossing the dry lake would have a medium length view of the proposed project. Typical recreational activities in this area include racing, archery, kite buggying, and land sailing. This KOP depicts foreground views of the existing 115-kV transmission line.

KOP 5 shows the nearly flat Ivanpah Lake with the town of Primm and the low, weathered hills and mountains in the middleground and background. The foreground of this view is primarily horizontal with topographic variation in the middleground and background. The horizontal dry lake located in the middleground smoothly inclines diagonally over the crest of the hills, transitioning into the jagged horizontal mountain skyline of the Spring Mountain Range. The dry lake has a smooth to slightly coarse texture with striations of light and gold-tan coloring the land. The hills and mountains in the view appear discontinuously rough and smooth. The hills are colored a variation of light tan, dark brown, sandy beige, wine purple, and slate; the mountains are a mottled gray and dark purple. No water is visible in this view.

A single short, domed, dark green shrub is located in the foreground. Vegetation is visible in background views at the base of the Spring Mountain Range. The vegetation in the middleground views is dark green with undefined edges and texture.

The Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line is present in this view, as well as other transmission lines not part of the proposed project, including the much more prominent existing transmission line on LSTs in the foreground of the view. The portion of the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line present, although not visible at this distance, consists of gray LSTs and associated conductors. The slightly elevated I-15, short cylindrical poles, and buildings and signs associated with the town of Primm are also visible in this view; no structures are visible in the background.

KOP 6: View from Interstate 15 near Primm, Nevada

KOP 6 (Figure 3.2-13) is a view from northbound I-15 looking northeast toward the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line route, the town of Primm, the Spring Mountain Range, and the Lucy Gray Mountains. Views of the proposed project for motorists on I-15 would be of a relatively short duration. The posted speed limit on I-15 is 70 miles per hour. For more information about I-15, refer to Section 3.14, "Transportation and Traffic." This KOP depicts middleground views of the existing 115-kV transmission line.

KOP 6 shows the nearly flat Ivanpah Valley with the low, domed toe of the Spring Mountain Range located at the edge of the view; the Lucy Gray Mountains are visible in the background. The nearly horizontal Ivanpah Lake, which runs adjacent to I-15, transitions into the irregular horizontal toe of the Spring Mountain Range, then into the weathered rugged skyline of the Lucy Gray Mountains. The exposed land in the view includes the golden tan dry lake with a slightly rough texture, and the golden brown and slate to wine-purple mountains with visual textures ranging from lumpy to pointed. No water is visible in this view.

Low mounded shrubs and interspersed grasses are visible in the foreground and represent the typical vegetation of this view. The distinct diagonal line of the vegetation parallels I-15. The color of the vegetation ranges from golden tan to a light olive green with an overall bristly and soft texture.

The Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line is present in this view, as well as other transmission lines not part of the proposed project. The portion of the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line present, while not visible, consists of gray LSTs and associated conductors. The flat I-15 and nearly vertical paralleling fence create a diagonal line that bisects the valley floor; nearly vertical road markers are randomly distributed along the interstate. The irregularly shaped and square-shaped buildings and signs of the town of Primm and a slightly elevated overpass are also visible in this view.

KOP 7: View from Highway 95 in the Eldorado Valley

KOP 7 (Figure 3.2-14) is a view from southbound Highway 95 looking southwest toward the Eldorado Valley, the Eldorado Substation, the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line route, and the McCullough Mountain Range. Views of the proposed project for motorists on Highway 95 would be of a relatively short duration. The posted speed limit on Highway 95 is 65 miles per hour. For more information about Highway 95, refer to Section 3.14, "Transportation and Traffic." This KOP depicts the background to seldom seen views of the existing Eldorado Substation and 115-kV transmission line.

KOP 7 shows the Eldorado Valley with the McCullough Mountain Range visible in the background. The valley floor is flat with some topographic variation, sloping downhill from the foreground to the middleground. The valley floor transitions into intermittently smooth and rough alluvial fans at the base of the mountain range, then into an irregularly weathered form. The nearly horizontal line of the foreground and middleground diagonally inclines at the alluvial fans, becoming an irregularly horizontal skyline with rugged peaks. The exposed soil in the view ranges from light to golden tan to ash brown on the valley floor; the fans and mountains range from warm pink, dark golden brown, gray-brown, and sage green. Primarily sandy and gravelly land is visible in the foreground, appearing smooth on the valley floor, roughening at the fans and mountains. No water is visible in this view.

a) View of the existing Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line looking northeast from Ivanpah Dry Lake

b) Simulated view of the proposed Eldorado-Ivanpah 230-kV transmission line looking northeast from Ivanpah Dry Lake

Figure 3.2-12 **KOP 5 – View from Ivanpah Dry Lake, East of Interstate 15**

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a) View of the existing Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line looking northeast toward Primm, Nevada

b) Simulated view of the proposed Eldorado-Ivanpah 230-kV transmission line looking northeast toward Primm, Nevada

Figure 3.2-13 **KOP 6 – View from Interstate 15 near Primm, Nevada**

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a) View of the existing Eldorado Substation and Eldorado-Baker-Coolwater-Dunn Siding-Mountain Pass 115-kV transmission line looking west from Highway 95

b) Simulated view of the upgraded Eldorado Substation and the proposed Eldorado-Ivanpah 230-kV transmission line looking west from Highway 95

Figure 3.2-14 **KOP 7 – View from Highway 95 in the Eldorado Valley**

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Vegetation in this view consists of low, rounded, scraggly, sharp shrubs, which create a generally horizontal line; the vegetation in the middleground and background is not distinguishable from this KOP. The color of the vegetation ranges from tan, light green, and dark red-brown in the foreground to dusty greens and browns in the middleground.

In addition to the Eldorado Substation and the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line, other transmission lines not part of the proposed project are present in this view. The portion of the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line present, while not visible at this distance, consists of gray LSTs and associated conductors. A gray and green fence is visible in the foreground and creates a generally horizontal line with short vertical fence posts. A flat, blue reflective solar facility and two substations are located on the valley floor, creating complex horizontal and vertical lines associated with the solar panels, support buildings, and poles.

KOP 8: View from the Highway 164 Overpass in the Ivanpah Valley

KOP 8 (Figure 3.2-15) is a view from the I-15/Highway 164 Overpass looking northwest toward the proposed Ivanpah Substation, Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line route, the Ivanpah Valley, the Ivanpah Lake, the Clark Mountain Range, the Spring Mountain Range, and the Lucy Gray Mountains. This photograph provides an elevated and, subsequently, broader view of what a motorist on northbound I-15 would see. Views of the proposed project for motorists on I-15 would be of a relatively short duration. The posted speed limit on I-15 is 70 miles per hour. For more information about I-15, refer to Section 3.14, "Transportation and Traffic." This KOP depicts the background to seldom seen views of the proposed Ivanpah Substation location and the existing 115-kV transmission line.

KOP 8 is a view of the Ivanpah Valley with the Clark Mountain Range, the Spring Mountain Range, and the Lucy Gray Mountains visible in the background. The valley floor is typically flat, sloping downhill from foreground to middleground with a low, diagonally sloping hill located west of I-15. Ivanpah Lake and the valley floor create a generally horizontal line with topographic variations at the isolated, low, conical hills and at the irregularly weathered mountains in the background. The exposed soil in the valley is predominantly golden tan, while Ivanpah Lake is a light tan. The hills and mountains range in color, from light tan to dark golden brown to mottled brown; the Lucy Gray Mountains have a warm pink cast. The gravelly texture of the foreground transitions into the generally smooth valley floor, which transitions into the intermittently rough- and smooth-textured mountains. No water is visible in this view.

The typical vegetation visible in the view consists of low, mounded, randomly spaced shrubs, which create a weak horizontal line. The color of the vegetation in this view ranges from sage green to red-brown with an overall rough, bristly texture that transitions into a smooth, velvety texture on the valley floor.

The Eldorado-Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line, although not distinguishable at this distance, is present in this view, as well as other transmission lines not part of the proposed project. The portion of the Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line present consists of gray LSTs and associated conductors. I-15 and associated dividers and signs are visible in this view, as well as dirt roads and buildings associated with a former roadside service and the town of Primm. The grays, black, whites and yellows of I-15 create a strong diagonal line curving north, transitioning to a vertical line sloping downhill from foreground to background. The tan dirt roads create diagonal lines crossing the valley floor, and the muted gray buildings associated with a former roadside service and the town of Primm appear angular and block-like in the background.

3.2.2 Applicable Laws, Regulations, and Standards

The following section provides a summary of federal, state, and local laws, regulations, and standards that govern visual resources in the proposed project area.

3.2.2.1 Federal

Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) of 1976 (90 Stat. 2743; 43 United States Code 1601, et seq.) established the BLM as the jurisdictional agency for expanses of land in the West to be managed as multiuse lands. The following sections of the FLPMA relate to the management of aesthetic and visual resources on federal lands:

> § 102(a): "The public lands [shall] be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values."
>
> § 201(a): "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including…scenic values)."
>
> § 505(a): "Each right-of-way shall contain terms and conditions which will…(ii) minimize damage to the scenic and esthetic values."

Federal regulations regarding aesthetics and visual resources are enacted through the application of the Visual Resource Management (VRM) system outlined in the BLM 8400 VRM Manual. The VRM system involves inventorying scenic values and establishing management classes and objectives for those values, and then evaluating proposed activities to determine whether they conform to the management objectives. VRM classes may be established in Resource Management Plans (RMPs). In the absence of VRM classes in an adopted RMP, BLM resource specialists may complete a Visual Resource Inventory (VRI) for the affected area. The California Desert Conservation Area Plan does not have established VRM classes for the proposed project area within California. The Las Vegas RMP has established VRM classes for the proposed project area within Nevada. Because the classes are established differently for Nevada and California, there may be different ratings for adjacent lands at the California–Nevada border. The VRM and VRI classes described below are shown on Figure 3.2-1.

California Desert Conservation Area Plan

The proposed Ivanpah Substation, a portion of the transmission route, and a portion of the telecommunications route would be located on BLM land managed according to the California Desert Conservation Area (CDCA) Plan (BLM 1980). The CDCA Plan does not include VRM classifications, nor does it directly address scenic values in the jurisdictional area; however, the BLM developed VRI classes for the ISEGS project, which are consistent with the CDCA Plan. The proposed project would be located entirely within a VRI Class III area (BLM and CEC 2009). The management objectives associated with VRI classes are discussed below in Section 3.2.3.3, "Methodology."

Northern and Eastern Mojave Plan Amendment

The Northern and Eastern Mojave (NEMO) Plan Amendment (BLM 2002) updated the CDCA Plan for lands crossed by the proposed project. The plan did not establish VRM classes. The NEMO plan addressed visual resource impacts to users of historic trails in the plan area. The Old Spanish Historic Trail crosses land managed according to the NEMO Plan Amendment, but the trail would not be crossed by the proposed transmission or telecommunications routes, including alternatives, and no proposed project components would be located within the vicinity of the Old Spanish Historic Trail.

a) View of the proposed Ivanpah Substation location looking northwest from the Highway 164/Interstate 15 overpass

Simulated iew of the proposed Ivanpah Substation location looking northwest from the Highway 164/Interstate 15 overpass
looking west from Highway 95

Figure 3.2-15 **KOP 8 – View from the Highway 164 Overpass in the Ivanpah Valley**

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Las Vegas Resource Management Plan

Within Nevada, a portion of the proposed project would be located on land managed according to the Las Vegas RMP (BLM 1998). The BLM Southern Nevada District Office manages land under its jurisdiction according to the goals and policies outlined in the Las Vegas RMP, which contains the following objective regarding the management of visual resources:

- **VS-1.** Limit future impacts on the visual and aesthetic character of the public lands.

The proposed transmission line would cross VRM Class II and VRM Class III land as designated by the Las Vegas RMP. The proposed telecommunications line would cross VRM Class II land. The management objectives associated with VRM classes are discussed below in Section 3.2.3.3, "Methodology."

National Historic Preservation Act

The National Historic Preservation Act (NHPA) includes language protecting the visual integrity of sites listed or eligible for the National Register of Historic Places: "Examples of adverse effects…include…introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features…" (36 Code of Federal Regulations Part 800.5). Impacts to visual resources protected by the NHPA are discussed in Section 3.5, "Cultural Resources."

3.2.2.2 State

California Department of Transportation

The California State Department of Transportation (Caltrans) administers the State Scenic Highway Program to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways (California Streets and Highways Code § 260, et seq.). The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in the Streets and Highways Code § 263. The program entails regulation of land use and density of development, attention to the design of sites and structures, attention to and control of signage, landscaping, and grading, and other restrictions. The local jurisdiction is responsible for adopting and implementing such regulations. If a highway is listed as eligible for official designation, it is also part of the Scenic Highway System and care must be taken to preserve its eligibility status. There are no designated or eligible State Scenic Highways within the vicinity of EITP.

Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) developed the I-15 Landscape and Aesthetics Corridor Plan (NDOT 2005) as required by the NDOT Master Plan. The I-15 Landscape and Aesthetics Corridor Plan does not contain any rules, regulations, or policies regarding projects built within view of the I-15 corridor. However, in outlining planned landscape and aesthetic improvement projects for the corridor, the I-15 Landscape and Aesthetics Corridor Plan does establish scenic zones along the highway. The proposed project would parallel the portion of I-15 classified as the "Gateway to Nevada's Excitement" Design Segment. Design Objectives for the portion of I-15 paralleled by the proposed project are classified as Statewide Gateway (near Primm, Nevada) and Preserved Desert Landscape Character (from Roach, Nevada, to Jean, Nevada). Design objectives for these segments of I-15 applicable to the proposed project include the following:

- Preserved Desert Landscape Character
  - 2. Preserve scenic views of mountain ranges in the distance, middleground of the Mojave Desert, and lake beds in the foreground.
- Managed Desert Landscape Character

- 1. Plan for a future design context that will integrate expected growth, major facilities, and development within this segment.
- 2. Maintain the desert character in conjunction with new urbanization and growth.

There are no designated or eligible Scenic Highways within view of the proposed project in Nevada (NDOT 2009).

3.2.2.3 Regional and Local

San Bernardino County, California

The Conservation and Open Space Elements of the San Bernardino County General Plan include the following goals, objectives, and programs relating to aesthetic and visual resources (San Bernardino County 2005 and 2006):

- **Goal D/CO 1.** Preserve the unique environmental features and natural resources of the Desert Region, including native wildlife, vegetation, water, and scenic vistas.
- **Policy D/CO 1.2.** Require future land development practices to be compatible with the existing topography and scenic vistas and protect the natural environment.
- **Policy D/CO 3.2.** All outdoor lighting including street lighting shall be provided in accordance with the Night Sky Protection Ordinance and shall only be provided as necessary to meet certification standards.
- **Goal OS5.** The County will maintain and enhance the visual character of scenic routes in the County.
- **Policy OS 5.1.** Features meeting the following criteria will be considered for designation as scenic resources: a.) A roadway, vista point, or area that provides a vista of undisturbed natural areas, b.) Includes a unique or unusual feature that comprises an important or dominant portion of the viewshed (the area within the field of view of the observer), c.) Offers a distant vista that provides relief from less attractive views of nearby features (such as views of mountain backdrops from urban areas).
- **Policy OS 5.2.** Define the scenic corridor on either side of the designated route, measured from the outside edge of the ROW, trail, or path. Development along scenic corridors will be required to demonstrate through visual analysis that proposed improvements are compatible with the scenic qualities present.
- **Policy OS 5.3.** The County desires to retain the scenic character of visually important roadways throughout the County. A "scenic route" is a roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County. Therefore, the County designates the following route as a scenic highway and applies all applicable policies to development on this route.
  - I-15 from the junction with Interstate 215 northeast to the Nevada state line, excepting those areas within the Barstow Planning Area and the community of Baker where there is commercial/industrial development, those portions within the Yermo area from Ghost Town Road to the East Yermo Road overcrossing on the south side only, and from First Street to East Yermo Road overcrossing on the north side and all incorporated areas.
- **Night Sky Protection Ordinance (Ord. 3900).** This ordinance provides that "Commercial and industrial outdoor lighting must be fully shielded so that no light is emitted above the horizontal plane…do not direct light or light trespass onto adjacent property…or to any member of the public who may be traveling on adjacent roadways."

Clark County, Nevada

The Clark County Comprehensive Plan includes the following policies related to the siting and design of public utilities to minimize impacts to aesthetic and visual resources (Clark County 2006):

- **UT 1-4.** Support increasing capacity of existing utility corridors over establishing new ones.
- **UT 1-8.** Support the reduction of visual impacts by newly constructed utility poles, towers, substations, and equipment buildings. Use methods for reducing the effect through actions such as:
  - Disguising and co-locating antennas for cell towers
  - Hiding equipment buildings with screening and solid fencing
  - Using architecture design on major utility poles to complement the character of a community
  - Placing high capacity electrical transmission lines underground to lessen visual impacts in large multi-use projects

Boulder City, Nevada

The Boulder City Master Plan includes the following policy related to visual impacts within the Eldorado Valley region (Boulder City 2003):

> **EV 3: Views.** The visual impacts of future development in the Eldorado Valley should be a strong consideration when reviewing future proposals for energy production facilities or other uses. Future development should be designed so as to minimize negative impacts to views of the Eldorado Valley from the urbanized areas of the city.

3.2.3 Impact Analysis

This section defines the methodology used to evaluate impacts for visual resources, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. This section also lists the Applicant Proposed Measures (APMs) designed to minimize impacts to visual resources in Section 3.2.3.4, "Applicant Proposed Measures." For mitigation measures, refer to Section 3.2.4.

3.2.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to visual resources would result from the proposed project, and explains the significance of those effects in the proposed project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate the comparison of alternatives, the significance of environmental changes is described in terms of temporal scale, spatial extent, and intensity.

The following criteria were considered in determining whether a visual impact would be adverse. The BLM VRM methodology was used as the primary indication of potential impact significance. If impacts meet the VRM class objectives of a given KOP in Nevada or are consistent with the VRI objectives in California, the impact is considered minor or negligible. If the impact does not meet the applicable VRM or VRI class objectives of a given KOP, the impact is considered major. The analysis considers the level of visual contrast that would be introduced at KOPs, focusing on contrast in form, line, color, and texture and the introduction of new sources of light or glare.

3.2.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. have a substantial adverse effect on a scenic vista;
b. substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
c. substantially degrade the existing visual character or quality of the site and its surroundings; or
d. create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

3.2.3.3 Methodology

The proposed project would be located primarily on BLM land; therefore, the methodology used to determine impacts on visual resources is consistent with the BLM's guidelines for selecting KOPs, describing the views from these locations, determining the degree to which views would be impacted, and assessing the proposed project's compliance with applicable VRM or VRI objectives. The assessment of the proposed project's impacts is based on an evaluation of the changes to the existing visual environment that would result from construction, operation, and, maintenance of the proposed project.

KOPs were selected in accordance with BLM VRM Manual 8431 and include critical viewpoints such as those from residential communities or road crossings, representative views of typical landscapes in the proposed project area, and any special project or landscape feature, such as the proposed substation location or a dry lake bed. The KOP selection process considered the number of viewers, the duration of the view, and viewer expectation.

Viewer expectation and the sensitivity of viewpoints were also considered in selecting the KOPs as outlined in the BLM Visual Resources Inventory Manual 8410-1. Factors considered in determining the sensitivity of a viewpoint and viewer expectation include the types of users in the area, the amount of use for each location, any public interest, adjacent land uses, and areas with special designations such as Wilderness Areas or Recreation Areas.

KOPs were agreed upon by the applicant's consultants, CPUC consultant, and BLM staff from both the Needles and Las Vegas field offices. The consulting team met with BLM staff from both field offices to conduct field work and identify potential KOPs. Coordination with agency staff continued after completion of the visual field work to discuss potential project issues and finalize the selection of KOPs for the proposed project.

Field surveys in San Bernardino County, California, and Clark County, Nevada, were conducted on October 16, 2008, to select potential KOPs in consultation with the BLM. Additional field surveys were conducted in Clark County, Nevada, on November 13 and 14, 2008, to select potential KOPs in consultation with the BLM. During the field visits and in subsequent consultation, BLM staff indicated that:

- BLM land in California that would be crossed by proposed project components is managed as VRI Class III; and
- BLM land in Nevada that would be crossed by proposed project components is designate VRM Class III and VRM Class II.

KOP photos were taken with a 35mm camera and fixed 50mm lens, with a resulting horizontal field of view of approximately 40 degrees. A single-frame image was used for each KOP. If viewed as a 10-inch wide image at a distance of about 1 foot, this field of view approximates the actual field of view experienced.

In accordance with BLM guidelines, simulations were prepared to assess the degree of visual contrast that would be introduced by the proposed project. The photographs taken from each of the KOPs were used as the basis for the simulations. For each view, computer modeling and rendering techniques were used to produce the simulated images. Existing topographic and site data provided the basis for developing an initial digital model. Project engineers provided three-dimensional (3-D) digital models of the transmission and substation structures. These models were then combined with the digital site model to produce a complete computer model of the proposed project.

For each simulation viewpoint, a viewer location was digitized from topographic maps and scaled aerial photographs, using 5 feet as the assumed viewer eye level. Computer wire frame perspective plots were then overlaid on the photographs of the views from the simulation viewpoints to verify scale and viewpoint location. Digital visual simulation images were produced as a next step based on computer renderings of the 3-D model combined with high-resolution digital versions of base photographs. The final hardcopy visual simulation images that appear in this document were produced from the digital image files using a color printer.

Comparison of the “before” photographs with the simulations of the proposed project as it would appear after construction provided the basis for determining the potential impacts on views and visual quality. These simulations do not include any landscaping plans as landscaping had not been finalized at the time the simulations were prepared. Additionally, all simulations depict the proposed project as it would appear when constructed and do not depict the proposed project during construction. Therefore, these simulations depict the proposed project as it would appear immediately after construction and before any landscaping were to be installed.

The impact analysis assessed the contrast between the existing conditions and conditions that would exist after construction of the proposed project for basic visual features (landforms, water bodies, vegetation, and structures) using four basic design elements (form, line, color, and texture). Views and features of the proposed project are described in terms of distance zones. These are foreground (0 to 1 mile), middleground (1 to 3 miles), background (3 to 5 miles), and seldom-seen views (greater than 5 miles).
The degree of contrast that would be introduced by the proposed project at each KOP is then assigned a BLM rating which reflects the degree of contrast of visual changes against the objectives of the applicable VRM class or VRI rating that the KOP is located within. These ratings are as follows:

- Strong: the element contrast demands attention, will not be overlooked, and is dominant in the landscape
- Moderate: The element contrast begins to attract attention and begins to dominate the characteristic landscape.
- Weak: the element contrast can be seen but does not attract attention.
- None: the element contrast is not visible or perceived.

BLM classifies the visual resources of an area by assigning them to one of four inventory classes using a standard visual resource inventory process. Each of the four classifications corresponds to management goals as follows:

- Objective Class I: The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
- Objective Class II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

- Objective Class III: The objective of this class is to partially retain the existing character of the landscape. The level of change to characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
- Objective Class IV: The objective of this class is to provide for management activities that allow major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

As directed in the BLM Visual Contrast Rating Manual 8431, a number of variables are considered in determining the significance of a potential impact to aesthetics and visual resources for each KOP. A weak visual change can constitute a major visual impact if the change is perceptible in foreground views to a highly sensitive viewer group such as recreational viewers in a VRM Class I area. The factors considered in determining the extent and implications of the visual changes are as follows:

- The specific changes in the affected environment's composition and character and any outstanding valued qualities,
- The context of the affected visual environment,
- The extent to which the affected environment contains places or features that have been designated in plans and policies for protection or special consideration, and
- The numbers of viewers, their activities, and the extent to which the activities are related to the visual qualities affected by proposed changes.

3.2.3.4 Applicant Proposed Measures

The applicant has included the following APMs related to visual resources:

APM AES-1: Road Cut Rock Staining. Where new roads are required in the South McCullough Mountains to access new or existing transmission and subtransmission towers, the applicant would consult with the BLM regarding feasible methods to treat the exposed rock to match the overall color of the adjacent weathered rock.

APM AES-2: Seeding and Inter-Planting. Where new roads are required in the South McCullough Mountains to access new or existing transmission and subtransmission towers, road cuts would be treated by seeding and/or inter-planting into the disturbed areas to restore the area to an appearance that would blend back into the overall landscape context.

APM AES-3: Non-Reflective Finish. LSTs and TSPs would be constructed of steel that was galvanized and treated at the factory to create a dulled finish that would reduce reflection of light off of the tower members. As appropriate to the environment, the galvanized coating would also be treated to allow the towers to blend into the backdrops. Non-specular transmission cable would be installed for the new transmission line to minimize conductor reflectivity.

APM AES-4: Regrade/Revegetate Construction Sites. Areas around new or rebuilt transmission and subtransmission structures that must be cleared during the construction process would be regraded and revegetated to restore them to an appearance that would blend back into the overall landscape context.

APM AES-5: Use Existing Access Roads. To the extent feasible, existing access roads would be used.

APM AES-6: Minimize Road Modifications. Widening and grading of roads would be kept to the minimum required for access by proposed project construction equipment.

APM AES-7: Dust Suppression. During the construction period, dust suppression measures would be used to minimize the creation of dust clouds potentially associated with the use of the access roads.

APM AES-8: Substation Lighting Control. The substation lighting would be designed to be manually operated only when required for non-routine nighttime work. The lighting would be directed downward and shielded to eliminate offsite light spill at times when the lighting might be in use.

3.2.3.5 Proposed Project / Proposed Action

Construction

Visual impacts associated with construction of the proposed project would result from the following:

- The removal of existing vegetation and the exposure of bare soils within construction workspaces;
- Grading and vegetation removal to improve access and spur roads;
- Exposure of bare soils where pits would be dug for tower installation;
- Removal of vegetation and grading for the proposed Ivanpah Substation and microwave tower;
- Trenching along Nipton Road where the telecommunications line would be installed underground; and
- Storage of materials and equipment.

Construction impacts would be greatest in areas with the greatest amount of land disturbance, such as laydown or staging areas and areas where substantial trenching would be required. Construction yards would be located at the Eldorado Substation, which is visible in KOP 7 (Figure 3.2-14); in Jean, Nevada; at an existing generating station yard in Nevada; at a Primm Valley Casino vacant lot in Primm, Nevada; at a vacant lot at the Whiskey Pete's Casino in Primm, Nevada; at the proposed BrightSource generating station yard, which would be visible in KOP 8 (Figure 3.2-15); and in the town of Nipton, California.

However, construction impacts would be temporary because the land would be restored to its original condition (APM AES-4). Construction would occur over an approximately 19 month period, although construction in any one location would be of a shorter duration. The visual impact from activities, such as grading and the removal of vegetation, may occur for up to three years after the construction period, depending upon the success of revegetation efforts. Additionally, MM BIO-2 requires the applicant to develop a Reclamation, Restoration, and Revegetation Plan (RRRP) prior to adoption of the Final EIR/EIS that will guide restoration and revegetation activities for all disturbed lands associated with construction of the project and the eventual termination and decommissioning of the project. MM BIO-2 is discussed in further detail in Section 3.4: 'Biological Resources.'

Construction impacts would be greatest for areas with high degrees of viewer sensitivity, such as residential areas, recreational areas, and areas with unique visual features. These include viewers at KOP 1, KOP 2, KOP 4, and KOP 5 (Figures 3.2-8, 3.2-9, 3.2-11, and 3.2-12). Construction in these areas would temporarily disrupt viewsheds, creating visual contrast by introducing construction equipment and as a result of construction-related activities.

Operation & Maintenance

This section summarizes the visual impacts that would occur during operation and maintenance of the proposed project.

The proposed double-circuit 230-kV transmission line would replace an existing single-circuit 115-kV subtransmission line. The proposed transmission line would be strung on 216 LSTs that range in height from 110 to 180 feet and 42 single-circuit H-Frame towers that range in height from 45 to 75 feet. The proposed LSTs are depicted in the simulation for KOP 4 (Figure 3.2-11), and the single circuit H-frame structures are depicted in the simulation for KOP 1 (Figure 3.2-8). The existing single-circuit 115-kV subtransmission line is strung on H-Frame towers that are approximately 70-feet tall. Replacing existing towers with larger, taller towers would incrementally contribute to visual impacts, but would not create a new source of contrast in an otherwise undeveloped landscape. However, given the increased structure size, there would be a minor, long-term adverse effect on visual resources. As discussed in Chapter 3.9, “Land Use,” the transmission line route is primarily within established BLM energy corridors and would follow the existing 115-kV transmission ROW with the exception of six minor deviations.

Longer-term visual impacts would also result from removing or altering vegetation that may currently provide a visual barrier, or from changing landforms in a way that introduced contrasts in visual scale, special characteristics, form, line, color, or texture. The proposed Ivanpah Substation and microwave tower would affect visual resources by introducing a new, angular form into an undeveloped area, disrupting the lines and spatial proportions of views. The proposed Ivanpah Substation is depicted in the simulation for KOP 8 (Figure 3.2-15). The facility colors would contrast with natural palettes, and the structures would disrupt lines and uniform textures in the landscape. Permanent impacts on visual resources would be more intense for areas with higher degrees of viewer sensitivity, including residences, recreation areas such as the Ivanpah Dry Lake, Wilderness Areas, and the MNP.

The visual impact of the proposed project is discussed in more detail with regard to each KOP in the next section. Contrast ratings prepared for each KOP are included in Appendix C.

Impacts by Key Observation Point

Simulations of the proposed project facilities for each KOP, figures 3.2-8 through 3.2-15, are provided below. The simulations are compared against KOP photographs depicting the existing setting to assess the level of contrast that would be introduced by the proposed project. Contrast is described in terms of changes to the form, line, color, and texture or landforms, water bodies, vegetation, and structures present in the view. Contrast is also described in terms of duration. Short-term changes would be present during construction. Long-term changes would be present for the life of the proposed project. The analysis then considers whether the level of contrast meets the visual resource objectives of the applicable VRM Class or VRI rating.

Appendix C contains the visual contrast rating worksheets (Form 8400-4) from the BLM Visual Resource Inventory Handbook H-8410-1.

KOP 1: View of the Transmission Corridor

KOP 1 (Figure 3.2-8) is located within a BLM VRM Class III area, with views of VRM Class III and VRM Class II areas in the foreground and middleground. The sensitivity of this viewpoint is considered moderate: while visual resources are of high concern to recreational users of the South McCullough Wilderness Area, and the maintenance of those values is important, overall use of the area is low, and adjacent land uses include other transmission lines. The proposed project would be visible in the foreground and middleground distance zone. The contrast rating worksheet for this KOP is located in Appendix C.

Construction of the proposed transmission line would be visible in KOP 1. Construction would result in short-term and long-term changes to the foreground and middleground of the existing environment of this view. Large equipment, delivery trucks, and construction equipment would be present during construction, and the movement and storage of such vehicles would be visible. Transmission towers would become visible as they are erected throughout the construction period. Construction of new access roads, decommissioning of existing H-frame LST and T-frame LST transmission towers, installation of the telecommunications line, and preparation of the transmission line tower structure sites would result in temporary generation of fugitive dust and temporary clearing of vegetation that would be visible from KOP 1. To lessen the visual impacts associated with the clearing of vegetation and rock cutting required to improve existing access roads or construct new access roads, the applicant would consult with the BLM to determine feasible methods to weather exposed rock (APM AES-1) and would blend the roads back into the overall landscape by seeding and/or inter-planting (APM AES-2).

Operation of the proposed project would result in long-term changes to the foreground and middleground of the existing environment of KOP 1. This KOP depicts a location where the proposed route would diverge from the existing ROW due to a transmission line crossing. Long-term visible changes would result from the addition of H-frame TSP structures, LSTs, the telecommunications line, and associated conductors in the foreground, and LSTs in the middleground. H-frame TSPs are used at this point along the proposed transmission line to allow the proposed line to cross under the remaining existing transmission line visible in the foreground and middleground in this view. The H-frame TSPs, LSTs, telecommunication line, and associated conductors would be visible in the foreground in this view; LSTs would be less distinguishable in the middleground in this view. Denser H-frame TSPs and larger LSTs would replace the existing H-frame and T-frame transmission line in this view, creating a strong change to the line of the structures in the foreground and a strong change to the line of the structures in the middleground. Areas permanently cleared of vegetation for access roads and transmission line towers would be visible in the foreground of KOP 1. As outlined in APM AES-1 and APM AES-2, cleared areas in the South McCullough Mountains would be reseeded and interplanted and disturbed rock would be stained to lessen visual contrast.

Development of the proposed transmission line in the view from KOP 1, including construction and operation, would result in a weak change to the form, line, color, and texture of the landform and vegetation. Construction, operation, and decommissioning of the proposed transmission line in this view would result in a moderate change in the form, line, color, and texture for structures present in the foreground of the existing environment, and a moderate change to the form, line, color, and texture for structures present in the middleground of the existing environment.

The changes to the existing environment would be consistent with the VRM Class III assigned to the foreground but would not be consisten with the VRM Class II designation in middleground views. Therefore, development of the proposed transmission line would result in a major, adverse, and unavoidable effect at KOP 1.

KOP 2: View from South McCullough Wilderness

KOP 2 (Figure 3.2-9) is located within and includes views of a BLM VRM Class III area, although the South McCullough Wilderness Area immediately east of the photo location is managed as VRM Class II. The sensitivity of this viewpoint is moderate: while visual resources are a high concern for recreational users of the South McCullough Wilderness Area and the maintenance of those values is important, the overall use of the area is low and adjacent land uses include other transmission lines. This viewpoint is approximately 3 miles from the proposed transmission line route, so the proposed project would be visible in background views. The contrast rating worksheet for this KOP is located in Appendix C.

Construction would result in short-term and long term changes to the middleground of the existing environment. Large equipment, delivery trucks, and construction equipment would be present during construction, and movement of such vehicles could be visible. Transmission towers would become increasingly evident as they were erected throughout the construction period. Construction of new access roads, decommissioning of existing transmission towers, installation of the telecommunications line, and preparation of the transmission line tower structure sites would result in temporary generation of fugitive dust and temporary clearing of vegetation that could be visible in KOP 2 under certain conditions. To lessen the visual impacts associated with the clearing of vegetation and rock cutting required to improve existing access roads or construct new access roads, the applicant would consult with the BLM to determine feasible methods to weather exposed rock (APM AES-1) and would blend the roads back into the overall landscape by seeding and/or inter-planting (APM AES-2).

Operation of the proposed project would result in minor long-term changes to the middleground of the existing environment. Long-term changes would result from the addition of LSTs, the telecommunications line, and associated conductors. These elements of the proposed project would barely be visible to not visible under certain conditions, such as haze, dust storms, or at night due to the 3-mile distance between the viewpoint and the proposed transmission route. During normal conditions, these elements would result in weak changes to the existing environment due to the distance. LSTs would replace the existing H-frame LST and T-frame LST transmission line, resulting in a weak change to the line of the structures visible in the view. Areas permanently cleared of vegetation for access roads and transmission line towers would also barely be visible to not visible in KOP 2.

Development of the proposed transmission line in this view, including construction and operation, would result in a minor change in the form, line, color, and texture of the land form, vegetation, and structures present in the existing environment. The changes to the existing environment would be consistent with the VRM Class III assigned to these BLM-managed lands because all changes to landform, vegetation, and structures visible from this vantage point would be weak. Therefore, development of the proposed transmission line would result in a minor adverse effect at KOP 2, and mitigation would not be required.

KOP 3: View from Interstate 15 near Jean, Nevada

KOP 3 (Figure 3.2-10) includes views of a BLM VRM Class III area. KOP 3 is located approximately 6.5 miles from the proposed transmission line route. The sensitivity of this viewpoint is moderate to low: there is a high level of use, but visual resources are a low concern for most users and a low priority for public concern. The sensitivity of this viewpoint is considered low because most viewers would be travelers on I-15. Travelers that typically use this roadway are primarily concerned with reaching a destination as opposed to driving specifically for recreation or sightseeing, and the posted speed limit is 70 miles per hour. Additionally, there is no scenic highway designation for this roadway. This viewpoint is located approximately 6.5 miles from the proposed transmission line route, so the proposed project would be visible in background views. The contrast rating worksheet for this KOP is located in Appendix C.

Construction would result in short-term changes to the background of the existing environment similar to those described for KOP 2, but these changes would not be visible to motorists along I-15 due to the distance.

Operation of the proposed project would result in long-term changes to the background of the existing environment of KOP 3 similar to those described for KOP 2. Due to the approximately 6.5-mile distance between this viewpoint and the proposed transmission route, changes to structures in the background would not be visible in this view.

Development of the proposed transmission line in this view, including construction and operation, would not result in any visible change in the form, line, color, and texture of the land, water body, vegetation, or structures present in the existing environment due to the fact that changes would be present only in seldom seen views and the viewer would likely be traveling at a high speed. Additionally, the proposed project would follow the existing route and would repeat the pattern created by the existing 115-kV transmission line that is currently present in this view. The changes to the existing environment would be consistent with the VRM Class III assigned to these BLM-managed lands because all changes to landform, vegetation, and structures would be not visible from this viewpoint. Therefore, development of the proposed transmission line would result in a negligible adverse effect at KOP 3, and mitigation would not be required.

KOP 4: View from the Desert Oasis Apartments in Primm, Nevada

KOP 4 (Figure 3.2-11) is not located on BLM-managed land but includes views of a BLM VRM Class III area in the foreground. Middleground and background views include land designated VRI Class III. The BLM does not assign VRM classes to or assess visual impacts for private land but has assigned VRM and VRI classes for land visible from this location. The sensitivity of this viewpoint is moderate to high: maintenance of visual resources is a major concern for residents and the use of the area is high, although adjacent land uses include existing energy and industrial development. This viewpoint is adjacent to the proposed transmission route, so the proposed project would be visible in foreground views. The contrast rating worksheet for this KOP is located in Appendix C.

Construction would result in short-term changes to the foreground of the existing environment of KOP 4. Construction of new access roads, decommissioning of existing transmission towers, installation of the telecommunications line, and preparation of the transmission line tower structure sites would result in temporary generation of fugitive dust that would be visible from KOP 4. Large equipment, delivery trucks, and construction equipment would be present during construction, and movement of such vehicles could be visible. Transmission towers and associated conductors would be visible in the foreground as they were erected throughout the construction period. However, the wall barrier surrounding the apartment complex would block views of much of the construction activity, equipment, and material storage.

Operation of the proposed project would result in long-term changes to the foreground of the existing environment of KOP 4. Long-term visible changes would result from the addition of LSTs, the telecommunications line, and associated conductors in the foreground. Taller LSTs would replace the existing H-frame towers in this view, resulting in a strong change to the line of the structures in the foreground. Additionally, the conductor wire would be thicker and would therefore strengthen horizontal lines visible in foreground views, resulting in a strong degree of visual contrast. Areas permanently cleared of vegetation for access roads and transmission line towers would not be visible in the foreground of KOP 4 due to the wall barrier surrounding the apartment complex.

Development of the proposed transmission line in this view, including construction and operation, would not result in any visible change in the form, line, color, or texture of the landform and vegetation. Construction and operation of the proposed transmission line in this view would result in a moderate change in the form, line, and color of structures present in the foreground of the existing environment. The changes to the existing environment would be consistent with the VRM Class III and VRI Class III designations assigned to the BLM-managed lands in the viewshed because changes to structures visible from this vantage point would be moderate. Therefore, development of the proposed transmission line would result in a minor, adverse affect and mitigation would not be required.

KOP 5: View from the Ivanpah Dry Lake

KOP 5 (Figure 3.2-12) is located within and includes foreground and middleground views of a VRI Class III area. Background views include land managed according the VRM Class III objectives. The sensitivity of this viewpoint is moderate to high: there is a high level of use and visual resources are a moderate concern for most recreational users although there is significant adjacent development, both commercial and industrial. Visual concern is considered moderate for most recreational users because the duration of views would be high and recreational activities may be enhanced by visual resources although that is not the primary objective of the activity. This viewpoint is located approximately 1 mile from the proposed transmission line route, so the proposed project would be visible in middleground views. The contrast rating worksheet for this KOP is located in Appendix C.

Construction would result in short-term and long-term changes to the middleground of the existing environment. Large equipment, delivery trucks, and construction equipment would be present during construction, and movement of such vehicles could be visible. Transmission towers would become increasingly evident as they are erected throughout the construction period. Construction of new access roads, decommissioning of existing transmission towers, installation of the telecommunications line, and preparation of the transmission line tower structure sites would result in temporary generation of fugitive dust and temporary clearing of vegetation that could be visible in KOP 5 under certain conditions.

Operation of the proposed project would result in long-term changes to the middleground of the existing environment of KOP 5 similar to those described for KOP 2. The LSTs, telecommunications line, and associated conductors would generally blend in against the backdrop of the Spring Mountain Range and would barely be visible to not visible in middleground views from KOP 5. Access roads, another permanent element of the proposed project, and other areas permanently cleared of vegetation would likely not be visible from KOP 5.

Development of the proposed transmission line in this view, including construction and operation, would result in no visible change in the form, line, color, or texture of the landform and vegetation. Construction and operation of the proposed transmission line in this view would result in a weak change in the form, line, color, and texture for structures present in the existing environment. The changes to the existing environment would be consistent with the VRI Class III and VRM Class III designations assigned to these BLM-managed lands because all changes to landform, vegetation, and structures visible from this vantage point would be weak. Therefore, development of the proposed transmission line would result in a minor adverse effect, and mitigation would not be required.

KOP 6: View from Interstate 15 near Primm, Nevada

KOP 6 (Figure 3.2-13) is located within and includes foreground and middleground views of a VRI Class III area. Background views include land managed according the VRM Class III objectives. The sensitivity of this viewpoint is moderate to low: there is a high level of use, but visual resources are a low concern for most users and a low priority for public concern. The sensitivity of this viewpoint is considered low because most viewers would be travelers on I-15. Travelers that typically use this roadway are primarily concerned with reaching a destination as opposed to driving specifically for recreation or sightseeing, and the posted speed limit is 70 miles per hour. Additionally, there is no scenic highway designation for this roadway. The town of Primm, Nevada has a number of hotels and casinos, a gas station, and a truck stop Visitors to Primm and potential viewers of the proposed project include tourists and travelers along I-15 who have stopped for amenities. This viewpoint is approximately 1 mile from the proposed transmission line route, so the proposed project would be visible in middleground views. The contrast rating worksheet for this KOP is located in Appendix C.

Construction would result in short-term changes to the middleground views similar to those described for KOP 5.

Operation of the proposed project would result in long-term minor changes to the middleground of the existing environment of KOP 6 similar to those described for KOP 2. The LSTs, telecommunications line, and associated conductors would introduce new vertical lines into the landscape; these elements of the proposed project would result in weak visual change. Access roads and other areas permanently cleared of vegetation would likely not be visible from KOP 6 because existing access roads in this viewshed are not discernable at middleground distances.

Development of the proposed transmission line in this view, including construction and operation, would result in no visible change in the form, line, color, or texture of the land, water body, or vegetation. Construction of the proposed project would be most visible as the transmission line crossed I-15 and could result in moderate visual impacts to motorists along I-15. Operation of the proposed transmission line in this view would result in a weak change in the form and line by introducing new vertical lines into the landscape for structures present in the existing environment. The changes to the existing environment would be consistent with the VRI Class III and VRM Class III designations assigned to these BLM-managed lands because all changes to landform, vegetation, and structures visible from this vantage point would be weak. Therefore, development of the proposed transmission line would result in a minor adverse effect, and mitigation would not be required.

KOP 7: View from Highway 95 in the Eldorado Valley

The photo in KOP 7 (Figure 3.2-14) was taken from BLM land managed as VRM Class III, but depicts views of private land in the Eldorado Valley south of Boulder City, Nevada. The BLM does not assign VRM classes to or assess visual impacts of private land. The sensitivity of this viewpoint is moderate to low: there is a high level of use, but visual resources are a low concern for most users and a low priority for public concern. The sensitivity of this viewpoint is considered low because most viewers would be travelers on Highway 95. Travelers that typically use this roadway are primarily concerned with reaching a destination as opposed to driving specifically for recreation or sightseeing, and the posted speed limit is 65 miles per hour. Additionally, there is no scenic highway designation for this roadway, and there is other development visible in the existing view including a solar generation facility and the existing Eldorado Substation and 115-kV transmission line. This viewpoint is approximately 3.5 miles from the proposed transmission line route, so the proposed project would be visible in background views. The contrast rating worksheet for this KOP is located in Appendix C.

Construction would result in short-term changes to the middleground of the existing environment of KOP 7. Construction of new access roads, decommissioning of existing transmission towers, preparation of the transmission line tower structure sites, installation of the telecommunications line, and expansion of the Eldorado Substation would result in temporary generation of fugitive dust that could be visible from KOP 7 under certain conditions. Temporary clearing of vegetation would not be visible from KOP 7. Large equipment, delivery trucks, and construction equipment would be present during construction, and movement of such vehicles could be visible but may not hold the attention of the viewer because the viewer would likely be traveling at high speeds.

New features of the proposed project in this view include the extension of the existing yard to install two 230-kV line positions to accommodate the new double-circuit line within the existing footprint of the Eldorado Substation and taller towers to support the proposed 230-kV transmission line that would replace the existing 115-kV transmission line. Operation of the proposed project would result in long-term changes to the middleground of the existing environment of KOP 7. Long-term changes would result from the addition of LSTs, associated conductors, the telecommunications line, and expansion of the Eldorado Substation in the background; these new facilities in the background would not be discernable from KOP 7. Areas permanently cleared of vegetation for access roads and transmission line towers would not be visible in the background in middleground or background views.

Development of the proposed transmission line and the expansion of the Eldorado Substation in this view, including construction, operation, and decommissioning, would result in no visible change in the form, line, color, or texture of the landform, vegetation, or structures in the existing environment. These changes would be located within the existing footprint of the Eldorado Substation and include extension of the existing yard to install two 230-kV line positions to accommodate the new double-circuit line. Changes to the existing environment would be consistent with the VRM Class III because the minor changes to the existing substation and installation of slightly larger towers would not be discernable in background views due to the distance, short duration of views for motorists on Highway 95, and likelihood that the weak contrast in color between the proposed LSTs and the existing environment would cause the structures to recede into the background. Therefore, development of the proposed transmission line and the expansion of the Eldorado Substation would result in a negligible adverse effect, and mitigation would not be required.

KOP 8: View from the Highway 164 Overpass in the Ivanpah Valley

KOP 8 is located within and includes views of land managed as VRI Class III. The sensitivity of this viewpoint is moderate to low: there is a high level of use, but visual resources are a low concern for most users and a low priority for public concern. The sensitivity of this viewpoint is considered low because most viewers would be travelers on I-15. Travelers that typically use this roadway are primarily concerned with reaching a destination as opposed to driving specifically for recreation or sightseeing, and the posted speed limit is 70 miles per hour. Additionally, there is no scenic highway designation for this roadway. Further, existing development in and around Primm, Nevada is visible in background views. This viewpoint is located approximately 5 miles from the proposed transmission line route, so the proposed project would be visible in background views. The contrast rating worksheet for this KOP is located in Appendix C.

Construction would result in short-term changes to the background of the existing environment of KOP 8. Construction of new access roads, decommissioning of existing transmission towers, preparation of the transmission line tower structure sites, installation of the microwave tower, installation of the telecommunications line, and construction of the proposed Ivanpah Substation would result in temporary generation of fugitive dust that could be visible in KOP 8 under certain conditions. Temporary clearing of vegetation would not likely be visible from KOP 8. Large equipment, delivery trucks, and construction equipment would be present during construction, and movement of such vehicles would be visible.

Operation of the proposed project would result in long-term changes to the background of the existing environment of KOP 8. Long-term changes would result from the addition of LSTs, associated conductors, the proposed Ivanpah Substation, and vegetation clearing. The proposed Ivanpah Substation would be visible in the background of KOP 8; the LSTs, associated conductors, and telecommunications line would not be visible. The substation would introduce a new structure into the landscape that would contrast in color with the existing environment, would introduce new vertical lines, and would draw the attention of the viewer. Areas permanently cleared of vegetation for the proposed Ivanpah Substation could be visible in the background of KOP 8; permanently cleared vegetation for access roads and transmission line towers would be visible as well, drawing the attention of the viewer by introducing contrast in color and texture. These changes would distract from views of the existing geologic formation present in the background.

Construction and operation would result in a moderate change in the color of the landform, a weak change in the line of vegetation, and a moderate contrast with existing structures in the background of KOP 8. The changes to the existing environment would be consistent with the VRI Class III designation assigned to these BLM-managed lands because the VRM Class III designation allows for moderate change. Additionally, mitigation measures AES-1, AES-2, and AES-3 would lessen the contrast that would be introduced to the existing colors in the viewshed and minimize the dominance of the substation and microwave tower within the view.

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The proposed project would result in minor adverse effects to visual resources temporarily due to construction activities and permanently due to the introduction of taller towers and new structures, including the proposed Ivanpah Substation and the microwave tower.

With respect to operational impacts associated with the permanent presence of the proposed project, of the eight KOP's evaluated, seven would conform with the established VRM or VRI classes and one would not conform (Table 3.2-1).

Table 3.2-1 Conformance with VRM or VRI Class

Key Observation Point	VRM/VRI Class	Distance	Sensitivity	Conformity Determination
KOP 1: View of the Transmission Corridor Looking Northeast toward the McCullough Mountain Range	VRM Class II and VRM Class III	Foreground and Middleground	Moderate	Does not Conform with VRM Class II
KOP 2: View from the South McCullough Wilderness Area	VRM Class II	Background	Moderate	Conforms
KOP 3: View from Interstate 15 near Jean, Nevada	VRM Class III	Seldom Seen	Low	Conforms
KOP 4: View from the Desert Oasis Apartments in Primm, Nevada	VRM Class III and VRI Class III	Foreground	Moderate to High	Conforms
KOP 5: View from Ivanpah Dry Lake, East of Interstate 15	VRM Class III	Middleground	Moderate to High	Conforms
KOP 6: View from Interstate 15 near Primm, Nevada	VRM Class III	Middleground	Low	Conforms
KOP 7: View from Highway 95 in the Eldorado Valley	VRM Class III	Background	Low	Conforms
KOP 8: View from Highway 164 Overpass in the Ivanpah Valley	VRI Class III	Background	Low	Conforms with Mitigation

In addition to the measures proposed by the applicant specifically to minimize impacts on aesthetics and visual resources (APM AES-1 through APM AES-8), additional mitigation would be required to lessen impacts on visual resources to the greatest extent possible. Mitigation measures AES-1 and AES-2 would lessen the contrast in color and line that would be introduced by construction of the Ivanpah Substation, as shown in KOP 8.

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IMPACT AES-1: Adverse Impact to a Scenic Vista
Less than significant without mitigation

Designated scenic vistas do not occur in the proposed project area; however, the telecommunications portion of the proposed project would traverse land designated VRM Class II, which is managed to preserve visual resources. Additionally, the proposed project would be located within the vicinity of the South McCullough Wilderness Area and the Wee Thump Joshua Tree Wilderness Area, both of which are managed as VRM Class I areas. Construction of new access roads, upgrades to existing transmission towers, and installation of the telecommunications line would result in temporary generation of fugitive dust that would be visible within the VRM Class II area and from both the South McCullough Wilderness Area and the Wee Thump Joshua Tree Wilderness Area. Large equipment, delivery trucks, and construction equipment would be present during construction, and movement of such vehicles would be visible. However, impacts to visual resources due to construction would be temporary.

The telecommunications line would be strung on the existing 500-kV Eldorado–Lugo Transmission Line. This change would not be discernable as there is already an existing 500-kV transmission line in the viewshed. No change would be visible from the South McCullough Wilderness Area or the Wee Thump Joshua Tree Wilderness Area.

Because the telecommunications line would be strung on existing structures and not visibly discernable from wilderness areas, and impacts to visual resources would be limited to temporary construction activities, the proposed project would result in a less than significant impact under this criterion.

IMPACT AES-2: Substantially Degrade Existing Visual Character or Quality
Less than significant with mitigation

As discussed under the Impacts by Key Observation Point section above, the proposed project would conflict with VRM or VRI objectives for one of the eight KOPs. At KOP 1, the proposed project would introduce moderate levels of contrast with the existing structures in the viewshed by introducing linear elements of a larger scale and more prominent color. This is the only KOP that shows views of VRM Class II areas; all other KOPs show views of VRM Class III or VRI Class III areas.

Overall, the proposed project would not result in substantial degradation of the landscape. The proposed project would be consistent with VRM or VRI objectives for seven of the eight KOPs due to distance; relatively low viewer concern by many of the temporary visitors to the area; and the fact that the proposed project would replace an existing line, repeating the patterns currently visible in the landscape. There would be two new structures constructed as part of the proposed project: the Ivanpah Substation and the microwave tower. As described above in MM AES-1, the applicant would consult with the BLM to paint these structures a color that would minimize visual contrast with the surrounding landscape, reducing the level of contrast that would be introduced. MM AES-2 would further reduce contrast in color and line that would be introduced by the proposed Ivanpah Substation by requiring the applicant to stain rock disturbed by clearing and grading activities. MM AES-3 would reduce the color contrast that would be introduced by a white microwave dish or cover by requiring the applicant to consult with the BLM prior to construction to chose a BLM approved color. Additionally, the proposed project would be located in an energy corridor already crossed by numerous transmission lines. Therefore, even though the proposed project would conflict with VRM or VRI objectives for one of the eight KOPs, the proposed project would not *substantially* degrade the existing visual character or quality of the landscape and would result in a less than significant impact under this criterion.

IMPACT AES-3: Create a New Source of Light or Glare
Less than significant without mitigation

Lighting would only be installed for the proposed Ivanpah Substation. The applicant would install manually operated substation lighting, which would only be required for non-routine nighttime work. Lighting would be directed downward and shielded to eliminate off-site light spill (APM AES-8). Therefore, the proposed project would result in a less than significant impact under this criterion.

NO IMPACT. Adverse Impact to Scenic Resources within a State Scenic Highway. The proposed project does not traverse any designated or eligible state scenic highways within the proposed project area. Consequently, the proposed project would not have the potential to substantially damage scenic resources (including trees, rock outcroppings, and historic buildings) within a designated or eligible state scenic highway.

3.2.3.6 No Project / No Action Alternative

Under the No Project Alternative, the proposed project, including the transmission line, the proposed Ivanpah Substation, the telecommunications line, and all other components of the proposed project, would not be constructed. Therefore, none of the changes to the existing visual environment discussed in Section 3.2.3.5, "Proposed Project," would occur, and there would be no adverse impact to visual resources.

3.2.3.7 Transmission Alternative Route A

Regarding potential construction and operation aesthetics impacts to sensitive viewpoints, Transmission Line Alternative A is similar to the proposed project. Alternative A would be visible only from KOP 7; all other segments of this alternative would be identical to the proposed project, as discussed in Section 3.2.3.5, "Proposed Project."

Transmission Line Alternative A would be present, but not visually distinguishable from KOP 7. This alternative would follow the same route as the portion of the proposed transmission line present in this view, except for a portion in the far middleground. In the far middleground, the alternative route would continue running southwest toward the McCullough Pass instead of turning northwest to follow the existing transmission line route. This alternative would reconnect with the existing transmission line before entering the McCullough Mountain Range. These changes would result in stronger overall visual contrast where the route would veer from the existing 115-kV transmission line route than the proposed project due to the structures not paralleling existing transmission facilities. However, these changes would still be consistent with a VRM Class III designation; therefore, implementation of transmission line Alternative A and the expansion of the Eldorado Substation would result in minor adverse effects.

Impacts from this alternative would be less than significant, and mitigation would not be required.

3.2.3.8 Transmission Alternative Route B

Regarding potential construction and operation aesthetics impacts to sensitive receptors, Transmission Line Alternative B is similar to the proposed project. Alternative B would be visible only from KOP 7; all other segments of this alternative would be identical to the proposed project, as discussed in Section 3.2.3.5, "Proposed Project."

Transmission Line Alternative B would be present but not visually distinguishable from KOP 7. This alternative route would originate at the Eldorado Substation and then run north-northeast before turning southwest, reconnecting with the existing transmission line route in the far middleground of this view. These changes would result in stronger overall visual contrast where the route would veer from the existing 115-kV transmission line route than the proposed project due to the structures not paralleling existing transmission facilities. However, these changes would still be consistent with a VRM Class III designation; therefore, implementation of transmission line Alternative A and the expansion of the Eldorado Substation would result in minor adverse effects.

Impacts from this alternative would be less than significant, and mitigation would not be required.

3.2.3.9 Transmission Alternative Route C

Regarding potential construction and operation aesthetics impacts to sensitive receptors, Transmission Line Alternative C is similar to the proposed project. Alternative C would only differ from the proposed project analysis at KOPs 4, 5, and 6; all other segments of this alternative would be identical to the proposed project, as discussed in Section 3.2.3.5, “Proposed Project.”

The Transmission Line Alternative C route would not be visible from KOPs 4 and 5. This alternative would re-route the proposed transmission line to the west of the town of Primm, through the Spring Mountain Range, and would run the route along the west side of the Ivanpah Lake before it reconnected with the existing transmission line route. Implementation of this route would result in removal of the existing transmission line adjacent to the Desert Oasis Apartment Complex. These changes would result in stronger overall visual contrast where the route would veer from the existing 115-kV transmission line route than the proposed project due to the structures not paralleling existing transmission facilities. However, these changes would still be consistent with a VRM Class III designation; therefore, implementation of transmission line Alternative C would result in minor adverse effect from KOPs 4 and 5 and would lessen the visual impact on residents of the Desert Oasis Apartment Complex and recreational users of the Ivanpah Dry Lake.

This alternative also would not be visible in the views from KOP 6, which represents views from I-15. However, this alternative would still cross I-15, albeit in a different location and, therefore, would not lessen visual impacts to motorists along I-15.

Impacts from this alternative would be less than significant, and mitigation would not be required.

3.2.3.10 Transmission Alternative Route D and Subalternative E

Regarding potential construction and operational impacts to sensitive viewpoints, Transmission Line Alternative D and Subalternative E are similar to the proposed project. These alternatives would only differ from the proposed project analysis at KOPs 4, 5, and 6; all other segments of these alternatives would be identical to the proposed project as discussed in Section 3.2.3.5, “Proposed Project.”

Transmission Line Alternative D and Subalternative E would not be visible in the view from KOP 4. These alternatives would re-route the proposed transmission line to the east of Primm to match the footprint of an existing 500-kV transmission line. The route would cross the Ivanpah Lake before reconnecting with the existing transmission line route. Implementation of these routes would result in removal of the existing transmission line adjacent to the Desert Oasis Apartment Complex. These changes would be consistent with the VRM Class III designation for the area. Therefore, implementation of transmission line Alternatives D and E would result in no adverse effect from KOP 4 and would lessen the impacts to residents of the Desert Oasis Apartment Complex.

These alternatives would be visible from KOPs 5 and 6. These alternatives would route the transmission line closer to KOPs 5 and 6 and would result in stronger overall visual contrast due to the structures not paralleling existing transmission facilities along this alternative route; however, the increased visual contrast due to the proximity of the transmission line to the KOPs would represent only an incremental change and would not substantially change the analysis in Section 3.2.3.5, “Proposed Project.” Transmission Alternative D and Subalternative E would have the same visual impact on recreational users of the Ivanpah Dry Lake and motorists along I-15 as would the proposed project. .These changes would still be consistent with a VRM Class III designation; therefore, implementation of transmission line Alternative D and Subalternative E would only result in minor adverse effects.

While these alternatives would match the footprint of an existing 500-kV transmission line which would mimic the linear pattern of that line, these alternatives would require a new ROW and therefore would result in a slight increase in visual impacts. However, impacts from this alternative would still be less than significant, and mitigation would not be required.

3.2.3.11 Telecommunication Alternative (Golf Course)

Regarding potential construction and operation aesthetics impacts to sensitive receptors, the Golf Course Alternative is similar to the proposed project. This alternative would only differ from the proposed project analysis at KOP 8; all other segments of this alternative would be identical to the proposed project as discussed in Section 3.2.3.5, "Proposed Project."

The Golf Course Alternative would consist primarily of installing the telecommunications line underground along Nipton Road for an additional 9 miles and stringing the telecommunications line along existing 33-kV distribution lines to connect with the proposed Ivanpah Substation. This alternative would result in moderate temporary impacts due to an additional segment of trenching along Nipton Road. The portion of the telecommunications line that would be strung along the existing 33-kV distribution lines would not result in a visual impact because the line would be imperceptible except at an extremely close distance.

This alternative would be installed in a new underground duct beneath the Primm Valley Golf Course. This would result in an increased visual impact to users of the Golf Course during the construction period due to trenching activities, exposure of soils, storage of construction equipment, and transportation of materials. These impacts would be temporary, and overall this alternative would only result in minor adverse visual effects.

Impacts from this alternative would be less than significant, and mitigation would not be required.

3.2.3.12 Telecommunication Alternative (Mountain Pass)

Regarding potential construction and operation aesthetics impacts to sensitive receptors, the Mountain Pass Alternative is similar to the proposed project. This alternative would only differ from the proposed project analysis at KOP 8; all other segments of this alternative would be identical to the proposed project as discussed in Section 3.2.3.5, "Proposed Project."

The Mountain Pass Alternative would consist primarily of installing the telecommunications line underground along Nipton Road for an additional 9 miles and stringing the telecommunications line along existing 33-kV distribution lines to connect with the proposed Ivanpah Substation. This alternative would result in moderate temporary impacts due to an additional segment of trenching along Nipton Road.

The segment that would be strung along existing 33-kV distribution lines would traverse an area designated VRI Class II, which has stricter objectives for visual resources than the proposed route, which would cross areas with VRI Class III designations. The segment of the telecommunications line that would be strung along the existing 33-kV distribution lines would not result in a visual impact because the line would be imperceptible except at an extremely close distance. Impacts would be limited to construction activities including stringing the telecommunication line, transporting materials, storing equipment, and possibly constructing new or upgrading existing access roads. These impacts would be temporary, and overall this alternative would only result in minor adverse visual effects.

Impacts from this alternative would be less than significant, and mitigation would not be required.

3.2.4 Mitigation Measures

The following mitigation would be required to lessen impacts on aesthetics and visual resources:

MM AES-1: Painting the Ivanpah Substation. Prior to construction, the applicant will consult with the BLM to select an appropriate color from the BLM approved palette to paint any enclosed structures that would be constructed for the Ivanpah Substation. The applicant will submit photographs following substation construction to the BLM and the CPUC to document compliance with this measure.

MM AES-2: Rock Staining near the Ivanpah Substation. For areas that are cleared and/or graded to construct the Ivanpah Substation, the applicant would consult with the BLM regarding feasible methods to treat the exposed rock to match the overall color of the adjacent weathered rock.

MM AES-3: Microwave Dish Color. Prior to construction, the color of the microwave dishes or covers must be approved by the BLM. White dishes or covers will be avoided to minimize color contrast with the existing landscape.

3.2.5 Whole of the Action/Cumulative Action

Below is a brief summary of information related to visual resources in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses additional impacts or mitigation imposed by the CEC for ISEGS.

3.2.5.1 Setting

The ISEGS project would be developed on four square miles of BLM land west of I-15 and the northern half of the Ivanpah Dry Lake bed, east of the foot of the Clark Mountains. The ISEGS site consists of primarily bajada scrub with minimal surface disturbance. There is a vivid 416-foot rock formation at the center of the proposed site. The ISEGS project site would be collocated with the proposed Ivanpah Substation site. The existing visual character of this location and the potentially affected viewer groups are described in greater detail in Section 3.2.1.2, “Ivanpah and Eldorado Substations.”

BLM and CEC staff determined that the Ivanpah Valley floor has moderate overall visual sensitivity (with moderate existing visual quality, moderately high viewer concern, and high viewer exposure), which was determined to be generally consistent with a Visual Resource Inventory (VRI) Class III assigned by the BLM for the area.

Key Observation Points

The BLM and the CEC selected KOPs that represent typical views of project components and views from sensitive locations. For the visual resources analysis in the ISEGS document, BLM and CEC staff selected the following 10 KOPs:

- KOP 1: View from Primm Valley Golf Course
- KOP 2: Second View from Primm Valley Golf Course
- KOP 3: View of Ivanpah 2 and 3 from I-15 near Yates Well Road (middleground-distance viewpoint)
- KOP 4: View of Ivanpah 1 from I-15 near Yates Well Road (middleground-distance viewpoint)
- KOP 5: View from I-15 at Nipton Road (background-distance viewpoint)
- KOP 6: View from the east side of Ivanpah Dry Lake
- KOP 7: View from the west side of Ivanpah Dry Lake

- KOP 8: View from Primm, Nevada
- KOP 9: View from the Umberci Mine in the Stateline Wilderness Area
- KOP 10: View from the Mojave National Preserve near the Benson Mine

A map showing these points in relation to the proposed ISEGS project, photos from these locations, and a description of the visual character of these views are included in the ISEGS FSA/DEIS.

Applicable Laws, Regulations, and Standards

The ISEGS project is subject to the same federal, State of California, and San Bernardino County laws, regulations and standards as EITP, as discussed in Section 3.2.2, "Applicable Laws, Regulations, and Standards."

3.2.5.2 Methodology

The analysis of impacts to visual resources for the ISEGS FSA/DEIS was conducted using the methods typically used by the CEC to assess impacts to visual resources; CEC and BLM stated that this method and the findings that resulted from this analysis were essentially consistent with findings that would be obtained using the BLM VRM methodology as described in Section 3.2.3.3, "Methodology." Ratings of visual sensitivity and the visual contrast that would be introduced by the proposed project were made based on field observation, photo documentation, and review of applicant-prepared simulations and project information.

Staff considered whether there would be a significant impact under NEPA using the following criteria:

- Significant impacts to visual resources are analyzed in terms of context and intensity (40 CFR 1508.27). Context considers the affected region and interest in and use of the region, among other factors. Intensity refers to the severity of the impact; for the analysis of impacts to visual resources, relevant factors include "unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands…," degree of controversy, degree of uncertainty about possible effects, degree to which an action may establish a precedent for future actions, and potential for cumulatively significant impacts.

Staff considered whether there would be a significant impact under CEQA using the following criteria:

- Would the project have a substantial adverse effect on a scenic vista?
- Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway?
- Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Staff additionally considered whether the project would violate any local laws, ordinances, or regulations related to visual resources, including light and glare.

3.2.5.3 Impacts

The CEC and the BLM have published the impacts described below related to visual resources for the ISEGS project.

Construction

It is estimated that project construction would take place over a 48-month period. Impacts to visual resources during the construction phase of the ISEGS project would result from construction parking and laydown areas, including temporary fabrication buildings; exposed soils due to grading of the 4-square-mile project site; fugitive dust from grading and other construction-related activities; and nighttime construction lighting. These activities would create a strong degree of visual change from vantage points along I-15, in the Clark Mountains, and from the Mojave National Preserve.

To address fugitive dust concerns, the BLM and CEC staff recommends Conditions of Certification AQ-SC3, AQ-SC4, and AQ0SC7 as well as SOIL&WATER-1, which would reduce impacts to visual resources from fugitive dust to less than significant levels. To address potential light pollution impacts, staff recommend Condition of Certification VIS-4 (described in Section 3.2.5.4, "Mitigation Measures"), which would reduce impacts due to nighttime construction to less than significant. To address long-term impacts due to grading of the site, staff recommends Condition of Certification BIO-14, referenced in Condition of Certification VIS-3 (described in Section 3.2.5.4, "Conditions of Certification/Mitigation Measures" below), which requires the revegetation of all disturbed soil surfaces.

Operation (as seen from Key Observation Points)

As noted in Section 3.2.5.1, "Setting," BLM and CEC staff determined that the Ivanpah Valley floor has moderate overall visual sensitivity (with moderate existing visual quality, moderately high viewer concern, and high viewer exposure), which is generally consistent with VRI Class III. The BLM and CEC determined that the ISEGS project would result in potentially substantial adverse impacts to existing scenic resources from six of the 10 KOPs, as described below.

KOPs 1-2: View from Primm Valley Golf Course
From these vantage points, the ISEGS project would create a strong level of contrast by introducing a strong vertical line and form, the effect of which would be amplified by reflected sunlight; a textural contrast with the existing character of the desert scrub landscape; and contrast in hue and brightness with the existing undisturbed soil surfaces. Additionally, the ISEGS project would exhibit strong special and scale dominance. The ISEGS document concludes that while the strong level of visual change from this vantage point would result in a potentially significant impact given the moderate overall sensitivity of the Ivanpah Valley, implementation of Conditions of Certification VIS-1 and VIS-2 (described in Section 3.2.5.4, "Mitigation Measures") would mitigate the impact to less than significant levels.

KOPs 3-4: Middleground-distance viewpoints on I-15
From these vantage points, the ISEGS project would introduce a strong vertical line and form, which would create a strong level of visual contrast that would be amplified by reflected sunlight. Additionally, the vast scale and visual magnitude of the mirrors would create a strong textural contrast with the existing character of the desert scrub landscape, and visible areas of disturbed soil could create a strong contrast with the hues and brightness of the existing undisturbed soil surface. BLM and CEC staff stated that implementation of Condition of Certification VIS-1 would lessen the impact to visual resources from KOPs 3 and 4, but would not fully address the level of contrast that would be introduced by the ISEGS project.

KOP 9: View from the Umberci Mine in the Stateline Wilderness Area
From this vantage point, the ISEGS project would introduce strong contrast in form, line, color, and texture. Due to the relative proximity of the project and the elevated angle of the view, the scale and spatial dominance of the project would be high, and the bright solar receivers would obstruct views of the Clark Mountains to a moderate to strong degree. The strong degree of visual contrast that would be introduced by ISEGS at this KOP would not be compatible with the moderate overall visual sensitivity of the Ivanpah Valley or the high overall sensitivity of the Stateline Wilderness area. Therefore, there would be a significant adverse impact to visual resources from this viewpoint even with the incorporation of mitigation.

KOP 10: View from the Mojave National Preserve near the Benson Mine

From this vantage point, the ISEGS project would introduce strong contrast in form, line, color, and texture. From the elevated viewpoint, the mirror arrays would be a dominant feature in the view and would produce nuisance glare at various periods throughout the day. The strong level of contrast that would be introduced by the ISEGS project from this vantage point would not be compatible with the overall moderate visual sensitivity of the Ivanpah Valley and would disrupt scenic views from the Mojave National Preserve. Therefore, there would be a significant adverse impact to visual resources from this viewpoint even with the incorporation of mitigation.

The BLM and the CEC staff determined that the project would not result in a substantial adverse impact to existing scenic resources from four of the 10 KOPs, as described below.

<u>KOP 5: Background-distance viewpoint on I-15</u>
From this vantage point, the ISEGS project would introduce a moderate level of visual contrast and project dominance would be moderate (or co-dominant). Impacts to visual resources from this KOP would be less than significant because moderate visual contrast would be consistent with the site's moderate overall sensitivity. However, staff notes that the degree of contrast would increase as motorists travel toward the project site, increasing the level of visual contrast from middleground distances and resulting in potentially significant impacts to visual resources.

<u>KOP 6: View from the east side of the Ivanpah Dry Lake</u>
From this vantage point, the overall visual change introduced by the ISEGS project would be weak to moderate, due to the distance and the low, oblique viewing angle. This level of visual change would be compatible with the overall moderate visual sensitivity of the project area, and therefore impacts to visual resources from this viewpoint would be less than significant without mitigation.

<u>KOP 7: View from the west side of Ivanpah Dry Lake</u>
From this vantage point, the ISEGS project would introduce weak to moderate levels of overall visual change due to the distance and the low, oblique viewing angle. These would be compatible with the moderate overall visual sensitivity of the project area; therefore, impacts to visual resources from this viewpoint would be less than significant without mitigation.

<u>KOP 8: View from Primm, Nevada</u>
From this vantage point, viewer exposure and orientation to the ISEGS project site would be limited. Visual quality at this location is relatively low due to development in Primm. Due to the oblique angle and distance, overall visual change from this vantage point would be weak to moderate, and would be compatible with the moderate overall visual sensitivity of the Ivanpah Valley. Impacts would be less than significant without mitigation.

<u>CEQA Impact Discussion</u>

The BLM and CEC staff additionally determined that the ISEGS project would result in significant impacts to visual resources under the four CEQA criteria listed above in Section 3.2.5.2, "Methodology." Impacts to scenic vistas, to scenic highways, to the existing visual character of the project area, and due to light and glare are summarized below.

Scenic Vistas

There are no designated scenic vistas in the ISEGS project area; however, given the high scenic quality and high levels of recreational use, for the purpose of the analysis, the CEC and the BLM staff considered viewpoints within the Clark Mountains in the Stateline Wilderness Area (KOP 9) and viewpoints within the Mojave National Preserve (KOP 10) equivalent to designated scenic vistas. Additionally, CEC and BLM staff stated that views of the Clark Mountains from I-15 could be considered a designated scenic vista in light of the county scenic highway designation for I-15.

As described above for KOPs 9 and 10, which represent views from the State Wilderness Area and the Mojave National Preserve, respectively, the ISEGS FSA/DEIS concluded that the project would alter panoramic views of the Ivanpah Valley from mostly undisturbed desert scrub landscape to views of industrial development dominated by expansive mirror arrays, 459-foot-tall solar collector towers, substantial grading, and associated project components and equipment. BLM and CEC staff concluded that the resulting visual change would constitute a substantial adverse visual effect.

Views from the I-15 corridor would not be substantially obstructed by the ISEGS project, but glare from the project could strongly alter the character of these views.

State Scenic Highways

There are no eligible or designated State Scenic Highways within the ISEGS project area. The project would be located adjacent to I-15, immediately adjacent to a prominent rock outcropping that is a landmark for viewers in the area. The ISEGS FSA/DEIS states that the project would not directly damage the rock outcropping, but would dramatically alter its visual setting.

Existing Visual Character

The BLM and CEC staff determined that the Ivanpah Valley floor has moderate overall visual sensitivity (with moderate existing visual quality, moderately high viewer concern and high viewer exposure), which is generally consistent with VRI Class III. Impacts of the ISEGS project to visual character from the 10 KOPs are described above. Impacts to visual resources from six of the 10 KOPs would be significant and adverse even with implementation of Conditions of Certification VIS-1 through VIS-4.

Light and Glare

Glare is considered a major issue of concern for the ISEGS project and is analyzed as a safety concern in the Traffic and Transportation section of the FSA/DEIS. In that section, the BLM and CEC staff recommended Conditions of Certification TRANS-3 and TRANS-4 to lessen the effects of glare. The FSA/DEIS visual analysis concludes that even with the incorporation of these conditions, glare from the ISEGS project would dominate the view, would alter the character of the view, and could detract from the public's ability to enjoy views.

Additionally, light pollution from nighttime construction and permanent FAA-required safety lighting would impact night sky views, particularly from the Mojave National Preserve. BLM and CEC staff recommended Condition of Certification VIS-4, which would require that lighting be shielded and directed downward (with the exception of FAA-required safety lighting) and would mitigate the impact to night sky views from the Mojave National Preserve to less than significant levels.

Compliance with Local Laws, Ordinances, and Regulations

The BLM and CEC staff concluded that the project would not comply with three applicable goals and policies of San Bernardino County as stated in the San Bernardino County General Plan Conservation and Open Space Element. The goals and policies with which the ISEGS project would conflict are:

- Conservation Element Goal D/CO 1, which calls for preservation of the unique environmental features and natural resources of the Desert Region, including scenic vistas
- Open Space Element Goal OS 5 and Policy OS 5.2, which states that the county will maintain and enhance the visual quality of county scenic routes and requires that development along scenic routes demonstrate compatibility with existing scenic resources through a visual analysis

Closure and Decommissioning

When ISEGS is no longer in use, the applicant will decommission the project as outlines in the Draft Closure, Revegetation, and Rehabilitation Plan. Original contours will be restored and the site will be revegetated; however, given the difficulty of revegetating in an arid region and given the prominent color contrast between graded, disturbed soils and undisturbed soils in the vicinity, decommissioning of the project and visual recovery would likely occur over a long period of time.

3.2.5.4 Conditions of Certification/Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to noise if the project is approved:

VIS-1. The project owner will treat the surfaces of all project structures and buildings visible to the public such that (a) their colors minimize visual intrusion and contrast by blending with the existing tan and brown color of the surrounding landscape, (b) their colors and finishing do not create excessive glare, and (c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors will be non-specular and non-reflective, and the insulators will be non-reflective and non-refractive.

This mitigation measure also outlines the verification process to ensure that the measure is followed and to document its success.

VIS-2. At the request of and in consultation with BLM's Authorized Officer, the CEC's Compliance Project Manager (CPM), and the golf course owner, the project owner will prepare a perimeter landscape screening plan to reduce the visibility of the proposed ISEGS project as seen from the golf course. The intent of the plan will be to provide screening of the power project, particularly the mirror fields, while retaining as much of the scenic portion of the overall views of Ivanpah Valley and Clark Mountains as feasible. The design approach will be developed with prior consultation with the golf course owner, and implemented only at the golf course owner's request. The project owner will submit to BLM's Authorized Officer and CPM for review and approval, and simultaneously to the golf course owner for review and comment, a preliminary conceptual landscaping plan whose objective is to provide an attractive visual screen to views of the ISEGS project mirror fields. Upon approval by BLM's Authorized Officer, the CPM, and the golf course owner, the project owner will submit to BLM's Authorized Officer and the CPM for review and approval, and simultaneously to the golf course owner for review and comment, a landscaping plan the proper implementation of which will satisfy these requirements. The plan will include:

A. A detailed landscape, grading, and irrigation plan, at a reasonable scale. The plan will demonstrate how the requirements stated above will be met. The plan will provide a detailed installation schedule demonstrating installation of as much of the landscaping as early in the construction process as is feasible in coordination with project construction.

B. A list (prepared by a qualified professional arborist familiar with local growing conditions) of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions and mitigation objectives, with the objective of providing the widest possible range of species from which to choose.

C. Maintenance procedures, including any needed irrigation and a plan for routine annual or semi-annual debris removal for the life of the project.

D. A procedure for monitoring for and replacement of unsuccessful planting for the life of the project.

E. One set each for BLM's Authorized Officer and the CPM of 11-inch-by-17-inch color photo simulations of the proposed landscaping at five years and 20 years after planting, as viewed from adjoining segments of I-15.

This plan will not be implemented until the project owner receives final approval from BLM's Authorized Officer and the CPM.

This mitigation measure also outlines the verification process to ensure that the measure is followed and to document its success.

VIS-3. The project owner will revegetate disturbed soil areas to the greatest practical extent, as described in Condition of Certification BIO-14. To address specifically visual concerns, the required Closure, Revegetation, and Rehabilitation Plan will include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the substation and other ancillary operation and support structures.

For verification of this measure, the ISEGS document refers to Certificate of Certification BIO-14.

VIS-4. To the extent feasible, consistent with safety and security considerations, the project owner will design and install all permanent exterior lighting and all temporary construction lighting such that (a) lamps and reflectors are not visible from beyond the project site, (b) lighting does not cause excessive reflected glare, (c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting, (d) illumination of the project and its immediate vicinity is minimized, and (e) the plan complies with local policies and ordinances. The project owner will submit to BLM's Authorized Officer and the CPM for review and approval, and simultaneously to the County of San Bernardino for review and comment, a lighting mitigation plan that includes the following:

A. Location and direction of light fixtures will take the lighting mitigation requirements into account.

B. Lighting design will consider setbacks of the project features from the site boundary to aid in satisfying the lighting mitigation requirements.

C. Lighting will incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated.

D. Light fixtures that are visible from beyond the project boundary will have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security.

E. All lighting will be of minimum necessary brightness consistent with operation safety and security.

F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) will have (in addition to hoods) switches, time switches, or motion detectors so that the lights operate only when the area is occupied.

This mitigation measure also outlines the verification process to ensure that the measure is followed and to document its success.

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3.3 Air Quality and Greenhouse Gases

This section contains a description of the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to air quality and greenhouse gases (GHGs).

3.3.1 Environmental Setting

The project extends from the Ivanpah Valley in San Bernardino County, California, to the Eldorado Valley in Clark County, Nevada. The California section of the proposed project lies within the easternmost portion of San Bernardino County in the Mojave Desert Air Basin. The Nevada section lies within southern Clark County.

3.3.1.1 Climate

The proposed project area is mostly rural. There are no weather stations close to the proposed route. However, weather stations at the Naval Air Weapons Station (NAWS) China Lake, approximately 120 miles west of the project, and at the McCarran Airport in Las Vegas Valley, approximately 20 miles north of the project, have been used to provide representative data for the project.

At the NAWS China Lake weather station, the climate is semi-arid desert with average annual precipitation of about 2 inches. Gusty winds occur in late winter and early spring months due to cold fronts. Strong westerly winds can bring up the wind speed from an average of 25 knots to 35 knots. Due to the surrounding mountainous topography and to wind speeds, there can be transfer of pollutants from one area to another. Summers have warm, dry days and cool nights. Daytime temperatures can rise to 100 degrees Fahrenheit (°F) or above and fall to the mid-60s during the night. Average annual snowfall is minimal (NCDC 1996).

At the McCarran Airport weather station summers are typical for deserts with semi-arid conditions. Daytime conditions are warm and dry with high temperatures around 100°F and above, and nights are cool with temperatures in the mid-70s. Moist summer air can spawn severe thunderstorms which can result in heavy soil erosion in the foothills. The Sierra Nevada Mountains of California act as barriers in preventing moisture from the Pacific Ocean. As a result, there are not many rainy days in the area. Snowfall is rare, although there have been exceptions. Winds that produce major storms are from the southwest to the valley or from the northwest through the pass (NCDC 1996).

3.3.1.2 Air Quality

The Federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (U.S. EPA) to set National Ambient Air Quality Standards (NAAQS) for criteria pollutants that are emitted from numerous and diverse sources. These pollutants are considered harmful to public health and the environment. U.S. EPA has set NAAQS for seven criteria pollutants: carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone, particulate matter less than or equal to 10 micrometers in diameter (PM_{10}), particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$), and sulfur dioxide (SO_2). Ozone is not emitted directly from emission sources but is created in the atmosphere via a chemical reaction between oxides of nitrogen (NO_X) and volatile organic compounds (VOCs) in the presence of sunlight. As a result, NO_X and VOCs are often referred to as ozone precursors and are regulated as a means to prevent ground-level ozone formation.

The State of California has also established California Ambient Air Quality Standards (CAAQS) for these criteria pollutants, as well as ambient air quality standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles (VRPs). Clark County, Nevada, has also established ambient air quality standards (AAQS) that in most instances are equivalent to NAAQS. The NAAQS, Clark County AAQS, and CAAQS are summarized in Table 3.3-1.

Table 3.3-1 Summary of National, California, and Clark County Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS Primary	NAAQS Secondary	CAAQS	Clark County AAQS
CO	8-hour	9 ppm[a]	—	9 ppm	9 ppm
	1-hour	35 ppm[a]	—	20 ppm	35 ppm
Lead	3-month (rolling average)	0.15 $\mu g/m^3$	0.15 $\mu g/m^3$	—	—
	Quarterly	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$	—	1.5 $\mu g/m^3$
	30-day	—	—	1.5 $\mu g/m^3$	—
NO_2	Annual	0.053 ppm	0.053 ppm	0.030 ppm	0.053 ppm
	1-hour	0.100 ppm[e]	—	0.18 ppm	—
Ozone	8-hour	0.075 ppm[b] (0.08 ppm)[b,c]	0.075 ppm[b] (0.08 ppm)[b,c]	0.070 ppm	0.08 ppm
	1-hour	—	—	0.09 ppm	0.12 ppm
PM_{10}	Annual	—	—	20 $\mu g/m^3$	50 $\mu g/m^3$
	24-hour	150 $\mu g/m^3$ [d]	150 $\mu g/m^3$ [d]	50 $\mu g/m^3$	150 $\mu g/m^3$
$PM_{2.5}$	Annual	15.0 $\mu g/m^3$ [e]	15.0 $\mu g/m^3$ [e]	12 $\mu g/m^3$	15 $\mu g/m^3$
	24-hour	35 $\mu g/m^3$ [f]	35 $\mu g/m^3$ [f]	—	65 $\mu g/m^3$
SO_2	Annual	0.03 ppm	—	—	0.03 ppm
	24-hour	0.14 ppm	—	0.04 ppm	0.14 ppm
	3-hour	—	0.5 ppm	—	0.50 ppm
	1-hour	—	—	0.25 ppm	—
Sulfates	24-hour	—	—	25 $\mu g/m^3$	—
H_2S	1-hour	—	—	0.03 ppm	—
Vinyl chloride	24-hour	—	—	0.01 ppm	—
Visibility reducing particles	8-hour	—	—	Extinction coefficient of 0.23 per km visibility of 10 miles or more due to particles when relative humidity is less than 70%.	—

Source: CARB 2008

Notes:

[a]Not to be exceeded more than once per year.

[b]To attain this standard, the 3-year average of the fourth highest daily maximum 8-hour average concentration over a year must not exceed the standard.

[c]1997 standard. The implementation rules for this standard will remain in place for implementation purposes as U.S. EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.

[d]Not to be exceeded more than once per year on average over 3 years.

[e]To attain this standard, the 3-year average of the 98th percentile must not exceed the standard.

[f]The 3-year average of the 98th percentile of 24-hour concentrations within an area must not exceed the standard.

Key:

CO = carbon monoxide
km = kilometer
H_2S = hydrogen sulfide
NO_2 = nitrogen dioxide
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
ppm = parts per million
SO_2 = sulfur dioxide
$\mu g/m^3$ = micrograms per cubic meter

The U.S. EPA compares ambient air criteria pollutant measurements with NAAQS to assess air quality in regions within the United States. Similarly, the California Air Resources Board (CARB) compares air pollutant measurements in California with CAAQS. Based on these comparisons, regions are placed in one of the following categories:

- Attainment – A region is "in attainment" if monitoring shows ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. In addition, an area that has been re-designated from nonattainment to attainment is classified as a "maintenance area" for 10 years to ensure that the air quality improvements are sustained.
- Nonattainment – If the NAAQS or CAAQS are exceeded for a pollutant, the region is designated as nonattainment for that pollutant.
- Unclassifiable – An area is unclassifiable if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

The closest representative ambient air monitoring station to the project is in Jean, Nevada. The maximum 8-hour ozone concentration at this station in 2008 was 0.078 parts per million (ppm). For PM_{10}, the maximum 24-hour average concentration in 2008 was 96 micrograms per cubic meter ($\mu g/m^3$) and the annual average concentration was 14 $\mu g/m^3$ (U.S. EPA 2009a). In California, an ambient air monitoring station is located in the Mojave National Preserve. The maximum 8-hour ozone concentration at this station in 2008 was 0.086 ppm (U.S. EPA 2009a).

The portion of the Mojave Desert Air Basin where project activities would occur is currently designated as nonattainment for PM_{10} (NAAQS and CAAQS) and ozone (CAAQS only). This portion of the basin is designated as attainment and/or unclassifiable for all other pollutant NAAQS and CAAQS. The portion of Clark County where project activities would occur is currently designated nonattainment for the ozone NAAQS. This portion of the county is designated as attainment and/or unclassifiable for all other pollutant NAAQS. The air quality designations of areas of project activity are summarized in Table 3.3-2.

Hazardous air pollutants (HAPs; also referred to as toxic air contaminants [TACs] in California) are air pollutants suspected or known to cause cancer, birth defects, neurological damage, or other health issues. HAPs can originate from mobile sources such as vehicles or off-road equipment. Diesel engines emit a complex mix of pollutants, the most visible of which are very small carbon particles or "soot," known as diesel particulate matter (DPM). CARB has identified DPM as a TAC. Except for lead, there are no established ambient air quality standards for HAPs. Instead, these compounds are managed on a case-by-case basis depending on the quantity and type of emissions and proximity of potential receptors.

3.3.1.3 Greenhouse Gases and Climate Change

According to the U.S. EPA, "Climate change refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer)" (U.S. EPA 2009b). Climate change may be affected by a number of factors including solar radiation, ocean circulation, and human activities such as burning fossil fuels or altering the Earth's surface through deforestation or urbanization, among other factors (U.S. EPA 2009c).

Table 3.3-2 Attainment Status within the Proposed Project Area

Pollutant	Desert Portion of San Bernardino County, California, in the Mojave Desert Air Basin[a] NAAQS	Desert Portion of San Bernardino County, California, in the Mojave Desert Air Basin[a] CAAQS	Clark County, Nevada[b] NAAQS
CO	A	A	A
Lead	A	A	A/U
NO_2	A/U	A/U	A/U
Ozone	A/U	Moderate NA	NA
PM_{10}	Moderate NA	NA	A
$PM_{2.5}$	A/U	A/U	A/U
SO_2	A/U	A/U	A/U
Sulfates	--	A	--
H_2S	--	U	--
VRP	--	U	--

Sources: MDAQMD 2008, U.S. EPA 2009a

Notes:
[a]Refers only to the portion of San Bernardino County, California, and the Mojave Desert Air Basin where project activities would occur.
[b]Refers only to the portion of Clark County, Nevada where project activities would occur.

Key:
A = attainment
A/U = attainment/unclassifiable
CO = carbon monoxide
H_2S = hydrogen sulfide
km = kilometer
NA = nonattainment
NO_2 = nitrogen dioxide
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
ppm = parts per million
SO_2 = sulfur dioxide
U = unclassifiable
μg/m[3] = micrograms per cubic meter

GHGs refer to gases that trap heat in the atmosphere, causing a greenhouse effect. As defined in California Assembly Bill (AB) 32, GHGs include, but are not limited to, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). Atmospheric concentrations of the two most important directly emitted, long-lived GHGs—CO_2 and CH_4—are currently well above the range of atmospheric concentrations that occurred over the last 650,000 years (Pew Center 2008). According to the Intergovernmental Panel on Climate Change (IPCC), increased atmospheric levels of CO_2 are correlated with rising temperatures; concentrations of CO_2 have increased by 31 percent above pre-industrial levels since 1750 (Figure 3.3-1). Climate models show that temperatures will probably increase by 1.4 degrees Celsius (°C) to 5.8°C by 2100 (IPCC 2007).

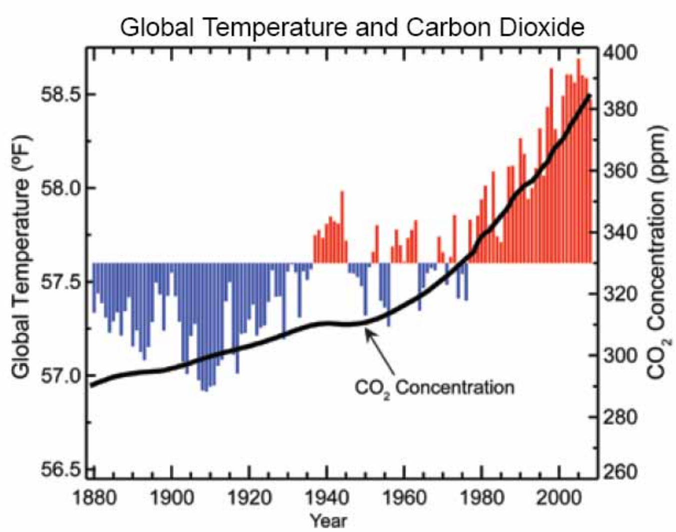

Figure 3.3-1 Relationship between Global Temperature and Carbon Dioxide
Source: IPCC 2001

Global warming potential (GWP) estimates how much a given mass of a GHG contributes to climate change. The term enables comparison of the warming effects of different gases. GWP uses a relative scale that compares the warming effect of the gas in question with that of the same mass of CO_2. The CO_2 equivalent (CO_2e) is a measure used to compare the effect of emissions of various GHGs based on their GWP, when projected over a specified time period (generally 100 years). CO_2e is commonly expressed as million metric tons (MMT) of CO_2 equivalents ($MMTCO_2e$). The CO_2e for a gas is obtained by multiplying the mass of the gas (in tons) by its GWP.

Climate Change impacts - State of California and Southwestern US

In AB 32, the legislature recognized California's particular vulnerability to the effects of global warming, finding that global warming will "have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry" (Health and Safety Code [H&SC] Section 38501, subd. (b)). Since the project area is among the parts of the state that experience hot weather, this area is at a greater likelihood of suffering from any electricity shortages caused by the strains of global warming. It may also feel the economic and public health damages from changes in vegetation and crop patterns, lower summer reservoirs, and increased air pollution that a changed climate will bring (CARB 2009). MDAQMD has not published any area-specific impacts, but it can be expected that the area would experience conditions similar to those projected in the Southwestern U.S.

If global warming emissions continue unabated, California is expected to face poorer air quality, a sharp rise in extreme heat, a less reliable water supply, more dangerous wildfires, and expanding risks to agriculture. Statewide annual temperatures are expected to increase by as much as 10°F by the end of the century. As temperatures rise, electricity demand will also increase. Diminished snow melt flowing through dams, potentially exacerbated by decreasing precipitation, would decrease the potential for hydropower production in California.

Under the expected scenarios for current projections of GHG emissions level impacts, it can be expected that the most germane regional impacts discussed above would be an increased risk of wildfires, higher local seasonal temperatures, and an increase in seasonal flash flooding.

3.3.2 Applicable Laws, Regulations, and Standards

Ambient air quality and air pollutant emissions from stationary and mobile sources are managed under a framework of federal, state, and local rules and regulations.

3.3.2.1 Federal

The CAA establishes the U.S. EPA's responsibilities to protect and improve the nation's air quality. The U.S. EPA oversees the implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants, and reducing emissions from motor vehicles and other mobile sources. The U.S. EPA also requires that each state prepare and submit a State Implementation Plan (SIP) for review. The SIP consists of background information, rules, technical documentation, and agreements that an individual state will use to clean up polluted areas. The plans and rules associated with them are enforced by the state and local agencies, but are also federally enforceable.

At this time, there are no finalized federal laws, regulations, or standards governing GHG emissions at the federal level in the U.S.

General Conformity

The General Conformity Rule has been promulgated by the U.S. EPA to ensure that the actions of federal departments or agencies conform to the applicable SIP. The General Conformity Rule covers direct and indirect emissions of criteria pollutants or their precursors that are caused by a federal action, are reasonably foreseeable, and can practically be controlled by the federal agency through its continuing program responsibility. A federal action is exempt from the General Conformity Rule requirements if the action's total net emissions are below the *de minimis* levels specified in the rule and are not regionally significant. An analysis of the project indicates that net direct and indirect emissions associated with project construction and operation would be less than the thresholds that would trigger the need for a General Conformity Determination under this rule.

3.3.2.2 State

California

The California Clean Air Act outlines a statewide air pollution control program in California. CARB is the primary administrator of the California Clean Air Act, while local air quality districts administer air rules and regulations at the regional level. CARB is responsible for establishing CAAQS, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and preparing the SIP. CARB uses air quality management plans prepared by local air quality districts as the basis of SIP development. CARB has adopted regulations to reduce the emissions from diesel exhaust for on-road vehicles and off-road equipment.

GHG Regulations

Until recently, climate change was not considered an environmental impact under CEQA, and GHG emissions associated with projects were not quantified, disclosed, or mitigated. Over the last five years, however, multiple legislative actions have occurred.

On June 1, 2005, California Governor Arnold Schwarzenegger issued Executive Order S-3-05, establishing statewide GHG emission reduction targets of 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. On September 27, 2006, Governor Schwarzenegger signed the Global Warming Solutions Act, AB 32, which capped the state's GHG emissions at 1990 levels by 2020. This was the first statewide program in the country to mandate an economy-wide emissions cap that included enforceable penalties.

Based on its 1990–2004 inventory of GHG emissions in California, CARB staff recommended an amount of 427 $MMTCO_2e$ as the total statewide GHG 1990 emissions level and 2020 emissions limit. CARB approved the 2020 limit on December 6, 2007. This limit is an aggregated statewide limit, rather than sector- or facility-specific. CARB estimated emissions levels as approximately 480 $MMTCO_2e$ in year 2007. The 2020 reduction target is currently estimated to be 174 $MMTCO_2e$.

In 2007, the California Senate passed Senate Bill (SB) 97, requiring the Governor's Office of Planning and Research (OPR) to develop draft CEQA guidelines for the mitigation of GHG emissions and the effects of GHG emissions. In response to SB 97, the OPR proposed amendments to the CEQA guidelines in April 2009 that would provide guidance to California public agencies for analyzing and mitigating the effects of GHGs. In particular, the amendments proposed two new questions related to GHG impacts to the CEQA guidelines Appendix G Checklist, as well as additional questions on deforestation, energy conservation, and traffic impacts related to increased vehicle trips.

The Climate Change Scoping Plan, approved by the CARB on December 12, 2008, to fulfill Section 38561 of AB 32, is the state's roadmap to reach GHG reduction goals. The measures in the Scoping Plan will be in effect by 2012. Developed by CARB in conjunction with the CAT, the plan outlines a number of key strategies to reduce GHG emissions by approximately 42 $MMTCO_2e$ by 2020 (about 25% of the estimated reductions needed by 2020). Due to expected growth in population and energy use, the emissions reduction target is approximately 30 percent below business as usual by the year 2020. The recommended early action measures include encouraging a low carbon fuel standard, landfill methane capture, reductions from mobile air conditioning, semiconductor reductions, SF_6 reductions, reductions of high GWP consumer products, a heavy-duty vehicles measure, a tire pressure program, and others.

On March 18, 2010, the CEQA guidelines mentioned above were amended to include a requirement for the quantification and mitigation of GHG emissions.

Some of the most important sections of the amendments are:

- Section 15064: The amendments require a lead agency make a "good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project." The agency may use a quantitative or qualitative analysis. (§ 15064.4(a).) This is a change from the originally proposed amendments, which omitted the reference to "scientific or factual data." The guidelines provide a list of factors to be considered in assessing the significance of the impact from GHG emissions, including increases or reductions in GHG caused by the project, the applicable thresholds, and the project's compliance with local, regional, or statewide GHG reduction plans (§ 15064.4(b)).
- Section 15093: The statement of overriding considerations may consider the region-wide or statewide environmental benefits.
- Section 15125: An EIR must discuss any inconsistencies between the proposed project and regional blueprint plans and plans for GHG emission reduction.
- Section 15126.4: Mitigation measures may include measures in an existing plan or mitigation program, implementation of project features, offsite measures including offsets, or GHG sequestration. Mitigation in a plan may include project-specific mitigation.
- Section 15183: Projects may tier from programmatic-level GHG emissions analysis and mitigation. Section 15183 details what a GHG Emission Reduction Plan should contain. A later project may use the plan for its cumulative impacts analysis.
- Appendix G: "GHG" was added to the list of categories. Transportation and Traffic was modified to expand congestion analysis beyond level of service and remove reference to parking.

Nevada

The Nevada Department of Environmental Protection (NDEP) is the primary administrator of air quality rules and regulations at the state level. Thus, the NDEP is responsible for preparing and submitting the SIP to the U.S. EPA. However, air quality administration in Clark and Washoe counties has been delegated to the local county government and air districts. NDEP uses air quality management plans prepared by these county air quality districts during SIP development.

3.3.2.3 Local

Mojave Desert Air Basin (Desert Portion of San Bernardino County, California)

The Mojave Desert Air Quality Management District (MDAQMD) is the administrator of air pollution rules and regulations within the portion of the Mojave Desert Air Basin that includes the desert portion of San Bernardino County and the far eastern end of Riverside County. The MDAQMD is also responsible for issuing stationary source air permits, developing emissions inventories and local air quality plans, maintaining air quality monitoring stations, and reviewing air quality environmental documents required by CEQA.

Fugitive Dust Control

MDAQMD Rule 403.2 outlines fugitive dust control requirements applicable for the Mojave Desert Planning Area. The dust control requirements include:

- Using periodic watering for short-term stabilization of disturbed surface areas
- Performing reasonable precautions to prevent trackout onto paved surfaces
- Covering loaded haul vehicles while operating on publicly maintained paved surfaces
- Stabilizing site surfaces upon completion of grading
- Cleaning up trackout or spills on publicly maintained paved surfaces within 24 hours
- Reducing non-essential earth-moving activity under high wind conditions.

Additionally, the following requirements are applicable to construction/demolition sources disturbing 100 or more acres:

- Preparing and submitting to MDAQMD, prior to commencing earth-moving activity, a dust control plan that describes all applicable dust control measures that will be implemented at the project
- Preparing and submitting to MDAQMD stabilized access route(s)
- Maintaining natural topography to the extent possible
- Constructing parking lots and paved roads, where feasible
- Constructing upwind portions of project first, where feasible

Clark County, Nevada

The Clark County Department of Air Quality and Environmental Management (CC-DAQEM) is the administrator of air pollution rules and regulations within Clark County, Nevada. The CC-DAQEM is also responsible for issuing stationary source air permits, developing emissions inventories and local air quality plans, and maintaining air quality monitoring stations.

Fugitive Dust Control

Clark County Rule Section 94 outlines permitting and dust control for construction activities. Under this rule, a dust control permit is required from the CC-DAQEM prior to the start of large construction projects. A dust mitigation plan is required as part of the application for a dust permit.

3.3.3 Impact Analysis

This section defines the methodology used to evaluate impacts for air quality and GHGs, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.3.4.

3.3.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to air quality would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

This document uses the following criteria to evaluate air quality impacts as part of the NEPA analysis:

a. conflict with or obstruct implementation of the applicable air quality plan;
b. violate any ambient air quality standard when added to the local background; increase the number or frequency of violations; contribute substantially to an existing or projected air quality violation; or
c. expose sensitive receptors to substantial pollutant concentrations.

3.3.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. conflict with or obstruct implementation of the applicable air quality plan;
b. violate any ambient air quality standard when added to the local background; increase the number or frequency of violations; contribute substantially to an existing or projected air quality violation;
c. result in a cumulatively considerable net increase of any criteria pollutant for which the proposed project region is nonattainment under an applicable ambient air quality standard;
d. expose sensitive receptors to substantial pollutant concentrations;
e. create objectionable odors affecting a substantial number of people;
f. generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;
g. conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

MDAQMD has adopted emission thresholds of significance for construction and operational emissions to help lead agencies analyze the significance of project-related emissions. These thresholds are shown in Table 3.3-3.

Table 3.3-3 MDAQMD Significant Emission Thresholds

Criteria Pollutant	**Annual Threshold** (tons)	**Daily Threshold** (lbs)
CO	100	548
NO_x	25	137
VOCs	25	137
SO_2	25	137
PM_{10}	15	82
$PM_{2.5}$	15	82
H_2S	10	54
Lead	0.6	3

Source: SCE 2009
Key:
CO = carbon monoxide
H_2S = hydrogen sulfide
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

The MDAQMD has not adopted any GHG significance threshold in response to AB 32. At this time, no mandatory GHG regulations or finalized agency CEQA thresholds of significance apply to this project. In the absence of an established CEQA threshold of significance, CARB's Mandatory GHG Reporting program may be used to determine whether or not a project's emissions of GHGs may be considered significant. With the passing of AB 32, CARB has been mandated to implement a regulatory program applicable to key sectors and facilities with significant combustion sources. CARB has set the facilities reporting threshold as 25,000 metric tons or more per year for most sources.

In October 2008, CARB presented a Preliminary Draft Staff Proposal with an example threshold of 7,000 $MTCO_2e$ per year for operational emissions (excluding transportation-related emissions) from industrial projects (CARB 2008). To date, CARB has not adopted this threshold or proposed alternative thresholds. In December 2008, the South Coast Air Quality Management District (SCAQMD) adopted an interim threshold of 10,000 $MTCO_2e$ per year (operational emissions plus construction emissions amortized over 30 years) for "industrial" projects for which the SCAQMD is the lead agency, and it is developing guidelines for projects for which other agencies are the lead.

To assess the significance of the proposed project's GHG emissions, the CPUC will apply the SCAQMD significance threshold of 10,000 $MTCO_2e$ per year, including all operational emissions and the construction emissions averaged over 30 years for this project. In the absence of a rulemaking to establish a GHG emission threshold of significance to be applied uniformly throughout the state, the CPUC is assessing the impacts of GHG emissions on a case-by-case basis. In areas of the state in which the local air pollution control district or air quality management district has not adopted a threshold of significance, the CPUC will consider applying a threshold that has been adopted by CARB or another air pollution control district or air quality management district. In this instance, the CPUC is using the SCAQMD threshold because CARB has yet to adopt a threshold, and the SCAQMD threshold was adopted after rigorous public vetting, and, at the time of writing, it is the only air district to adopt an emission-based threshold.

The SCAQMD developed its interim significance threshold for GHGs from stationary sources through a robust stakeholder working group process, which included staff from OPR, CARB, and the Office of the Attorney General. The working group provided input to staff at seven public meetings. The numerical threshold SCAQMD established is 10,000 $MTCO_2e$ per year, which corresponds to a threshold that captures 90 percent of stationary source GHG emissions. SCAQMD adopted the 90 percent emission capture rate as a reasonable cut-off point, based on staff estimates that the emissions from projects that will not exceed this threshold would account for slightly less than 1 percent of the future statewide GHG emissions target.

Use of the SCAQMD threshold is an appropriate tool in the CPUC's project-by-project analysis. After careful consideration, the CPUC finds that this threshold is appropriate for this project at this time. The following analysis describes the estimated emissions associated with the construction and operation of the proposed project and the significance of this impact.

3.3.3.3 Methodology

To assess the potential air quality impacts associated with the project according to the significance criteria discussed above, the potential air pollutant emissions from the construction phase and the operational phase (including maintenance activities) of the project were evaluated. As applicable, the project-related emissions were compared with appropriate significance thresholds. In addition, the proximity of emission sources to potential receptors was determined.

Emissions of criteria pollutants and GHGs were estimated using data on vehicle/equipment operation and published emission factors. For fugitive dust sources, $PM_{2.5}$ emissions were assumed to be equivalent to 10 percent of PM_{10} emissions. In addition, controlled fugitive emissions were assumed to be 50 percent of uncontrolled fugitive emissions based on the use of dust suppression required by local agencies (water truck for unpaved roads). Most emissions of GHGs were derived based on estimated equipment types and run-time, although additional estimates for worker commute and operational fugitive emissions of SF_6 were estimated based on applicant-provided information. See Appendix D for detailed air quality calculations.

3.3.3.4 Applicant Proposed Measures

The applicant has not proposed any measures related to air quality or air emission reduction for the proposed project beyond what is required by applicable regulations.

3.3.3.5 Proposed Project / Proposed Action

The project has the potential for air quality impacts during construction, ongoing operation, and maintenance of the proposed project components.

Construction

Air pollutant emissions would be generated during various activities associated with the project segments. Construction of the EITP would include removal of existing conductor, towers, foundations, and wood poles; installation of LST foundations; and assembly, hauling, and restoration activities. Construction at the Ivanpah Substation would involve grading, civil, and electrical phases. Installation of the telecommunications line would include tower work and line stringing. Air pollutant emissions would be generated during each construction phase from engine exhaust of onsite construction equipment and on-road vehicles. Onsite earthmoving activities and vehicle travel on local/access roads would generate fugitive dust.

Due to the linear nature of a transmission/telecommunications line, the numerous construction activities would occur at different locations spread out over the length of the proposed line. Thus, it is expected that construction equipment use would be spread out over a wide geographical area. The various construction activities could occur either simultaneously or at different times. The overall length of project construction is estimated at approximately 19 months. Depending on the project schedule, the level of construction activity is expected to be highly variable.

The estimated total criteria air pollutant emissions for all construction activities are presented in Table 3.3-4. A comparison of emissions expected in the MDAQMD (San Bernardino County, California) to the corresponding MDAQMD significance thresholds is presented in Table 3.3-5. Based on these estimates, the primary source of CO, NO_x, VOC, and SO_2 emissions would be non-road diesel construction equipment. It is assumed that most PM_{10} and $PM_{2.5}$ would be fugitive dust generated by vehicle traffic on unpaved roads. In general, construction emissions would be spread out over a wide geographic area.

The estimated average daily criteria pollutant emission rate for construction activities is presented in Table 3.3-6. This table also includes the daily MDAQMD significance thresholds. The average daily construction emission rates are based on the assumption that construction activities would occur concurrently and that equipment for each activity would be operating on the same day.

Effect on Implementation of Applicable Air Quality Plan

Construction activities related to the project would not conflict with or obstruct implementation of California or Nevada SIPs. These plans outline the long-term strategies for regional air quality compliance with NAAQS and state/local ambient air quality standards. The state emission inventories, as part of the SIPs, include fugitive dust and emissions from off-road equipment such as construction equipment. The emissions associated with project construction would be temporary and would be only a very small fraction of the regional emissions. No long-term effects associated with operation and maintenance of the proposed project would occur because periodic inspections would be the only activities that would generate emissions, and the emissions would be negligible.

Table 3.3-4 Total Project Construction Emissions

Location	Construction Activity	Total Emissions (tons)					
		CO	NO_x	VOCs	SO_2	PM_{10}	$PM_{2.5}$
San Bernardino County, California (MDAQMD)	Existing 115-kV Line Removal	0.28	0.44	0.06	0.0006	2.6	0.56
	Ivanpah Substation Construction	3.8	10	1.1	0.01	4.0	1.0
	220-kV Eldorado–Ivanpah Transmission Line Installation	4.5	8.1	0.96	0.04	8.0	1.9
	33-kV Distribution Line Installation	0.05	0.10	0.01	0.0001	0.11	0.02
	Telecommunication Line Installation	0.32	0.61	0.07	0.0009	0.95	0.21
	Total	**9.0**	**19**	**2.2**	**0.05**	**16**	**3.7**
	First 12-Month Period	***5.7***	***12***	***1.4***	***0.03***	***10***	***2.4***
	Second 12-Month Period[b]	***3.3***	***7.1***	***0.8***	***0.02***	***5.8***	***1.4***
Clark County, Nevada	220-kV Eldorado-Ivanpah Transmission Line Installation	18	32	3.8	0.16	32	7.8
	Telecommunication Line Installation	1.3	2.4	0.28	0.004	3.8	0.83
	Replacement of Overhead Ground Wire on Eldorado–Lugo 500-kV Line	2.5	4.3	0.51	0.05	4.7	1.1
	Total	**22**	**39**	**4.6**	**0.22**	**41**	**10**
	First 12-Month Period	***14***	***25***	***2.9***	***0.14***	***26***	***6.1***
	Second 12-Month Period[b]	***8.0***	***14***	***1.7***	***0.08***	***15***	***3.6***
Total Project Area[a]	Ivanpah Substation Construction	3.8	10	1.1	0.01	4.0	1.0
	220-kV Eldorado–Ivanpah Transmission Line Installation	22	40	4.8	0.20	40	9.7
	Existing 115-kV Line Removal	0.28	0.44	0.06	0.001	2.6	0.56
	33-kV Distribution Line Installation	0.05	0.10	0.01	0.0001	0.11	0.02
	Telecommunication Line Installation	1.6	3.0	0.36	0.004	4.7	1.0
	Replacement of Overhead Ground Wire on Eldorado–Lugo 500-kV Line	2.5	4.3	0.51	0.05	4.7	1.1
	Total	**31**	**58**	**6.8**	**0.27**	**56**	**13**
	First 12-Month Period	***19***	***37***	***4.3***	***0.17***	***36***	***8.5***
	Second 12-Month Period[b]	***11***	***21***	***2.5***	***0.10***	***21***	***5.0***

Notes:
[a]Includes location of all projects in San Bernardino County, California, and Clark County, Nevada.
[b]Approximately 9 months of construction is anticipated for second 12-month period.

Key:
CO = carbon monoxide
kV = kilovolt
MDAQMD = Mojave Desert Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

Table 3.3-5 Comparison of Annual Project Emissions in San Bernardino County, California, to MDAQMD Significance Thresholds

Air Pollutant	Annual Project Emissions in San Bernardino County, California (MDAQMD) (tons/yr) First 12-Month Period	Annual Project Emissions in San Bernardino County, California (MDAQMD) (tons/yr) Second 12-Month Period[a]	MDAQMD Annual Emission Significance Threshold (tons/yr)
CO	5.5	3.2	100
NO_x	12	7.0	25
VOCs	1.4	0.8	25
SO_2	0.03	0.02	25
PM_{10}	10	5.8	15
$PM_{2.5}$	2.4	1.4	15

Note:
[a]Approximately 9 months of construction is anticipated for second 12-month period.

Key:
CO = carbon monoxide
MDAQMD = Mojave Desert Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

Table 3.3-6 Daily Project Construction Emissions

Location	Construction Activity	Average Daily Emissions[a] (lbs/day)					
		CO	**NO_x**	**VOCs**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
San Bernardino County, California (MDAQMD)	Existing 115-kV Line Removal	17	26	3.3	0.04	153	33
	Ivanpah Substation Construction	47	122	14	0.1	50	13
	220-kV Eldorado–Ivanpah Transmission Line Installation	77	138	16	0.7	137	33
	33-kV Distribution Line Installation	12	25	3	0.04	27	6
	Telecommunication Line Installation	11	20	2	0.03	34	9
	Combined Total	*164*	*331*	*39*	*0.9*	*401*	*94*
	MDAQMD Daily Emission Significance Thresholds	***548***	***137***	***137***	***137***	***82***	***82***

Table 3.3-6 Daily Project Construction Emissions

Location	Construction Activity	Average Daily Emissions[a] (lbs/day)					
		CO	NO_x	VOCs	SO_2	PM_{10}	$PM_{2.5}$
Clark County, Nevada	220-kV Eldorado–Ivanpah Transmission Line Installation	77	138	16	0.7	137	33
	Telecommunication Line Installation	11	20	2	0.03	34	9
	Replacement of Wire on Eldorado–Lugo 500-kV Line	25	43	5	0.5	47	11
	Combined Total	*113*	*201*	*23*	*1.2*	*218*	*53*

Note:
[a]Based on the conservative assumption that all construction equipment operates concurrently.

Key:
CO = carbon monoxide
MDAQMD = Mojave Desert Air Quality Management District
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PM_{10} = particulate matter with a diameter of 10 micrometers or less
SO_2 = sulfur dioxide
VOCs = volatile organic compounds

Temporary Ambient Air Quality Impacts Caused by Construction Activities

Emissions generated from construction activities are anticipated to cause temporary increases in ambient air pollutant concentrations along the route of construction activities and the access roads used by project vehicles. Since the construction activities would be transient and would impact specific locations for only limited durations, long-term impacts would not occur. Further, the majority of the proposed construction would be carried out in isolated areas of the desert that are not close to populated areas. As stated earlier, construction activity would also not be concentrated in a single location but spread out over a wide geographic area. However, although the applicant would implement mitigation measures (MM AIR-1, use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls to reduce emissions), short-term impacts to ambient air quality could still occur.

Temporary Emission Increases of NO_x, VOCs, and PM_{10} during Construction

Project construction would occur in an area designated nonattainment for ozone and PM_{10}. The estimates of average daily emissions of PM_{10} and NO_x from project construction activities exceed MDAQMD daily significance thresholds (see Table 3.3-6). Comparison of average daily emissions to significance thresholds was based on the conservative assumption of daily equipment use. However, construction activities would be transient and would impact specific locations for only limited durations; therefore, long-term impacts would not occur. Mitigation measures would be implemented (MM AIR-1, use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls) to reduce short-term impacts. However, these mitigation measures are not expected to reduce PM_{10} and NO_x emissions from construction activities to below MDAQMD daily significance thresholds.

Temporarily Expose Sensitive Receptors to Increased Pollutant Concentrations

Diesel particulate emissions would be part of the exhaust from project construction equipment and on-road vehicles. The only receptor identified as being close to the proposed project construction area is the Desert Oasis Apartment Complex, which could be exposed to short-term increased pollutant concentrations. The project would not be near schools, day care centers, hospitals, or other sensitive receptors. Given that construction activities would be transient and would impact specific locations for only limited durations, long-term impacts would not occur.

Temporarily Cause Odors Due to Fuel Combustion

Exhaust from construction equipment might temporarily create odors from the combustion of fuel. However, the level of emissions would likely not cause a perceptible odor to a substantial number of people. Any odors that were perceptible would be temporary during construction activities. Vehicle emissions during project operation would be minimal, so no objectionable odors are expected.

Generate GHG Emissions

The estimated total GHG emissions from all construction activities is approximately 7,000 $MTCO_2e$ (see Table 3.3-7).

Table 3.3-7 Summary of GHG Emissions from Construction and Operation

Greenhouse Gas	**Annual Direct Emissions** (metric tons) **Construction**	**Annual Direct Emissions** (metric tons) **Operation**[a,b]	**Global Warming Potential**	**Annual Carbon Equivalent Emissions** ($MTCO_2e$) **Construction**	**Annual Carbon Equivalent Emissions** ($MTCO_2e$) **Operation**
CO_2	6,950	18	1	6,950	18
SF_6	–	0.0073	23,900	–	176
			subTotal	**6,950**	**194**
Total Project GHG Emissions, Max Yearly				**7,144**	
CPUC-Applied SCAQMD Threshold				**10,000**	
Emissions do not exceed threshold LESS THAN SIGNIFICANT IMPACT					

Notes:
[a]Direct emissions of CO_2 estimated based on 100 vehicle miles traveled per day and 1.1 lbs CO_2/mile.
[b]Direct emissions of SF_6 estimated by assuming 1% leak rate from equipment storing 1,620 lbs of SF_6, which would equal 16.2 lbs/year.

Key:
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
SF_6 = sulfur hexafluoride

Operation & Maintenance

The emissions of criteria air pollutants during project operation would be primarily from maintenance vehicles used by workers to patrol the transmission lines and visit the substation. These operational/maintenance emissions would be negligible. It is assumed that most of the GHG emissions during project operation would result from potential leaks of SF_6 from substation/transmission equipment. Annual GHG emissions from the operational activities are estimated at approximately 190 $MTCO_2e$ (Table 3.3-7).

NEPA Summary

Construction activities related to the project would not conflict with or obstruct implementation of California or Nevada SIPs. The emissions associated with project construction would be temporary and would be only a very small fraction of the regional emissions. No long-term impacts associated with operation and maintenance would occur. Therefore, the proposed project would have a negligible effect on the implementation of an applicable air quality plan.

Emissions generated from construction activities would temporarily increase ambient air pollutant concentrations along the route of the transmission line and in the vicinity of access roads used by project vehicles. Construction emissions of $PM_{2.5}$, PM_{10}, and NO_X would temporarily exceed MDAQMD daily significant thresholds, even with the implementation of use of low-emission equipment (MM AIR-1) and enhanced fugitive dust controls (MM AIR-2). This would result in short-term, moderate impacts on ambient air quality.

Diesel particulate emissions would be part of the exhaust from project construction equipment and on-road vehicles. As discussed above, the Desert Oasis Apartment Complex is the only receptor, but the potential exposure of this receptor to emissions would be short term (approximately 2.5 weeks during construction). Therefore, the short-term exposure of sensitive receptors to increased pollutant concentrations from the proposed project would be minor.

Air pollutant emissions and resulting impacts during operation of the proposed project would be negligible.

CEQA Significance Determinations

IMPACT AIR-1: Conflict or Obstruct the Implementation of Applicable Air Quality Plan
Less than significant

Construction activities related to the project would not conflict with or obstruct implementation of the Mojave Desert Planning Area Air Quality Attainment Plan. The emissions associated with project construction would be temporary and would be a small fraction of the regional emission inventory included in the plan. No long-term impacts associated with operation and maintenance are anticipated for the proposed project. Therefore, the proposed project would have a less than significant impact on implementation of applicable air quality plans.

IMPACT AIR-2: Temporary Ambient Air Quality Impacts Caused by Construction Activities Would Violate or Contribute Substantially to an Air Quality Violation
Potentially significant

The estimated average daily emissions of $PM_{2.5}$, PM_{10}, and NO_X from project construction activities would exceed MDAQMD daily significance thresholds (see Table 3.3-6). The comparison of average daily emissions to significance thresholds was based on conservative assumptions about daily equipment use. The large majority of $PM_{2.5}$ and PM_{10} emissions are due to fugitive dust generated from onsite construction and vehicle travel on roads. Implementation of MM AIR-1, the use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls, would reduce potential impacts, but would not likely reduce emissions from construction activities to below the MDAQMD daily significant thresholds. Impacts would be limited to the duration of project construction; long-term and operational impacts would not occur. As average daily emissions of $PM_{2.5}$, PM_{10}, and NO_X are projected to exceed established thresholds, associated impacts could be potentially significant.

IMPACT AIR-3: Temporary Emission Increases of NO_x and PM_{10} during Construction Would Contribute to a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Nonattainment Area
Potentially significant

Project construction would occur in an area designated nonattainment for ozone and PM_{10}. The estimates of average daily emissions of PM_{10} and NO_X from project construction activities exceed MDAQMD daily significant thresholds (see Table 3.3-6). The comparison of average daily emissions to significance thresholds was based on conservative assumptions about daily equipment use. . The large majority of $PM_{2.5}$ and PM_{10} emissions are due to fugitive dust generated from onsite construction and vehicle travel on roads.

Mitigation measures MM AIR-1, the use of low-emission equipment, and MM AIR-2, enhanced fugitive dust controls, would be implemented to reduce potential impacts, but these mitigation measures would not likely reduce PM_{10} and NO_X emissions from construction activities to below the MDAQMD daily significant thresholds; therefore, the impact of temporary emissions from construction is potentially significant.

IMPACT AIR-4: Temporarily Expose Sensitive Receptors to Substantial Pollutant Concentrations
Less than significant

Diesel particulate emissions would be generated during project construction. The only receptor identified as being close to the proposed project construction area is the Desert Oasis Apartment Complex, where residents could be exposed to short-term increased pollutant concentrations. The project would not be located near schools, day care centers, hospitals, or other sensitive receptors. Given that construction activities would be transient and would impact specific locations for only limited durations, the impact of increased pollutant concentrations on sensitive receptors would be less than significant.

IMPACT AIR-5: Temporarily Create Objectionable Odors Due to Fuel Combustion that would Affect a Substantial Number of People
Less than significant

Odors created during construction from the combustion of fuel would likely not cause a perceptible odor to a substantial number of people. If perceptible, such impacts would be temporary and would be limited to the duration of the project construction period. Vehicle emissions during project operation would be minimal, so no objectionable odors are expected. Therefore, impacts associated with increased odors due to fuel combustion would be less than significant.

IMPACT AIR-6: Generate GHG Emissions That May Have a Significant Impact on the Environment
Less than significant

The project would cause an increase in GHG emissions. However, the amount of emissions from both project construction (estimated at 6,950 $MTCO_2e$) and operation (estimated at 194 $MTCO_2e$ per year) would be insignificant. Neither the state of California, nor the applicable air districts has officially adopted a GHG threshold of significance for CEQA. The purpose of establishing a threshold is to provide some guidance for determining if a project will have a significant impact on the environment. CPUC, as the lead agency, has the responsibility to assess the level at which the effects of the project would be significant. In order to use a conservative methodology, CPUC has elected to apply a significance threshold of 10,000 metric tonnes CO_2e per year, which corresponds to the lowest officially adopted GHG threshold in the state of California (from SC AQMD).As with other individual small projects (e.g., projects that emit less than 25,000 $MTCO_2e$ per year), the GHG emissions increases that would result under the project would not be expected to individually have a significant impact on global climate change. Therefore, the impact of the generation of GHG emissions would be less than significant.

NO IMPACT. Conflict With Any Applicant Plan, Policy, or Regulation Aimed at Reduction of Greenhouse Gases. At this time, no mandatory GHG regulations or finalized agency guidelines apply to this project. In the absence of established state regulations addressing mitigation of impacts related to GHG emissions, OPR has issued guidance encouraging agencies to develop a regional approach (OPR 2009). MDAQMD has not issued any finalized guidance for GHG reporting or set any thresholds for CEQA analysis of GHG emissions. As there are no applicable regional policies or plans that address this type of project, the project does not conflict with any identified plans, policies, or regulations.

3.3.3.6 No Project / No Action Alternative

Under the No Project Alternative, the new double circuit transmission line would not be constructed. Thus, there would be no construction or operational emissions or air quality impacts.

3.3.3.7 Transmission Alternative Route A

Transmission Alternative Route A would vary from the proposed project route near the Eldorado Substation. The remainder of the EITP would be the same. The level of construction and operational activity for the entire route using Transmission Alternative Route A is expected to be similar to that of the proposed project route. Thus, the air quality and GHG impacts associated with this alternative would be similar to those discussed above for the proposed project.

Transmission Alternative Route A would have a negligible effect on the implementation of an applicable air quality plan. As with the proposed project, the total amount of the emissions generated during construction, even with implementation of emission equipment (MM AIR-1) and enhanced fugitive dust controls (MM AIR-2), would be sufficient to create short-term, moderate impacts to ambient air quality. The short-term exposure of sensitive receptors to increased pollutant concentrations from this alternative would be minor. The average daily emissions of $PM_{2.5}$, PM_{10}, and NO_X from construction activities would exceed MDAQMD daily significance thresholds; therefore, these short-term impacts would be potentially significant. The impact of increased pollutant concentrations on sensitive receptors would be less than significant. The impact of increased odors due to fuel combustion would be less than significant. The impact of the generation of GHG emissions would be less than significant. This alternative would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

3.3.3.8 Transmission Alternative Route B

Transmission Alternative Route B would vary the proposed project route near the Eldorado Substation. The remainder of the EITP would be the same. Although this alternative route is about 5.5 miles longer than the proposed route, the level of construction and operational activity associated with the entire route using Transmission Alternative Route B is expected to be similar to that of the proposed project route, as it would only impact an additional 24 acres. Assuming emissions impacts are in line with the additional length and area of impact, the emissions under this scenario could be approximately 5 percent above the emissions for the proposed project. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed above for Transmission Alternative Route A.

3.3.3.9 Transmission Alternative Route C

Transmission Alternative Route C is a route variation near Primm. The remainder of the EITP would be the same. Although this alternative route is longer than the proposed route, the level of construction and operational activity associated with the entire route using Transmission Alternative Route C is expected to be similar to that of the proposed project route as it would only impact an additional 5.5 acres. Assuming emissions impacts are in line with the additional length and area of impact, the emissions under this scenario could be approximately 5 percent above the emissions of the proposed project. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed above for Transmission Alternative Routes A and B.

3.3.3.10 Transmission Alternative Route D and Subalternative E

Transmission Alternative Route D and Subalternative E are route variations near Primm. The remainder of the EITP would be the same. The level of construction and operational activity associated with the entire route using Transmission Alternative Route D and Subalternative E is expected to be similar to that of the proposed project route. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed for Transmission Alternative Routes A, B, and C above.

3.3.3.11 Telecommunication Alternative (Golf Course)

This alternative would deviate from the proposed project telecommunication route outside the town of Nipton, California. This alternative would not require the proposed microwave tower. The telecommunications line would continue along the north side of Nipton Road in a new underground duct for approximately 10 miles. The telecommunications line would then be underbuilt on existing distribution lines for approximately 10 miles to the proposed Ivanpah Section with the exception of a segment that would be installed in a new underground duct beneath the Primm Valley Golf Course.

The level of construction and operational activity associated with this alternative telecommunications route are expected to be similar to that of the proposed project route. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed above for Transmission Alternative Routes A, B, C, and D and Subalternative E.

3.3.3.12 Telecommunication Alternative (Mountain Pass)

This alternative would deviate from the proposed project telecommunication route outside the town of Nipton, California. This alternative would not require the proposed microwave tower. The telecommunications line would continue along the north side of Nipton Road in a new underground duct for approximately 10 miles. The telecommunications line would then be underbuilt on existing distribution lines for approximately 15 miles to the west of the town of Mountain Pass and north of the existing Mountain Pass Substation to the proposed Ivanpah Substation.

The level of construction and operational activity associated with this alternative telecommunications route are expected to be similar to that of the proposed project route. Thus, the air quality and GHG impacts associated with this alternative would be similar to those associated with the project and discussed for Transmission Alternative Routes A, B, C, and D, Subalternative E, and the Golf Course Telecommunication Alternative.

3.3.4 Mitigation Measures

The following mitigation measures are proposed to reduce the air quality impacts associated with the proposed project:

MM AIR-1: Low-emission Construction Equipment. All construction equipment with a rating between 100 and 750 horsepower (hp) will be required to use engines compliant with U.S. EPA Tier 2 non-road engine standards. In addition, all off-road and portable construction diesel engines not registered under the CARB Statewide Portable Equipment Registration Program that have a rating of 50 hp or more will meet, at a minimum, the Tier 2 California non-road engine standards unless that engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that engine will be equipped with a Tier 1 engine. The applicant will substitute small electric-powered equipment for diesel- and gasoline-powered construction equipment where feasible. The applicant will maintain construction equipment according to manufacturing specifications and use low-emission equipment.

MM AIR-2: Enhanced Dust Control Measures. In addition to the dust control requirements by MDAQMD and CC-DAQEM, the following measures will be implemented for mitigation:

- Frequent watering or stabilization of excavations, spoils, access roads, storage piles, and other sources of fugitive dust (parking areas, staging areas, other) if construction activity causes persistent visible emissions of fugitive dust beyond the work area
- Pre-watering of soils prior to clearing and trenching
- Pre-moistening of, prior to transport, import and export dirt, sand, or loose materials
- Dedication of water truck or high-capacity hose to any soil screening operations
- Minimization of drop height of material through screening equipment
- Reduction of the amount of disturbed area where possible
- Planting of vegetative ground cover in disturbed areas within 21 days after construction activities have ceased.

3.3.5 Whole of the Action / Cumulative Action

Below is a summary of information related to air quality and GHGs in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC and the BLM for the ISEGS project.

3.3.5.1 Setting

Since the ISEGS project is located in the Southern California Mojave Desert close to the California-Nevada border, the environmental setting is very similar to that of the EITP.

Applicable Laws, Regulations, and Standards

Due to the variation in project components and location between EITP and ISEGS, different laws, regulations, and standards would apply to ISEGS than those listed above for EITP (see Table 3.3-8). Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with the EITP would not apply. ISEGS project components and operational features that trigger additional laws, regulations, and standards include:

- Three solar concentrating thermal power plants with one natural-gas-fired steam boiler each
- Natural gas supplied through a 6-mile distribution pipeline
- Air cooled condensers at each of the three plants
- Diesel-fired 240-hp fire pump engine at each plant
- Four 3,750-hp emergency generator engines
- Tractor-pulled mirror washing trailers

Table 3.3-8 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
Federal		
40 CFR Part 52	Nonattainment NSR requires a permit, BACT, and offsets. Permitting and enforcement is delegated to MDAQMD. PSD requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The ISEGS project is a new source that has a rule-listed emission source; thus, the PSD trigger levels are 100 tons per year for NO_X, VOCs, SO_2, $PM_{2.5}$, and CO. The ISEGS project's proposed emissions are below NSR and PSD applicability thresholds.	Operations
40 CFR Part 60	NSPS, Subpart D, Standards of Performance for Electricity Steam Generation Units. Establishes emission standards and monitoring/recordkeeping requirements for units with greater than 250 MM BTU/hr heat input. Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Establishes emission standards for these engines, which include emergency fire water pump engines.	Operations
State		
HSC Section 40910-40930	Permitting of source needs to be consistent with CARB-approved Clean Air Plans.	Operations
HSC Section 41700	Restricts emissions that would cause nuisance or injury.	Operations

Table 3.3-8 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
CCR Section 93115	Airborne Toxics Control Measure for Stationary Compression Ignition Engines. Limits the types of fuels allowed, establishes maximum emission rates, establishes recordkeeping requirements on stationary compression ignition engines including emergency fire water pump engines.	Operations
Local		
Rule 404 Particulate Matter – Concentration	Limits the particulate matter concentration from stationary source exhausts.	Operations
Rule 900 Standard of Performance for New Stationary Source	Incorporates the Federal NSPS (40 CFR 60) rules by reference.	Operations
Regulation XII – Federal Operating Permits	Requires that new or modified major facilities or facilities that trigger NSPS, Acid Rain or other federal air quality programs obtain a Title V federal operating permit.	Operations
Rule 1210 – Acid Rain	Requires that facilities subject to the federal Acid Rain program obtain permits and comply with emissions and monitoring provisions.	Operations
Rule 1303 – New Source Review	Specifies BACT/offsets technology and requirements for any new emissions unit that has potential to emit any affected pollutants.	Operations
Rule 1306 – Electric Energy Generating Facilities	Describes actions to be taken for permitting of power plants that are within the jurisdiction of the California Energy Commission.	Operations

Key:
BACT = Best Available Control Technology
CARB = California Air Resource Board
CCR = California Code of Regulations
CFR = Code of Federal Regulations
CO = carbon monoxide
HSC = Health and Safety Code
MDAQMD = Mojave Desert Air Quality Management District
MM BTU/hr = 1 million British Thermal Units per hour
NO_X = nitrogen oxides
NSPS = New Source Performance Standards
$PM_{2.5}$ = particulate matter with a diameter of 2.5 micrometers or less
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
VOC = volatile organic compound

3.3.5.2 Methodology

The methodology for analyzing impacts for the ISEGS project was similar to that used for the EITP; differences are noted below. CEC staff primarily used two CEQA significance criteria to evaluate the ISEGS project. First, all project emissions of nonattainment criteria pollutants and their precursors (NO_X, VOC, PM_{10}, and SO_2) were considered CEQA significant cumulative impacts that must be mitigated. Second, any AAQS violation or any contribution to any AAQS violation caused by any project emissions was considered CEQA significant and mitigation was required. BACT would be applied to both the onsite stationary and the non-stationary sources for the ISEGS project. For the NEPA analysis, the Prevention of Significant Deterioration (PSD) threshold was considered in addition to the NAAQS and general conformity considered above for EITP. Also, the emissions from the proposed project, both stationary source and onsite mobile source, were analyzed for ISEGS using air dispersion models to determine the probable impacts at ground level.

3.3.5.3 Impacts

The CEC and BLM have published the following impacts related to air quality and GHGs for the ISEGS project:

Construction Impacts

The ISEGS project would consist of three phases, with total construction duration of 48 months. Activities such as site preparation, construction, and installation of major equipment and structures would result in fugitive dust emissions and emissions from equipment exhausts. In addition, a small amount of hydrocarbon emissions may occur because of the temporary storage of petroleum fuel at the site. Air dispersion modeling was done to analyze the ground level impacts from all construction activities. Peak hourly, daily, and annual construction equipment exhaust and fugitive dust emissions were used to perform the modeling analysis. The modeled impacts from construction activities were added to the background concentrations to assess the impact from the project. The modeling results indicated that there would be no new exceedances created except for 24-hour PM_{10}. Since the area is nonattainment for PM_{10}, feasible mitigation measures would be implemented for the ISEGS project. The modeling analysis shows that, after implementation of the recommended fugitive dust mitigation measures, the project's construction would not cause violations of the ambient air quality standards. Therefore, no significant NEPA impacts would occur after implementation of the mitigation measures.

To mitigate the impacts from the construction of the facility, the applicant has proposed to follow the mitigation measures from the SCAQMD CEQA guidelines. In addition to those, the BLM and CEC have recommended the use of polymer based soil stabilizers, or equivalent, on the site's unpaved roads and inactive disturbed surfaces during construction.

Construction-related impacts associated with GHG emissions during construction were not quantified in the ISEGS FSA/DEIS.

Operational Impacts

Operational emissions are expected from the boilers, fire pump, and emergency generator. The impacts were analyzed with the help of the U.S. EPA dispersion model AEMROD. The modeled impacts from operation were added to the background concentrations to assess the impact from the ISEGS project. With the exception of 24-hour PM_{10}, there would be no new exceedances from the project operation. The implementation of fugitive dust mitigation practices would help reduce the emissions and thus the impacts from PM_{10}. Similar to the construction analysis, the results show that project operations would not cause violation of the NAAQS. Therefore, no significant NEPA impacts would occur after implementation of the mitigation measures. Similarly, in the case where there would be overlapping impacts from construction and operation, the modeling analysis indicates that there would be no significant NEPA impacts with mitigation.

The ISEGS area is nonattainment for ozone, therefore the emissions of NO_X and VOCs are analyzed in the ISEGS FSA/DEIS since they are precursors to ozone. In the absence of mitigation, there is a possibility for higher levels of ground-level ozone from the construction and operation of the ISEGS project.

Secondary particulate formation (assumed to be 100 percent $PM_{2.5}$) is the process of conversion from gaseous reactants to particulate products. The ISEGS project is not a notable source of ammonia emissions, so the small amount of operating NO_X and SO_X emissions that would be generated by this project would have a reduced potential to create secondary particulates.

The applicant proposed measures for operations include emission controls on boilers, purchase of a new engine for the emergency generator that would meet the Tier 2 emission standards, and use of a Tier 2 engine for the fire water pump. But based on the current New Source Performance Standards (NSPS) standards, the fire pump engine would not have emissions higher than the Tier 3 emission standards. The emission controls on boilers would include low NO_X burners, flue gas recirculation, and emission limits for criteria pollutants for all the boilers. ARB low sulfur diesel fuel would be used for the emergency generator engines.

Although the onsite emissions of GHGs was predicted to be approximately 25,000 MT/yr, CEC concluded that the ISEGS project overall would reduce GHG emissions.

> "The operation of the ISEGS Mitigated Ivanpah 3 plant would affect the overall electricity system operation and GHG emissions in several ways:
>
> - ISEGS Mitigated Ivanpah 3 would provide low-GHG, renewable generation.
> - ISEGS Mitigated Ivanpah 3 would facilitate to some degree the replacement of out-of-state high-GHG-emitting (e.g., coal) electricity generation that must be phased out in conformance with the State's new Emissions Performance Standard.
> - ISEGS Mitigated Ivanpah 3 would facilitate to some extent the replacement of generation provided by aging fossil-fired power plants that use once-through cooling.
>
> These system impacts would result in a net reduction in GHG emissions across the electricity system providing energy and capacity to California. Thus, staff concludes that the project would result in a cumulative overall reduction in GHG emissions from power plants, would not worsen current conditions, and would not result in impacts that are cumulatively CEQA significant."

Decommissioning Impacts

During closure and dismantling activities for the ISEGS project, the sources of air emissions would cease to operate and the only emissions would be those associated with exhaust and fugitive emissions generated during the dismantling process. The emissions are expected to be less than those occurring during construction. The CEQA air quality impacts are expected to be less than significant.

With the proposed mitigation measures in place, the project is not expected to have significant NEPA impacts or cause any violations of the CEQA significance criteria.

3.3.5.4 Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to air quality and GHGs if the ISEGS project is approved:

Air Quality Staff Conditions of Certification:

AQSC-1: The project owner shall designate and retain an onsite Air Quality Construction Mitigation Manager (AQCMM) who shall be responsible for directing and documenting compliance with Conditions of Certification AQSC3, AQ-SC4, and AQ-SC5 for the entire project site and linear facility construction.

AQ-SC2: The project owner with the AQCMP shall provide an Air Quality Construction Mitigation Plan for approval, which details the steps to ensure compliance with Conditions of Certification AQ-SC3, AQ-SC4, and AQ-SC5.

AQ-SC3: The AQCMM shall submit documentation that shows compliance with the fugitive measures to the BLM's Authorized Officer and CPM in each Monthly Compliance Report.

AQ-SC4: The AQCMM shall monitor all construction activities for visible dust plumes.

AQ-SC5: The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the mitigation measures for controlling diesel construction-related emissions.

AQ-SC6: The project owner, when obtaining dedicated vehicles for mirror washing activities and other facility maintenance activities, shall only obtain new model year vehicles that meet California on-road vehicle emission standards for the model year when obtained.

AQ-SC7: The project owner shall provide a site operations dust control plan, including all applicable fugitive dust control measures identified in AQ-SC3.

AQ-SC8: The project owner shall provide the CPM copies of all district-issued Authority to Construct (ATC) and Permit to Operate (PTO) for the facility.

AQ-SC9: The emergency generator and fire pump engines procured for this project will meet or exceed the NSPS Subpart IIII emission standards for the model year that corresponds to their date of purchase.

AQ-SC10: The ISEGS 1, ISEGS 2, and ISEGS 3 boilers shall not exceed a total annual natural gas fuel heat input that is more than 5 percent of the total annual heat input from the sun for ISEGS1, ISEGS2, and ISEGS 3, respectively.

3.4 Biological Resources

This section describes the environmental setting, regulatory setting, and potential impacts of the construction and operation of the proposed project and alternatives with respect to biological resources. Information in this section is largely based on the Eldorado–Ivanpah Transmission Project Biological Technical Report (EPG 2009) and the Proponent's Environmental Assessment (PEA) dated May 28, 2009, as prepared by Southern California Edison (SCE, hereafter referred to as the applicant). Details on locations of the EITP facilities, rights-of-way (ROWs), extra workspaces, and staging areas can be found in Chapter 2. Chapter 2 also provides a detailed description of construction, operation, and maintenance techniques used for the proposed project and alternatives to the proposed project. Comments received from the general public and resource agencies during the scoping process are evaluated and addressed as well in Section 3.4.3, "Impact Analysis."

3.4.1 Environmental Setting

The EITP is located within the Eldorado and Ivanpah valleys in southern Clark County, Nevada, and in southeastern California. The project would cross public and privately owned lands (see Section 3.9, "Land Use, Agricultural Resources, and Special Management Areas"). Most of the lands that would be crossed by the transmission line in California are administered by the BLM. Small segments would cross private parcels at Nipton, California, and in the vicinity of the Mountain Pass Substation. Similarly, the EITP in Nevada is predominantly situated on BLM lands, but private lands would be crossed near the Eldorado Substation and possibly at Primm, Nevada.

Environmental analysis for biological resources is confined by the natural geographic boundaries of the region in which the EITP is sited. The region is comprised of alternating valleys and abrupt mountain ranges with gently sloping aprons of sediment debris spread along the slopes. The mountains drain to interior closed basins with playa lakes in the valley bottoms. Specifically, environmental analysis incorporates the drainage footprint of the Eldorado, Ivanpah, Roach, and Jean playa lake beds that are present in the Eldorado, Ivanpah, and Jean valleys (see Figure 3.8-2 in Section 3.8, "Hydrology and Water Quality"). These playas are typically high in evaporated salts, and plant communities are usually composed of salt-tolerant species. The analysis also incorporates the seven mountain ranges that surround the proposed project area. These ranges are typically rugged and characterized by cliffs, ledges, and formations with small pockets and crevices. Historic abandoned mines are located in some of the mountain ranges (EPG 2009). The Clark Mountains bound the far western edge of the proposed project, while the Spring Mountains are to the north of the existing transmission line just above Primm, Nevada. At the eastern edge of the Ivanpah Valley in Nevada, the transmission line passes between Sheep Mountain to the north and the north end of the Lucy Gray Mountains, then passes through the northern McCullough Mountains. The telecommunication line alternatives pass to the west of the Highland Ranges, and, further south, between the McCullough and New York mountains.

The entire EITP is within the Mojave Desert biome. A generally accepted elevation range for the Mojave Desert is from -479 feet in Death Valley, California, to 4,500 feet along the northern edge of the biome, and up to 5,500 feet in the mountains. Elevations within the EITP corridor vary from approximately 1,800 feet at the Eldorado Substation to 5,305 feet at the Mountain Pass Substation. Annual precipitation for the Mojave Desert typically ranges from 2.5 to 7.5 inches, and is predominantly associated with winter rains, which occur from mid-December through early March.

3.4.1.1 Existing Conditions

Survey Methodology and Coverage

Information on biological resources within the EITP was gathered through field surveys and desktop analyses. Field surveys were conducted by the applicant. As the third-party contractor charged with identifying and assessing project impacts, Ecology and Environment, Inc., independently conducted desktop analyses by reviewing current regional literature and accessing agency internet biological databases and resources, such as the California Natural Diversity

Database (CNDDB), the Nevada Natural Heritage Program (NNHP) database, and California Department of Fish and Game (CDFG), Nevada Division of Environmental Protection, National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), and BLM internet resources. Regional review was defined by the natural geographic boundaries in which the proposed project area is present, as described in Section 3.4.1, above.

Field surveys were conducted in 2008 and 2009 for most of the project areas and in buffer zones of varying width around existing and proposed project facilities. New access and spur roads as identified by the applicant will be surveyed during spring 2010. Reconnaissance surveys were performed along the entire existing transmission line route from the Eldorado Substation west to the proposed Ivanpah Substation site (proposed transmission line route), and from the proposed Ivanpah Substation site west to the Mountain Pass Substation. The following were also surveyed:

- Transmission Line Alternative Routes A and B near the Eldorado Substation, and Alternatives C and D and Subalternative E near Primm, Nevada;
- The Nipton 33-kV/Earth 12-kV line from the Mountain Pass Substation south to an existing AT&T microwave site;
- The proposed fiber optic route along the existing Eldorado–Lugo transmission line from the Eldorado Substation south to Nipton; and
- The Nipton 33-kV line between Nipton and the point where the Nipton 33-kV line crosses I-15.

During field surveys, biological resources were assessed within a 250-foot-wide corridor along the transmission lines. The purpose of reconnaissance surveys was to identify vegetation communities and wildlife present, to conduct preliminary searches for sensitive plant and wildlife species in suitable habitats within the project limits (including nests for raptors), and to identify areas that required additional protocol-level surveys for sensitive species. Protocol surveys provide specific location information on sensitive species occurrences within project limits. Focused surveys conducted included USFWS protocol-level presence/absence surveys (including zones of influence) for the Mojave population of desert tortoise and surveys for rare plants and invasive/noxious weed species.

Protocol-level surveys for desert tortoise were conducted in spring 2008 and 2009 along the proposed transmission line route between the Eldorado Substation and the Mountain Pass Substation, all transmission alternative routes, the proposed telecommunications lines and all alternatives, and the proposed microwave tower site near the town of Nipton. Because of the more limited potential impacts associated with placement of the fiber optic communications line along existing transmission and distribution lines (Eldorado–Lugo 500-kV and Nipton 33-kV, respectively), protocol surveys were not performed for the entire telecommunication route but focused on areas of ground disturbance associated with cable pulling and tensioning sites, tower retrofit construction areas, and other construction areas. Tower pads and spur roads associated with the existing Eldorado–Lugo transmission line (route for the proposed fiber optic line, Path 2, Sections 1 and 2) were surveyed. Access roads along the Eldorado–Lugo line were not surveyed. The USFWS service has agreed that data collected for the 100-foot-buffered tower sites and the spur roads on the Eldorado–Lugo transmission route can be used for estimating desert tortoise densities along these access roads (Burroughs 2009). The applicant plans to complete additional desert tortoise surveys in spring 2010. For the proposed transmission line route and alternatives, biologists surveyed a 200-foot ROW, plus five zone-of-influence transects on each side. Results of the 2008 desert tortoise surveys are provided in the Desert Tortoise Survey Report (Karl 2009), an appendix to the Eldorado-Ivanpah Transmission Project Biological Technical Report (EPG 2009). Results of the 2009 desert tortoise surveys are provided in the DRAFT Desert Tortoise Survey Report (Karl 2010), in Appendix B-2 of this document.

A rare plant and invasive/noxious weed survey was conducted by first developing target species lists after consulting lists of federally and state-listed species and similar species lists maintained by the California Native Plant Society (CNPS), the CNDDB, the NNHP, the Nevada Native Plant Society (NNPS), and the California and Nevada offices of the BLM. Field surveys for rare plants were conducted along the proposed route and in most project areas; however, some areas were not covered, including some alternative routes and existing substation facilities. Additionally, the Ivanpah Dry Lake playa and disturbed ground areas and paved roads and parking lots near Primm, Nevada, were not surveyed. Additional surveys for rare plants will be completed by the applicant in spring 2010. An invasive/ noxious weed survey was performed along the proposed project route from the existing Eldorado Substation to the proposed Ivanpah Substation site, extending west along the fiber optic communications route to the Mountain Pass Substation.

Survey results for both reconnaissance and protocol-level surveys are provided in the Eldorado–Ivanpah Transmission Project Biological Technical Report (EPG 2009). Table 3.4-1 outlines the schedule for additional biological surveys to be performed by the applicant. Pre-construction surveys are also outlined in Table 3.4-1, as these surveys will be necessary to verify that the construction area is cleared of sensitive biological resources from 1 to 30 days prior to construction. Though additional biological surveys still need to be completed as outlined in Table 3.4-1, Council on Environmental Quality (CEQ) regulations (Title 40 of the Code of Federal Regulations [CFR], Section [§] 1502.22) allow the analysis within an environmental document to proceed with incomplete data, particularly if the available information is sufficient to determine the potential for impacts. As biological resources can move into project boundaries after initial surveys have been conducted, pre-construction surveys identify the current status of biological resources within project boundaries and allow for appropriate management if any sensitive organisms are found.

Table 3.4-1 Additional Biological Surveys to be Completed

Survey	Survey Area	Survey Schedule	Notes
Bighorn sheep	McCullough Pass, Highland Pass between Highland Range and South McCullough Mountains, Mountain Pass Substation area	December through May, if construction is to occur in bighorn sheep areas during the January through May lambing season	Surveys conducted if bighorn lambing areas cannot be avoided during lambing season (January–May)
Burrowing owl	All project areas with suitable burrowing owl habitat: scrublands, sparse shrublands, and grasslands with low vegetation height. Presence of burrows made by fossorial mammals or manufactured structures such as culverts and drains.	Habitat assessment to be conducted during migratory bird survey and preconstruction surveys	
Desert tortoise	Project areas not previously surveyed, including access and spur roads	May 2010 and preconstruction clearance surveys	Protocol-level surveys with zone of influence have been conducted for the majority of proposed project and alternatives during the 2008 and 2009 spring survey season
Jurisdictional delineation	All project areas	Jan 2010	Project area to be surveyed for washes/other areas that will require water permits
Migratory birds	All project areas	February/March 2010 and preconstruction surveys (February–August)	
Raptors and raptor nests	McCullough Pass, Eldorado–Lugo 500-kV line between Highland Range and South McCullough Mountains, Mountain Pass Substation area.	December 2009, March 2010, and preconstruction surveys	Surveys for these areas to include the surrounding cliffs; surveys conducted during the spring, preferably March
Rare plants	All project areas	Winter/spring 2009–2010; timing depends on growing conditions	The majority of project areas were surveyed during the 2008 and 2009 rare plant surveys
Wildlife	All project areas	Preconstruction surveys, all year	

Plant Communities

Habitat types within the proposed project area are typical of those found in the Mojave Desert (Figure 3.4-1). Vegetation at lower elevations over most of the EITP is characteristic of the creosote bush-white bursage (*Larrea tridentata-Ambrosia dumosa*) series (Sawyer and Keeler-Wolf 1995). Other specific vegetation types include saltbush (*Atriplex* spp.) scrub, Mojave yucca (*Yucca schidigera*) desert scrub, Joshua tree (*Yucca brevifolia*) woodland, black bush (*Coleogyne ramosissima*) scrub, desert wash, and pinion pine-juniper (*Pinus monophyla-Juniperus californica*) woodland. In addition, areas relatively devoid of native vegetation include the dry lake beds, developed areas, paved roads, highways, and access roads and other disturbed areas associated with construction and ongoing mining operations.

Saltbush Scrub

Saltbush scrub typically has low plant species diversity, and within the proposed project area is dominated by saltbush species, white bursage, and big galleta (*Pleuraphis rigida*) located in alkaline soils around the perimeter of the dry lake beds. Vegetation is an intermittent to open canopy, generally less than 2 feet in height.

Creosote Bush Scrub/Creosote Bush-White Bursage Scrub

The creosote bush-white bursage series is dominated by creosote bush and augmented by a variety of other shrubs, including four-wing saltbush (*Atriplex canescens*), all-scale (*A. polycarpa*), desert senna (*Senna armata*), cheesebush (*Hymenoclea salsola*), sweetbush (*Bebbia juncea*), and other less common shrubs. Numerous annual plants and forbs are present to varying degrees, including pincushion flower (*Chaenactis fremontii*), bristly fiddleneck (*Amsinckia tessellate*), desert globemallow (*Sphaeralcea ambigua*), cryptantha (*Cryptantha* sp.), combseed (*Pectocarya* sp.), and Mediterranean grass (*Schismus barbatus*). Cacti are not common at lower elevation; however, they are more common at higher elevations and on steeper slopes. Cacti species present include Wiggins' cholla (*Cylindropuntia echinocarpa*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), California barrel cactus (*Ferocactus cylindraceus*), diamond cholla (*Cylindropuntia ramosissima*), and beavertail pricklypear (*Opuntia basilaris*).

Mojave Yucca Desert Scrub

Mojave yucca is the dominant over-story plant in this community, which is a common transitional community between creosote bush-white bursage scrub and Joshua tree woodland communities. This plant community has a greater abundance of plant species than creosote bush communities, including more species of cacti. Cactus species include California barrel cactus, cottontop cactus (*Echinocereus polycephalus*), Wiggins' and diamond chollas, Engelmann's hedgehog cactus, and beavertail pricklypear. Shrub species include Virgin River brittlebush (*Encelia virginensis*), as well as white bursage at the lower elevation limits of the plant community and black bush at the upper limits.

Joshua Tree Woodland

Joshua tree woodland occurs at middle elevations in the proposed project area. Joshua tree woodland is dominated by Joshua trees as the overstory plant with Mojave yucca, ephedras (*Ephedra* sp.), cheesebush, California buckwheat (*Eriogonum fasciculatum*), and wolfberry (*Lycium andersonii*) present as common shrub species.

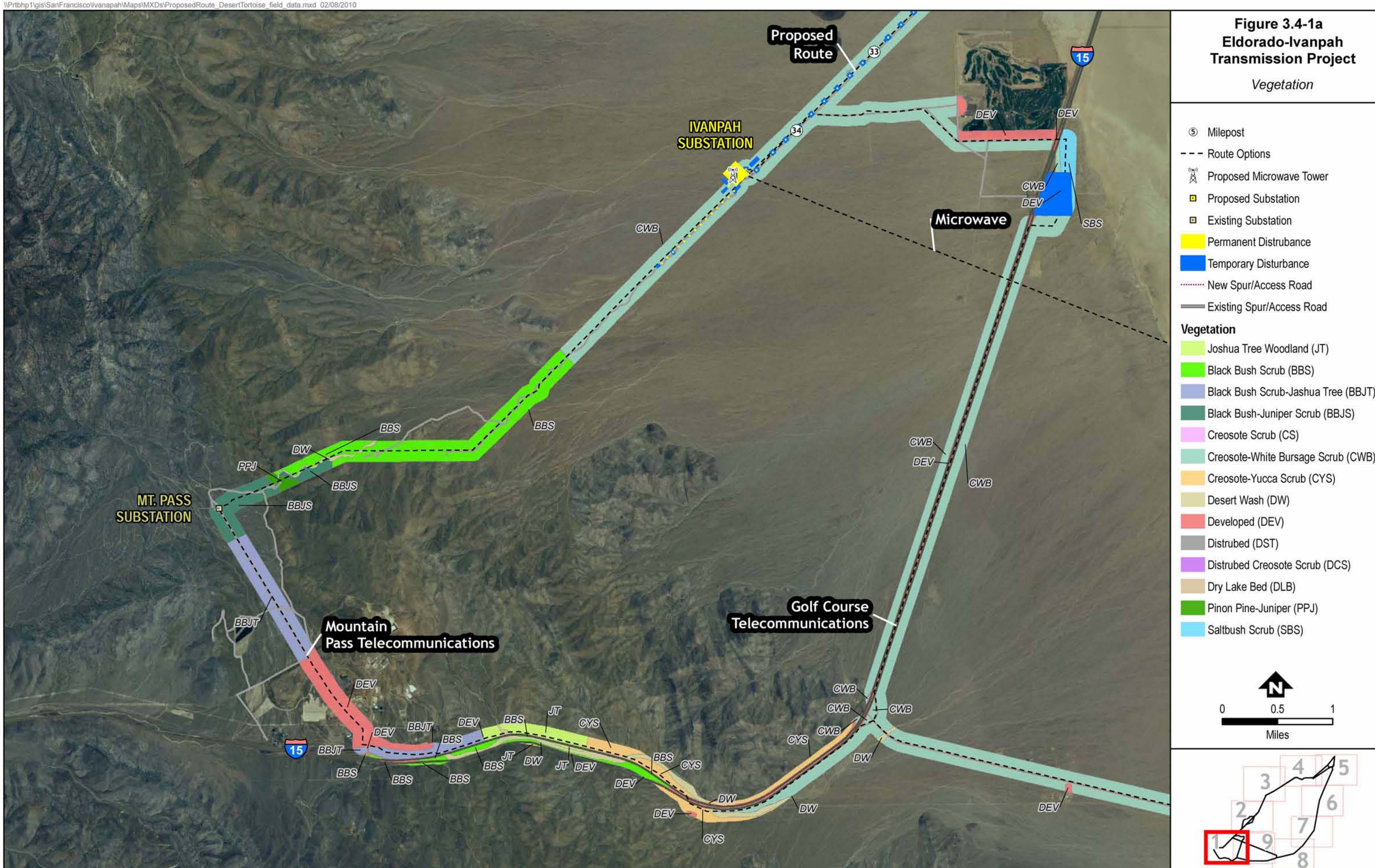
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Figure 3.4-1a
Eldorado-Ivanpah Transmission Project
Vegetation
Milepost
Route Options
Proposed Microwave Tower
Proposed Substation
Existing Substation
Permanent Distrubance
Temporary Disturbance
New Spur/Access Road
Existing Spur/Access Road
Vegetation
Joshua Tree Woodland (JT)
Black Bush Scrub (BBS)
Black Bush Scrub-Jashua Tree (BBJT)
Black Bush-Juniper Scrub (BBJS)
Creosote Scrub (CS)
Creosote-White Bursage Scrub (CWB)
Creosote-Yucca Scrub (CYS)
Desert Wash (DW)
Developed (DEV)
Distrubed (DST)
Distrubed Creosote Scrub (DCS)
Dry Lake Bed (DLB)
Pinon Pine-Juniper (PPJ)
Saltbush Scrub (SBS)
0 0.5 1
Miles
Proposed Route
IVANPAH SUBSTATION
Microwave
MT. PASS SUBSTATION
Mountain Pass Telecommunications
Golf Course Telecommunications
15
33
34

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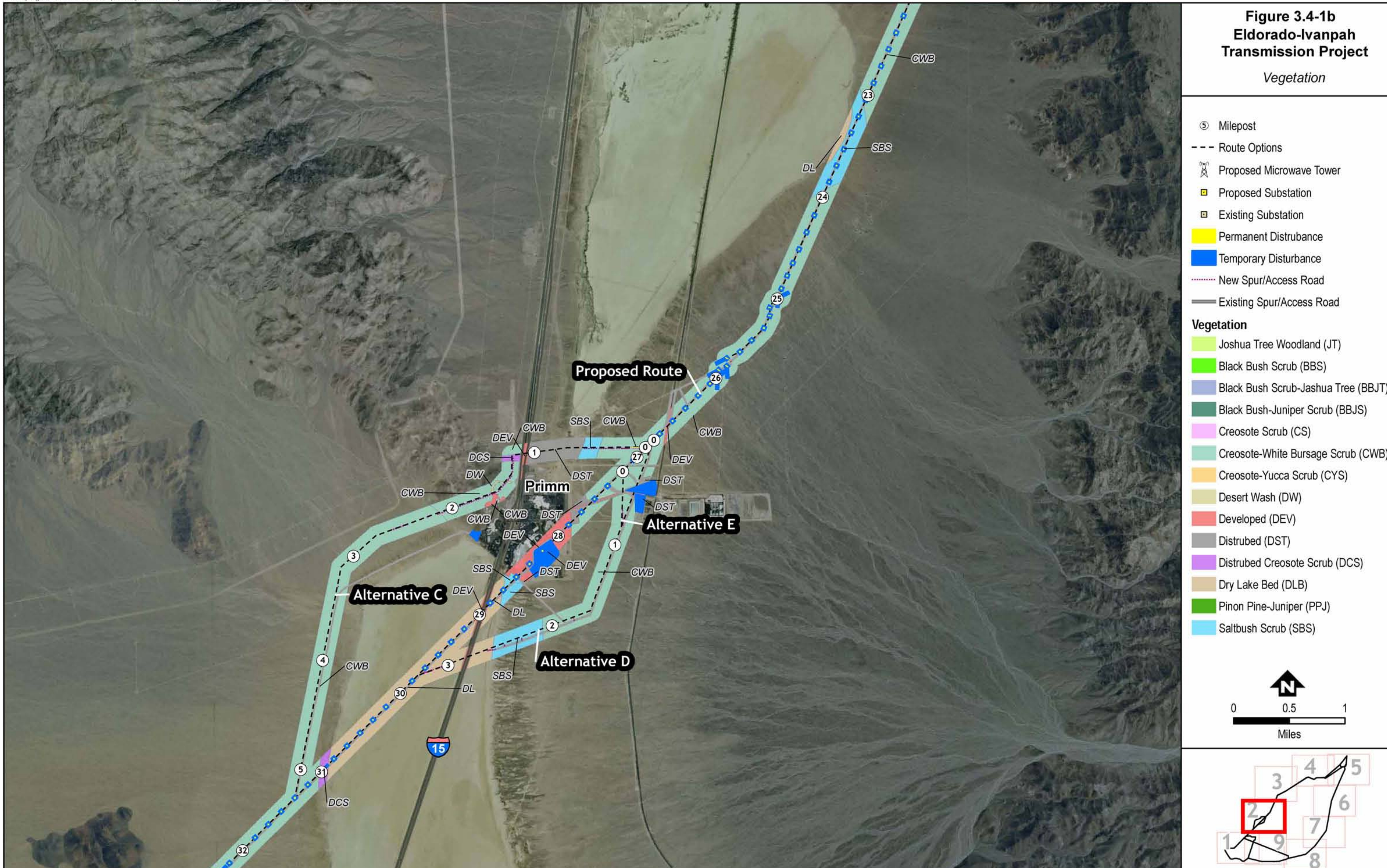
Figure 3.4-1b
Eldorado-Ivanpah Transmission Project
Vegetation



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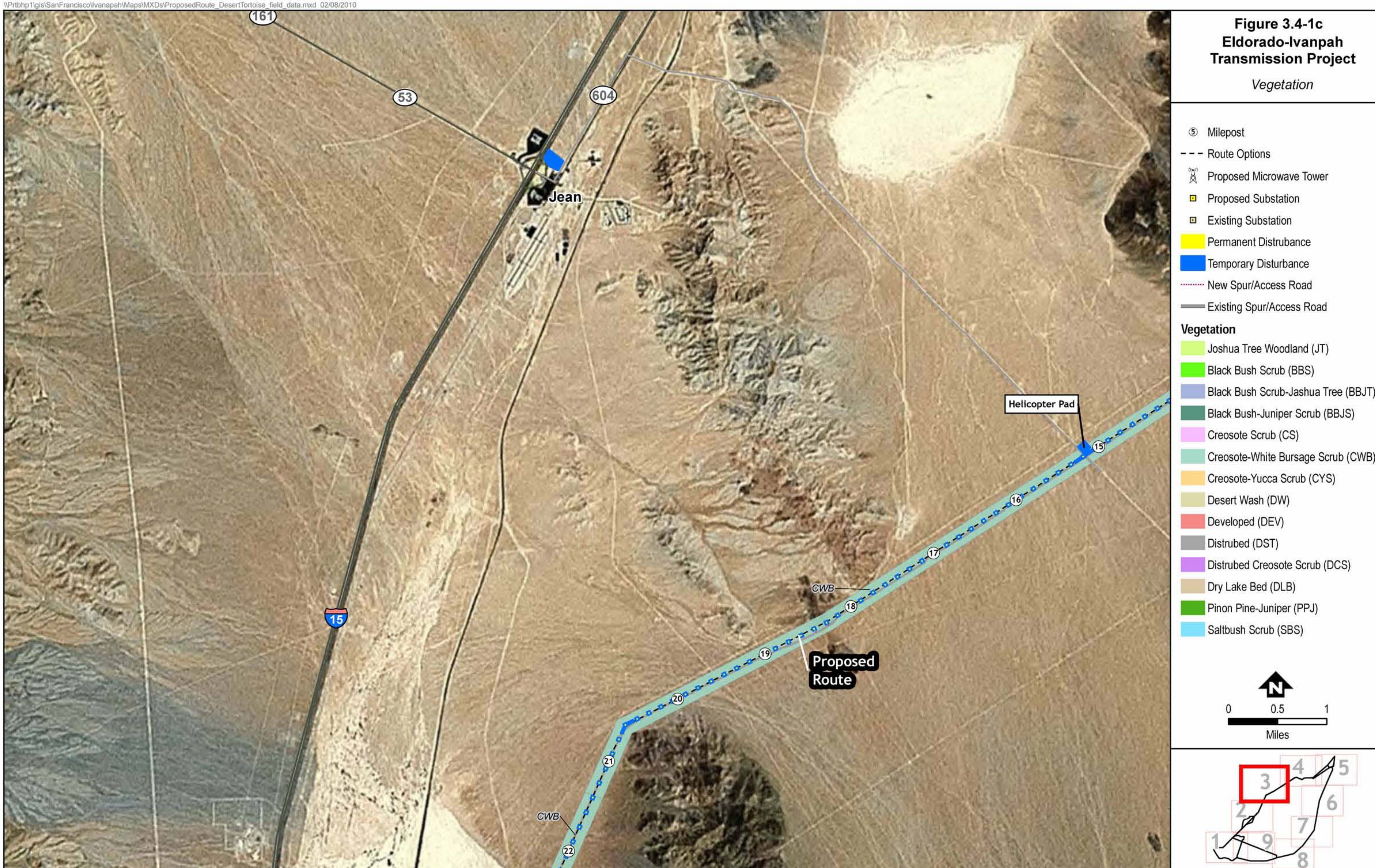

Figure 3.4-1c
Eldorado-Ivanpah Transmission Project
Vegetation
Milepost
Route Options
Proposed Microwave Tower
Proposed Substation
Existing Substation
Permanent Distrubance
Temporary Disturbance
New Spur/Access Road
Existing Spur/Access Road
Vegetation
Joshua Tree Woodland (JT)
Black Bush Scrub (BBS)
Black Bush Scrub-Jashua Tree (BBJT)
Black Bush-Juniper Scrub (BBJS)
Creosote Scrub (CS)
Creosote-White Bursage Scrub (CWB)
Creosote-Yucca Scrub (CYS)
Desert Wash (DW)
Developed (DEV)
Distrubed (DST)
Distrubed Creosote Scrub (DCS)
Dry Lake Bed (DLB)
Pinon Pine-Juniper (PPJ)
Saltbush Scrub (SBS)
N
0 0.5 1
Miles
Jean
Helicopter Pad
Proposed Route
CWB
CWB
161
53
604
15
15
16
17
18
19
20
21
22

\\Prtbhp1\gis\SanFrancisco\Ivanpah\Maps\MXDs\ProposedRoute_DesertTortoise_field_data.mxd 02/08/2010

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Figure 3.4-1e
Eldorado-Ivanpah Transmission Project
Vegetation

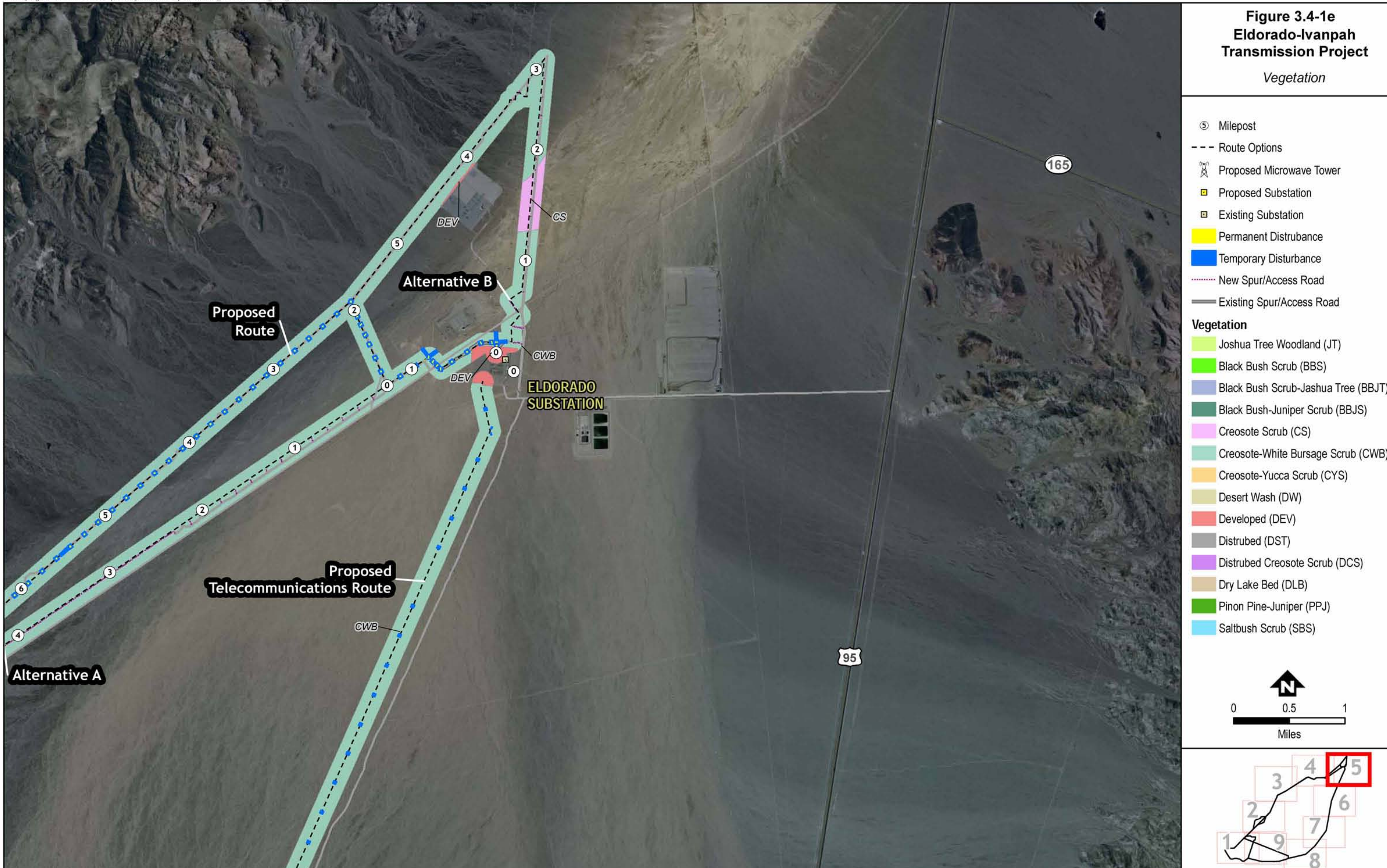

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Figure 3.4-1f
Eldorado-Ivanpah Transmission Project
Vegetation

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Figure 3.4-1g
Eldorado-Ivanpah Transmission Project
Vegetation

Milepost
Route Options
Proposed Microwave Tower
Proposed Substation
Existing Substation
Permanent Distrubance
Temporary Disturbance
New Spur/Access Road
Existing Spur/Access Road

Vegetation
Joshua Tree Woodland (JT)
Black Bush Scrub (BBS)
Black Bush Scrub-Jashua Tree (BBJT)
Black Bush-Juniper Scrub (BBJS)
Creosote Scrub (CS)
Creosote-White Bursage Scrub (CWB)
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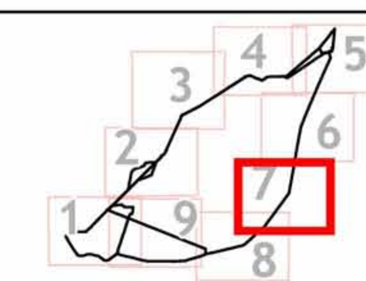
Desert Wash (DW)
Developed (DEV)
Distrubed (DST)
Distrubed Creosote Scrub (DCS)
Dry Lake Bed (DLB)
Pinon Pine-Juniper (PPJ)
Saltbush Scrub (SBS)

N
0 0.5 1
Miles



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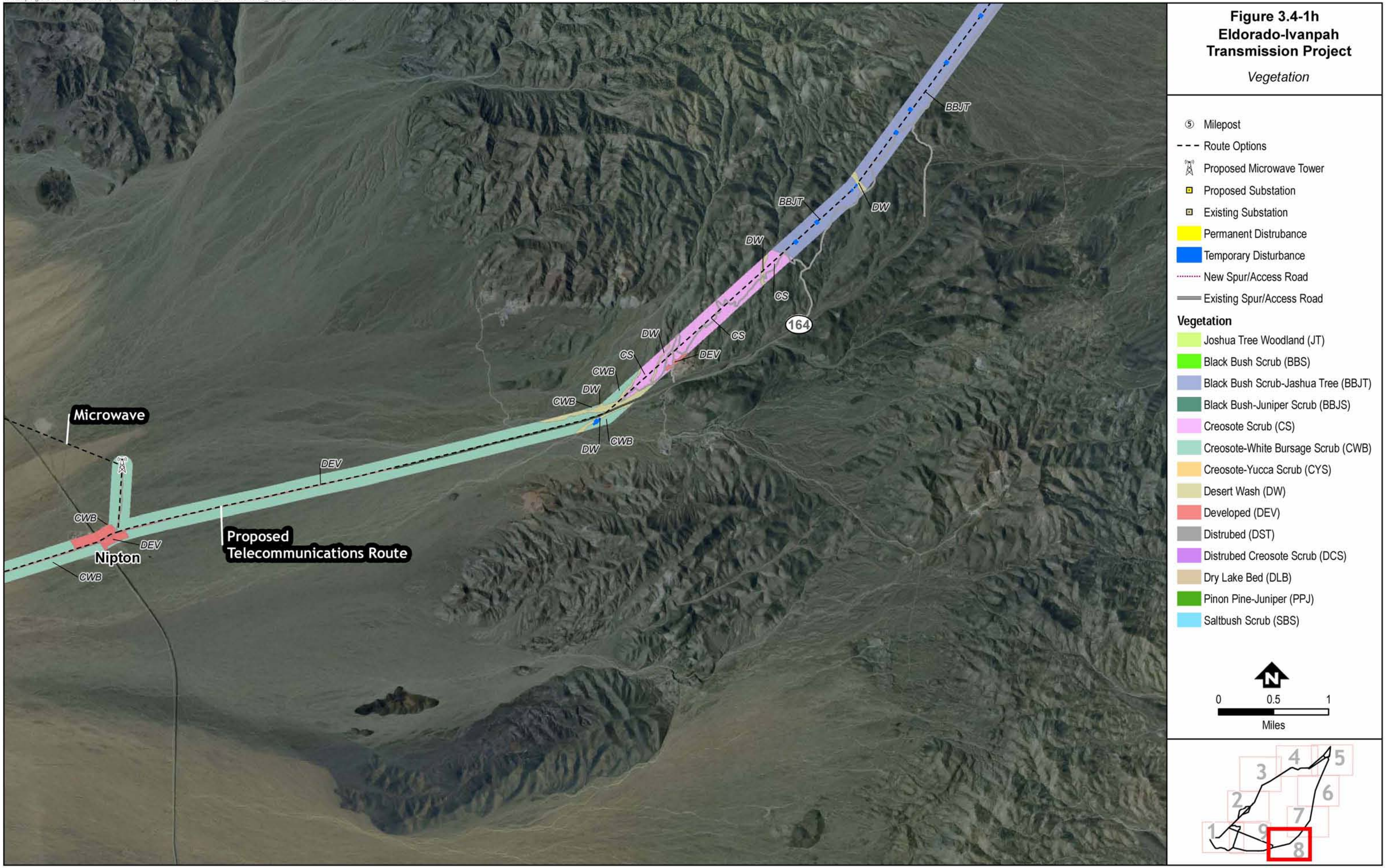

Figure 3.4-1h
Eldorado-Ivanpah Transmission Project
Vegetation

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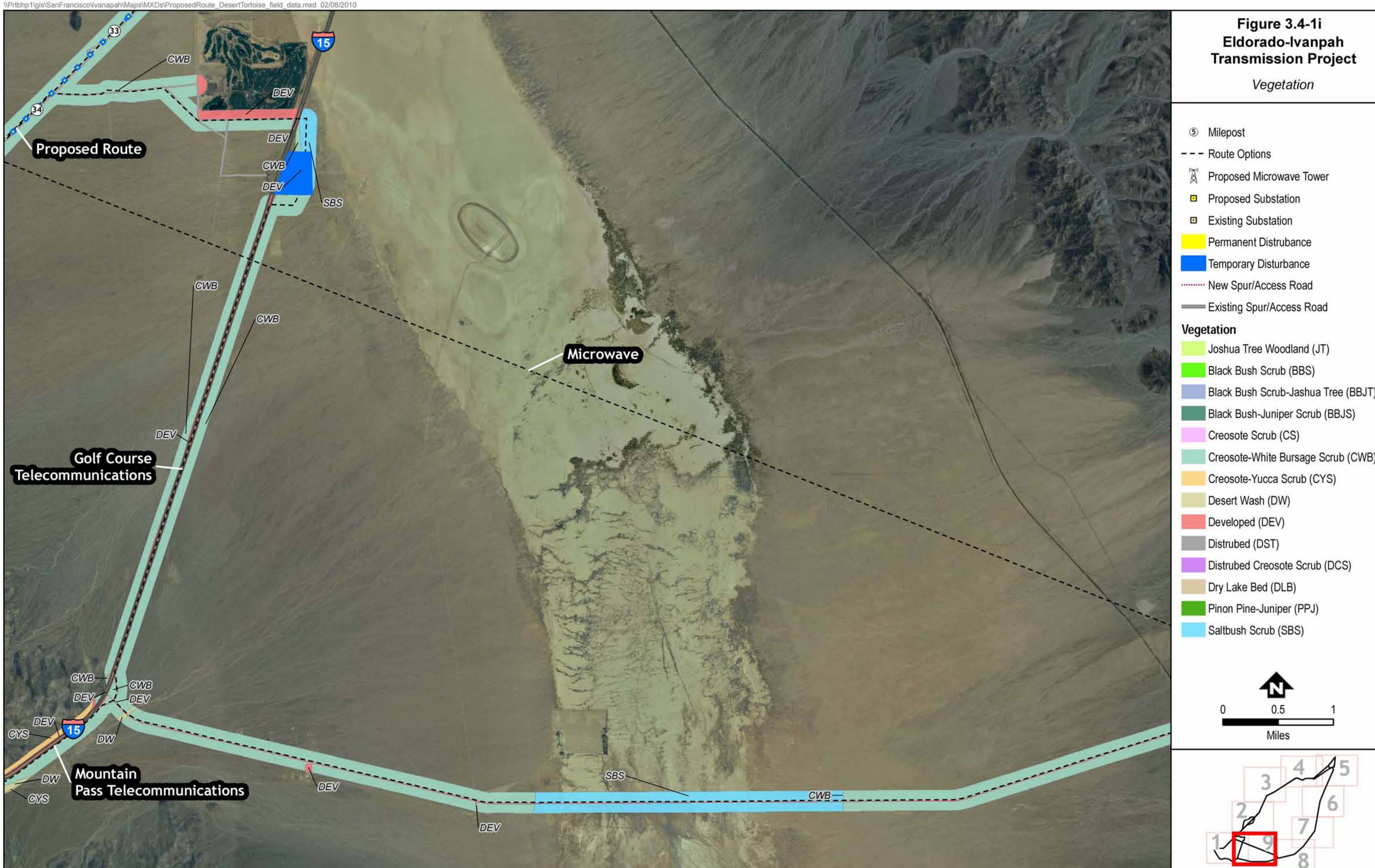

Figure 3.4-1i
Eldorado-Ivanpah Transmission Project
Vegetation

Creosote bush and black bush typically occur at ecotonal boundaries with lower and higher elevation adjacent plant communities, respectively.

Black Bush Scrub

The black bush scrub plant community, typical of mid-elevation desert mountains, is dominated by black bush and features emergent (i.e., growth above the level of the standing canopy) Utah juniper (*Juniperus osteosperma*), single leaf pinion (*Pinus monophylla*), and numerous shrub species including ephedra, annuals, and perennial plants, including turpentine broom (*Thamnosma montana*), goldenbush (*Ericameria* sp.), Mexican bladder sage (*Salazaria mexicana*), desert lupine (*Lupinus shockleyi*), freckled milkvetch (*Astragalus lentiginosus*), and desert paintbrush (*Castilleja angustifolia*). Black bush scrub intergrades with creosote bush scrub at lower elevations and Joshua tree woodland at higher elevations.

Desert Wash Habitat (Catclaw Acacia Series)

Vegetation present within the numerous desert washes in the proposed project area includes widely scattered catclaw acacia (*Acacia greggii*) and, more commonly, ephedra, cheesebush, and sweetbush. Mesquite mistletoe (*Phoradendron californicum*) occurs in some of the catclaw acacia in wash areas. Vegetation along canyon bottoms and washes in the McCullough Mountains is shrub-dominated, with no emergent tree species. Shrubs present include catclaw acacia, wolfberry, California trixis (*Trixis californica*), Virgin River brittlebush, and California buckwheat.

Pinion Pine-Juniper Woodland

Pinion pine and juniper woodlands consist of scattered trees between 10 and 50 feet tall, and generally occur at elevations above Joshua tree woodland and in environments more mesic than those that support Joshua tree woodland. For the proposed project, this vegetation type occurs at the higher elevations in the Clark Mountains. In Mojave Desert regions of California and Nevada within the EITP, the dominant species are single-leaf pinion and California juniper. Other species found in association with these dominants include Joshua tree, various desert scrub oaks (*Quercus turbinell or Q. john-tuckeri*), blackbrush, Mormon-tea (*Ephedra viridis)*, burrobush (*Hymenoclea salsola*), wolfberry, and snakeweed (*Gutierrezia sp.).*

Summary of Plant Communities by Proposed Project Area

A complete list of plants observed within the EITP area is found in the Eldorado-Ivanpah Transmission Project Biological Technical Report (EPG 2009).

The proposed and alternative transmission line routes would be located primarily within creosote bush-white bursage vegetation, with the exception of the McCullough Mountains north pass, which includes desert wash vegetation, and the areas immediately adjacent to Ivanpah Dry Lake, which are dominated by saltbush scrub. Vegetation varies depending on elevation and disturbance factors.

This description begins at the northern end (milepost [MP] 0) of the proposed transmission line ROW and moves south toward the Ivanpah Substation (MP 35) and the existing Mountain Pass Substation. The Eldorado Substation is at an elevation of approximately 1,800 feet in the flat Eldorado Valley. Vegetation in the vicinity of the Eldorado Substation is dominated by the creosote bush-white bursage series, and occurs on flat, sandy soils with numerous small washes. From the Eldorado Substation to the McCullough Mountains, the creosote bush-white bursage vegetation is augmented by a variety of shrubs and annual forbs. Cacti are not common here, but a few species of cacti are present.

The desert wash vegetation in the McCullough Mountains is shrub-dominated, supporting widely scattered catclaw acacia and ephedra. The canyon bottoms and washes of the McCullough Mountains in the transmission route area are treeless. The mountain slopes do support a wider diversity of cacti, subshrubs, and forbs than does the Eldorado Valley. Soils along this portion of the transmission route are generally sandy, with some rock- and cobble-dominated areas. The McCullough Mountains range from 2,300 feet elevation on the lower slopes to 3,370 feet at the top. These mountains are rugged, with deeply incised canyons and frequent cliff faces. West of the McCullough Mountains, the transmission line descends from approximately 3,200 feet into the Jean Valley and the eastern Ivanpah Valley, which has an elevation of approximately 2,600 feet. Here the transmission line ROW is located on broad, sandy alluvial fans where the creosote bush-white bursage community is augmented by all-scale and big galleta. Yuccas, chollas, and cacti are also present here. The line then passes Roach Lake and continues to Primm, Nevada, where it traverses the Ivanpah Dry Lake playa and heads into the Clark Mountains. Both Roach and Ivanpah lakes are devoid of vegetation, and the areas immediately bordering the lakes are saltbush scrub.

West of the Ivanpah playa, the vegetation again becomes dominated by the creosote bush-white bursage series, which gives way to a distinctive black bush series as the line ascends into the Clark Mountains toward Mountain Pass Substation. The area around the Mountain Pass Substation, with an elevation of approximately 5,320 feet, is in black bush series habitat, with Utah juniper an important element of the plant community. In the Mountain Pass area, species of yucca (*Y. baccata*, *Y. brevifolia*, and *Y. schidigera*) are common but not abundant, and several species of cacti, including prickly pear species (*Opuntia* spp.), chollas, and others, are present. In addition, the approach to the Mountain Pass Substation from the east supports scattered single-leaf pinion pine.

The Eldorado–Lugo Telecommunication Line would traverse habitats dominated by creosote bush scrub, Mojave desert scrub, Joshua tree woodland, and black bush scrub, and would cross areas with desert wash habitat. Again, this description moves north from the Eldorado Substation south to Nipton and I-15. South of the Eldorado Substation, elevation gradually increases in the South McCullough Mountains, and vegetation density and diversity increase from the pure creosote bush-white bursage scrub to include more shrubby vegetation. Cacti species are few, desert washes are present with catclaw acacia, and at higher elevations around 3,200 feet, Joshua trees begin to become prominent. Black bush appears around 4,500 feet. Once the line descends to the Ivanpah Valley, the vegetation transitions back to Mojave desert scrub habitat. The Nipton 33-kV telecommunication route and alternatives between Nipton, California, and I-15 are located within creosote bush scrub and cross saltbush scrub on the southern end of the Ivanpah Dry Lake bed. Table 3.4-2 lists vegetation types within the proposed project area and provides estimates of temporary and permanent disturbance from the project to vegetation.

Noxious and Invasive Weeds

Noxious weeds are species of non-native plants included on the weed lists of the U.S. Department of Agriculture (USDA; USDA 2009a) or the California Invasive Plant Council (CIPC; CIPC 2006) and those weeds of special concern identified by the BLM. Noxious weeds are a concern due to their potential to cause permanent damage to natural plant communities directly via competition or indirectly through alteration of the natural fire regime. No high concentrations of noxious weeds were observed anywhere along the project ROW.

Noxious weeds encountered during the surveys included nine species within the California segment of the project and eight within the Nevada segment (Table 3.4-3).[1] Compact brome (*Bromus madritensis* var. *rubens*), redstem stork's bill (*Erodium cicutarium*), African mustard (*Malcolmia africana*), prickly Russian thistle (*Salsola tragus*), common Mediterranean grass, and saltcedar (*Tamarix ramosissima*) were common to both California and Nevada segments. Wild oat (*Avena fatua*), cheatgrass (*Bromus tectorum*), and Chilean chess (*B. trinii*) were found only on the California segment of the project, and Bermudagrass (*Cynodon dactylon*) and London rocket (*Sisymbrium irio*) were unique to the Nevada segment. Asian mustard (*Brassica tournefortii*) was reported to be present on the adjacent proposed ISEGS plant site (CEC and BLM 2009) and, while not directly observed during the survey, is likely to be present within the proposed project area. Several plants listed below (*Erodium* spp., *Bromus* spp., and *Schismus* spp.) are widespread throughout the region and are difficult to control, while others, such as mustard, thistle, and *Tamarix* spp., can be successfully controlled and will continue to spread if not.

[1] NOTE: Data gap. BLM has indicated that the applicant should identify hot spot locations within the project area where these species are located in order to properly implement invasive management.

Table 3.4-2 Acreage of Project-Related Disturbance for Vegetation Communities within the EITP

Vegetation Type	Acreage in EITP Area	Approximate Temporary Disturbance[1] (% of Total Acreage)	Approximate Permanent Disturbance[2] (% of Total Acreage)
Black bush scrub	1.36	1.36 (0.4)	0 (0.00)
Black bush scrub-Joshua tree woodland	8.43	8.43 (2.2)	0 (0.00)
Creosote scrub	29.57	22.80 (5.9)	6.77 (11.5)
Disturbed creosote scrub	1.23	1.10 (0.30)	0.13 (0.2)
Creosote-white bursage scrub	242.58	199.28 (51.8)	43.30 (73.7)
Desert wash	5.09	3.90 (1.0)	1.19 (2.0)
Saltbush scrub	13.54	12.79 (3.3)	0.75 (1.3)
Developed (urban/impervious)	53.13	52.39 (13.6)	0.74 (1.3)
Disturbed (bare ground)	5.31	5.26 (1.4)	0.05 (0.1)
Dry lake bed	12.13	10.19 (2.70)	1.94 (3.3)
Pinion pine-juniper woodland	DNP	NA	NA
UNKNOWN (Areas of temporary/permanent impacts outside applicant-provided data layer)	70.91	67.03 (17.4)	3.88 (6.6)

Notes:
[1] Temporary impacts from: Laydown areas, OPGW areas, Tower construction areas, Helicopter pads, Pulling sites for the 115-kV line, Tensioning sites, Splicing areas
[2] Permanent impacts from: Tower clearance areas, New spur roads, Ivanpah Substation

Key:
DNP = Data not provided by applicant
kV = kilovolt
NA = not applicable
OPGW = optical ground wire

Table 3.4-3 Noxious and Invasive Weed Species Documented in the EITP

Common Name	Scientific Name	California Invasive Plant Inventory Invasiveness Rating	Control	Project Segment
Wild oat	*Avena fatua*	Moderate	Control	CA
Asian mustard	*Brassica tournefortii*	High	Eradicate	CA & NV
Compact brome	*Bromus madritensis* var. *rubens*	High	Not feasible	CA & NV
Cheatgrass	*Bromus tectorum*	High	Not feasible	CA
Chilean chess	*Bromus trinii*	Not rated*	Not rated*	CA
Bermudagrass	*Cynodon dactylon*	Moderate	Control	NV
Redstem stork's bill	*Erodium cicutarium*	Limited	Not feasible	CA & NV
African mustard	*Malcolmia africana*	Not rated*	Not rated*	CA & NV
Russian thistle	*Salsola tragus*	Limited	Eradicate	CA & NV
Mediterranean grass	*Schismus barbatus*	Limited	Not feasible	CA & NV
London rocket	*Sysimbrium irio*	Moderate	Control	NV
Saltcedar	*Tamarix ramosissima*	High	Eradicate	CA & NV

Notes:
*USDA listing as invasive, not rated.
California Invasive Plant Inventory Invasiveness Rating:
High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
Moderate – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment generally depends on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
Limited – These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Drainages/Riparian Areas[2]

Ivanpah and Roach lakes are crossed by the proposed project and/or the alternatives, and Jean and Eldorado lakes lie adjacent to the project. Numerous washes and drainages are crossed by the project facilities. In the Eldorado Substation area, the desert washes are generally small and support shrub-dominated vegetation. The existing access road for the northern McCullough Pass area follows an alluvial fan and desert wash up through the canyon. West of the McCullough Mountains where the transmission line descends into the Jean Valley and the eastern Ivanpah Valley, the transmission line ROW crosses numerous small to relatively large dry washes that flow out of the McCullough Mountains. West of Ivanpah Dry Lake, the existing ROW crosses both small and broad washes as the transmission line heads up to Mountain Pass. Numerous washes are also present along the telecommunication route that runs from Eldorado Substation down to Nipton and into the Ivanpah Valley south of Ivanpah Dry Lake. The proposed telecommunications line just north of Nipton lies within the vicinity of Big Tiger Wash, a larger drainage between the southern McCullough and the New York mountains.

The specific condition of these desert drainages has not been determined; a jurisdictional delineation will be conducted in early spring 2010 by the applicant. The delineation will document drainage characteristics (including riparian vegetation presence) and determine jurisdictional extents based on the U.S. Army Corps of Engineers (USACE) and the CDFG codes and regulations. It will also determine whether any wetlands exist within the proposed project area.

Wildlife Communities

The mammalian fauna is dominated by small, mostly nocturnal species of rodents and bats. Diurnal mammals are also common and include hares, rabbits, ground squirrels (*Spermophilus tereticaudus*), and ungulates. The following were observed on the project site: black-tailed jack rabbit (*Lepus californicus*), desert wood rat (*Neotoma lepida*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), gray fox (*Urocyon cinereoargenteus*), wild burro (*Equus asinus*), and desert bighorn sheep (*Ovis canadensis nelsoni*). Additionally, 22 other mammal species have the potential to occur within the proposed project area (refer to the Eldorado–Ivanpah Transmission Project Biological Technical Report [EPG 2009]).

Very few amphibian species occur within the proposed project area: two in California and four in Nevada. In contrast, the reptilian fauna is very diverse for the project in both California and Nevada. There are 15 lizard species, 18 snake species, and one tortoise species that occur within the EITP in California. The EITP in Nevada provides habitat for 17 lizard species, 18 snake species, and one tortoise species.

The proposed project area potentially hosts a wide variety of avian fauna, including songbirds, raptors, woodpeckers, owls, ground fowl, flycatchers, doves, cuckoos, shrikes, crows, and ravens. Approximately 46 bird species may occur in the proposed project area. Many of these birds would only winter in the area (e.g., Northern flicker [*Colaptes auratus*], sage thrasher [*Oreoscoptes montanus*], and white-crowned sparrow [*Zonotrichia luecophyrs*]), while others, such as the red-tailed hawk (*Buteo jamaicensis*), chukar (*Alectoris chukar*), and greater roadrunner (*Goecoccyx californianus*) are year-round residents. Additionally, numerous species may use vegetation or soil burrows to breed within the proposed project area. A full list of species with the potential to occur is found in the Eldorado–Ivanpah Transmission Project Biological Technical Report (EPG 2009).

Special-Status Species

Some species of plants and animals are accorded special status by state and federal agencies largely because they are either scarce on a regional level, facing clearly defined threats, or in a position within the regional landscape to potentially become scarce. Special-status species at the federal level include those listed as threatened, endangered, or proposed, or those that are candidates for listing under the Endangered Species Act (ESA). BLM-designated

[2] NOTE: Lack of delineation is a significant data gap. This document is incomplete without this information from SCE as impact analysis cannot be conducted.

sensitive species are designated by the BLM State Director's Office. Still other species are tracked by state heritage programs and assigned different levels of concern based on rarity and perceived level of threat.

In California, plant and animal species are tracked and monitored by the CDFG via the CNDDB. The State of California through the Fish and Game Code may also formally designate plants and animals as state-listed threatened or endangered. The CDFG also maintains a list of fully protected species that may not be taken or possessed at any time and for which permits are required for scientific collection and/or relocation (for the protection of livestock).

In Nevada, at-risk species are tracked through the NNHP within the Department of Conservation and Natural Resources. The NNHP also assigns rank indicators to plant and animal species based on rarity and perceived level of threat. The State of Nevada can also fully protect wildlife species through the stipulations of Nevada Revised Statute 501. The State of Nevada also protects "critically endangered" plant species as well as cacti and yuccas under Nevada Revised Statute 527.

Plant and animal species that both are special status and are among those having greatest probability of occurrence within the proposed project area in California and Nevada are identified in Tables 3.4-4 and 3.4-5. Some species are included only in the California table or only in the Nevada table based solely on their state-protected status, even though most of these species are likely to occur in both states. The California list was derived from an online search of the CNDDB, coupled with lists of species of concern to the BLM and additional review of published literature. Similarly, the Nevada list was derived from an online review of the listing of special-status species maintained by the NNHP as well as lists of species of concern to the BLM and species covered by the Multiple Species Habitat Conservation Plan (MSHCP) of Clark County, Nevada. The narrative following the tables addresses only those species of special concern identified as occurring or likely to occur within the proposed project area.

The following wildlife and plant species were identified on USFWS, CDFG, and BLM lists as potentially occurring within California in the vicinity of the project, but are highly unlikely to occur on site due to a lack of suitable habitat, appropriate soils, and/or suitable elevation and thus are excluded from Table 3.4-4. The wildlife species excluded are hoary bat (*Lasiurus cinereus*), ringtail (*Bassaricus astutus*), gray vireo (*Vireo vicinior*), Bendire's thrasher (*Toxostoma bendirei*), Virginia's warbler (*Vermivora virginiae*), hepatic tanager (*Piranga flava*), summer tanager (*Piranga rubra*), grey-headed junco (*Junco hyemalis*), and Kokoweef Crystal Cave harvestman (*Texella kokoweef*). The plant species excluded are desert ageratina (*Ageratina herbacea*), Cima milkvetch (*Astragalus cimea* var. *cimae*), Howe's hedgehog cactus (*Echinocereus engelmannii* var. *howei*), limestone daisy (*Erigeron uncialis* var. *uncialis*), Clark Mountain spurge (*Euphorbia exstipulata* var. *exstipulata*), hairy erioneuron (*Erioneuron pilosum*), Wright's bedstraw (*Galium wrightii*), pungent glossopetalon (*Glossopetalon pungens*), Jaeger's ivesia (*Ivesia jaegeri*), knotted rush (*juncus nodosus*), false buffalo grass (*Munroa squarrosa*), beavertail pricklypear (*Opuntia basilaris* var. *brachyclada*), Thompson's beardtongue (*Penstemon thompsoniae*), Jaeger's phacelia (*Phacelia perityloides* var. *jaegeri*), small-flowered rice grass (*Piptatherum micranthum*), New Mexico locust (*Robinia neomexicana*), many-flowered schkuhria (*Schkuhria multiflora* var. *multiflora*), and Johnson's beehive cactus (*Sclerocactus johnsonii*).

The following wildlife and plant species were identified on USFWS, Nevada Department of Wildlife (NDOW), BLM, and Clark County MSHCP lists as potentially occurring within the project area in Nevada but are very unlikely to occur on site due to a lack of suitable habitat, appropriate soils, and/or suitable elevation and thus are excluded from discussion. The wildlife species excluded are small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), little brown bat (*Myotis lucifugus*), fringed myotis (*Myotis thysanodes*), cave myotis (*Myotis velifer*), long-legged myotis (*Myotis volans*), spotted bat (*Euderma maculatum*), Nevada admiral (*Limenitis weidemeyerii nevadae*), Carole's silver-spot butterfly (*Speyeria zerene carolae*), and Spring Mountains comma skipper (*Hesperia*

Table 3.4-4 Special-Status Species of Wildlife and Plants with Potential to Occur in the California Segment of the Proposed Project Area

Common Name	Scientific Name	Habitat	Status	Potential
Plants				
Mormon needle grass	*Achnatherum aridum*	Outcrops in shrub-steppe, pinion–juniper, and Joshua tree habitats between 3,940 and 5,100 feet in elevation	S2.2	L
Small-flowered androstephium	*Androstephium breviflorum*	Creosote bush scrublands on sandy to gravelly soils, stabilized dunes to alluvial fans between 720 and 5,260 feet in elevation	S1.3	O
White bearpoppy	*Arctomecon merriamii*	Creosote bush scrub, limestone outcrops and dry lake beds at elevations between 2,000 and 6,280 feet	S2.2	L
Mojave milkweed	*Asclepias nyctaginifolia*	Arroyos and dry slopes in Mojave Desert scrub between 1,500 and 5,580 feet in elevation	S2	O
Borrego milkvetch	*Astragalus lentiginosus* var. *borreganus*	Sandy flats and semi-stabilized dunes in creosote bush scrub	S3.3, S1	O
Spring Mountain milkvetch	*Astragalus remotus*	Gravelly limestone or sandstone soils or washes in creosote bush scrub between 3,600 and 5,500 feet in elevation	S2	L
Scaly cloak fern	*Astrolepis cochisensis cochisensis*	Pinion-juniper and Joshua tree habitats between 2,950 and 5,900 feet in elevation	S2.3	L
Black grama	*Bouteloua eriopoda*	Dry, open, sandy to rocky slopes, flats, washes, scrub, and woodland between 2,950 and 6,230 feet in elevation	S3.2	O
Gilman's cymopterus	*Cymopterus gilmanii*	Limestone- or gypsum-derived soils between 3,280 and 6,560 feet in elevation	S2.2	L
Utah vine milkweed	*Cynanchum utahense*	Sandy to gravelly soils in Mojave Desert scrub at 492 to 4,659 feet in elevation	BLM, S3.3	O
Clark Mountain buckwheat	*Eriogonum heermanni* var. *floccosum*	Calcareous, gravelly slopes or washes in creosote bush or saltbush scrub. Restricted to a few ranges in SW Nevada and possibly in adjacent California areas. Elevations between 2,950 and 7,540 feet	BLM, S2	O
Desert pincushion	*Escobaria vivipara* var. *deserti**	Limestone soils 3,281 to 7,874 feet in elevation	S2.2	†
Viviparous foxtail cactus	*Escobaria vivipara* var. *rosea***	Sandy to rocky often calcareous soils, desert woodland slopes between 4,100 and 8,860 feet in elevation	S1, S2	†
Nine-awned pappus grass	*Enneapogon desvauxi*	Rocky slopes or in crevices on calcareous soils in desert woodland; pinion-juniper between 4,180 and 5,990 feet in elevation	S2	O
California barrel cactus	*Ferocactus cylindraceus*	Gravelly or rocky hillsides, canyons, and alluvial fans between 200 and 5,000 feet in elevation	BLM‡	O
Parish club cholla	*Grusonia parishii*	Joshua tree habitat between 3,000 and 5,000 feet in elevation; this plant is present on the proposed Ivanpah Substation site	S2.3	O
Hairy-podded fine-leaf hymenopappus	*Hymenopappus filifolius* var. *eriopodus*	Limestone soils in pinion-juniper habitat in the New York and Clark Mountains. Known to occur between 5,250 and 5,580 feet in elevation	S1.3	L
Hillside wheat grass	*Leymus salinus mojavensis*	Hillsides in desert mountains and pinion-juniper woodland between 4,430 and 7,000 feet	S1.3	L
Plains flax	*Linum puberulum*	Dry ridges of desert mountains between 2,000 and 8,200 feet in elevation	S2.3	L
Rough menodora	*Menodora scabra*	Rocky soils of canyons in the New York and Clark mountains between 1,500 and 7,500 feet in elevation	S2.3	L

Table 3.4-4 Special-Status Species of Wildlife and Plants with Potential to Occur in the California Segment of the Proposed Project Area

Common Name	Scientific Name	Habitat	Status	Potential
Polished blazing star	*Mentzelia polita*	Limestone or gypseous soils between 3,940 and 4,920 feet in elevation in the Clark Mountains	S1.2	L
Red four o'clock	*Mirabilis coccinea*	Dry, rocky slopes, and washes; pinion-juniper habitat between 3,510 and 5,900 feet in elevation	S2.3	L
Tough muhly	*Muhlenbergia arsenei*	Limestone rock outcrops and slopes; Clark Mountains between 4,590 and 6,100 feet in elevation	S1, S2	L
Curved-spine beavertail	*Opuntia curvospina*	Mojave Desert scrub between 3,280 and 4,590 feet in elevation	S1.2	L
Spiny cliffbrake	*Pellaea truncata*	Granite or igneous outcrops between 3,900 and 7,050 feet in elevation; pinion-juniper habitat in the New York Mountains	S2	L
White-margined beardtongue	*Penstemon albomarginatus*	Sand dunes and/or deep, sandy soils at elevations ranging from 2,560 to 5,890 feet in elevation	S1.2	L
Rosy two-toned beardtongue	*Penstemon bicolor* ssp. *roseus*	Rocky, calcareous soils and scree in creosote bush or black bush desert scrub at elevations from 1,800 to 4,840 feet	S1.3	L
Stephens' penstemon	*Penstemon stephensii*	Desert scrub or pinion-juniper woodland at elevations from 3,800 to 6,070 feet	BLM‡	L
Aven Nelson's phacelia	*Phacelia anelsoni*	Sandy or gravelly soils in creosote bush, pinion-juniper, or Joshua tree habitats between 3,900 and 4,920 feet in elevation	S2.3	O
Sky-blue phacelia	*Phacelia coerulea*	Open, sandy to rocky areas in Mojave Desert scrub and pinion-juniper habitats between 2,000 and 6,560 feet in elevation	S2.3	O
Chamber's physaria	*Physaria chambersii*	Limestone soils in pinion-juniper habitat in the Clark Mountains between 4,920 and 8,500 feet in elevation	S2.3	L
Abert's sanvitalia	*Sanvitalia aberti*	Dry slopes from 5,150 to 5,900 feet in elevation in the New York and Clark Mountains	S1, S2	L
Rusby's desert mallow	*Sphaeralcea rusbyi* var. *eremicola*	Mojave Desert scrub and Joshua tree habitats between 3,200 and 4,920 feet in elevation; Clark Mountains	BLM, S1.3	L
Mammals				
American badger	*Taxidea taxus*	Mojave Desert scrublands on flats and alluvial fans with friable soils where rodents are present	BLM, S4	L
Desert bighorn sheep	*Ovis canadensis nelsoni*	Large, relatively contiguous areas of steep, sparsely vegetated mountainous terrain. Present in the McCullough Range	BLM, S3	L
Wild burro	*Equus asinus*	Mostly low desert environments in scrublands and woodlands. Scat recorded in California at west Ivanpah Dry Lake	WHBA	O
Townsend's big-eared bat	*Plecotus townsendii*	Roosts in mines, caves, and buildings in Mojave Desert scrub	BLM, S2, S3	L
Birds				
Golden eagle	*Aquila chrysaetos*	Open country in woodland or mountains, nests on cliff ledges or very large trees. Recorded near Ivanpah Substation in California	FPS	L
Western burrowing owl	*Athene cunicularia hypugaea*	Open, sparsely vegetated land with available animal burrows. Observed along Alternative C, near California/Nevada border	BLM	O

Table 3.4-4 Special-Status Species of Wildlife and Plants with Potential to Occur in the California Segment of the Proposed Project Area

Common Name	Scientific Name	Habitat	Status	Potential
Loggerhead shrike	*Lanius ludovicianus*	Occurs in desert scrub, denser vegetation along washes, and woodlands. Observed along California project segments	BLM	O
Crissal thrasher	*Toxostoma crissale*	Occurs where dense thickets of mesquite or other shrubs occur along desert washes or wetlands	S3	L
Le Conte's thrasher	*Toxostoma lecontei*	Most common in sparse, open vegetation including creosote bush scrub and saltbush scrub	BLM‡	L
Reptiles				
Desert tortoise	*Gopherus agassizii*	Occurs in Mojave Desert scrub and Joshua tree woodlands in valleys, on bajadas, and in low hills at elevations of up to 4,900 feet. Observed at various points along the project alignment	FT, ST, S2	O
Gila monster	*Heloderma suspectum*	Prefers rocky outcrops, canyons, foothills, bajadas, and edges of washes with dense vegetation rather than open scrublands. A Sonoran desert species, peripheral in the Mojave desert	BLM‡, S4	L

Sources: Benson 1982; CDFG 2003; Jepson 2008

Key:
* Formerly *Coryphantha chlorantha*.
** Formerly *Coryphantha vivipara* var. *rosea*
† Individuals of an unknown species of *Escobaria* (*Coryphantha*) were located; species determination will require presence of flowers.
‡ BLM sensitive species not listed in the CNDDB database.

Status
BLM = Bureau of Land Management sensitive species
FPS = State of California Fully Protected Species
FT = Federally listed as threatened (Endangered Species Act)
ST = California listed as threatened

Potential of Occurrence
L = Likely (moderate or better potential)
O = Observed during reconnaissance studies

CNDDB state ranking:
S1 = Less than 6 element occurrences (EOs), or fewer than 1,000 individuals, or less than 2,000 acres
S1.1 = Very threatened
S1.2 = Threatened
S1.3 = No current threats known
S2 = 6–20 EOs, or 1,000–3,000 individuals, or 2,000–10,000 acres
S2.1 = Very threatened
S2.2 = Threatened
S2.3 = No current threats known
S3 = 21–100 EOs, or 3,000–10,000 individuals, or 10,000–50,000 acres
S3.1 = Very threatened
S3.2 = threatened
S3.3 = no current threats known
S4 = Apparently secure within California. NO THREAT RANK
S5 = Demonstrably secure to ineradicable in California. NO THREAT RANK
WHBA = Wild Free-Roaming Horses and Burros Act

Table 3.4-5 Special-Status Species of Wildlife and Plants With Potential to Occur in the Nevada Segment of the Proposed Project Area

Common Name	Scientific Name	Habitat	Status	Potential
Plants				
Catclaw Acacia	*Acacia greggii*	Well-drained, sandy or rocky soils. Chaparral & brush country. Washes; stream banks; brushlands.	MSHCP	L
White bearpoppy	*Arctomecon merriamii*	Creosote bush scrub, limestone outcrops and dry lake beds at elevations between 2,000 and 6,280 feet	BLM, W, MSHCP	L
Spring Mountain milkvetch	*Astragalus remotus*	In gravelly or sandy soils in desert wash or desert shrub communities between 3.400 and 7,050 feet in elevation		L
Scrub Lotus	*Lotus argyraeus var. multicaulis*	Pinyon Juniper Woodlands. Habitat sandy washes, ledges or clay slopes in canyons.	MSHCP	L
White-margined beardtongue	*Penstemon albomarginatus*	Sand dunes and/or deep, sandy soils at elevations ranging from 2,560 to 5,890 feet	BLM, ART, MSHCP	O
Rosy twotone beardtongue	*Penstemon bicolor* ssp. *roseus*	Rocky, calcareous soils and scree in creosote bush or black bush desert scrub at elevations of from 1,800 to 4,840 feet	BLM, ART	O
Honey Mesquite	*Prosopis glandulosa*	Found in desert drainage ways. Well-drained sandy soils.	MSHCP	L
Mammals				
Desert Pocket Mouse	*Chaetodipus penicillatus*	Inhabit the sandy, open desert with sparse vegetation of grasses, mesquites, creosote bushes, and a few cacti.	MSHCP	L
Desert Kangaroo Rat	*Dipodomys deserti*	Found in a variety of desert scrub habitats, the common factor being a substrate of wind-drifted sand, probably not less than 50 cm (20 in) deep. Preferred canopy is sparse to moderate. Less common in denser stands. Areas of soft sand, such as dunes; creosote bush or shad scale scrub.	MSHCP	L
Wild burro	*Equus asinus*	Mostly low desert environments in scrublands and woodlands. Scat recorded in California at west Ivanpah Lake	WHBA	L
California leaf-nosed bat	*Macrotus californicus*	Caves and mines in desert scrub habitat, generally below 3,280 feet in elevation. Requires warm roost sites in winter	BLM, ART	L
California myotis	*Myotis californicus*	Dry, brushy habitats; roosts in cracks and crevices	BLM, ART	L
Townsend's big-eared bat	*Corynorhinus townsendii*	Roosts in mines, caves, and buildings in Mojave Desert scrub	BLM, ART	L
Big free-tailed bat	*Nyctinomops macrotis*	Roosts in rugged, rocky areas in desert scrub	BLM, ART	L
Desert bighorn sheep	*Ovis canadensis nelsoni*	Large, relatively contiguous areas of steep, sparsely vegetated mountainous terrain. Present in the McCullough Range	BLM	O
American badger	*Taxidea taxus*	Mojave Desert scrublands on flats and alluvial fans with friable soils where rodents are present	BLM, S4	L
Kit Fox	*Vulpes macrotis*	Inhabit arid and semi-arid regions encompassing desert scrub, chaparral, halophytic, and grassland communities. Prefer loose textured soils and generally avoid rugged terrain.	MSHCP	L
Birds				
Golden eagle	*Aquila chrysaetos*	Open country in woodland or mountains, nests on cliff ledges or very large trees. Recorded near Ivanpah Substation site in California	BLM	L
Western burrowing owl	*Athene cunicularia hypugaea*	Open, sparsely vegetated land with available animal burrows. Observed along Alternative C, near California/Nevada border	BLM, 501	L

Table 3.4-5 Special-Status Species of Wildlife and Plants With Potential to Occur in the Nevada Segment of the Proposed Project Area

Common Name	Scientific Name	Habitat	Status	Potential
Peregrine falcon	*Falco peregrinus*	Nests on cliffs surrounded by large expanses of open space in a variety of habitats. Known to breed in the McCullough Range	BLM, 501, MSHCP	L
Prairie falcon	*Falco mexicanus*	Nests on cliffs and in deep canyons in a variety of arid and desert habitats. Known to occur in the McCullough Range	BLM	L
Loggerhead shrike	*Lanius ludovicianus*	Occurs in desert scrub, denser vegetation along washes, and woodlands. Observed west of the McCullough Mountains	BLM	O
Phainopepla	*Phainopepla nitens*	Mostly mesquite thickets along washes, but also desert scrub and woodland habitats. Observed on Nevada project segments	BLM, 501, MSHCP	O
Le Conte's Thrasher	*Toxostoma lecontei*	Saltbush/shadscale vegetation or cholla cacti in sandy substrate. It needs vegetative litter for cover and for obtaining prey.	MSHCP, FT	L
Crissal Thrasher	*Toxostoma crissale*	Primarily inhabits dense desert scrub and arroyo riparian vegetation. It also occurs in foothill scrub and pinyon-juniper woodland with a shrubby understory.	MSHCP, National Bird of Conservation Concern by USFWS	L
Gray Vireo	*Vireo Vicinior*	Dry thorn scrub, chaparral, and pinyon-juniper and oak-juniper scrub, in arid mountains and high plains scrubland.	MSHCP, National Bird of Conservation Concern by USFWS	L
Cactus Wren	*Campylorhynchus Brunneicapillus*	Primarily inhabit areas that are desert or semi-desert; they also live along arid hillsides and locales that provide them with vegetation such as spiny cacti and cholla, which is used for nesting.	MSHCP	L
Scott's Oriole	*Icterus parisorum*	Found in desert grassland prairies and mountain canyons, particularly if yucca or palms are present; nests in pinyon-juniper woodlands, sycamores, and cottonwoods.	MSHCP	L
Reptiles				
Desert tortoise	*Gopherus agassizii*	Occurs in Mojave Desert scrub and Joshua tree woodlands in valleys, on bajadas, and in low hills at elevations up to 4,900 feet. Observed at various points along the project alignment	FT, 501, MSHCP	O
Gila monster	*Heloderma suspectum*	Prefers rocky outcrops, canyons, foothills, bajadas, and edges of washes with dense vegetation rather than open scrublands. A Sonoran desert species, peripheral in the Mojave desert	BLM, 501	L
Chuckwalla	*Sauromalus ater*	Rocky outcrops with crevices for hiding in Mojave Desert scrub. Observed near the McCullough Pass alignment	BLM	O
Western banded gecko	*Coleonyx variegatus*	Creosote bush scrub, associated with rocks, or sometimes barren dunes. Largely nocturnal	MSHCP	L
Desert iguana	*Dipsosaurus dorsalis*	Creosote bush scrub with loose sand, or hardpan areas with rocks	MSHCP	L
Black collared lizard	*Crotaphytus insularis*	Frequents rocky areas in arroyos and on slopes of hills in creosote bush, saltbush, and Basin sagebrush deserts	MSHCP	L
Long-nosed leopard lizard	*Gambelia wislizenii*	Open scrublands such as creosote bush, alkali bush, or sagebrush on various substrates	MSHCP	L
Western leaf-nosed snake	*Phyllorhynchus decurtatus*	Sandy or gravelly substrates associated with creosote bush scrub	MSHCP	L
Glossy snake	*Arizona elegans*	Variety of habitats from sparse desert scrub to chaparral, as well as grasslands, mostly at low elevations	MSHCP	L
Common kingsnake	*Lampropeltis getula*	Found in a wide variety of habitats, including deserts with rock shelters or animal burrow refuges	MSHCP	L
Long-nosed snake	*Rhinocheilus lecontei*	Occurs in desert or shrubby habitats mostly in valleys and hills	MSHCP	L

Table 3.4-5 Special-Status Species of Wildlife and Plants With Potential to Occur in the Nevada Segment of the Proposed Project Area

Common Name	Scientific Name	Habitat	Status	Potential
Lyre snake	*Trimorphodon biscutatus*	Most often found in areas of massive rock outcrops in creosote bush, desert scrub, or desert grasslands	MSHCP	L
Speckled rattlesnake	*Crotalus mitchellii*	Generally in rocky areas, usually associated with creosote bush. Range includes sagebrush, succulent desert, and pinion-juniper	MSHCP	L
Sidewinder	*Crotalus cerastes*	Fine wind-blown sand areas in hummocks; also on flats and rocky hillsides. Associated with creosote bush and desert scrublands	MSHCP	L
Mojave rattlesnake	*Crotalus scutulatus*	Most common in upland desert scrublands in creosote bush habitat and also in mesquite thickets and barren desert	MSHCP	L
Desert Horned Lizard	*Phyrynosoma platyrhinos*	Arid regions with some loose sandy soils for burrowing, and limited vegetation such as sagebrush or shadscale. They can also be found in areas with hardpan and gravelly soils as well.	MSHCP	L

Status Codes
501 = Protected under NRS 501
ART = Nevada Natural Heritage Program At Risk Taxa
BLM = BLM sensitive species
FT = Federally listed as threatened
MSHCP = Clark County Multiple Species Habitat Conservation Plan
ST = Listed by the State of Nevada as threatened
W = Nevada Native Plant Society (NNPS) Watch List species; potentially vulnerable to becoming threatened or endangered

Potential of Occurrence
L = Likely (moderate or better potential
O = Observed During Reconnaissance Studies

Colorado mojavensis). The plant species excluded are Las Vegas bear poppy (*Arctomecon californica*), Clokey milkvetch (*Astragalus aequalis*), blue diamond cholla (*Opuntia whipplei* var. *multigeniculata*), scrub lotus (*Lotus argy raeus* var. *multicaulis*), Jaeger beardtongue (*Penstemon thompsoniae* var. *jaegeri*), and Parish's phacelia (*Phacelia parishii*).

Plants

Twenty-nine special-status plant species occur or are very likely to occur along the California segment of the project, while four special-status plant species occur or are very likely to occur along the Nevada segment of the project. Based on a review of the existing state and federal databases, no plant species listed as threatened or endangered by the federal government or the states of California or Nevada are expected to occur within the proposed project area.

Mormon Needle Grass (S2.2)

Mormon needle grass (*Achnatherum aridum*) is associated with rock outcrops or shrub-steppe habitats where Joshua tree or pinion-juniper woodland habitats exist on carbonate soils (CNPS 2001). Stems may approach 3 feet in height, with the inflorescence, which may be partially enclosed by the upper leaf sheath, being 2 to 7 inches in length. Plants flower in May or June (Jepson 2008). Mormon needle grass was not observed during surveys, but suitable habitat is present for the species in Antimony Canyon east of the Mountain Pass Substation.

Small-flowered Androstephium (S1.3)

Small-flowered androstephium (*Androstephium breviflorum*) is a perennial herbaceous monocot bulb native to the Mojave Desert of California and parts of western Arizona and southern Nevada (USDA 2009b). Sage green strap-like leaves surround a 10- to 30-centimeter (cm) flower stalk topped by three to 12 funnel-shaped white to lavender flowers 1 to 2 cm long (Hickman 1993). Blooming occurs between April and May. This species is associated with sandy to gravelly soils of alluvial fans or stabilized dunes in creosote bush scrub vegetation (eFlora 2009). This plant was observed along Transmission Alternative Route D in California.

White Bearpoppy (S2.2)

The white bearpoppy (*Arctomecon merriamii*) is an evergreen perennial herb. The leaves are basal, rounded-dentate, and moderately hairy, which give the leaves a bluish-green appearance. The emerging flower stalks have the typical poppy family nodding habit of the flower bud, which becomes erect at maturity. The flowers, which have white petals on stalks 12 to 16 inches in height, appear in the spring (NNHP 2001b). The white bearpoppy occurs in southeastern California and southern Nevada (Jepson 2008). The plants occur on generally barren, calcareous soils, alluvial gravels, and carbonate rock outcrops (Jepson 2008, NNHP 2001b). Populations of the white bearpoppy are decreasing in number (NNHP 2001b).

The white bearpoppy was not observed during surveys, but suitable habitat for the species occurs within the proposed project area. There is a CNDDB record of the species northeast of Umberci Mine at "Bearpoppy Saddle," which is approximately 4 miles west of the north end of Transmission Alternative Route C. Additional observances have been recorded between the Umberci Mine and Stateline Pass to the northeast.

Mojave Milkweed (S2)

Mojave milkweed (*Asclepias nyctaginifolia)* is a perennial plant with decumbent to erect stems to about 1 foot in height. The leaves are opposite, and may be elliptic, lanceolate, or oval. Greenish-white flowers may be present between May and September (CNPS 2001, Jepson 2008, Kearney and Peebles 1960). The plants occur along arroyos or on dry slopes (CNPS 2001, Kearney and Peebles 1960). In California the species is generally associated with pinion-juniper woodland (Calflora 2008). The range of the Mojave milkweed is from San Bernardino County, California, east to New Mexico (CNPS 2001).

A single Mojave milkweed plant was observed during the rare plants survey approximately 0.55 miles southwest of the proposed Ivanpah Substation site. Suitable habitat is present from this location west to the vicinity of the Mountain Pass Substation.

Borrego Milkvetch (S1, S3.3)

Borrego milkvetch (*Astragalus lentiginosus* var. *borreganus*) is a short-lived perennial or annual dicot herb with multiple stems up to 45 cm long. Silvery compound leaves occur with pea-shaped purple to lavender flowers in clusters of one to 15. Flowering occurs between March and May (Calflora 2009). The species is widely distributed in native to sandy or gravel soils in both the Mojave and Sonoran deserts in California, Nevada, and portions of Arizona (USDA 2009c). This plant was observed along the portion of Nipton Road included in both the Mountain Pass and Golf Course Telecommunication Alternatives in California.

Spring Mountain Milkvetch (S2)

Spring Mountain milkvetch (*Astragalus remotus*) is a perennial herb with several erect stems, 1.5 to 4 decimeters (dm) long, and with grayish compound leaves and buff-colored, lilac-tinged flowers. It blooms from April to early June and is commonly found in desert scrub or washes in dry, rocky-to-sandy soils derived from calcareous limestone or sandstone (USDA 2009c). This species may occur along the route in California west of Primm near the toe of the Spring Mountains.

Scaly Cloak Fern (S2.3)

The scaly cloak fern (*Astrolepis cochisensis.* var. *cochisensis*) is a perennial herb of small stature, generally between 1 and 4 inches in height, associated with limestone outcrops and associated rocky slopes in pinion-juniper woodland or in habitats that contain Joshua trees (CNPS 2001, Jepson 2008). The species occurs from California east to New Mexico. Suitable habitat for the scaly cloak fern is present in the vicinity of the Mountain Pass Substation, but the plant was not observed during surveys.

Black Grama (S3.2)

Black grama (*Bouteloua eriopoda)* is a tufted perennial grass of the western United States and northern Mexico that has decumbent to erect stems approximately 2 feet in height. Inflorescences are generally present between May and October (CNPS 2001, Gould 1951). Black grama most commonly occurs in dry habitats with sandy or rocky soils in flats, on slopes, along washes, and in scrub and woodland communities, including pinion-juniper habitat (CNPS 2001, Gould 1951, Jepson 2008). Black grama is present along the route and was observed in more than one location in Antimony Canyon east of the Mountain Pass Substation during rare plant surveys.

Gilman's Cymopterus (S2.2)

Gilman's cymopterus (*Cymopterus gilmanii*) is known to be present only in Nevada and California, and occurs in Mojave Desert scrub habitat, often on carbonate substrates (CNPS 2001). Flower stalks are usually less than 9 inches in height, with the greenish-purple flowers appearing between April and May (Jepson 2008).

Gilman's cymopterus was not observed during any project surveys, but there are CNDDB occurrences of the species in the Clark Mountains, and suitable habitat may be present near the Mountain Pass Substation. There are also CNDDB records of the species occurring at Bear Poppy Saddle, which is approximately 4.0 miles west of the north end of Transmission Line Alternative C, and to the north near Kally Mine and the vicinity of Stateline Pass.

Utah Vine Milkweed (BLM, S3.3)

Utah vine milkweed (*Cynanchum utahense)* is native to the Mojave Desert and is known to be present in the states of Utah, Arizona, Nevada, and California. Utah vine milkweed is a member of the dogbane family (*Apocynaceae*). It is a small (up to about 1 meter [m]), highly branched vine that grows up through other desert shrubs for support. It has small, narrow leaves, only a few centimeters long, and bright yellow to orange flowers that grow in umbels. The plant typically grows on sandy to gravelly flats in creosote bush desert. Multiple occurrences of the Utah vine milkweed were recorded during the rare plant survey along the proposed telecommunication line route in California just southwest of the proposed Ivanpah Substation site and directly east of Nipton.

Desert Pincushion (S2.2)

The desert pincushion cactus (*Escobaria vivipara* var. *deserti*) was formerly known as *Coryphantha chlorantha*, and appears in the CNDDB under this name. The desert pincushion cactus usually occurs as a single stem but may be multi-stemmed. Plants seldom exceed 6 inches in height, and the flower color is variable. Flowers usually occur in April and May (Jepson 2008). The species occurs on carbonate soils between approximately 3,280 and 7,870 feet in elevation.

A species of *Escobaria* cactus is present at several locations along the route from the Mountain Pass Substation east for a distance of approximately 3.5 miles. Most of the occurrences are within 0.4 miles of the substation. These cacti are of either the *deserti* variety or are the viviparous foxtail cactus (*Escobaria vivipara* var. *rosea*), but their identity could not be decisively determined because flowers were not present on the plants when the rare plant survey was conducted. Flowers must be present in order to discriminate between these two varieties of *E. vivipara*.

Viviparous Foxtail Cactus (S1, S2)

The viviparous foxtail cactus was formerly known as *Coryphantha vivipara* var. *rosea*. The range of this species includes northwestern Arizona, southern Nevada, and southeast California (Benson 1982). This cactus occurs on limestone substrates in pinion-juniper woodland or on low hills and slopes in Mojave Desert scrub (Benson 1982, CNPS 2001, Jepson 2008). The plants may have one to several heads and produce magenta to purplish blooms in May or June (Benson 1982, CNPS 2001). The species is considered rare and is threatened by over-collection (Hickman 1993, Jepson 2008). The viviparous foxtail cactus could occur in the Clark Mountains, and it may be the species that is present along the route, as mentioned above under the discussion of the desert pincushion.

Nine-awned Pappus Grass (S2)

Nine-awned pappus grass (*Enneapogon desvauxi*) occurs on calcareous soils, usually associated with slopes or rocky crevices in desert woodland habitat. The species ranges from southern California east to Texas, and south to Peru. Plant stems may reach about 20 inches in height, with the inflorescences present in August and September (Jepson 2008). Nine-awned pappus grass was found during the rare plant survey. A single occurrence of this species was recorded 2.2 miles southwest of the proposed Ivanpah Substation site.

Clark Mountain Buckwheat (BLM)

The Clark Mountain buckwheat (*Eriogonum heermannii* var. *floccosum*) is a perennial subshrub that can grow up to 0.5 m tall. It is composed of a basal rosette of oblong grayish leaves, topped by a network of finely jointed branches with many small (1 to 3 mm), inconspicuous, pale yellowish flowers. It occurs on gravelly slopes and washes in desert scrublands. This species has a very limited distribution and is confined to a few mountain ranges in southeastern California and southwest Nevada (eFlora 2009, USDA 2009d). This plant was observed along the California segment of the route.

California Barrel Cactus (BLM)

The California barrel cactus (*Ferocactus cylindraceus*) has no federal status under the ESA, is not listed on the California BLM list of sensitive species, and is not afforded any status in the CNDDB (it is not tracked). It was considered too common to be included in the CNPS Inventory of Rare and Endangered Plants of California (2001). The BLM policy for this species is avoidance. If avoidance is not possible, individuals of this species should be temporarily relocated to areas outside of the disturbance footprint and used in later restoration and re-vegetation efforts of temporary disturbance areas.

This cactus and its varieties occur widely in Arizona, Nevada, California, and Utah in desert habitats. The plants prefer gravelly to rocky hillsides, canyon walls, and wash margins in the desert. Two varieties could be present in the proposed project area: var. *lecontei*, which occurs between 2,500 and 5,000 feet in elevation, and var. *acanthodes*, which occurs between 200 and 2,500 feet in elevation. This species was found in moderate density along the proposed route in California west of Ivanpah Dry Lake.

Parish Club Cholla (Matted Cholla; BLM, S2.3)

Parish club cholla (*Grusonia parishii*) is known to be present in the Mojave and Sonoran deserts of Arizona, California, and Nevada. Parish club cholla grows in mats, hence the alternate common name of “matted cholla.” The mats are close to the ground and this cactus never “emerges” from the shrubby desert vegetation surrounding it. Plants flower in late spring and early summer and are usually found on silty, sandy, or gravelly flats, dunes, and hills. During rare plant surveys, Parish club cholla was found on the proposed Ivanpah Substation site and along the proposed transmission and telecommunication alignment north and south of the substation site in California.

Hairy-podded Fineleaf Hymenopappus (S1.3)

Hairy-podded fineleaf hymenopappus (*Hymenopappus filifolius* var. *eriopodus*) inhabits limestone soils among pines and/or junipers at elevations of about 1,600 to 1,700 m (5,250 to 5,580 feet; Jepson 2008). Plants may reach 0.8m (30 inches) in height and produce whitish flowers in May or June, and occasionally again in October (Jepson 2008). This species is recorded in the Clark and New York mountains, and may occur near the Mountain Pass Substation.

Hillside Wheat Grass (S1.3)

Hillside wheat grass (*Leymus salinus mojavensis*) grows to about 14 dm (55 inches) in height with an inflorescence to 14 cm (5.5 inches) long, and flowers between May and June. This grass occurs on rocky hillsides in pinion-juniper habitat (CNPS 2001, Jepson 2008). The only place within the project ROW where this species might occur is in the vicinity of the Mountain Pass Substation, where suitable habitat is found.

Plains Flax (S2.3)

Plains flax (*Linum puberulum*) inhabits dry ridges of deserts, mesas, or mountains from California to Colorado and Texas (Jepson 2008). Plains flax is a perennial species that can grow to about 15 inches in height (Epple and Epple 1995, Jepson 2008, Kearney and Peebles 1960). The flowers, which have yellow to orange petals, may bloom any time between April and October (Epple and Epple 1995, Jepson 2008). Plains flax was not observed during project surveys, but suitable habitat is present throughout the proposed project area.

Rough Menodora (S2.3)

Rough menodora (*Menodora scabra*) is a shrub that grows to about 18 inches in height and produces light canary yellow flowers anytime between May and September, which are followed by distinctive translucent paired fruit (Epple and Epple 1995, Kearney and Peebles 1960). Rough menodora occurs on rocky soils of slopes, dry mesas, foothills, and canyons (Jepson 2008, Kearney and Peebles 1960). In California, rough menodora is recorded from the Clark, Eagle, and New York mountains (Jepson 2008). Rough menodora has not been observed during surveys but may occur within the project limits on the east flank of the Clark Mountains.

Polished Blazing Star (S1.2)

The polished blazing star (*Mentzelia polita*) is a perennial plant that grows to about 31 cm (1 foot) in height with white, peeling stems and linear to lanceolate leaves less than 7 cm (2.75 inches) in length. The white to pale yellow flowers appear in April or May (Charters 2008). The plants occur on limestone or gypseous soils often associated with ephedra (*Ephedra nevadensis)* and sumac (*Rhus* spp.) The polished blazing star is present in the Clark

Mountains (Charters 2008, Jepson 2008). This species could occur within the proposed project area in the Clark Mountains.

Red Four O'clock (S2.3)

Red four o'clock (*Mirabilis coccinea*) has ascending to erect stems to nearly 2 feet in height. The fleshy, linear leaves are sessile, and the intense red blossoms may be present between May and July (Jepson 2008). This plant occurs on dry soils of rocky slopes and along washes, often associated with pinion-juniper habitat (CNPS 2001, Jepson 2008). Red four o'clock was not observed during surveys, but suitable habitat for the species is present near the Mountain Pass Substation.

Tough Muhly (S1, S2)

Tough muhly (*Muhlenbergia arsenei*) is a perennial grass that may reach 4 dm (16 inches) in height. The inflorescence is 12 cm (4.7 inches) long and may be present from August to October. Tough muhly occurs on rock outcrops and limestone slopes in the Clark and New York Mountains (CNPS 2001, Jepson 2008). Tough muhly could be present in the proposed project area near the Mountain Pass Substation.

Curved-spine Beavertail (S1.2)

The curve-spined beavertail cactus (*Opuntia curvospina*), also known as the searchlight pricklypear, is a recognized hybrid between tulip and dollarjoint pricklypears (*O. phaeacantha* and *O. chlorotica*) that has been proposed as a distinct species (CNPS 2001, USDA 2008). The species occurs in Mojave Desert scrub, chaparral, and pinion-juniper woodland. Blooms appear on the plants between April and June (CNPS 2001). The curve-spined beavertail cactus could be present within the project limits.

Spiny Cliffbrake (S2)

Spiny cliffbrake (*Pellaea truncata*) occurs in rock crevices, on cliffs, and in boulder piles of granite or other igneous rocks in pinion-juniper habitat (CNPS 2001, Jepson 2008). Spiny cliffbrake was not observed during surveys, but suitable habitat is present in the steep, rocky terrain near the Mountain Pass Substation.

White-margined Beardtongue (BLM, ART)

The white-margined beardtongue (*Penstemon albomarginatus*) is a multi-stemmed perennial herb that grows from rhizomes, 6 to 14 inches in height, with distinctive, white-margined, spatulate leaves. The tubular flowers, arranged in leafy whorls, appear from March to early June. The flowers are pink to lavender with darker purple markings. When dried, the flowers remain purplish (Jepson 2008, Smith 2001).

The white-margined beardtongue is currently present at 12 sites in Clark and Nye counties, Nevada (Smith 2001). The plants have also been recorded within San Bernardino County, California (NNHP 2001c). In Nevada, the plants are generally restricted to deep, loose deposits of aeolian sands, or sandy alluvium along dry arroyos, low-profile slopes, or alluvial terraces (Smith 2001). All sites in Nevada are within either the creosote bush-bursage or Joshua tree-mixed shrub associations (NNHP 2001c, Smith 2001).

The white-margined beardtongue was observed along the project route during the rare plant survey in Nevada but may also occur along the California segments.

Rosy Two-toned Beardtongue (CA: S1.3, NV: BLM, ART)

The rosy two-toned beardtongue (*Penstemon bicolor* ssp. *roseus*) is a perennial herb less than 60 inches in height with thick, ovate leaves 1.5 to 4.5 inches in length. The basal leaves are fused around the stem. The flowers, which appear from mid-March to mid-May, vary from cream to magenta, and the corolla is from 0.7 to 1.1 inches in length. The plants are found in rocky soils of calcareous, granitic, or igneous origin, in drainages, along roads, on scree at the bases of rock outcrops, and in other places receiving enhanced runoff. The plants are found in creosote bush-bursage, black bush, and mixed shrub associations (Jepson 2008, NNHP 2001a). The plant is present in Clark and Nye counties, Nevada; Mohave County, Arizona; and California (Kearney and Peebles 1960, NNHP 2001a). Three occurrences of this species are known in California: one east of Keany Pass on the Clark Mountain USGS quad, one near Heart in the Castle Mountains on the Heart Peak USGS quad, and one vague location on the Homer Mountain USGS quad, all in San Bernardino County. At least 70 sites for the species are known in Nevada, most of which are the rose-flowered phase (Smith 2005). The two subspecies of the two-toned beardtongue (*P. b. bicolor* and *P. b. roseus*) are not considered valid taxa by Smith (2005), who includes them in *P. bicolor*.

No individuals of this species were found in California during the spring 2008 survey. However, the rosy two-toned beardtongue was observed at several locations along the project route in Nevada, primarily along the main drainage on the east flank of the north McCullough Pass area, and at a single locality along the Eldorado–Lugo transmission line corridor. Because of their stature, the plants stand out in the landscape, even when dormant. Based on recorded occurrences, the species is evidently widespread but is expected to be uncommon in the proposed project area.

Stephens' Penstemon (BLM)

Stephens' penstemon (*Penstemon stephensii*) occurs on rocky slopes or in bedrock crevices, and along washes, usually associated with carbonate soils, in habitats from creosote bush scrub to pinion-juniper woodland. The rose to magenta flowers may be present between April and June (CNPS 2001, Jepson 2008). Stephens' penstemon has not been observed during surveys, but suitable habitat is present in the proposed project area.

Aven Nelson's Phacelia (S2.3)

Aven Nelson's phacelia (*Phacelia anelsoni*) is an annual herb that occurs on carbonate, sandy, or gravelly soils in a variety of habitats (Jepson 2008). The species' range extends from southern California across Nevada to southwest Utah. It is an erect annual plant to about 20 inches in height, with white or pale blue to lavender flowers that may be present in April or May (CNPS 2001, Jepson 2008). Aven Nelson's phacelia was observed at four closely spaced locations in the proposed project area, about 1 mile northeast of the Mountain Pass Substation.

Sky-blue Phacelia (S2.3)

Sky-blue phacelia (*Phacelia coerulea*) is an ascending to erect annual herb that grows to about 16 inches in height. The plants inhabit sandy to rocky soils, from creosote bush desert to pinion-juniper habitats. The pale bluish to purple flowers may be present from April to May (CNPS 2001, Jepson 2008, Kearney and Peebles 1960). Sky-blue phacelia was observed in the project area as a single occurrence approximately 2.8 miles northeast of the Mountain Pass Substation. The species is likely to exist at other locations within the proposed project area.

Chamber's Physaria (S2.3)

Chamber's physaria (*Physaria chambersii*) is an herbaceous tufted plant that is usually no more than 6 inches in height. Leaves are basal and spatulate with an acute tip. Chamber's physaria is a limestone soil endemic species usually associated with pinion-juniper habitat. The species is recorded in the Clark and Grapevine mountains in California, and occurs north to Oregon and east to Utah and Arizona. The yellow flowers usually appear in April or May (CNPS 2001, Jepson 2008, Kearney and Peebles 1960). Chamber's physaria was not observed during the project rare plant survey, but there is suitable habitat for the species in the Clark Mountains.

Abert's Sanvitalia (S1, S2)

Abert's sanvitalia (*Sanvitalia aberti*) is an annual plant occurring on dry slopes in pinion-juniper woodland (CNPS 2001, Jepson 2008). Plants may reach 11 inches (29 cm) in height (Jepson 2008). The yellow flowers are present in August or September. In California the species is present in the Clark and New York mountains (Jepson 2008). Abert's sanvitalia might occur in the project area in the vicinity of the Mountain Pass Substation.

Rusby's Desert Mallow (BLM, S1.3)

Rusby's desert mallow (*Sphaeralcea rusbyi* var. *eremicola*) occurs in Joshua tree woodland and Mojave Desert scrub habitats (CNPS 2001, Jepson 2008). The species is relatively short for a plant in the *Sphaeralcea* genus, reaching only about 12 inches (3 dm) in height. Rusby's desert mallow occurs only in Death Valley and the Clark Mountains (Jepson 2008). There are CNDDB records of this species in the vicinity of the Kally Mine and Stateline Pass area, which are west/northwest of the north end of Transmission Alternative Route C. This species could occur within the project area near the Mountain Pass Substation.

Catclaw Acacia (MSHCP)

Catclaw acacia (*Acacia greggii*) is a native, long-lived, deciduous, spreading shrub or small tree. Depending on the harshness of site conditions, catclaw acacia typically ranges from 3.3 to 29.5 feet (1 to 9 meters) tall. In Nevada, Catclaw acacia occurs with desert wash vegetation (Gucker 2005), and could occur within any portion of the project with this vegetation type.

Honey Mesquite (MSHCP)

Honey mesquite (*Prosopis glandulosa*) is a deciduous, thorny shrub or small tree exhibiting a high degree of variation in growth form. The largest trees are often found along water courses or floodplains where the deep root system has access to year-round water. Drainage ways in the Mojave Desert are the primary habitat for western honey mesquite. This vegetation could occur in California and Nevada.

Scrub Lotus (MSHCP)

Scrub lotus (*Lotus argyraeus var. multicaulis*) is a perennial herb that is native to California and is endemic to California, but also found occasionally into Nevada. It occurs in pinyon-juniper woodland on mountain slopes or gravely sandy soils (Calflora 2010). This species has limited potential to occur within the project area.

Wildlife

Based on desktop analysis and field surveys, several special-status wildlife species are known to occur or have a very high potential to occur within the EITP (Tables 3.4-3 and 3.4-4).

Reptiles

Mojave Population Desert Tortoise (FT, ST, S2, NRS 501)
The Mojave population of the desert tortoise (*Gopherus agassizii*) is currently listed as threatened by both the USFWS under the ESA (Federal Register 1990) and the State of California under the California Endangered Species Act (CESA; CDFG 2008b). The Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994) and the Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*) (USFWS 2008) define recovery units, critical habitat, and management strategies for all desert tortoise populations in California and Nevada, among other states. The entire project is within the Northeast Mojave Recovery Unit and passes through the Piute-Eldorado Critical Habitat Unit in Nevada and the Ivanpah Critical Habitat Unit in California (Figure 3.4-2). Desert tortoises occupy a variety of habitats, from flats and lower slopes dominated by creosote bush scrub at lower elevations to rocky slopes dominated by blackbrush and juniper woodland ecotones at higher elevations (USFWS 2008). Desert tortoises generally occur at elevations from below sea level in Death Valley, California, to 5,000 feet at Yucca Mountain, Nevada; however, presence at elevations up to 7,300 feet has been reported (USFWS 2008). In the Mojave Desert, tortoises occur most commonly on gently sloping terrain with sandy gravel soils and where there is sparse cover of low-growing shrubs, which allows establishment of herbaceous plants. Soils must be friable enough for digging burrows, but firm enough so that burrows do not collapse. Typical habitat for the desert tortoise in the Mojave Desert has been characterized as creosote scrub, often mixed with cacti, yucca, and other drought-resistant shrubs, such as white bursage and saltbush. These habitats tend to have a relatively high diversity of perennial plants and average annual precipitation ranges from 5 to 20 cm (USFWS 2008). The diet of the desert tortoise will vary depending on the seasonal availability of food. Tortoises prefer flowers of annual plants and

grasses, but will also assume cacti and woody herbs. Desert tortoises reach reproductive maturity at 18 to 20 years of age. Tortoises typically lay eggs in late spring/early summer, and the eggs hatch 90 to 120 days later in late summer / early fall. Eggs are laid under several inches of sand near the mouth of the burrow opening.

The entire proposed project area falls within the range of the species, and most of the project areas provide suitable habitat for tortoises (Figure 3.4-2). In Nevada, the proposed transmission alignment would pass through approximately 8.3 miles of the Piute-Eldorado Critical Habitat Unit to the west of Eldorado Substation (Table 3.4-6). In California, the proposed transmission alignment would not cross designated critical habitat.

Table 3.4-6 Desert Tortoise Critical Habitat Crossed by EITP Components

Route	Critical Habitat Unit	State	Miles in Critical Habitat	Start MP	End MP	Difference between Alternative and Proposed Route (miles)[a]
Transmission Line Route (& primary telecommunications line)						
Proposed Transmission Route	Piute-Eldorado	NV	8.27	23.49	31.75	NA
Transmission Alternative Route A	Piute-Eldorado	NV	3.88	0.00	3.88	-0.37
Redundant Telecommunication Line Route						
Proposed Redundant Telecommunication Route (NV)	Piute-Eldorado	NV	11.75	14.82	26.57	NA
Proposed Redundant Telecommunication Route (CA)	Ivanpah	CA	3.10	0.00	3.10	NA
Telecommunication Alternative Route (Mountain Pass) – west of Nipton, CA	Ivanpah	CA	12.80	13.58	26.39	9.70
Telecommunication Alternative Route (Golf Course) – west of Nipton, CA	Ivanpah	CA	12.88	8.91	21.79	9.78

Notes:
[a] A negative value indicates that this alternative route would decrease the total number of miles that the project feature would cross designated critical habitat for the desert tortoise.

Key:
MP = Milepost.

In Nevada, the proposed redundant telecommunication line would cross approximately 11.8 miles of the Piute-Eldorado Critical Habitat Unit to the south of the Eldorado Substation (Figure 3.4-2, Table 3.4-6). In California, the proposed redundant telecommunications line would cross approximately 3.1 miles of the Ivanpah Critical Habitat Unit between the California-Nevada state line and the proposed microwave tower site to the northeast of the town of Nipton. The proposed microwave tower site would also be located entirely within the Ivanpah Critical Habitat Unit for the desert tortoise. Both of the alternative redundant telecommunications line routes (Mountain Pass and Golf Course) would cross the Ivanpah Critical Habitat Unit in California. While in Nevada these two alternative redundant telecommunication routes are identical to the proposed route, the California segments differ significantly from the proposed route. Whereas the proposed redundant telecommunication route would cross approximately 3.1 miles of the critical habitat in California, the Golf Course alternative would cross approximately 12.9 miles of the Ivanpah Critical Habitat Unit, and the Mountain Pass alternative would cross approximately 12.8 miles of the Ivanpah Critical Habitat Unit (Figure 3.4-2, Table 3.4-6).

Almost the entire lengths of all proposed and alternative project features are located within suitable habitat for the desert tortoise, although there are several exceptions. Roach and Jean lakes (dry) are not considered suitable desert tortoise habitat, nor are the disturbed and developed areas associated with the town of Primm, Nevada. At higher elevations, neither the proposed telecommunication line near the southern end of the McCullough Range nor the Mountain Pass Telecommunication Alternative is optimal desert tortoise habitat.

During protocol-level desert tortoise surveys conducted in 2008 and 2009, desert tortoises or associated sign (scat, burrows, shell fragments) were observed throughout most of the survey area with the exception of the developed and disturbed areas around Primm, Nevada, disturbed areas near the Molycorp Mine west of 1-15, the dry lake playas (Roach and Jean), and the higher elevation areas around Mountain Pass Substation. Desert tortoise densities in the Nevada portion of the proposed project area as reported by the BLM range from very low to moderate (Figure 3.4-2). Desert tortoise densities for the California portion of the project were not reported by BLM. The desert tortoise 2008 survey results are an appendix to the Eldorado-Ivanpah Transmission Project Biological Technical Report (EPG 2009), while the 2009 survey results are provided as a separate document. The Biological Technical Report and the desert tortoise 2008 survey results are found in Appendix B-1 Biological Technical Report, and the Desert Tortoise Surveys are found in Appendix B-2 Desert Tortoise Surveys.

Gila Monster (BLM, S4, NRS 501)

The Gila monster (*Heloderma suspectum)* occurs in southern Nevada, extreme southwestern Utah, southern California, Arizona, and northern Sinaloa, Mexico (Beck 2005, Stebbins 2003). Gila monster populations in California are not currently faced with any immediate threat, but their numbers are very low, with only 26 credible records (from four counties) in the past 153 years (Beaman and Lovich 2007). In Nevada, the species occurs in Clark, Lincoln, and Nye counties (NNHP 2004).

Gila monsters prefer undulating rocky foothills, bajadas (shallow slopes under rocky hills), and canyons, and tend to avoid open sandy plains (Beck 2005). Brown and Carmony (1991) indicate that rough, rocky country is an important component of Gila monster habitat. Habitat of this type provides many crevices under rocks and similar structures that can be used for winter hibernacula and and/or summer dens. Trees and shrubbery are an important part of Gila monster habitat in providing shade and cover, but also in supporting larger populations of prey species.

Gila monsters use dry washes and their edges, as well as mesquite thickets, for foraging. Gila monsters use a “search and dig” strategy to forage for nests, and have a varied diet that includes newborn rodents and rabbits, lizards, ground-nesting birds, carrion, and eggs from birds and reptiles (Beck 2005, Ivanyi et al. 2000, Lowe et al. 1986). The daily timing of Gila monster activities varies according to season and locality, and generally shows a bimodal pattern (Beck 2005). The amount of surface activity is estimated to be low; in some locations Gila monsters may spend up to 98 percent of their time in burrows (Brown and Carmony 1991, Ivanyi et al. 2000). However, recent telemetry studies indicate that Gila monsters move much more than expected when they are active (Beck 2005). Home range estimates vary from an average of 86 acres in Utah to 159 acres in Nevada (Beck 2005).

With respect to the proposed project area, potentially suitable Gila monster habitat occurs in the proposed project area in the rougher terrains on mountain slopes and in rocky canyons and ravines associated with the McCullough and Clark mountains. No Gila monsters have been observed in the project area to date, but they are unlikely to be observed due to their often crepuscular activity regime and limited time spent on the surface during the year.

Chuckwalla (BLM)

The chuckwalla (*Sauromalus ater*) is restricted to rocky areas in desert flats, hillsides, and mountains, where crevices are available for shelter (Brennan and Holycross 2006). Creosote bush is common throughout its range (Stebbins 2003). Chuckwallas are primarily herbivorous, eating a variety of desert annuals and perennials, but they occasionally eat insects (Brennan and Holycross 2006, Sherburn 1972, Stebbins 2003). The common chuckwalla is widely distributed across western Arizona, southern Nevada, southeastern California, Baja California, and northwestern Sonora.

The chuckwalla is likely to occur anywhere in the proposed project area where suitable rocky habitat is present. It was observed in the rocky terrain of the Lucy Gray Range and the McCullough Range during the biological surveys.

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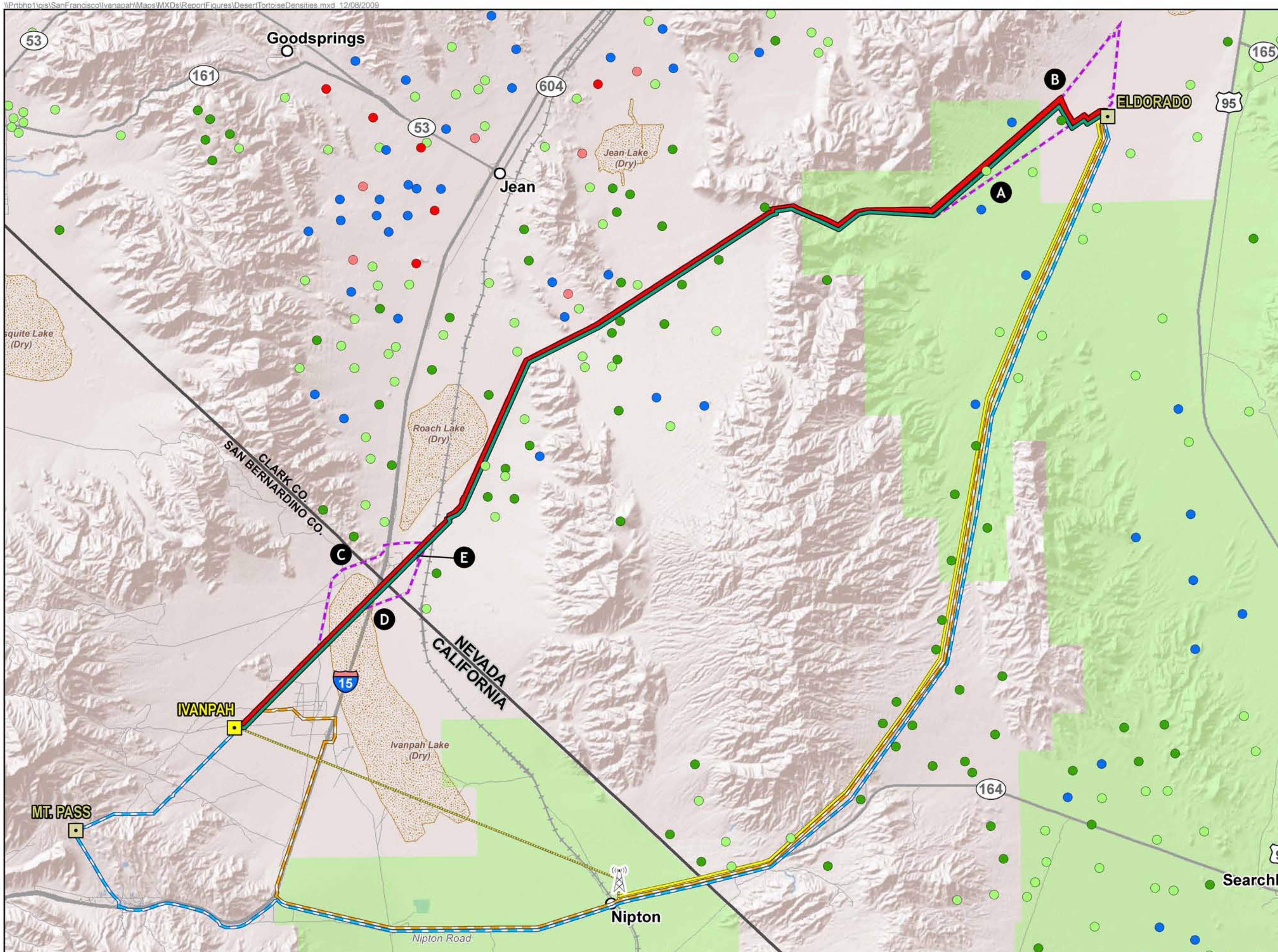

Figure 3.4-2
Eldorado-Ivanpah Transmission Project
Desert Tortoise Densities Within the EITP Area (BLM Data)

PROPOSED PROJECT
- Transmission L.ine
- Telecommunications Line
- Redundant Telecommunications Line
- Microwave

ALTERNATIVES
- Transmission Line Alternatives
- Redundant Telecommunications Line - Mountain Pass
- Redundant Telecommunications Line - Golf Course
- Proposed Microwave Tower
- Proposed Substation
- Existing Substation
- City
- Road

Tortoise Relative Density
- Very High
- High
- Moderate
- Low
- Very Low
- USFWS Desert Tortoise Critical Habitat

N

0 1 2 3 4 5
Miles

December 2009

Western Banded Gecko (MSHCP)

With its soft, pliable skin, the western banded gecko (*Coleonyx variegatus*) would seem poorly suited to life in extremely arid situations, but its nocturnal and subterranean habits allow it to thrive in arid environments such as creosote bush desert and desert scrub habitats (Stebbins 2003). It feeds on a variety of arthropods, primarily insects (Degenhardt et al. 1996, Stebbins 2003). The western banded gecko is very likely present within the proposed project area, and because it accepts various soil types and elevation, it could be present anywhere (Degenhardt et al. 1996).

Desert Iguana (MSHCP)

The desert iguana (*Dipsosaurus dorsalis*) is primarily an inhabitant of creosote bush habitat, where it is often active in the heat of the day. Creosote bush provides shelter from heat and predators, and its flowers are a staple in the diet of the desert iguana. The desert iguana is primarily herbivorous and often accesses food plant materials by climbing up into creosote bushes or other vegetation. It will also eat insects and carrion (Ivanyi et al. 2000, Stebbins 2003). The desert iguana is likely to be present within the project area, particularly in creosote bush habitat. The species was documented at the proposed ISEGS site adjacent to the California segment of the project (CEC 2008).

Black Collared Lizard (MSHCP)

The black collared lizard (*Crotaphytus insularis*) tends to prefer rocky habitat with generally sparse vegetation, but has been recorded in less rocky areas. It eats primarily insects, but will take other lizard species and some plant materials (Stebbins 2003). The black collared lizard is likely not common within the project area, but it would most likely be found along the ROW that passes through the McCullough Mountains where the terrain is hillier and some rocks are present. The species was documented at the proposed ISEGS site near the California segment of the proposed project (CEC 2008).

Long-nosed Leopard Lizard (MSHCP)

The long-nosed leopard lizard (*Gambelia wislizenii*) is a rather large lizard that can be quite variable in coloration. This lizard prefers mostly open country, and will occur on a variety of substrates and in many vegetation communities such as creosote bush, sagebrush (*Artemisia* spp.), or other low scattered plant groupings (Stebbins 2003). It may occur in rocky areas, but the presence of rocks is not a requirement for the species (Degenhardt et al. 1996). The long-nosed leopard lizard eats a variety of prey including insects, lizards, and snakes, but because of its large size, it is even capable of taking small rodents (Degenhardt et al. 1996, Stebbins 2003). It also consumes some plant materials (Stebbins 2003). The long-nosed leopard lizard is likely to be present almost anywhere within the EITP area. Its presence in the creosote bush habitat at the bases of the mountains would be expected. The species was documented at the proposed ISEGS site adjacent to the proposed project (CEC 2008).

Desert Horned Lizard (MSHCP)

Desert horned lizard (*Phrynosoma platyrhinos*) occurs in arid regions that have at least some loose soil available for burrowing. Desert horned lizard is generally found in areas with sandy soils and limited vegetation such as sagebrush or shadscale. This species could occur anywhere within the project area.

Western Leaf-nosed Snake (MSHCP)

The Western leaf-nosed snake (*Phyllorhynchus decurtatus*) is found in creosote bush desert, but is not often observed. These snakes seldom exceed 20 inches in length, and have an enlarged rostrum that aids in digging. This snake occurs in desert scrub habitat, and is typically associated with areas where creosote bush is dominant. Its principal foods are various species of lizards including the western banded gecko (Stebbins 2003). The Western leaf-nosed snake is likely to be present within the proposed project area where creosote bush is the dominant plant. This snake probably would be present where the project would pass through the McCullough or Clark mountains.

Glossy Snake (MSHCP)

The glossy snake (*Arizona elegans*) is found in sparsely vegetated or barren desert, grasslands, or chaparral-covered slopes, where it is primarily active at night (Degenhardt et al. 1996, Stebbins 2003). While it is an efficient burrower, it readily utilizes burrows of other animals or spaces beneath rocks for shelter. The glossy snake is more common at lower elevations, and is often found associated with Western and diamondback rattlesnakes (*Crotalus viridis* and *C. atrox*, respectively; Degenhardt et al. 1996). It eats primarily lizards, but snakes, small mammals, and birds are also taken (Degenhardt et al. 1996, Stebbins 2003). The glossy snake may be present anywhere within the EITP area.

Common Kingsnake (MSHCP)

The common kingsnake (*Lampropeltis getula*) is present through a wide range of habitats and elevations, from sea level to near 7,000 feet (Degenhardt et al. 1996, Stebbins 2003). In desert habitats it uses rock shelters, animal burrows, or manufactured structures to escape high temperatures and low humidity (Degenhardt et al. 1996). It feeds primarily on other snake species, but also consumes lizards, frogs, birds, and eggs of reptiles and birds (Degenhardt et al. 1996, Stebbins 2003). The common kingsnake is likely to occur within the proposed project area and is more likely to be found in the mountainous areas of the corridor than in the creosote bush-dominated flats.

Long-nosed Snake (MSHCP)

The long-nosed snake (*Rhinocheilus lecontei*) is typically a snake of valleys or low rolling hills where grasses or thick vegetation and little rock are present (Degenhardt et al. 1996). The primary prey of the long-nosed snake are lizards and small mammals, but it will also take snakes, reptile eggs, insects, and, occasionally, birds (Degenhardt et al. 1996, Stebbins 2003). The long-nosed snake is likely to be present within the proposed project area among low shrubby vegetation where the project would cross the Clark and McCullough mountains.

Lyre Snake (MSHCP)

The range of the lyre snake (*Trimorphodon biscutatus*) barely extends into southern Nevada. This snake tends to prefer the steeper slopes and rocky terrain of canyons and arroyos, but may occasionally be encountered on valley floors (Degenhardt et al. 1996, Stebbins 2003). It may occur in a variety of vegetation types from sea level to almost 8,000 feet in elevation (Stebbins 2003), and it preys mainly on lizards but also takes snakes, birds, and small mammals, including bats, which it seeks out in their roosts (Degenhardt et al. 1996, Stebbins 2003). No lyre snakes were observed during surveys; however, their presence within the proposed project area is possible.

Speckled Rattlesnake (MSHCP)

The speckled rattlesnake (*Crotalus mitchellii*) prefers rocky habitats, but may also occur in areas of non-cohesive soils and sandy habitats. The speckled rattlesnake is present in creosote bush, succulent desert, thornscrub, and pinion-juniper woodland habitats. This rattlesnake preys primarily on small mammals, birds, and lizards (Stebbins 2003). The speckled rattlesnake is likely to be present anywhere within the EITP, and is not likely to be restricted to any specific habitat type.

Sidewinder (MSHCP)

Usually less than 3 feet in length, the sidewinder (*Crotalus cerastes*) is not a large snake. It is usually found in areas of aeolian sands where plants such as creosote bush or mesquite have developed mounds that support the burrowing rodents that are its main prey. The sidewinder is not restricted to sandy areas, and may occur on hardpan or even rocky hillsides (MacMahon 1985, Stebbins 2003). The "stepped" tracks it leaves in sand are characteristic of its method of locomotion. The principal prey of the sidewinder are rodents and lizards, but birds may also be taken (Stebbins 2003). The sidewinder is likely to be present within the proposed project area in areas of loose sand, and may be present on upper mountain slopes. Sandy habitat near where the line passes between Sheep Mountain and the Lucy Gray Mountains would be possible habitat for the sidewinder. The sidewinder was documented at the proposed ISEGS site (CEC 2008).

Mojave Rattlesnake (MSHCP)

The Mojave rattlesnake (*Crotalus scutulatus*) is more commonly found in upland desert and the foothills of the mountains in areas with mostly scattered vegetation, often in creosote bush or mesquite habitat, and usually not in very rocky habitat (Degenhardt et al. 1996, Stebbins 2003). The Mojave rattlesnake eats mostly small mammals, lizards, snakes and birds (Stebbins 2003). The Mojave rattlesnake is likely to be present anywhere along the project corridor except in areas where loose, sandy soils are prevalent.

Mammals

Desert Bighorn Sheep (BLM, S3)

The subspecies of desert bighorn sheep that is present in the proposed project area (Nelson's bighorn sheep) occurs in the Southwest desert regions of the United States. The sheep is classified by the CDFG and NDOW as a big game mammal, and annual hunting seasons allow for a very limited take. The Clark Mountains and the entire proposed project ROW in California are in the CDFG Zone 3 for desert bighorn sheep hunting, while the McCullough Mountains are within the NDOW Area 26 Unit 263 hunting area. The 2008 quota for bighorn for Unit 263 is set at 10 animals, and the hunt period in Unit 263 is from November 10 through December 10.

Desert bighorn are creatures of rugged, open, mountainous terrain where adequate forage, water, and escape terrain are available. Steep slopes and cliffs are used to escape from predators. The Nelson subspecies has become well adapted to the desert mountain environment. It is typically found in small bands in areas with little or no permanent water, although it does require access to surface water (Wehausen 2006). Its diet consists of grasses, forbs, and sedges. Mating may take place at any time in the desert if climatic conditions are suitable. The gestation period is about 180 days. Decline of the species can be attributed to degradation of habitat due to development, road-building, water-management practices, and recreational activities. The bighorns are also highly susceptible to various diseases, e.g., bacterial pneumonia (Pasteurellosis), sometimes passed on to them by domestic sheep, and they are often preyed upon by mountain lions, coyotes, and likely by domestic dogs. High predation by mountain lions has been documented in the Clark Mountains (Wehausen 2006). Drought-induced mortality can also occur if edible food sources decline or if there is competition for surface water with humans and other large mammals (i.e. cattle or burros).

Within the proposed project area in California, Nelson's bighorn is found in the rugged, upland topography associated with the Clark Mountain Range. Specific to the Nevada segment of the project, desert bighorn sheep are present in the McCullough Range, including the north McCullough Pass area through which the proposed transmission line alignment would pass (Figure 3.4-3). Bighorn were observed along the transmission line alignment in the north McCullough Pass area during surveys. Within the McCullough range are bighorn special use areas (lambing areas and summer grounds) that are of concern to wildlife and land managers. Lambing grounds are generally at higher elevation in mountain ranges where ewes go in the winter or spring to drop their lambs. The higher, less accessible terrain may afford the ewes and lambs greater protection from certain predators, such as coyotes. Summer grounds are areas of the mountain range sheep occupy during the hot summer months. Summer grounds must provide adequate forage and be close enough to water. The only water development in the McCullough Mountains available to bighorn sheep in summer is the "Linda" guzzler (a manufactured water storage device), approximately 1.3 miles north of the McCullough Pass.

Wild Burros (WHBA)

The wild burro receives protection under the 1971 federal Wild Free-Roaming Horses and Burros Act (WHBA; 16 USC 1331-1340). The act protects wild horses (*Equus caballus*) and burros within designated allotments on lands administered by the United States Forest Service (USFS) and the BLM. The rationale is to maintain populations of these animals in ecological balance within the designated areas. The species is not listed as threatened or endangered by the USFWS (under the ESA) or the states of California or Nevada. The California Fish and Game Code (Section 4600) provides additional protection for these animals (MacDonald 2006).

As of 2006, there were only three remaining wild burro herds in California, none of which are considered genetically viable populations. The combined California populations consist of approximately 345 animals (MacDonald 2006). Wild burros are present in the proposed project area in California. Although no burros were identified during field surveys, recent burro scat was observed on the west edge of Ivanpah Dry Lake.

American Badger (BLM, S4)

The American badger (*Taxidea taxus*) is frequently found on the flats and alluvial fans next to desert mountains (Hoffmeister 1986). It occupies a diversity of habitats, particularly with the following elements: sufficient food friable soils, and relatively open uncultivated land. It will eat small mammals and burrowing rodents, wood rats (*Neotoma* spp.), reptiles, birds and their eggs, and bees and other insects (CDFG 1986).

Badger populations have declined drastically, particularly in California. Urban and agricultural development has had the greatest detrimental effects on badgers. They have been targets of deliberate killing for many years, and have suffered from rodent and predator poisoning (CDFG 1986).

A badger was observed near the Eldorado Substation during project surveys, and badgers were observed during field surveys for the ISEGS (CEC 2008), which is proximal to the project area. Badgers are more likely to occur on upper bajadas, such as the bajada east of Mountain Pass Substation, where greater plant species diversity and cover provides better habitat for prey species.

Desert Kangaroo Rat (MSHCP)

Desert kangaroo rat (*Dipodomys deserti*) live in sand dunes in very hot, dry deserts of the southwestern United States, even below sea level in Death Valley, California. Desert kangaroo rat require deep sand for their burrow, and will not dig them in rapidly shifting sand. They could occur anywhere within the project area.

Desert Pocket Mouse (MSHCP)

Desert pocket mouse (*Chaetodipus penicillatus*), a medium-sized pocket mouse, occurs in the southwestern United Sates and northern Mexico. Desert pocket mouse is found in various arid, open desert environments, usually where the vegetation is rather sparse. These may include desert wash, desert succulent shrub, desert scrub, and alkali desert scrub. Desert pocket mouse prefers soft alluvian, sandy, or silty soils along stream bottoms, desert washes, and valleys, rather than rocky terrain. These pocket mice live in soils that may be populated by creosote bush, cholla, palo verde, burroweed, mesquite, cacti, and short, sparse grass, as well as in lower edges of alluvial fan with yucca, mesquite, grama, and prickle poppy (Chebes 2002). This species could occur anywhere within the project vicinity.

Kit Fox (MSHCP)

The kit fox (*Vulpes macrotis*) primarily occur in the southwestern part of the United States and northern and central Mexico. Kit foxes are primarily found in arid regions, such as desert scrub, chaparral, and grasslands; they may also occur in agricultural areas and urban environments. Kit foxes prefer areas with loose soils for constructing dens (Patton and Francl 2008). This species may occur within the project area at any time.

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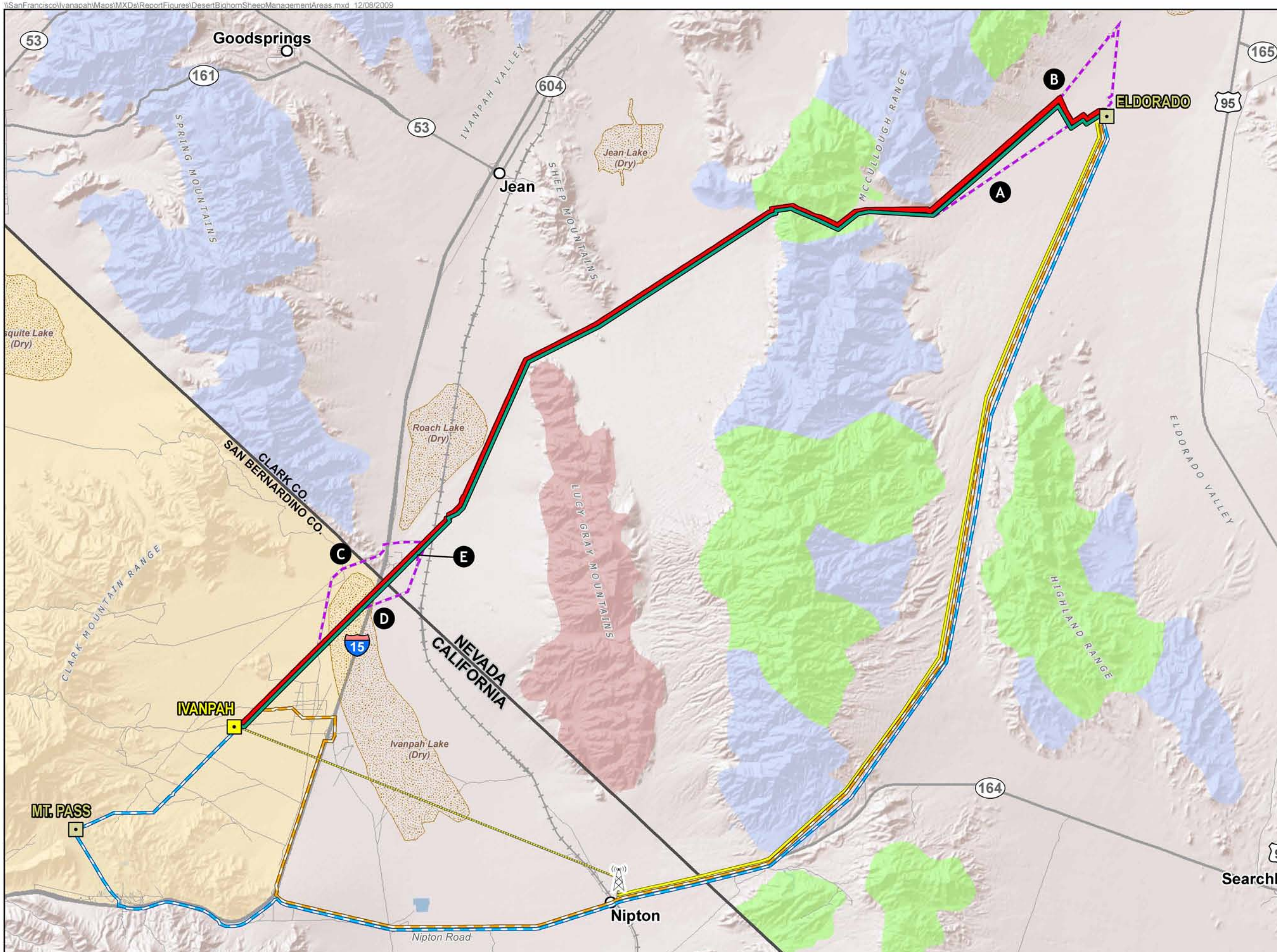

Figure 3.4-3
Eldorado-Ivanpah Transmission Project

Desert Bighorn Sheep Management Areas

PROPOSED PROJECT
- Transmission L.ine
- Telecommunications Line
- Redundant Telecommunications Line
- Microwave

ALTERNATIVES
- Transmission Line Alternatives
- Redundant Telecommunications Line - Mountain Pass
- Redundant Telecommunications Line - Golf Course

- Proposed Microwave Tower
- Proposed Substation
- Existing Substation
- City
- Road

Bighorn Sheep Habitat
- Crucial Habitat (Includes Potential Lambing Areas)
- Historically Unoccupied
- Winter Range
- CDFG Zone 3

0 1 2 3 4 5
Miles

December 2009

NV UT CO CA AZ NM

California Leaf-nosed Bat (BLM, ART)

The California leaf-nosed bat (*Macrotus californicus*) is primarily a resident of caves and mines in desert scrub habitat, generally below 3,280 feet in elevation (Hoffmeister 1986, Western Bat Working Group [WBWG] 2005). These bats use a variety of night roosts, such as open buildings, porches, bridges, rock shelters and mines (Harvey et al. 1999). The California leaf-nosed bat feeds on large night-flying and terrestrial insects, and sometimes fruit, including those of cacti (Hoffmeister 1986). There is evidence that a California leaf-nosed bat may use the same roost throughout its life (Brown et al. 1993). It does not forage far from its roost. Approximately 20 maternity colonies, and fewer than 20 winter roost sites, all located in mines, are known in California, mostly in mountains bordering the Colorado River Basin (Brown et al. 1993). Threats to this species include mine closures, vegetation removal, vandalism at roosts, and prolonged exposure to low temperatures (Brown et al. 1993).

The project is within the generally accepted range of the California leaf-nosed bat (Barbour and Davis 1969, Bat Conservation International [BCI] 2008, Harvey et al. 1999), and the species could occur where suitable mine or cave roost habitat is present. There is very little evidence of historic mining on Clark Mountain, Sheep Mountain, in the Lucy Gray Mountains, or in the north McCullough Pass area. Mine shafts suitable for bat roosts are unlikely to be present in these areas. Large solution pockets or small caves on Sheep Mountain and eroded pockets in igneous strata in the Lucy Gray and McCullough mountains could support small numbers of roosting bats if the voids are of adequate depth to maintain the proper roost temperature range required.

The proposed fiber optic communication line on the Eldorado–Lugo transmission line passes through an area of intense historic mining activity in the south end of the McCullough Mountains and the north end of the New York Mountains near the Big Tiger Wash and Nevada State Highway 164. Numerous abandoned mine shafts in that area may contain suitable roosting habitat for this species. The status of these features as habitat is not known.

California Myotis (BLM, ART)

The California myotis (*Myotis californicus*) roosts in a variety of habitats including in rock crevices, under loose bark and within holes in trees, in buildings, and occasionally in caves or mines (Harvey et al. 1999, Hoffmeister 1986). It is primarily a resident of desert scrub habitats, but occurs as high as the lower edge of conifer zones, though rarely above 6,000 feet. In the southwestern deserts, it usually occurs near a water source, often in rocky riparian canyons (Barbour and Davis 1969, Hoffmeister 1986).

There is only marginally suitable habitat present in the project area in Nevada that may support this species. It would be most likely to occur within the proposed project limits during nocturnal foraging activity.

Townsend's Big-eared Bat (BLM, ART)

Townsend's big-eared bat (*Corynorhinus townsendii*) occurs throughout the western United States west of the Great Plains, north into British Columbia, and south to Oaxaca in Mexico (BCI 2008, Harvey et al. 1999). The pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*) is restricted to the desert southwest (Barbour and Davis 1969), and is the subspecies that would occur within the vicinity of the proposed project. This species normally roosts in mines or caves, and typically returns to the same roosts each year (Harvey et al. 1999).

It is probably the bat species most frequently encountered in caves and mines in the western United States (Barbour and Davis 1969). The pale big-eared bat is found from low desert up into coniferous forest (Hoffmeister 1986). It prefers moths to other prey (WBWG 2005).

Townsend's big-eared bat would be likely to use habitats similar to those attractive to the California leaf-nosed bat. The abandoned mines in the Big Tiger Wash area would be the most likely place for this species to occur within the EITP area.

Big Free-tailed Bat (BLM, ART)

The big free-tailed bat (*Nyctinomops macrotis*) is found in the southwestern United States, as far north as central Utah and Colorado, south to northern South America, and east to the Caribbean (Harvey et al. 1999, Hoffmeister 1986). The big free-tailed bat is probably at the northern limit of its normal range in the southwestern United States (Harvey et al. 1999). It is apparently uncommon within its range in the United States in general, but may be locally common Records for this species are often of individual bats from widespread locations (Barbour and Davis 1969). Maternity colonies are known in the United States from Arizona, New Mexico, and Big Bend National Park on the Rio Grande River in Texas (Hoffmeister 1986, Schmidly 1991). The big free-tailed bat roosts among rocky, usually high cliffs in crevices, in rock shelters, under slabs of rock, and occasionally in buildings (Harvey et al. 1999, Hoffmeister 1986).

The big free-tailed bat could use natural bedrock cavities or fractures in cliffs in the north McCullough Pass area, or in the Lucy Gray Mountains, or on Sheep Mountain. Its presence within the project area would likely be limited to nocturnal foraging activities.

Birds

The project provides foraging and nesting habitat for bird species, including raptors. Given the higher elevation and greater diversity (species and structure) in the plant community at Mountain Pass and on the southern portion of the existing Eldorado–Lugo transmission line, it may be that these areas are used more by transient, summer visitor, and permanent resident birds than are lands to the north, south, and east. Bird nesting could occur within vegetation (particularly shrubby plants and cacti species), in ground burrows, in cliffs and crevices associated with surrounding mountain ranges, and potentially on project facilities such as existing poles and towers. In the proposed project vicinity, the avian nesting season for most species is from late February to early July. There is a general lack of natural potential roosting and nesting habitat for raptors along most of the proposed project route. Some potential nesting habitat is found in the Clark Mountains near the Mountain Pass Substation, where there are rocky cliffs and a few pinion pine, and potential nesting habitat in the north McCullough Pass area where rocky terrain might support cliff nesting species. Electrical transmission line lattice towers probably provide most of the potential raptor nesting habitat in the area. A pair of red-tailed hawks was observed constructing a nest in a lattice tower in the east foothills of the Clark Mountains, and a second stick nest was also observed in a tower during 2008 surveys. No raptor nests were observed in any existing lattice towers on the Eldorado–Lugo line. Stick nests in lattice towers are often re-occupied or modified and re-used intermittently by raptors and corvids returning to an area annually. The nests are generally persistent on the towers for years.

Golden Eagle (BLM, FPS)

The golden eagle *(Aquila chrysaetos)* is relatively common in the western United States and can be found in a variety of habitats, but prefers open ground or low hills where visibility is good for hunting (Ehrlich et al. 1988, Glinski 1998). It nests on cliffs, large or small trees, and sometimes telephone poles (Glinski 1998). The golden eagle feeds primarily on mammals, preferring rabbits (*Lepus* spp.) and ground squirrels, but also will feed on snakes, birds, and large insects when mammals are unavailable (Ehrlich et al. 1988, Glinski 1998, Terres 1980).

Suitable nesting habitat for the golden eagle is present in the Clark Mountains, but primarily in rockier areas at higher elevations, and not within the project area. There is also potential for golden eagles nesting in the upper elevations of the McCullough Mountains, and there is a probable nesting record for the Highland Range (Floyd et al. 2007), which is east of the Eldorado–Lugo alignment. The project area as a whole is quite open, and provides suitable hunting habitat for the golden eagle. The golden eagle was recorded near the Ivanpah Substation site during project surveys and during surveys for the ISEGS site in 2008 (CEC 2008).

Burrowing Owl (BLM, NRS 501)

Burrowing owls (*Athene cunicularia*) use a variety of habitat types, including shortgrass prairie, open scrublands of mesquite (*Prosopis* spp.), creosote bush, or rabbit-brush (*Chrysothamnus* spp.), as well as agricultural fields, airports, and golf courses (Terres 1980, Ehrlich et al. 1988, Dechant et al. 1999). In desert areas, habitat is typically treeless, open, and relatively level. Burrowing owls often select burrows where surrounding vegetation is kept short by grazing, dry conditions, or burning (Hjertaas et al. 1995, Dechant et al. 1999). The burrowing owl is unique among North America owls in nesting in burrows in the ground. It is semi-colonial and usually occupies burrows excavated by small mammals, often at the edges of active colonies of prairie dogs (*Cynomys* spp.) or ground squirrels. In areas that lack colonial burrowing mammals, burrowing owls will use excavations made by other animals such as badgers, woodchucks (*Marmota monax*), skunks, foxes, armadillos (*Dasypus novemcinctus*), coyotes (*Canis latrans*), and tortoises. It may also use natural cavities in rocks and openings in human-made structures. In addition to the nest burrow it may also use several satellite burrows that may provide protection from predators and parasites (Dechant et al. 1999). Burrowing owls in the western United States do not dig their own burrows; thus, the presence of burrowing animals is a critical element of their habitat.

Burrowing owls are opportunistic feeders, preying on a variety of arthropods and small vertebrates (Dechant et al. 1999, Hjertaas et al. 1995). They may forage during the day or night, but tend to forage closer to the nest during the day. Foraging habitat requirements are variable, depending on prey availability and abundance.

The project is within the greater limits of the known range of the burrowing owl, and is within the historic and current breeding ranges of the species (Shufford and Gardali 2008). A review of current information shows almost no recent breeding records in the part of the eastern Mojave Desert that includes the project area (CNDDB 2008, Institute for Bird Populations 2008, State of California 2008, Bates 2006). Suitable habitat for burrowing owls is present in areas throughout the project, particularly where animal burrows, especially those of desert tortoise, are common. A burrowing owl was observed along Transmission Alternative Route C during project surveys. They were also observed on the adjacent proposed ISEGS site (CEC 2008).

Crissal Thrasher (S3)

Crissal thrasher (*Toxostoma crissale*) is known to occur in both San Bernardino County, California, and Clark County, Nevada. Habitat includes a range of desert scrublands, mesquite thickets along washes, and chaparral environments (AOU 1983). Nesting occurs in large shrubs or low trees generally less than 8 feet above the ground. This species feeds primarily on insects, but will eat berries and seeds and occasionally take small lizards (Terres 1980). The species is uncommon throughout its range and is abundant only where large segments of mesquite bush occur, such as along the Colorado River (CDFG 2009). Therefore, the primary threat to this species is loss of preferred mesquite thicket breeding habitat along desert washes and watercourses.

This species could occur in the desert wash habitats within the project area in California and Nevada.

LeConte's Thrasher (BLM)

LeConte's thrasher (*Toxostoma lecontei*) is very sparsely distributed in southern California, western Arizona, southern Nevada, and extreme southwestern Utah (Schram 1998). It is generally restricted to the lowest, hottest, and most barren desert plains, particularly in saltbush and creosote bush habitats (Terres 1980). LeConte's thrashers feed primarily on large insects and other terrestrial invertebrates, and they occasionally eat lizards, other vertebrates, seeds, or fruit (Dobkin and Granholm 2005, Ehrlich et al. 1988). Populations of this species are very sparse, with densities in optimum habitat of five pairs or fewer per square mile (Remsen 1978). This species is very secretive and sensitive to human disturbance. Specific threats include off-road vehicle activity and clearing of shrubs for agriculture or other development.

LeConte's thrashers were observed during project surveys north of Primm, Nevada, near Roach Lake. LeConte's thrashers are very likely to occur in other areas throughout the project, mostly on the lower bajadas, where vegetation is sparse and where chollas provide suitable nesting sites.

Peregrine Falcon (BLM, NRS 501)

Peregrine falcons (*Falco peregrinus*) inhabit open wetlands near cliffs, and they can also be found living in cities with tall buildings or bridges (National Geographic Society [NGS] 2002). General breeding habitat for this species includes open areas from tundra, savanna, and seacoasts to high mountains, as well as open forest and tall buildings (Ehrlich et al. 1988). Their diet is solely comprised of birds, which they catch in mid-air (Phillips et al. 1964). They eat mostly doves and pigeons, but also waterfowl, shorebirds, and passerines (Ehrlich et al. 1992).

The peregrine falcon is known to occur in the project vicinity (Floyd et al. 2007), as the project area contains both suitable open areas for foraging and suitable nesting habitat in the form of cliff ledges within the McCullough Mountains.

Prairie Falcon (BLM)

The prairie falcon (*Falco mexicanus*) is typically found in very open habitats in perennial grasslands, rangeland, and light agricultural areas, but is present in the southeast deserts in California as well (Dawson 1998, Wheeler 2003). The prairie falcon is known to nest almost exclusively on sheltered cliffs. The nests are usually on a rock ledge that is overhung, or in a crack, and the nest always faces open habitat (Ehrlich et al. 1988, Steenhof 1998, Wheeler 2003). However, there are a few records of these birds nesting in earthen embankments (Ehrlich et al. 1988). While they may nest near riparian areas, they do not require the presence of water (Wheeler 2003). They do not construct their own nest, but use an old avian nest or scrape together soil, rocks, and sticks (Dawson 1998, Wheeler 2003). The nests may be reused annually for many years (Wheeler 2003).

The prairie falcon may occur in the vicinity of the McCullough Mountains, but there are no records of the species breeding in the range (Floyd et al. 2007). The project area contains both suitable open areas for foraging and suitable nesting habitat within the McCullough Mountains. The prairie falcon prefers to nest on cliff faces using ledges, cavities, or crevices and will also lay eggs in abandoned stick nests of eagles, hawks, or ravens (Steenhof 1998).

Phainopepla (BLM, NRS 501)

The phainopepla (*Phainopepla nitens*) is a member of the silky flycatcher family, *Ptilogonatidae*, a primarily tropical family of birds. The phainopepla feeds on a variety of berries and insects. In desert scrub habitats, mesquite mistletoe berries are an important food source, and are an attractant to the species. In other areas they feed on juniper, elderberry (*Sambucus* spp.), grape (*Vitis* spp.), buckthorn (*Rhamnus* spp.), Russian olive (*Elaeagnus angustifolia* L.), and other berries. They forage for insects in typical flycatcher fashion, repeatedly launching out from a high perch to retrieve an insect and returning to the perch (Chu and Walsberg 1999, NatureServe 2008).

The phainopepla typically nests twice a year, but occasionally three broods are produced (NatureServe 2008). The first nest of the year is produced in low desert scrub or mesquite habitat. As the warmer weather approaches, the phainopepla moves to higher elevations into pinion-juniper or oak (*Quercus* spp.) forest, where it will nest a second time. Nests are constructed mostly by the male and are usually in a tree or occasionally in a shrub (Chu and Walsberg 1999, NatureServe 2008). The phainopepla is a confirmed breeding species in the McCullough Mountains (Floyd et al. 2007).

The creosote bush-white bursage habitat on much of the project is mostly unfavorable to the presence of phainopeplas. Very few trees are associated with desert arroyos in the area, but a few small-stature catclaw acacia are present, and some support mesquite mistletoe. Two phainopeplas were observed during site visits to the project. One individual was observed within McCullough Pass, and the second was observed along the proposed telecommunication line.

Loggerhead Shrike (BLM)

The loggerhead shrike (*Lanius ludovicianus*) is widely distributed across the United States. It is found in a variety of habitats, which generally include open country, thinly wooded or shrubby areas with clearings, meadows, pastures, old orchards, and thickets along roadsides (Terres 1980). In California, this species may be found in desert, pinion-juniper woodland, savannah, grassland, ranches, and agricultural land (Small 1977). Loggerhead shrikes feed primarily on large insects, but they frequently eat small birds, mice, lizards, amphibians, carrion, and other invertebrates (Ehrlich et al. 1988). Populations of this species appear to be declining almost everywhere throughout its range, with the probable causes being habitat loss and pesticides (Ehrlich et al. 1988). The loggerhead shrike is relatively common in the lower elevations of southern California, including deserts, foothills, the Salton Sea, and the Colorado River (Schram 1998). The loggerhead shrike is a resident throughout the state of Nevada and probably nests in the McCullough Mountains (Floyd et al. 2007).

Loggerhead shrikes have been observed on the California and Nevada segments of the project. Several observations were made just west of the slopes of the McCullough Mountains.

Gray *Vireo* (MSHCP)

Gray Vireo (*Vireo vicinior*) is a sub-foraging inhabitant of some of the hottest, most arid regions of the southwestern United States and adjacent parts of northwestern Mexico (Barlow Sheridan and Colette 1999). It is associated with scrub vegetation and chaparral in mountains and high plains scrubland. This species could occur within the California and Nevada portions of the project.

Scott's *Oriole* (MSHCP)

Scott's oriole (*Icterus parisorum*) is found in desert grassland prairies and mountain canyons, particularly if yucca or palms are present. This species nests in pinyon-juniper woodlands, sycamores, and cottonwoods and forages for insects on the ground or in yuccas and other trees close to the ground. The size of their territory has not been studied extensively; however, it is generally believed to be large, depending on the availability of appropriate habitat (Gartland 2006). Scott's oriole has limited potential to occur along the proposed transmission line and alternative routes in California and Nevada.

Cactus Wren (MSHCP)

Cactus wren (Campylorhynchus brunneicapillus) primarily inhabit areas that are desert or semi-desert, such as Joshua tree woodland in the Mojave Desert; they also live along arid hillsides and locales that provide them with vegetation such as spiny cacti and cholla, which are used for nesting. Declines in population have been correlated to urbanization, although the species less affected by development when nest-site alternatives are available (California Partners in Flight 2009). Cactus wren has limited potential to occur along the proposed transmission line and alternative routes.

3.4.1.2 Wildlife Resource Conditions

Big Game Ranges/Wintering Areas

Nelson's bighorn sheep, also known as desert bighorn sheep, is the only big game species likely to occur within the project area. Habitat connectivity is important for maintaining sustainable populations for this species, and any boundaries or obstacles that restrict access between mountain ranges or to surface water can impede natural colonization. Bighorn, especially rams, will move between mountain ranges if the distance of flat open desert to be crossed is not great and their route between ranges is not bisected by intense human activity such as freeways. Ewes generally tend to be more sedentary and long movements by ewes between mountain ranges are unusual.

As described previously, the Clark Mountains provide occupied suitable habitat for the bighorn. Additionally, the BLM Rangewide Plan for Managing Habitat of Desert Bighorn Sheep on Public Lands identifies the McCullough Mountains as a Category II (Crucial Habitat) area, where wintering areas and potential lambing areas are located in the mountain range. Figure 3.4-3 illustrates bighorn sheep management areas within the EITP area. Continuous suitable habitat for bighorn sheep exists from the McCullough Range to the southeast, including the nearby Highland Range Crucial Bighorn Habitat Area (approximately 7 miles south-southeast of the proposed transmission line alignment through the McCullough Mountains). The proximity of the two ranges, with the relatively narrow, high valley in between, is favorable to regular movements of bighorn sheep between the two ranges. The Eldorado–Lugo transmission line, which would support the fiber optic communications line, passes through this habitat between the two ranges, but does not enter either the South McCullough Wilderness Area or the Highland Range Crucial Bighorn Habitat Area. The population of bighorn sheep in the McCullough Range was estimated at approximately 200 animals in 2002 (Cummings 2002). Bighorn may also be present on Sheep Mountain and the Lucy Gray Mountains, and may use the valley between the two ranges during movements. The existing transmission line ROW passes between these two ranges east of I-15 and north of Primm, Nevada. Further south of this area, I-15 is likely a movement barrier between the west and east sides of the project area for bighorn sheep.

Special Management Areas

Components of the project traverse a number of areas requiring special management considerations.

BLM Areas of Critical Environmental Concern, Desert Wildlife Management Areas, and Wilderness Areas

Critical areas have been established at various times by the BLM for the conservation and recovery of certain species (e.g., desert tortoise), unique biological habitats, and non-biological resources such as cultural resources. These are known as Desert Wildlife Management Areas (DWMAs) and Areas of Critical Environmental Concern (ACECs). The Clark Mountain ACEC was designated under the California Desert Conservation Act (CDCA) Plan of 1980 (described further in Section 3.4.2, "Applicable Laws, Regulations, and Standards") to protect the natural and cultural values of the area (BLM 1980). The Clark Mountain ACEC has significant endemic plant species, plant communities, diverse wildlife elements, and cultural resources values. The Clark Mountain ACEC is just west and north of the Mountain Pass Substation. The proposed project or alternatives would not cross the Clark Mountain ACEC. However, the project does cross the Ivanpah DWMA ACEC and the Puite-Eldorado ACEC. The USFWS (2008c) maps critical habitat for the desert tortoise in all of these ACECs. Figure 3.4-4 depicts ACECs within the EITP.

The BLM manages several wilderness areas as part of the National Wilderness Preservation System. No vehicles or motorized equipment are allowed within these designated wilderness areas. The Wee Thump Joshua Tree Wilderness Area was established in 2002 and has a total of 6,050 acres (BLM 2009a). This wilderness was established to protect the dense stand of Joshua trees present in the flat, alluvial plain that is co-dominated by creosote and blackbrush. The wilderness provides habitat for desert tortoise and an unusually diverse group of cavity-nesting birds and birds finding winter refuge. The South McCullough Wilderness Area is a larger area comprised of various vegetation habitats (creosote scrub, yucca and cacti, Joshua trees, and pinion-juniper at higher elevations). The wilderness provides habitat for chukar, desert tortoise, and desert bighorn sheep (BLM 2009b). The proposed telecommunication route (Path 2, Sections 1 and 2) runs in between, but not across, the South McCullough and Wee Thump Joshua Tree wilderness areas (Figure 3.4-4).

Mojave National Preserve

Mojave National Preserve covers 1.6 million acres and is located in California east of Barstow between I-15 and I-40, stretching to the Nevada border. Established in 1994, the preserve is managed by the National Park Service to "preserve unrivaled scenic, geologic and wildlife values associated with these unique natural landscapes" (California Desert Protection Act 1994). The proposed project directly borders, but is not in, the Mojave National Preserve. The project would be separated from the preserve by Nipton Road in eastern San Bernardino County (NPS 2009; Figure 3.4-4).

Wildlife Corridors/Linkages

A wildlife corridor is defined as a linear landscape feature that allows animal movement between two patches of habitat or between habitat and geographically discrete resources such as water. Connections between extensive areas of open space are integral to maintaining regional biological diversity and population viability. Areas that serve as wildlife movement corridors are considered biologically sensitive because they facilitate the persistence of special-status species. In the absence of corridors, habitats become fragmented, isolated islands surrounded by development. Fragmented habitats support much lower numbers of species and increase the likelihood of extinction for select species.

Important distinctions exist between regional and local corridors. Regional corridors link two or more large areas of natural open space and maintain demographic and genetic exchange between wildlife populations residing within these geographically distinct areas, whereas local corridors give resident animals access to essential resources (water, food, cover, or den sites) within a large habitat patch and may also function as secondary connections to the regional corridor system. Different species have different corridor use potentials. For example, a landscape feature that functions as a corridor for a songbird may not suffice for a mountain lion (*Felis concolor*) or a reptile. A useful distinction can be drawn between natural and constructed corridor elements. Natural elements are features of the landscape, such as canyons or riparian strips, conducive to animal movement. Constructed elements, such as roadway bridges and drainage culverts, are often part of a corridor. Wildlife corridors in a partially developed landscape generally include both natural and constructed elements.

In the project vicinity, mountain ranges and valleys provide discrete corridors for wildlife movement. Barriers to movement include the highways and paved roads (such as I-15 and Highway 164), the Union Pacific railroad tracks running north–south through the project, and the dry lake beds (for some species). The surrounding mountain ranges, while providing corridors, may also present barriers. Animals that may use corridors are large mammals, reptiles, and bird species. As discussed above, desert bighorn sheep occur within the mountain ranges in this area, and may use the valleys to migrate between the mountains on a regional level, and use local corridors as access to guzzlers and lambing areas. Wild burros require habitat similar to that used by the bighorn sheep (Wehausen 2006), and have been observed in the area; they may also use the area as a wildlife corridor. Suitable and critical habitat for the desert tortoise occurs throughout the project area and the area likely functions as an important regional linkage among individual populations. While the exact migratory patterns of Gila monster are not known, these reptiles likely have seasonal movement patterns (Nowak 2005), and may use local corridors within the area. Various locations within the project area may also provide habitat for migrating birds along the Pacific Flyway or local movements into preferred forage habitats. The Clark Mountains provide unique habitat for a variety of birds as previously discussed, and birds using the Clark range may also forage within the EITP.

3.4.2 Applicable Laws, Regulations, and Standards

The following section provides a summary of federal, state, and local laws, regulations, and standards that govern biological resources in the project area.

3.4.2.1 Federal

Endangered Species Act, Section 7 (ESA, 16 USC §1531 et seq., and 50 CFR §17.1 et seq.)

The ESA was passed by the U.S. Congress in 1973, and has since been amended several times. The ESA and 50 CFR 17.1 et seq. designate and provide for protection of threatened and endangered plants and animals and their critical habitat. Procedures for addressing federally listed species follow two principal pathways, both of which require consultation with the USFWS, which administers the ESA for all terrestrial species. The first pathway (ESA Section 10(a), Incidental Take Permit) is set up for situations in which a non-federal government entity (where no federal nexus exists) must resolve potential adverse impacts to species protected under the ESA. The second pathway (ESA Section 7, Consultation) involves projects with a federal connection or requirement; typically these are projects sponsored or permitted by a federal lead agency. For the EITP, the federal lead agency (the BLM) initiates and coordinates the steps below for Section 7:

- Informal consultation with USFWS to establish a list of target species
- Preparation of biological assessment assessing potential for the project to adversely affect listed species
- Coordination between state and federal biological resource agencies to assess impacts and proposed mitigation
- Development of appropriate mitigation for all significant impacts on federally listed species

The USFWS ultimately issues a final Biological Opinion on whether the project would affect federally listed species. The Biological Opinion includes a Incidental Take statement of anticipated incidental take accompanied by the appropriate and reasonable mitigation measures to minimize such take. It is expected that the USFWS will issue a Biological Opinion for the EITP for impacts to any federally listed species.

Clean Water Act, Section 404 (33 USC §1344 and 40 CFR §100 et seq.)

The USACE has been authorized to regulate the discharge of dredged or fill material to the waters of the United States and adjacent wetlands by Section 404 of the Clean Water Act (CWA) of 1977. Wetland delineation is fundamental to USACE and U.S. Environmental Protection Agency regulatory responsibilities under Section 404 of the CWA. Wetland delineation consists of standardized procedures that are used to determine whether a wetland is present on a site and, if so, to establish its boundaries in the field. In combination with current regulations and policies, delineation methods help define the area of federal responsibility under CWA, within which the agencies attempt to minimize the impacts of proposed projects to the physical, chemical, and biological integrity of the nation’s waters. In determining jurisdiction under the CWA, the USACE is governed by federal regulations (33 CFR 320–330) that define wetlands. The USACE Wetlands Delineation Manual is the accepted standard for delineating wetlands pursuant to the Section 404 regulatory program. An Interim Regional Supplement to the USACE Wetlands Delineation Manual for the Arid West Region was released by the USACE in December 2006, and is the current accepted standard for this region.

The USACE evaluates permit applications for essentially all construction activities that occur in the nation’s waters, including wetlands. USACE permits are also required for any work in the nation’s navigable waters. The USACE either performs or receives jurisdictional delineations of waters of the U.S. that are within the potential area of impacts for proposed developments, and provides a jurisdictional determination of effects. The jurisdictional review performed by the USACE may require modifications of development plans and specifications in order to preclude impacts on waters of the U.S. SCE will conduct and submit a jurisdictional determination to the USACE for the EITP to ascertain whether any U.S. waters are within the project boundary. If they are, a permit will be required for any impacts to those systems.

Clean Water Act, Section 401 (33USC §1341)

Applicants applying for USACE permit coverage under Section 404 of the CWA for actions that could result in any discharge into waters of the U.S. must obtain a water quality certification from the state in which the action is proposed.

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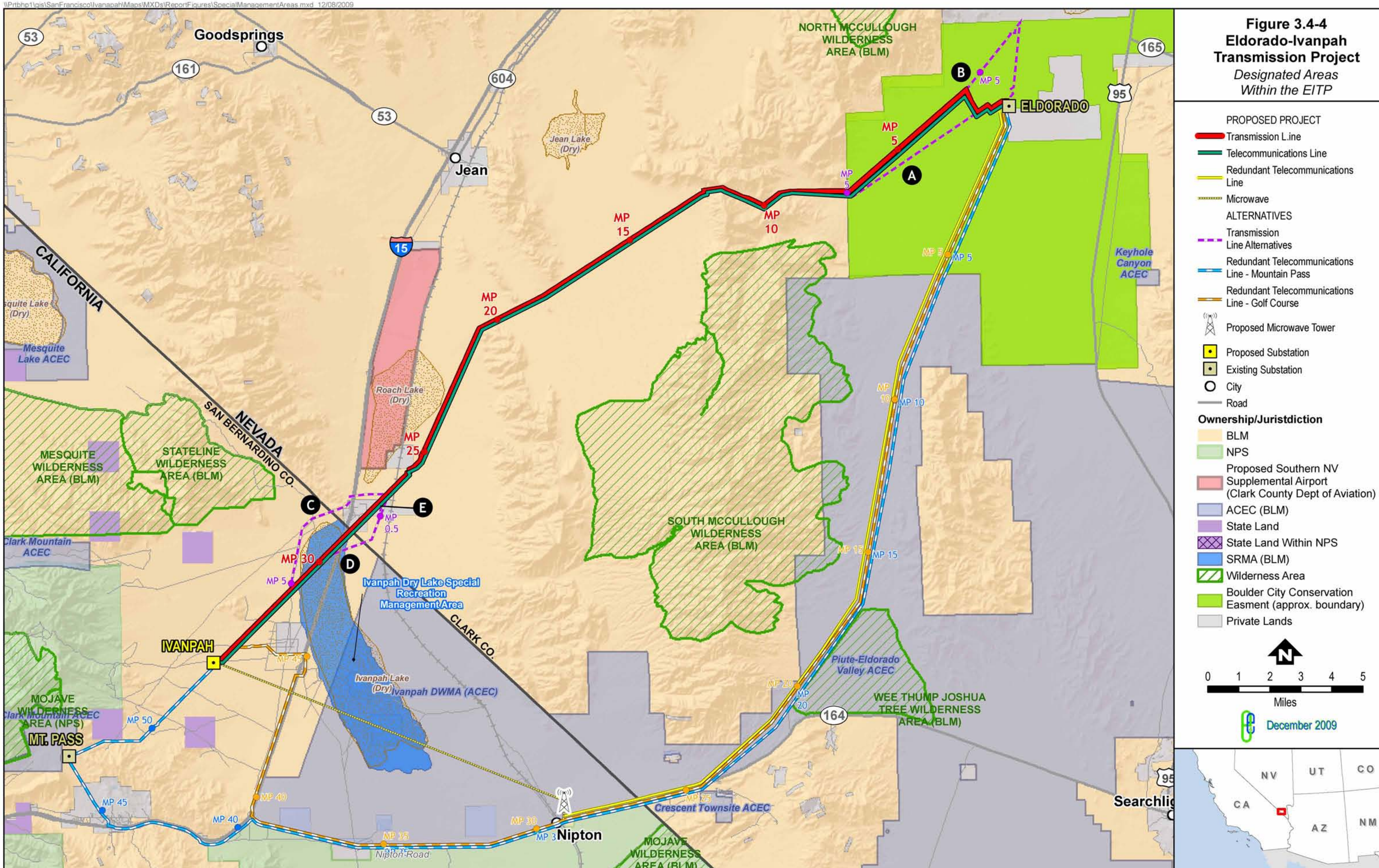

Figure 3.4-4
Eldorado-Ivanpah Transmission Project
Designated Areas Within the EITP

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The State of California uses its CWA Section 401 certification authority to ensure Section 404 permits protect state water quality standards. Water quality in California is governed by the Porter-Cologne Water Quality Control Act (California Water Code), which assigns overall responsibility for water rights and water quality protection to the State Water Resources Control Board (SWRCB). The nine statewide Regional Water Quality Control Boards (RWQCBs) develop and enforce water quality standards within their boundaries. The California Water Code defines "Waters of the State" as any surface water or groundwater, including saline waters, within the boundaries of the state.

The Nevada Department of Environmental Protection (NDEP) has the authority to grant or deny CWA Section 401 certification of a project requiring a federal permit for the discharge of dredge or fill materials under CWA Section 404. Alternately, the NDEP has the right to waive its certification authority if no action is taken on an application within a "reasonable time," not to exceed one year. If a waiver is granted, no conditions are attached, and in some cases a waiver may be equivalent to certification without conditions (NDEP 2009).

Migratory Bird Treaty Act (16 USC §7.3-712; 50 CFR §10)

The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-712) provides protection for a majority of bird species occurring in the U.S. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, or sell birds listed under the MBTA. Some common species are not covered under the MBTA and include the European starling (*Sturnus vulgaris*), the house sparrow (*Passer domesticus*), the rock pigeon (*Columba livia*), and game species such as grouse, turkey, and ptarmigan. There have been several amendments to the original law (including the Migratory Bird Treaty Reform Act of 1998). Currently, penalties include a fine of not more than $15,000 or imprisonment of not more than two years for misdemeanor violations of the act. The statute does not discriminate between live or dead birds and grants full protection to any bird parts, including feathers, eggs, and nests. Currently, 836 bird species are protected by the MBTA. The USFWS Migratory Birds and Habitat Program primarily operates under the auspices of the MBTA (USFWS 2009a).

Bald and Golden Eagle Protection Act (16 USC §668 and 50 CFR §22 et seq.)

The Bald and Golden Eagle Protection Act (BGEPA) prohibits any form of possession or taking of either bald eagles (*Haliaeetus leucocephalus*) or golden eagles. A 1962 amendment created a specific exemption for possession of an eagle or eagle parts (e.g., feathers) for religious purposes of Indian tribes. Rule changes made in September 2009 finalized permit regulations to authorize limited take of these species associated with otherwise lawful activities. These new regulations establish permit provisions for intentional take of eagle nests under particular limited circumstances (USFWS 2009b).

California Desert Protection Act of 1994

This act established Death Valley and Joshua Tree national parks, the Mojave National Preserve, and the Granite Mountains National Reserve. It also declared certain lands in the California Desert as wilderness, and included other natural resource designations and provisions. Though the proposed project does not directly impact any lands regulated by this act, the project does border the Mojave National Preserve and the Wee Thump Joshua Tree Wilderness Area.

California Desert Conservation Area Plan of 1980, as amended

The CDCA Plan was originally conceived under the Federal Land Policy and Management Act of 1976. It provides guidance for development of a plan for BLM management of public lands in the California desert (BLM 1980).

Northern and Eastern Mojave Coordinated Management Plan

The BLM approved the Northern and Eastern Mojave (NEMO) Management Plan in 2002, which is an amendment to the 1980 CDCA Plan (BLM 2002a). The NEMO plan sets standards for protection and preservation of approximately 2.4 million acres of public lands in the northern and eastern Mojave Desert in southeastern California. The plan established two DWMAs encompassing about 312,000 total acres that are managed as ACECs for the recovery of the desert tortoise (BLM 2002a, BLM 2002b). The project would cross through one of these areas, the Ivanpah DWMA, in California in areas north of Nipton Road (but south of I-15). The NEMO plan also addresses grazing guidelines for public leases and adjusted herd management areas for wild horses and burros as they affect the desert tortoise. The plan incorporated 23 wilderness areas (totaling 1.2 million acres) that were established by the 1994 California Desert Protection Act in the CDCA (BLM 2002b).

Desert Tortoise Recovery Plan and Critical Habitat Designation of 1994

The Desert Tortoise Recovery Plan established a strategy for the recovery and eventual de-listing of the Mojave population of desert tortoise. Six recovery units with 14 DWMAs were originally proposed in Arizona, California, Nevada, and Utah. Based on information in the Recovery Plan, 12 Critical Habitat Units were established for the Mojave population of desert tortoise by the USFWS on February 8, 1994 (59 FR 5820, USFWS 1994).

A draft revised recovery plan was prepared in 2008, which re-delineated the recovery units and reduced them from six units to five units, based on recent genetic research. The draft revised recovery plan combines the originally designated Eastern Colorado and Northern Colorado recovery units into the Colorado Desert Recovery Unit, which also now encompasses part of the Eastern Mojave Recovery Unit in Piute and Fenner valleys. The recovery units cover the entire range of the Mojave population of desert tortoise (USFWS 2008).

Cactus and Yucca Removal Guidelines, BLM

The BLM normally requires transplanting or salvage of certain native plant species that would be lost to development on lands under their jurisdiction. Species that typically require salvage regardless of their height in this region include yuccas (*Yucca* spp.), ocotillo (*Fouquieria splendens*), and cacti. For chollas, the plant must be less than 3 feet in height to require salvaging; all plants greater than 3 feet in height must be left on site to be destroyed by clearing activities (BLM 2001). The larger chollas thus become part of a natural desert mulch, which provides a seedbank for regeneration of these species.

3.4.2.2 State of California

California Endangered Species Act (California Fish and Game Code §2050 et seq.)

The CESA is similar to the federal ESA, and is administered by the CDFG. CESA was enacted to protect sensitive resources and their habitats. The CESA prohibits the take of CESA-listed species unless specifically provided for under another state law. CESA does allow for incidental take associated with otherwise lawful development projects. The CDFG recommends consultation early in project planning stages to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate mitigation planning to offset project-induced losses of listed species. A project applicant is responsible for consulting with the CDFG, if applicable, to preclude activities that are likely to jeopardize the continued existence of any CESA-listed threatened or endangered species or destroy or adversely affect habitat essential for any given species.

California Department of Fish and Game Code §1600-1603, Streambed Alteration Agreement

This statute regulates activities that would “substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of a natural watercourse” that supports fish or wildlife resources. A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks, and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. A Streambed Alteration Agreement (SAA) must be obtained for any proposed project that would result in an adverse impact to a river, stream, or lake. If fish or wildlife would be substantially adversely affected, an agreement to implement mitigation measures identified by the CDFG would be required. An SAA would likely be required for impacts to drainages in the EITP in California.

California Native Plant Protection Act of 1977; California Fish and Game Code §1900 et seq.

This law includes provisions that prohibit the taking of listed rare or endangered plants from the wild. The law also includes a salvage requirement for landowners. Furthermore, it gives the CDFG the authority to designate native plants as endangered or rare and provides specific protection measures for identified populations.

California Fish and Game Code §3503

This section prohibits the taking and possession of any bird egg or nest, except as otherwise provided by this code or subsequent regulations. The administering agency is the CDFG.

California Fish and Game Code §3511, §4700, §5515, and §5050

These sections prohibit the taking and possession of birds, mammals, fish, and reptiles listed as "fully protected." The administering agency is the CDFG.

California Fish and Game Code §3513 – Adoption of the Migratory Bird Treaty Act

This section provides for the adoption of the MBTA's provisions. As with the MBTA, this state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of non-game migratory birds. The administering agency is the CDFG.

California Food and Agriculture Code §80001 et seq. – California Desert Native Plants Act

The purpose of this act is to protect California desert native plants from unlawful harvesting on both public and privately owned lands. The act provides for legal harvesting of native plants.

California Code of Regulations §670.2 and §670.5

The code lists wildlife and plant species listed as threatened or endangered in California or by the federal government under ESA. Species considered future protected species by the CDFG are designated California species of special concern (CSC). CSC species currently have no legal status, but are considered indicator species useful for monitoring regional habitat changes.

Natural Communities Conservation Plan, Habitat Conservation Plan, and Other Jurisdictions in the Region

A review of the current (2008) USFWS-ECOS Conservation Plans and Agreements Database and the CDFG Natural Community Conservation Planning revealed no Natural Communities Conservation Plan (NCCP), Habitat Conservation Plan (HCP), or candidate HCPs within the area of influence of this project in California (CDFG 2008a).

3.4.2.3 State of Nevada

Nevada Revised Statute 501

Nevada Revised Statute 501, supplemented by the Nevada Administrative Code (NAC), is the Nevada state law that covers administration and enforcement of wildlife resources within the state. The administering agency is the NDOW. Any authorizations for impacts to protected species would be processed through the NDOW.

Nevada Revised Statute 527.060–527.120

Nevada Revised Statute 527, supplemented by the NAC, protects and regulates the removal of Christmas trees, yuccas, and cacti for commercial purposes. Such removal or possession requires a permit and tags from the Nevada Spur Forester Fire Warden, Nevada Division of Forestry.

3.4.2.4 Regional and Local

San Bernardino County Development Code

Approval from the county is required to remove, harvest, or transplant a living desert native plant. Provision 89.0415 of the San Bernardino County Development Code prohibits harvest or removal of the following desert native plants except under a permit issued by the Agricultural Commissioner or other applicable County Reviewing Authority: (1) desert plants with stems 2 inches or greater in diameter or 6 feet or greater in height (e.g., smoketree [*Dalea spinosa*]), (2) all species of the genus *Prosopis* (mesquites), (3) all species of the family *Agavaceae* (century plants, nolinas, yuccas), (4) creosote rings 10 feet or greater in diameter, and (5) all Joshua trees (Keep Milpas Rural 2009).

When the removal of specimen-size Joshua trees is requested, a removal permit will be granted only if the director of the Building and Safety Department finds that no other reasonable alternative exists for the development of the land. Joshua trees that are proposed to be removed would be transplanted or stockpiled for future transplanting wherever possible. In the instance of stockpiling, the permittee must comply with department policy to ensure Joshua trees are transplanted appropriately (Keep Milpas Rural 2009).

San Bernardino County General Plan

The San Bernardino County General Plan requires retention of existing native vegetation for new development projects, particularly Joshua trees, Mojave yuccas, creosote rings, and other species protected by the Development Code and other regulations. This can be accomplished by requiring the building official to make a finding that no other reasonable siting alternatives exist for development of the land prior to removal of a protected plant, by encouraging onsite relocation of Joshua trees and Mojave yuccas, and by requiring the developer to bear the cost of tree or yucca relocation (San Bernardino County 2007).

The San Bernardino County General Plan requires 50- to 100-foot riparian setbacks that prohibit removal of mature natural vegetation or of vegetation within 200 feet of a stream without a tree permit and environmental review with mitigations imposed. The San Bernardino County General Plan also encourages use of conservation practices when managing grading, replacing ground cover, protecting soils and natural drainage, and protecting or replacing trees (San Bernardino County 2007).

Clark County (Nevada) Multiple Species Habitat Conservation Plan

The Clark County MSHCP and the resultant USFWS Section 10(a) incidental take permit are designed to allow the incidental take of species covered by the ESA (Clark County 2000) on non-federal lands. The MSHCP provides for the long-term conservation and recovery of native species of wildlife and plants and their habitats, while allowing for regulated development of lands within Clark County. The plan is designed to comply with statutory and regulatory requirements of the ESA and NEPA. The plan represents a county-wide conservation strategy that emphasizes ecosystem-level management of natural resources. The plan supplants earlier species-specific conservation efforts. Lists of species that are covered under the plan are provided. Under the MCHSP, tree removal is allowed only for insect and disease control or in emergencies, and tree improvement activities may not impair wilderness values (Clark County 2000).

Four classes of management are designated under the MSHCP, and mitigation ratios and fees are applied to projects based on these classes. Intensively Managed Areas (IMAs) are “Core, High Priority Conservation Areas” set aside for one or more species, and no uses other than preservation are allowed. Less Intensively Managed Areas (LIMAs) are buffers between IMAs and other lands that preserve much of the natural resource values, while allowing low impact uses and development. Multiple Use Managed Areas (MUMAs) allow a variety of development (usually surrounding existing development and transportation and utility corridors), but mitigation is still required for species impacts. Impacts to LIMAs generally require higher mitigation ratios than do impacts to MUMAs. Unmanaged Areas (UMAs) are developed areas with little natural resource value and few requirements for natural resource preservation.

The non-federal lands around Primm, Nevada, and some of the land to the south and east of the existing Eldorado Substation are the only lands that would be governed by the Clark County MSHCP within the project boundaries (Figure 3.4-4).

Boulder City Conservation Easement

The Boulder City Conservation Easement (BCCE) was established by Boulder City in 1994 to exact protections and provide conservations for the desert tortoise, other species, and their habitat (City of Boulder 1994). The BCCE is a high priority conservation area in which development activity is severely limited. Only existing uses of historical easements are permitted, and expansion or significant modification to these uses is not allowed (Wainscott, personal communication 2009; Kokos, personal communication 2009). The BCCE was in place prior to the Clark County MSHCP, and the MSHCP has incorporated BCCE provisions. Clark County planners consider the BCCE to be the equivalent of USFWS-designated critical habitat (Wainscott 2009; Kokos 2009). The proposed project would fall within an existing utility easement corridor crossing the BCCE just east of the McCullough Pass area (Figure 3.4-4).

3.4.3 Impact Analysis

This section defines the methodology used to evaluate impacts on biological resources, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.4.4.

3.4.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to biological resources would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by CEQ regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

Effects to biological resources would occur if the project would:

- Substantially alter the structure and functions of sensitive upland, riparian, or aquatic vegetative communities;
- Change the diversity or substantially alter the numbers of a local population of any wildlife or plant species, or interfere with the survival, growth, or reproduction of affected wildlife and plant populations;
- Substantially interfere with the seasonal or daily movement or range of migratory birds and other wildlife;
- Result in a substantial long-term loss of existing special species habitat;
- Result in direct or indirect impacts on candidate or special-status species populations or habitat that would contribute to or result in the federal or state listing of the species (e.g., substantially reducing species numbers, or resulting in the permanent loss of habitat essential for the continued existence of a species); or
- Introduce and/or increase the potential for introduction of invasive, non-native, or noxious weeds to an area.

3.4.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFG or the USFWS;
    I. For desert tortoise, have any adverse effect on individuals of this species such that these animals become stressed and/or experience take;
    II. For raptors and birds protected by the MBTA, have any adverse effect on nesting birds such that birds abandon active nests and/or fledglings/young become stressed and/or experience take;
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFG or USFWS;
    I. Have a substantial adverse effect on sensitive desert vegetation and intact native vegetation communities;
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA;
d. Interfere substantially with the movement of native resident or migratory fish or wildlife species, wildlife corridors, or wildlife nursery sites;
    I. Interfere substantially with the movement of terrestrial wildlife species through physical entrapment or other means such that these animals become stressed and/or experience take;
e. Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
f. Conflict with the provisions of an approved local, regional, or state habitat conservation plan.

In addition to CEQA significance criteria, the NDOW has identified disturbance thresholds for certain species, restricting significant adverse impacts from project activities. These thresholds were considered in the assessment of impacts. Impacts would be significant if the construction, operation, or maintenance of the proposed project would not avoid adverse impacts to:

a. adult and juvenile desert bighorn sheep and sensitive habitat areas (i.e., lambing areas)
b. adult and juvenile burrowing owls and occupied habitat
c. Gila monster and occupied habitat;
d. nesting birds within the Wee Thump Joshua Tree Wilderness Area

3.4.3.3 Methodology

Impact analysis for biological resources was conducted by (1) gathering and vetting information from numerous sources (see description of sources below) in addition to the data provided by the applicant and (2) evaluating temporal and spatial affects to habitats and organisms potentially present within the project area and within a regional geographic context. Recent survey data provided by SCE were assessed for accuracy and appropriate implementation of resource agency protocols. Calculations for temporary and permanent disturbance to vegetation habitat were based on the applicant's projections of land disturbance from project features. Estimates for desert tortoise densities present within the EITP were provided from the 2008 and 2009 survey reports from SCE. Mapping resources were consulted to determine the extent of impact from the project on special management areas, including the Clark County MSHCP and the BCCE. Potential impacts and appropriate minimization and mitigation measures were discussed in-depth with resource agencies, specifically the USFWS, NDOW, and CDFG. Additionally, other relevant environmental documents for projects occurring in the same vicinity as the EITP were reviewed to assure consistency with impact analyses and proposed mitigation, including the ISEGS Final Staff Assessment/Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM and the joint CCPUC/BLM Draft Environmental Report (DEIR)/DEIS for the Sunrise Powerlink Transmission Project.

When analyzing impacts from the project alternatives, discussions were confined to impacts specifically generated by differences between the footprint of the proposed project and that of the alternative.

3.4.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) related to biological resources:

APM BIO-1: Conduct Preconstruction Surveys. Preconstruction biological clearance surveys would be conducted by qualified biologists to identify special-status plants and wildlife.

APM BIO-2: Minimize Vegetation Impacts. Every effort would be made to minimize vegetation removal and permanent loss at construction sites. If necessary, native vegetation would be flagged for avoidance.

APM BIO-3: Avoid Impacts on State and Federal Jurisdiction Wetlands. Construction crews would avoid impacting the streambeds and banks of streams along the route to the extent possible. If necessary, an SAA would be secured from the CDFG. Impacts would be mitigated based on the terms of the SAA. No streams with flowing waters capable of supporting special-status species would be expected to be impacted by the proposed project.

APM BIO-4: Best Management Practices. Crews would be directed to use Best Management Practices (BMPs) where applicable. These measures would be identified prior to construction and incorporated into the construction operations.

APM BIO-5: Biological Monitors. Biological monitors would be assigned to the project in areas of sensitive biological resources. The monitors would be responsible for ensuring that impacts on special-status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors would flag the boundaries of areas where activities would need to be restricted in order to protect native plants and wildlife or special-status species. Those restricted areas would be monitored to ensure their protection during construction.

APM BIO-6: Worker Environmental Awareness Program (see CR-2b, PALEO-3, W-11). A Worker Environmental Awareness Program (WEAP) would be prepared. All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project. The WEAP training would include a review of the special-status species and other sensitive resources that could exist in the project area, the locations of sensitive biological resources and their legal status and protections, and measures to be implemented for avoidance of these sensitive resources. A record of all trained personnel would be maintained.

APM BIO-7: Avoid Impacts on Active Bird Nests. SCE would conduct project-wide raptor and nesting bird surveys and remove trees or other vegetation, if necessary, outside of the nesting season (nesting season in the project area is late February to early July). If vegetation or existing structures containing a raptor nest or other active nest needed to be removed during the nesting season, or if work was scheduled to take place in close proximity to an active nest on an existing transmission or subtransmission tower or pole, SCE would coordinate with the USFWS, CDFG, and/or the NDOW as appropriate to obtain written verification prior to moving the nest.

APM BIO-8: Avian Protection. All transmission and subtransmission towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006).

APM BIO-9: Facility Siting. Final tower and spur road locations would be adjusted to avoid sensitive biological resources to the greatest extent feasible.

APM BIO-10: Invasive Plant Management. An invasive plant management plan would be developed to reduce the potential for spreading invasive plant species during construction activities.

APM BIO-11: Desert Tortoise Measures. The applicant or a qualified consultant would provide for the following to reduce impacts on desert tortoise:

- A field contact representative would be designated and would oversee compliance monitoring activities and coordination with authorizing agency(s). Compliance activities would at a minimum include conducting preconstruction surveys, assuring proper removal of desert tortoise, staffing biological monitors on construction spreads, and upholding all conditions authorized. The field contact representative would also oversee all compliance documentation including daily observation reports, non-compliance and corrective action reports, and final reporting to any authorized agency upon project completion.
- All work area boundaries associated with temporary and permanent disturbances would be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities. All workers would strictly limit activities and vehicles to the designated work areas.
- Crushing/removal of perennial vegetation in work areas would be avoided to the maximum extent practicable.
- All trash and food items generated by construction and maintenance activities would be promptly contained and regularly removed from the project site(s) to reduce the attractiveness of the area to common ravens.
- Pets would not be allowed in working areas unless restrained in a kennel.
- Where possible, motor vehicles would be limited to maintained roads and designated routes.
- Vehicle speed within the project area, along ROW maintenance routes, and along existing access roads would not exceed 20 miles per hour. Speed limits would be clearly marked and all workers would be made aware of these limits.
- Constructed road berms would be less than 12 inches in height and have slopes of less than 30 degrees.
- Construction monitoring would employ a designated field contact representative, authorized biologist(s), and qualified biologist(s) approved by the BLM during the construction phase. At a minimum, qualified biologist(s) would be present during all activities in which encounters with tortoises could occur. A qualified biologist is defined as a person with appropriate education, training, and experience to conduct tortoise surveys, monitor project activities, provide worker education programs, and supervise or perform other implementing actions. An authorized biologist is defined as a wildlife biologist who has been authorized to handle desert tortoises by the USFWS. A field contact representative is defined as a person designated by the project proponent who is responsible for overseeing compliance with desert tortoise protective measures and for coordination with agency compliance officer(s).
- Preconstruction clearance surveys would be conducted within 48 hours of initiation of site-specific project activities, following USFWS protocol (USFWS 1992). The goal of a clearance survey is to find all tortoises on the surface and in burrows that could be harmed by construction activities. Surveys would cover 100 percent of the acreage to be disturbed. All potential tortoise burrows within 100 feet of construction activity would be marked. Tortoise burrows would be avoided to the extent practicable, but would be excavated if they would be crushed by construction activities.
- Any tortoise found on the surface would be relocated to less than 1,000 feet away. Tortoises would be handled carefully following the guidelines given in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1999). Tortoises would be handled with new latex gloves

each time to avoid transmission of disease, and handlers would especially note guidelines for precautions to be taken during high-temperature periods.

- If a potential tortoise burrow were required to be excavated, the biologist would proceed according to the guidelines given in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1999). Tortoises removed from burrows would be relocated to an artificial burrow (Desert Tortoise Council 1999). The entrance of the artificial burrow would be blocked until construction activities in the area were over (Desert Tortoise Council 1999).
- For activities conducted between March 15 and November 1 in desert tortoise habitat, all activities in which encounters with tortoises might occur would be monitored by a qualified or authorized biologist. The biologist would be informed of tortoises relocated during preconstruction surveys so that he or she could watch for the relocated tortoises in case they attempted to return to the construction site. The qualified or authorized biologist would watch for tortoises wandering into the construction areas, check under vehicles, examine excavations and other potential pitfalls for entrapped animals, examine exclusion fencing, and conduct other activities to ensure that death or injuries of tortoises were minimized.
- No overnight hazards to desert tortoises (e.g., auger holes, trenches, pits, or other steep-sided depressions) would be left unfenced or uncovered; such hazards would be eliminated each day prior to the work crew and biologist leaving the site. Large or long-term project areas would be enclosed with tortoise-proof fencing. Fencing would be removed when restoration of the site was completed.
- Any incident occurring during project activities that was considered by the biological monitor to be in non-compliance with the mitigation plan would be documented immediately by the biological monitor. The field contact representative would ensure that appropriate corrective action was taken. Corrective actions would be documented by the monitor. The following incidents would require immediate cessation of the construction activities causing the incident, including (1) imminent threat of injury or death to a desert tortoise; (2) unauthorized handling of a desert tortoise, regardless of intent; (3) operation of construction equipment or vehicles outside a project area cleared of desert tortoise, except on designated roads; and (4) conducting any construction activity without a biological monitor where one was required. If the monitor and field contact representative did not agree, the federal agency's compliance officer would be contacted for resolution. All parties could refer the resolution to the federal agency's authorized officer.
- All construction personnel, including subcontractors, would complete a WEAP. This instruction would include specific desert tortoise training on distribution, general behavior and ecology, identification, protection measures, reporting requirements, and protections afforded by state and federal endangered species acts.
- Parked vehicles would be inspected prior to being moved. If a tortoise were found beneath a vehicle, the authorized biologist would be contacted to move the animal from harm’s way, or the vehicle would not be moved until the desert tortoise left of its own accord. The authorized biologist would be responsible for taking appropriate measures to ensure that any desert tortoise moved in this manner was not exposed to temperature extremes that could be harmful to the animal.
- Should any desert tortoise be injured or killed, all activities would be halted, and the field contact representative and/or authorized biologist immediately contacted. The field contact representative and/or authorized biologist would be responsible for reporting the incident to the authorizing agencies.
- A report to the USFWS would be produced reporting all tortoises seen, injured, killed, excavated, or handled. GPS locations of live tortoises would be reported.
- The applicant would implement a Raven Management Program that would consist of: (1) an annual survey to identify any tortoise remains at the base of the towers; this information would be relayed to the BLM so that the ravens and/or their nests in these towers could be targeted for removal, (2) SCE making an annual

or one time contribution to an overall raven reduction program in the California or Nevada desert, with an emphasis on raven removal in the vicinity of this project.

APM BIO-12: Desert Bighorn Sheep Measures. The applicant would consult with the BLM, USFWS, and NDOW regarding conservation measures to avoid impacts on desert bighorn sheep during construction. Project areas with the potential to impact bighorn sheep include the proposed transmission line route through the McCullough Mountains and the telecommunication route segment in the southern Eldorado Valley between the Highland Range and the Southern McCullough Mountains. Avoidance and minimization measures could include such elements as preconstruction surveys, biological monitoring, and timing construction activities to avoid bighorn sheep active seasons. Construction requiring the use of helicopters would be conducted outside of bighorn lambing season (April through October) and the dry summer months when bighorn may need to access artificial water sources north of the propose route in the McCullough Mountains (June through September).

APM BIO-13: Western Burrowing Owl Measures. Where project ground-disturbing activities would occur prior to the burrowing owl breeding season (mid-March to August), all burrows, holes, crevices, or other cavities in suitable habitat on the project, within the limits of proposed ground disturbance, would be thoroughly inspected by a qualified biologist before being collapsed. This would discourage owls from breeding on the construction site. Other species using burrows would be relocated prior to collapsing burrows. If construction were to be initiated after the commencement of the breeding season and burrowing owls could be seen within areas to be affected by ground construction activities, a qualified biologist would observe behavior to determine their breeding status. If breeding were observed, the nest area would be avoided, with an appropriately sized buffer sufficient to prevent disturbance during construction activities until the chicks fledged.

APM BIO-14: Gila Monster and Chuckwalla Measures. The following measures are the current NDOW construction site protocols for the Gila monster (NDOW 2005). These protocols are applicable for the Gila monster in both the Nevada and California sections of the project, and applicable for the chuckwalla in the Nevada section of the project.

Through the WEAP, workers and other project personnel should (at a minimum) know how to (1) identify Gila monsters and distinguish them from other lizards such as chuckwallas and banded geckos, (2) report any observations of Gila monsters (in Nevada) to the biological monitor for notification of the NDOW, (3) be alerted to the consequences of a bite resulting from carelessness or unnecessary harassment, and (4) be aware of protective measures provided under state law.

- Live Gila monsters found in harm's way on the construction site would be captured and then detained in a cool, shaded environment (<85 degrees Fahrenheit) by the project biologist or equivalent personnel until an NDOW biologist could arrive for documentation purposes. Although a Gila monster is venomous and can deliver a serious bite, its relatively slow gait allows for it to be easily coaxed or lifted into an open bucket or box, carefully using a long handled instrument such as a shovel or snake hook (note: it is not the intent of NDOW to request unreasonable action to facilitate captures; additional coordination with NDOW will clarify logistical points). A clean 5-gallon plastic bucket with a secure, vented lid; an 18-inch x 18-inch x 4-inch plastic sweater box with a secure, vented lid; or a tape-sealed cardboard box of similar dimension may be used for safe containment. Additionally, written information identifying the mapped capture location (e.g., GPS record), date, time, and circumstances (e.g., biological survey or construction) and habitat description (vegetation, slope, aspect, and substrate) would also be provided to NDOW.
- Injuries to Gila monsters may occur during excavation, blasting, road grading, or other construction activities. If a Gila monster is injured, it should be transferred to a veterinarian proficient in reptile medicine for evaluation of appropriate treatment. Rehabilitation or euthanasia expenses would not be covered by NDOW. However, NDOW would be immediately notified during normal business hours. If an animal were killed or found dead, the carcass would be immediately frozen and transferred to NDOW with a complete written description of the discovery and circumstances, habitat, and mapped location.
- Should NDOW's assistance be delayed, biologists or equivalent acting personnel on site may be requested to remove and release the Gila monster out of harm's way. Should NDOW not be immediately available to

respond for photo-documentation, a 35-mm camera or equivalent (5 mega-pixel digital minimum preferred) would be used to take good quality images of the Gila monster in situ at the location of live encounter or dead salvage. The pictures, preferably on slide film (.tif or .jpg digital format) would be provided to NDOW. Pictures would include the following information: (1) Encounter location (landscape with Gila monster in clear view); (2) a clear overhead shot of the entire body with a ruler next to it for scale (Gila monster should fill camera's field of view and be in sharp focus); (3) a clear, overhead close-up of the head (head should fill camera's field of view and be in sharp focus).

3.4.3.5 Proposed Project / Proposed Action

The proposed project would result in impacts to both vegetation and wildlife communities, as well as to special-status plant and wildlife species. The analysis is presented below, followed by NEPA and CEQA conclusions.

Vegetation

Clearing and grading activities for project infrastructure (the substation, improvements to existing access/spur roads, new access/spur roads, staging areas, pulling areas, stringing and splicing areas, and tower foundations for the transmission and telecommunications lines) would cause the direct loss of vegetation communities within the project area boundaries. Vegetation communities affected would include creosote brush-white bursage desert scrub, saltbush scrub, Mojave yucca desert scrub, Joshua tree woodland, black bush scrub, desert wash, and pinion pine-juniper. Some disturbance would be temporary, such as for the installation of temporary spur roads, staging areas, and pulling and stringing areas, which would all be removed upon construction completion. Impacts to vegetation in these areas would be temporary, as communities would likely re-colonize these areas over time. Other project infrastructure would be permanent, and vegetation would be permanently impacted for those project areas (substation, access roads, and towers). The extent of disturbance impact would vary by vegetation community and location within the project area. Total temporary disturbance would be approximately 384 acres, while permanent disturbance would be approximately 59 acres. Table 3.4-2 contains a breakdown of the acreage of permanent and temporary impacts per vegetation community. Creosote-white bursage scrub and black bush scrub are the dominant vegetation types within the project area and thus these communities would have the highest acreage impact.

Clearing and grading activities could cause the direct loss of *Escobaria spp*., rosy two-toned beardtongue, and white-margined beardtongue along the proposed transmission line in Nevada, and the direct loss of Utah vine milkweed, Parish club cholla, nine-awned pappus grass, Mojave milkweed, Aven Nelson's phacelia, sky-blue phacelia, California barrel cactus, and black gamma along the proposed transmission line in California. Clearing and grading required for one of the proposed pulling stations for the 115-kV line located to the west of the proposed substation could cause the loss of Parish club cholla and nine-awed pappus grass. Clearing and grading required for the telecommunication line (Path 1) could impact individuals of several special-status plant species: the Utah vine milkweed, *Escobaria* spp., and sky-blue phacelia, all identified in the EITP in California. Clearing and grading for the Ivanpah Substation could cause the loss of Parish club cholla, barrel cactus, and *Escobaria* spp. There could be both temporary and permanent impacts, depending on whether plant individuals could re-colonize on their own (a species-specific factor), which would also depend on whether the existing seedbank was still present after clearing.

Grading activities would disturb soil along the proposed transmission line and telecommunication line, thus indirectly impacting the vegetation communities by creating opportunities for non-native invasive weed species to colonize the disturbed work areas. Invasive weed species could out-compete native plants for resources such as water and space. Additionally, soil disturbance could reduce the native seed bank associated with the site. Dust generated during construction could adversely affect onsite and offsite native vegetation communities by reducing photosynthetic and respiratory activity, which could lead to lower growth rates and/or lower fitness of native plant species. Removal of native plant species would leave denuded areas at risk for the potential spread of non-native invasive weed species. Non-native invasive weeds could also be spread during operation and maintenance activities, such as from additional vehicle traffic due to routine line patrols, line washing, and ROW road maintenance. Additional vehicles and crews could indirectly impact the native vegetation by inadvertently track in clinging seeds and/or parts of noxious weeds, thus facilitating their spread. The spread of noxious weeds could also impact the current fire regime, as an increase in noxious weeds could increase the biofuel present, resulting in an increase in the intensity and/or frequency of fires. The increase in fire intensity and/or frequency could indirectly impact the native vegetation community by creating conditions in which plant species that are fire tolerant would have a competitive advantage. In general, noxious weeds tend to be more adaptive to frequent fires than the native desert vegetation. Spread of noxious weeds also could impact special management areas adjacent to or crossed by the project, such as the Mojave National Preserve, Wee Thump Joshua Tree Wilderness Area, Clark Mountain ACEC, Eldorado-Puite ACEC, and Ivanpah DWMA ACEC. Some invasive/noxious species (e.g., *Erodium* spp., *Bromus* spp., and *Schismus* spp.) are already widespread in the area and thus project implementation would have little effect on further impacts from these species. The proliferation of other weeds such as saltcedar and thistles could adversely impact native vegetation in the project area because these species would require aggressive control strategies.

The applicant has incorporated the following measures to minimize impacts to vegetation and special-status plants, and to reduce the spread of noxious, non-native, and invasive species:

- Preconstruction surveys (APM BIO-1)
- Minimal vegetation impacts (APM BIO-2)
- Best management practices (APM BIO-4)
- Biological monitors (APM BIO-5)
- Worker and environmental awareness program (APM BIO-6)
- Facility siting (APM BIO-9)
- Invasive plant management (APM BIO-10)
- Seeding and inter-planting (APM AES-2; see Section 3.2, "Aesthetics and Visual Resources," for details on this and the next three measures)
- Regrading/revegetation of construction sites (APM AES-4)
- Minimizing of road modifications (APM AES-6)
- Suppression of dust (APM AES-7)

Implementation of the project as designed, including these APMs, would result in adverse, moderate impacts on native vegetation communities and individuals of special-status plants species. There would be both short- and long-term impacts (depending on whether the ground disturbance was permanent or temporary) localized to the proposed route and substation footprint. Impacts also could be extensive due to the potential spread of introduced noxious and invasive plant species outside the boundaries of the proposed project along disturbance corridors. To avoid and minimize the impacts, mitigation measures are recommended. Preconstruction surveys proposed by the applicant need to include specific measures related to vegetation. All areas where clearing and grading and general ground-disturbance would occur need to be surveyed. MM BIO-1 includes surveying brush clearing areas during preconstruction surveys to check for the presence of special-status plants to be avoided and to determine the presence of noxious weeds that would need control strategies. MM BIO-2 involves restoration of vegetation and soils within the proposed project area to preconstruction conditions, immediately following construction and within one year post-construction, according to the requirements of wildlife resource agencies' authorizations. MM BIO-3 provides mitigation and compensation for special-status plants; these measures include transplanting and re-seeding and/or compensation, and would be carried out in consultation with appropriate agencies (USFWS, BLM, CDFG, and NDOW). Restoration to original conditions using native plants and soils is needed to encourage native revegetation from the associated seedbanks. MMs BIO-2 and BIO-3 provide protection to vegetation greater than that provided by APMs AES-2 and AES-4 by providing the specific details necessary to successfully implement onsite restoration activities. MM BIO-4 recommends that the Invasive Plant Management Plan produced in APM BIO-10 comply with

BLM standards to be effective. See Section 3.4.4, "Mitigation Measures," for further details on the mitigation measures proposed.

Jurisdictional Waters, Drainages, and Riparian Areas[3]
Based on a preliminary review of the location of intermittent streams as identified by USGS topographical maps, the proposed transmission line would impact several intermittent streams and desert washes.

Clearing of vegetation for grading activities (for the substation, existing access/spur roads, new access/spur roads, staging areas, pulling areas, stringing and splicing areas, and tower foundations for the transmission and telecommunications lines) and trenching activities to install the communication line could result in removal of desert wash vegetation and/or filling of jurisdictional areas. Additionally, removal of vegetation could result in increased erosion and sedimentation, resulting in degradation of water quality. The use of access and spur roads that cross desert washes during construction and during routine operation and maintenance could result in vegetation loss and increased erosion. Grading activities would disturb soil associated with the desert washes, thus indirectly impacting the desert wash vegetation by creating opportunities for non-native invasive weed species (e.g., *Tamarix ramosissima*) to colonize the disturbed work areas. Invasive weed species could out-compete native plants for resources such as water and space. Dust generated during construction could reduce the photosynthetic and respiratory activity of desert wash vegetation, which could adversely affect the growth rate and/or fitness of the vegetation. The use of vehicles and equipment to cross these washes could also result in degradation of water quality from the potential introduction of hazardous materials such as fuels and oils.[4]

A complete assessment of potential effects to jurisdictional waters, riparian areas, and wetlands caused directly or indirectly by the proposed project cannot be completed until Jurisdictional Delineation surveys are conducted.

The following measures would reduce impacts to potential jurisdictional waters:

- Minimal vegetation impacts (APM BIO-2)
- Avoidance of impacts to state and federal jurisdictional wetlands (APM BIO-3)
- Best management practices (APM BIO-4)
- Facility siting (APM BIO-9)
- Hazardous materials and waste handling management (APM HAZ-2)
- Spill prevention, countermeasures, and control plan (APM HAZ-5)
- Avoidance of drainages crossings by construction equipment (APM W-1)
- Erosion control (APMs W-2, W-4, W-9)

If the pending Jurisdictional Determination identifies the presence of jurisdictional waters, riparian areas, or wetlands within the proposed project area and these cannot be avoided (APM BIO-3), the adverse impacts will likely be moderate and both short term and long term. MMs BIO-5, BIO-6, and BIO-7 are recommended to reduce the adverse impacts on drainages and jurisdictional areas to minor on a localized scale. MM BIO-5 would require completion of a jurisdictional determination within the boundaries of the project area once the final engineering for the location project-specific features is complete. MM BIO-6 designates practices to minimize the amount of erosion and degradation to existing drainages. MM BIO-7 would require the applicant to develop a Mitigation Monitoring Plan for affected jurisdictional areas, as needed, for submittal to USACE for review and approval.

Wildlife

[3] NOTE: Pending a jurisdictional delineation, analysis on this section is incomplete.
[4] NOTE: Need to include acres of impacts (not available at this time)

Clearing and grading activities for project infrastructure (the Ivanpah substation, existing access/spur roads, and new access/spur roads, staging areas, pulling areas, stringing and splicing areas, and tower foundations for the transmission and telecommunications lines) would be potential sources of direct death of wildlife. Collisions with equipment and vehicles could occur for slower-moving species, species that have subsurface burrows, or ground-nesting birds. Nesting birds, bats, and reptiles are very susceptible to visual and noise disturbances caused by the presence of humans, construction equipment, and generated dust. Such disturbances could cause wildlife to alter foraging and breeding behavior and to avoid suitable habitat inside and outside the boundaries of the proposed project. For instance, nesting birds could abandon nests due to these disturbances, and if night construction were to be conducted, bats would be highly susceptible to night lighting.

Wildlife would also be indirectly impacted. As discussed earlier, grading and construction activities would remove and/or modify natural vegetation communities. These vegetation communities provide forage, shelter, and nesting opportunities to non-listed wildlife and multiple special-status wildlife. Loss and degradation of habitat would cause wildlife to rely more heavily on habitat in surrounding areas. The loss and degradation of habitat would have the potential to impact wildlife within the adjacent special management areas, which are the Mojave National Preserve, Wee Thump Joshua Tree Wilderness Area, Eldorado-Puite ACEC, Ivanpah DWMA ACEC, and Clark Mountain ACEC (adjacent to the Mountain Pass Substation). Loss of burrows due to proposed project construction, ground vibration, or avoidance behavior would cause wildlife to search for and/or dig new burrows. The searching and/or digging would expend more energy, which could result in an increased susceptibility to disease and predation and lowered reproductive success. Substation infrastructure built could alter wildlife movement, as animals would avoid construction areas such as the microwave tower and other permanent structures. Wildlife movement could also be altered due to construction of the perimeter fence that would exclude most wildlife from the 885-by-850-foot fenced area. The presence of proposed project infrastructure could also indirectly cause death of wildlife by increasing the risk of predation on certain species by native predators such as ravens and raptors due to additional perching and/or nesting habitat created by construction of the microwave tower, perimeter fence, and new transmission towers.

The following measures would help avoid or reduce impacts on wildlife species:

- Preconstruction surveys (APM BIO-1)
- Best management practices (APM BIO-4)
- Biological monitors (APM BIO-5)
- Worker and environmental awareness program (APM BIO-6)
- Facility siting (APM BIO-9)
- Invasive Plant Management (APM BIO-10)
- Minimization of road modifications (APM AES-6)
- Substation lighting control (APM AES-8)
- Muffling of construction equipment (APM NOI-4)
- Minimization of construction equipment idling (APM NOI-5)
- Removal of construction waste and trash (APM W-12)

Adverse, moderate impacts on wildlife species would occur with implementation of the proposed project and the proposed APMs. These impacts would be both short- term and long term and would be localized to the proposed route and substation footprint. To further avoid and reduce impacts, mitigation measures are recommended. MM BIO-1 includes surveying brush clearing areas during preconstruction surveys to allow clearance of the vegetation while preventing causing the inadvertent death of sheltering wildlife. MM BIO-8 reduces night lighting on sensitive habitats in all areas to avoid unnecessary visual disturbance to wildlife. MM BIO-9 prevents entrapment of wildlife in all steep-walled trenches or excavations. MM BIO-10 includes use of biological monitors throughout construction activities in all construction zones to ensure that wildlife is not harmed or harassed during construction.

Construction activities for project infrastructure are all sources of potential adverse impacts to listed or sensitive wildlife species. The mechanisms of potential impact as described above for non-listed species apply as well for special-status species and include direct and indirect impacts. Potential impacts and avoidance and minimization measures for grouped sensitive species are discussed in detail below.

Reptiles

Fifteen special-status reptile species may occur within the proposed project area. Two of these species were observed, the chuckwalla and the desert tortoise. An additional seven species (side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), long-nosed leopard lizard (*Gambelia wislizenii*), western whiptail (*Cnemidophorus tigris*), zebra-tailed lizard (*Callisaurus draconoides*), common collared lizard (*Crotaphytus collaris*), and sidewinder (*Crotalus cerastes*) were observed on the ISEGS site during biological surveys for that site (CEC 2008). The special-status reptiles potentially present within the project area would all be subject to similar types of impacts. Ground-disturbing activities could result in injury and death to slower-moving reptiles or reptiles occupying subsurface burrows. Increased vehicle use on the site during operation and maintenance could also increase the potential for collisions and death. The project would result in loss of habitat due to permanent structures and/or roads and temporary loss of habitat from construction activities. Permanent habitat loss would be small (less than approximately 51 acres) relative to available habitat within the area. Compaction of soils and introduction of exotic plant species due to grading and removal of vegetation during construction, operation, and maintenance activities could result in indirect adverse habitat loss over time.

Desert Tortoise

Construction of the project would cause adverse impacts on desert tortoise and its habitat. These impacts would be both short term and long term, and both localized and extensive. Proposed project ramifications would primarily be confined to project areas, although there is a small potential for impacts to extend to areas outside the project boundary. Desert tortoises maintain large home ranges of from approximately 10 acres up to 200 acres, depending on sex of the individual and on precipitation levels (USFWS 1994, 2008). Individual desert tortoises have been documented to make periodic forays of up to 7 miles at a time (USFWS 2008). Tortoises that maintain burrows in areas adjacent to the project could be impacted if they were to travel into the project area. In general, construction of the project, including clearing and grading and areas where drive-and-crush of vegetation would occur, would result in short-term impacts. Long-term impacts to desert tortoise would occur from permanent loss of habitat (e.g., within the footprint of permanent structures) and increased traffic along the entire ROW. Construction and operations/ maintenance crews might drive vehicles over vegetation within project areas. This would be particularly likely during tower-to-tower stringing activities, unless all cables were installed by helicopter. Impacts caused by disturbance to small areas, such as tower pad sites, would be localized. Although many such areas would be impacted, they would be spaced far enough apart that the impact would not be extensive. Impacts from disturbance to larger areas, such as access roads, spur roads, and the proposed Ivanpah Substation, would be extensive.

Desert tortoises would be susceptible to death or injury from collisions with project vehicles and equipment during clearing and grading, or any activities where vegetation would be crushed. Project-related traffic on access roads and spur roads as well as any construction activities at work sites could also result in the death or injury of desert tortoise through collisions. Desert tortoises could be harmed by inadvertent hazardous materials spills, including equipment fuel and hydraulic fluid leaks. All crew activities, as well as trash and debris associated with construction of the project, would have the potential to attract predators of the desert tortoise, including common ravens and domestic and feral dogs. In addition, both permanent and temporary structures, including fencing, towers, and buildings, would provide common ravens with perches. Handling desert tortoises for relocation, even by approved biologists, could lead the tortoises to void their bladders. Bladder voiding would cause tortoises to lose potentially critical water reserves and in some cases might lead to death. Handling desert tortoises also increases the risk of transmitting upper respiratory tract disease (URTD) from infected individuals to healthy individuals. This condition often leads to death and is one of the reasons for the decline of many desert tortoise populations in the Mojave Desert. Construction of any new access or spur roads could increase the volume of human recreational traffic, which could indirectly increase the potential for collection or for death by vehicle strike.

Desert tortoise habitat would be lost in project areas where permanent structures, access roads, or spur roads would be located. With a total area of approximately 38.5 acres, the proposed Ivanpah Substation in California would result in the largest project-related loss of desert tortoise habitat in a single area. In all areas of the project where vegetation and soil would be disturbed, but especially in areas that would be cleared or graded, the quality of desert tortoise habitat would be negatively affected. Introduced noxious and invasive plant species could out-compete existing annual vegetation that desert tortoises largely rely on for forage. There is a greater risk for loss of desert tortoise habitat due to increased scope and intensity of wildfires as invasive grasses become established in areas (USFWS 2008). Direct removal of succulent plant species would likewise remove available forage and an important source of moisture. The loss of mature shrub vegetation in cleared and graded areas would reduce the available shelter used by desert tortoises for shade and predator evasion.

Vehicles and equipment used during operations and maintenance of the project would make desert tortoises susceptible to death or injury from collision. Such activities, including line inspection and regular maintenance, would also potentially introduce noxious and invasive plant species to project sites, further degrading the quality of desert tortoise habitat in terms of native plant species composition and increasing the risk of wildfires.

Most of the project segments are located within desert tortoise habitat, and a significant proportion of these segments cross designated critical habitat (Figure 3.4-2, Table 3.4-6). Desert tortoise sign such as burrows, scat, and bone or shell fragments were observed in almost all areas of the proposed transmission alignment during surveys conducted in 2008, including on the proposed Ivanpah Substation site in California. Live desert tortoises were observed only on the transmission alignment in Nevada. Although no desert tortoises were observed on or near the California segments of the project, the nature and amount of desert tortoise sign observed in these areas indicates that tortoises are present here as well. The redundant telecommunications line is almost entirely within desert tortoise habitat. While surveys of this area have not currently been reported (pending the 2009 desert tortoise survey report), available literature suggests that desert tortoise is present along this segment of the project. Several areas within the proposed project area are not suitable habitat for desert tortoise, including Roach and Ivanpah lakes (dry), the disturbed and developed areas in and around the town of Primm, Nevada, and likely the higher elevations of the Eldorado–Lugo transmission line in the southern McCullough Range.

The project would cross two areas the USFWS designates as critical habitat for the desert tortoise (Figure 3.4-2), both of which are in the Northeastern Mojave Recovery Unit for the Mojave population of the desert tortoise (USFWS 2008). Impacts such as those caused by grading and clearing in critical habitat would be permanent in terms of restoration requirements, mitigation, and compensation. The proposed transmission alignment would cross approximately 8.3 miles of the Piute-Eldorado Critical Habitat Unit in Nevada to the west of the Eldorado Substation. Additionally, 2.1 acres of desert tortoise habitat within the Piute-Eldorado Critical Habitat Unit would be impacted by establishment of four proposed tensioning sites, four proposed pulling sites, and one proposed helicopter landing pad. These would be temporary in nature but considered permanent as they would be new disturbance areas in the Critical Habitat Unit. Impacts on the unit would be adverse, localized, and both short term and long term, depending on the location and type of construction activity considered.

The proposed redundant telecommunications line along the existing Eldorado–Lugo transmission line would cross approximately 11.8 miles of the Piute-Eldorado Critical Habitat Unit in Nevada, to the south of the Eldorado Substation. Impacts on this area of the Critical Habitat Unit would be adverse, but due to the lower intensity of construction activities planned along this segment (fiber optic line installation and tower retrofitting), the impacts would be primarily short term and localized. Impacts on critical habitat along this segment of the project would be long term and extensive if a significant length of new access or spur roads were to be constructed to access the existing Eldorado–Lugo transmission line, or if existing tower sites would need to be significantly graded. The proposed redundant telecommunications line would be installed underground along Nipton road from the California-Nevada state line to the proposed microwave station north of the town of Nipton and would cross the Ivanpah Critical Habitat Unit in California. This segment of telecommunications line would largely be installed in a narrow trench in the disturbed shoulder of Nipton Road. Impacts on critical habitat for this segment of the project would be adverse, short term, and localized. Construction of the underground proposed telecommunications line from Nipton Road north to the proposed microwave tower site, as well as the microwave tower site itself (approximately 0.23 acres), would be constructed primarily on previously undisturbed lands. Impacts on the Critical Habitat Unit along these segments of the project would be adverse, and both short term and long term, and, due to the small footprint of the microwave tower site and the narrow width of the trench, localized.

The proposed project would cross two DWMAs that are managed by the BLM as ACECs specifically for desert tortoise. Within the scope of the project area, these ACECs do not completely overlap the critical habitat units discussed above. Only the redundant telecommunications line would cross these ACECs. This line would cross the Piute-Eldorado Valley ACEC in Nevada and the Ivanpah ACEC in California. Impacts on these ACECs would be adverse, localized, and both short term and long term. Impacts on the Piute-Eldorado ACEC along this segment of the project would be long term and extensive if a significant length of new access or spur roads were constructed to access the existing Eldorado–Lugo transmission line.

The proposed redundant telecommunications line would be adjacent to the Mojave National Preserve in California. The project is separated from the preserve by Nipton Road on the southern edge of the project area. Nipton Road is a two-lane highway that receives light traffic. The construction planned along this segment of the project would involve installing fiber optic cable in a newly excavated narrow trench in the shoulder of Nipton Road. It is possible, but not likely, that desert tortoises residing in the preserve would cross Nipton Road and become susceptible to death from collisions with project vehicles and equipment. In general, potential impacts on the desert tortoise population of the Mojave National Preserve would be adverse, short term, and localized. No impacts on the desert tortoise populations in the Mojave National Preserve are anticipated.

The applicant has incorporated measures into the project design in addition to those prescribed for general wildlife that would avoid or minimize impacts on desert tortoise. Those additional APMs are:

- Minimal vegetation impacts (APM BIO-2)
- Desert tortoise measures (APM BIO-11)

Implementation of the proposed project, including the listed APMs, would result in potential impacts on desert tortoise that would be adverse and moderate. These impacts would be both short term and long term, and both localized and extensive. To further avoid and minimize impacts on desert tortoise, a number of additional mitigation measures are recommended. Several general mitigation measures would affect impacts on desert tortoise and most other wildlife as discussed above for general wildlife (also refer to Section 3.4.4, “Mitigation Measures,” for full mitigation details). Specific to desert tortoise, MM BIO-11 recommends that water used for dust control not be allowed to pool and that all leaks on water trucks and tanks be repaired immediately. The presence of water on project access roads and work areas could attract desert tortoises to the construction site, increasing the probability of impacts.. MM BIO-12 requires a number of additional desert tortoise-specific measures to further reduce impacts, including the requirement to receive and accept provisions of the Biological Opinion (USFWS), a 2081 Incidental Take Permit for California state-listed species (CDFG), and compensation to Clark County for impacts to the MSHCP prior to commencing any construction activities. In addition, MM BIO-12 recommends year-round monitoring in desert tortoise habitat, preconstruction clearance surveys ahead of not only vegetation-clearing activities but also of vegetation-crushing activities (such as trucks driving over shrubs), and daily clearance surveys of all active worksites in the morning before crews begin work. The measure recommends extension of the monitoring period because tortoises can be active year-round, including winter months, given warm enough temperatures or large rain events. Tortoises can travel relatively far during a day and often use construction equipment and materials as shelter from the sun and wind. Additionally, desert tortoises previously translocated from the project area may return. For these reasons, biological monitors should clear all active sites before the start of construction activities. MM BIO-12 outlines the biological monitoring reporting process, including daily monitoring reports, reports of harm to desert tortoises, and end-of-project summary reports by an authorized biologist. Lastly, MM BIO-12 outlines additional handling guidelines for the California portions of the project, which are to be adhered to in addition to the most current Desert Tortoise Council handling guidelines.

Gila monster and Chuckwalla

The chuckwalla and the Gila monster would be susceptible to the same impacts as were discussed for special-status reptiles in general. The chuckwalla was observed in the rocky terrain of the Lucy Gray Range and McCullough Range during the biological surveys. The Gila monster was not observed during the biological surveys. Both lizards prefer habitat characterized by rocky terrain that provides adequate crevices for use as winter hibernacula and summer dens.

APM BIO-14, for general wildlife, would avoid or minimize impacts on these two reptiles. The APM prescribes the use of the current NDOW construction site protocols, which provide protections for both the Gila monster and the chuckwalla. As currently designed, the project would have minor, adverse, short- and long-term, and localized impacts on individuals of these species. No mitigation measures are recommended.

Mammals

There is the potential for 17 protected mammal species to occur within the proposed project area (Tables 3.4-.3 and 3.4-4). Three of these species were observed during surveys: desert bighorn sheep, wild burro, and American badger.

Desert bighorn sheep

Impacts to bighorn sheep from the project would be adverse, moderate, and localized. The preferred habitat for desert bighorn sheep within the project area is found within and adjacent to the project in the Clark, McCullough, and Highland ranges. Both McCullough Range and Highland Range contain crucial habitat and overwintering habitat. The proposed project through McCullough Pass has the potential to impact lambing areas for bighorn sheep. Construction activities within McCullough Pass would cause visual and noise disturbance that could lead to avoidance of the lambing areas by bighorn sheep, which could result in the loss of a breeding opportunity for that season, or could increase the competition at alternate lambing sites in the area. Visual and noise disturbance could also decrease reproductive success through abandonment of the lambing grounds during the lambing season. Construction and operation and maintenance within the McCullough Pass would have adverse, moderate impacts that would be both short and long term.

The transmission route bisects the McCullough Range and the communication line bisects the McCullough Range and the Highland Range. Construction activities might interfere with the movement of sheep between these areas, and might impede natural colonization and inhibit the annual migration of the bighorn sheep from these overwintering ranges to the summer ranges north of the project. The bighorn sheep need to migrate to the north out of the project area during the summer to access water sources. The closest water source is the “Linda” guzzler, approximately 1.3 miles north of the north McCullough Pass.

The area near the Mountain Pass Substation in the Clark Mountain Range has the potential to support desert bighorn sheep. Though no potential lambing areas are currently documented in the Clark Mountains, project-related construction and maintenance might adversely impact sheep by causing avoidance of this area. Avoidance could result in decreased access to foraging habitat and could inhibit daily and seasonal movements.

In addition to the general biological APMs listed above, APM BIO-12 would reduce impacts on desert bighorn sheep protections. Through this APM, the applicant would initiate conversations with BLM and the state wildlife resource agencies to determine appropriate conservation and avoidance measures for the bighorn sheep within the project area. As currently designed, the project would adversely impact bighorn sheep and their suitable habitat within the EITP and in adjacent areas. To minimize these impacts, MM BIO-13 is recommended. MM BIO-13 would protect sheep by imposing seasonal limitations on project construction activities in lambing and wintering areas. Additionally, the applicant would conduct preconstruction surveys and biological monitoring during construction within suitable bighorn sheep habitat (the McCullough Mountains and the southern Eldorado Valley between the Highland Range and the southern McCullough Mountains). Any occurrences of the desert bighorn sheep would be reported to NDOW, and construction would be temporarily halted if any bighorn sheep were found to be within 500 feet of construction activities. These measures would help ensure clearance of the sheep from project areas and reduce the magnitude of impacts to the sheep.

Wild Burro

The wild burro was observed in the proposed project area in California. This species would be susceptible to visual and noise disturbance during construction activities and operation and maintenance, potentially resulting in changing its behavior to avoid the site. This could cause avoidance of suitable habitat and energetic costs to locate other suitable habitat. This would result in adverse short- and long-term impacts through loss of food and suitable habitat.

The general APMs described above for wildlife would help avoid and minimize potential impacts to the burro; no mitigation measures are recommended.

American Badger

Suitable habitat for the American badger exists within the project. Badgers are most likely to occur on upper bajadas, where greater plant species diversity and cover provides better habitat for prey species. There was one observation of an American badger near the Eldorado Substation, and badgers were observed during surveys at the nearby ISEGS site (CEC 2008). If badgers were present on the proposed project site during construction, there would be the potential for death due to the collapse of occupied burrows during clearing and grading. Visual and noise disturbances could trigger habitat avoidance behavior that could hinder successful foraging and breeding for individuals in the immediate area. Loss of forage and nest habitat by proposed project construction would reduce available suitable habitat within the badger's range. However, the amount of permanent habitat lost (less than approximately 51 acres) is relatively small compared with the total amount of available suitable badger habitat within this area.

The general APMs described above for wildlife would help avoid and minimize potential impacts to the badger. As currently designed, the project would have moderate, adverse, short- and long-term, localized impacts on individuals of this species. To further reduce impacts, MM BIO-14 is recommended. This measure would reduce the magnitude of impacts to badgers by using a qualified biologist to conduct preconstruction surveys and establishing a relocation protocol for any active badger burrow identified on the project.

Birds

Construction of the proposed project could cause adverse impacts on avian species, including nesting raptors and birds protected by the MBTA. Impacts on these bird species would typically result from activities that would cause nest abandonment or destruction of chicks or eggs in active nests or death of adults due to collision, or activities that would reduce potential forage and nesting habitat. For most species, the proposed project impacts would be confined to project areas and areas immediately adjacent to the project. For other species such as raptors, project-related impacts could extend up to a mile or more beyond project boundaries, depending on the nature of the site (e.g., urban or rural) and topography.

Active bird nests in shrubs or near the ground would be susceptible to being crushed during clearing and grading operations, and during any activities where vegetation would be crushed. Noise and visual disturbance caused by construction and project-related traffic, including construction at work sites and traffic along project access roads and spur roads, could cause nest abandonment or habitat avoidance by birds nesting on or off site in adjacent areas. Nest abandonment would result in death to chicks and hatching failure of eggs. Alternatively, construction might cause birds to avoid suitable habitat and opt to nest or forage in less suitable habitat. Such impacts could cause energetic costs to these birds and could indirectly contribute to stress, unsuccessful reproductive efforts, or death. Decreased foraging success due to habitat avoidance or removal of foraging habitat could decrease the survival of chicks in nests near the project. Because these impacts could occur at isolated nest sites along the project corridor, and because the project area is relatively small compared with the amount of similar habitat in the region, impacts on nesting birds would be localized.

Construction of new access roads or spur roads could increase the volume of recreational traffic, and, in turn, indirectly increase the potential for nest abandonment due to noise and visual disturbances by humans. Construction of earthen berms or gates to restrict post-construction recreational vehicle access tends to have low success rates, as most off-road vehicles can simply bypass these structures in the relatively flat topography of the desert. Construction of new transmission line towers, or larger ones to replace old towers, could increase the risk of death of adult raptors and larger non-raptor species by collision (APLIC 2006).

Disturbances associated with the operation and maintenance of the project could cause impacts similar to those caused by construction of the project, although operations and maintenance impacts would likely be less intense. Noise and visual disturbances caused by operations and maintenance crews could cause abandonment of active nests, which would result in the death of chicks or hatching failure of eggs. Raptors often occupy nests built onto transmission line towers or poles. Nest abandonment caused by noise and visual disturbances is likely, as well as increased susceptibility of chicks to death and/or hatching failure of eggs from falls or from being crushed if active nests were moved or disturbed during operations and maintenance. Such impacts could occur to active nests on transmission line towers or other project facilities, but could also occur outside of established access roads, spur roads, and tower sites. The potential for these impacts on nesting birds after the construction phase of the project is relatively small. In general, due to the lower levels of disturbance associated with operation and maintenance activities, post-construction adverse impacts on raptors would be short term and localized. Cumulative mortality by bird strike against towers would be greater during the operations phase, although the potential for this impact would be low. Due to the lower levels of disturbance associated with operations and maintenance activities, any adverse impacts on birds or raptor species would be minor, short term, and localized.

All construction activities and traffic related to the proposed project would have the potential to cause adverse impacts on MBTA-protected birds and nesting bird species; however, construction of certain segments of the project would have a greater potential for impacts than other segments. Installation of the proposed redundant telecommunications line may involve relatively less intensive construction methods. Although a number of existing towers of the existing Eldorado–Lugo transmission line would need to be retrofitted, no new towers would need to be constructed. The redundant telecommunications line would either be attached to existing towers, or, for a short segment near the town of Nipton, California, be installed in a newly excavated narrow trench in a roadside shoulder. Due to the less intensive construction methods associated with the redundant telecommunication line, impacts to MBTA-protected birds and nesting bird species would be less intense than impacts from the construction of the proposed transmission route.

No surveys for nesting birds, raptors, or nests were conducted for the proposed project, although the applicant plans to commence raptor and raptor nest surveys in spring 2010. Biologists reported several stick nests in various stages of construction during 2008 field surveys for desert tortoise. These nests were in transmission line towers or poles, and were likely built by common ravens or a raptor species. It is likely that most areas of the proposed project provide suitable nesting habitat for at least some bird species that are protected by the MBTA. Much of the route supports healthy and mature creosote shrubs, interspersed with yucca and cactus species on flats, and acacia and other desert riparian species along the edges of washes. These areas provide suitable nesting habitat for a number of desert-dwelling bird species, including smaller raptor species. The entire project is within the range of a number of raptor species. One golden eagle was observed soaring during desert tortoise surveys conducted on the California segment of the transmission alignment. Several red-tailed hawks were observed near project areas in both Nevada and California. Although a large number of existing transmission lines are present in and near project areas, relatively few potential raptor nests were observed. This may indicate a depressed or naturally low presence of raptors or nesting habitat in the project area. Trees and cliff sides in nearby mountain ranges, including Clark Mountain, the Lucy Gray Range, and the McCullough Range, likely provide more suitable nesting habitat for raptors than the relatively flat creosote shrub areas that typify project areas. The proposed project crosses two such mountainous areas. Golden eagles are known to frequent the north McCullough Pass area of the project. The proposed redundant telecommunications line in the southern McCullough Range would also cross higher elevations that may provide higher quality raptor nesting habitat.

In addition to general APMs for biological resources, the applicant has incorporated a number of measures into the project design to avoid or minimize direct and indirect impacts on bird species, including:

- Avoid impacts to active nests (APM BIO-7)
- Use avian-safe building standards (APM BIO-8)

Implementation of the proposed project with APMs would result in potential impacts on bird species that would be adverse and moderate. These impacts would be both short and long term, and localized. To reduce impacts on MBTA bird species and raptors, a number of additional mitigation measures are recommended. Several general MMs would reduce the impacts on birds and other wildlife (refer to Section 3.4.4, “Mitigation Measures,” for full MM details). MM BIO-1 recommends preconstruction surveys ahead of vegetation-clearing equipment at the time of clearing if construction is scheduled to occur during breeding season (late February through early July). If construction occurred during breeding season, new nests or nests that were missed during earlier preconstruction surveys would be detected at this time. Also, ground nesting raptors could enter the project area after preconstruction surveys had been performed; additional preconstruction surveys at the time of vegetation clearing would detect these nests. MM BIO-8 recommends that night lighting be reduced during construction, operations, or maintenance activities in all project areas with sensitive resources, including nesting bird species. MM BIO-10 recommends that biological monitors be present during construction in all construction areas where sensitive biological resources are potentially present, not just in areas where presence has been confirmed. Biological monitors would survey project areas with active construction daily and report all detections of new active nests.

Specific to all MBTA bird species and raptors, MM BIO-15 recommends a number of additional measures to further reduce impacts. MM BIO-15 protects active bird nests on or near project areas by requiring disturbance buffers around nests. Because no standardized disturbance buffers exist for birds in this region, the applicant would consult CDFG or NDOW (depending on the state the nest is in) to determine appropriate buffer sizes. Buffers would remain in effect until all eggs hatched and chicks fledged. For raptors, standardized buffers from the USFWS Utah Field Office are recommended for all raptors with the exception of burrowing owls (discussed below; USFWS 1999). All raptor and raptor nest surveys should use these USFWS buffer guidelines when determining the appropriate survey corridor width. MM BIO-15 outlines reporting procedures if active nests are detected on or near the project area, and authorizes the biological monitor to halt construction activities if it is determined that such activities would disturb nests. Lastly, MM BIO-15 requires consultation with NDOW prior to construction for segments of the project that pass by the Wee Thump Joshua Tree Wilderness area if construction is scheduled to occur during breeding season.

Special-Status Birds

Special-status bird species could occur within the proposed project area; the following were observed during the biological surveys: the golden eagle, western burrowing owl, loggerhead shrike, LeConte’s thrasher, and phainopepla. The latter three use the area for foraging and nesting. These birds would be susceptible to visual and noise disturbance as described above, potentially resulting in alteration of foraging behaviors to avoid the site and nest abandonment. Individuals of these species would be at risk if they were using onsite vegetation for nesting, as clearing of vegetation could result in the direct loss of nests and would also remove potential forage habitat. The project would result in direct, short- and long-term loss of food and shelter for special-status birds.

Burrowing owl

Construction of the proposed project could cause adverse impacts on western burrowing owls and burrowing owl habitat. Impacts on this species would result from nest abandonment or direct death of adults and/or chicks, or hatching failure of eggs in active nests, or because the project otherwise led to lowered reproductive success.

Burrowing owl nests in underground burrows would be susceptible to crushing during clearing and grading, or during any other activity where vegetation would be crushed. This would likely cause the mortality of chicks (and adults if they remained in the burrow) and hatching failure of eggs. Although adult and juvenile owls would likely flee occupied burrows at the threat of on-coming construction equipment, a small potential for death by crushing exists outside of breeding season. As previously discussed, all project construction and traffic could cause abandonment of nearby active nests due to the noise and visual disturbances associated with these activities, and would thus result in mortality of chicks or hatching failure of eggs. These disturbances could cause habitat avoidance if owls avoided using suitable burrows for nesting or avoided high-quality foraging habitat. Burrowing owl nesting and foraging habitat could be lost due to ground disturbance and construction of permanent structures. The impacts resulting from construction as described above would be adverse, moderate, short and long term, and localized.

Disturbances associated with project operations and maintenance would have the potential to cause impacts similar to those caused by construction of the project, although these disturbances are infrequent and thus impacts would likely be less intense. Burrowing owls usually occupy abandoned mammal burrows, which are often found in disturbed areas. Once construction activities were complete, burrowing mammals would be likely to re-colonize project areas, providing new burrows for potential owl nests. Burrowing owls that move onto project areas after construction is complete would be susceptible to vehicle collision or being crushed by operations and maintenance vehicles. The likelihood of this happening is low, given that maintenance activities would be infrequent. Nearby active nests could be abandoned due to the noise and visual disturbances associated with operations and maintenance crews. In general, due to the lower levels of disturbance associated with operations and maintenance activities, any adverse impacts on burrowing owls would be short term, localized, and minor.

The project is situated entirely within the range of the Western burrowing owl, and suitable burrowing owl habitat exists in most of the project area. One burrowing owl was observed during field surveys conducted in 2008 near Transmission Alternative Route C on the California side of the project. Burrowing owls were also observed on the proposed ISEGS site (CEC 2008). No protocol-level burrowing owl surveys were conducted in or near any project areas. Suitable burrowing owl habitat exists along most of the proposed project, and it is likely that burrowing owls nest within the project area.

In addition to the general biological APMs, APM BIO-13 would reduce impacts specific to burrowing owls. This APM outlines survey and avoidance measures during both breeding and non-breeding seasons for burrowing owls and their burrows. Implementation of the project with all APMs would result in potential impacts on burrowing owls that would be adverse, moderate, both short and long term, and localized.

To reduce impacts on burrowing owls, additional mitigation measures are recommended. Several general MMs would reduce impacts on burrowing owls, as discussed above for all bird species. Specific to burrowing owls, MM BIO-16 recommends a number of additional measures to further reduce impacts, including the requirement to perform preconstruction surveys within 30 days prior to construction in any given area of the project if construction is scheduled to occur during owl breeding season (February 1 through August 31). APM BIO-13 defines the burrowing owl breeding season as mid-March to August; however, MM BIO-16 recommends assuming a breeding season from February 1 through August 31, as defined by the California Burrowing Owl Consortium (CBOC 1993, CDFG 1995). If an active burrowing owl nest were identified, as determined by a qualified biologist, no activities would occur within approximately 160 feet (50 m) of the burrow until the eggs had hatched and all chicks had fledged. This 50-m disturbance buffer is recommended by the California Burrowing Owl Consortium and has been adopted by the State of California (CBOC 1993, CDFG 1995). There is a small potential for active burrowing owl nests to be present outside of project boundaries, where they would not be collapsed, yet within the 50-m buffer; construction activities in these areas would be delayed until all chicks had fledged. MM BIO-16 outlines the survey and biological monitoring reporting process, including provision of GPS locations of burrows, daily monitoring reports, reports of harm to burrowing owls, and end-of-project summary report by the authorized biologist. Lastly, for the California portions of the proposed project, a Burrowing Owl Mitigation and Monitoring Plan will be submitted to CDFG for review and approval prior to relocation of owls, and the project proponent will compensate for the direct loss of burrowing owl nesting and foraging habitat as outlined by CDFG.

Special Management Areas

The project has the potential to directly and indirectly impact biological resources on special management areas within and adjacent to the EITP.[5]

NEPA Summary

As currently designed, construction, operations, and maintenance activities associated with the proposed project would have impacts on native vegetation, local wildlife, and special-status plants and wildlife. Incorporation of recommended mitigation measures would reduce impacts on these resources through avoidance and minimization. After mitigation implementation, impacts on native desert vegetation and special-status plants would be minor and localized. Direct and indirect impacts to wildlife would be reduced to minor and localized.

For specific wildlife species, impacts would vary. After incorporation of recommended mitigation, impacts on desert tortoise due to construction of the project would be adverse, moderate, both short term and long term, and localized. However, if a significant number or length of new access roads and spur roads were necessary for construction of the project, impacts on desert tortoise habitat could be considered major and extensive. As currently designed, the project would have minor adverse, short- and long-term, localized impacts on Gila monster and chuckwalla. Adverse impacts to desert bighorn sheep would be localized and minor, with both short- and long-term impacts with incorporation of mitigation. Mitigation would reduce the adverse impacts on American badger to localized, minor, and short and long term. After mitigation, impacts on MBTA bird species, including raptors, would be adverse, minor, short and long term, and localized. Many of the potential impacts to birds would be avoided altogether if vegetation clearing occurred prior to breeding season. If construction were scheduled to occur during breeding season, the applicant would clear vegetation before the onset of breeding season. Recommended mitigation for burrowing owl would reduce impacts, which would be adverse and short and long term, to localized and minor.

In summary, the proposed project would significantly affect biological resources in an adverse manner.

CEQA Significance Determinations

IMPACT BIO-1: **Direct or indirect loss of listed or sensitive plant species, or a direct loss of habitat for listed or sensitive plant species**
Less than significant with mitigation

The proposed project would result in impacts on special-status plants as discussed above in the NEPA discussion. However, MMs BIO-1, 2, and 3 would reduce impacts to less than significant because preconstruction surveys would identify the location of any special-status plants so they could be avoided by project activities. If plants could not be avoided, mitigation for impacts would occur in the form of salvage and/or restoration efforts for vegetation and soils.

IMPACT BIO-2: **Direct or indirect loss of listed or sensitive wildlife or a direct loss of habitat for listed or sensitive wildlife**

[5] NOTE: This section will be developed further after discussions on Land Use are finalized.

Potentially significant

The proposed project would result in impacts on several special-status wildlife species and their habitat as discussed above in the NEPA discussion section. Those species include reptiles, mammals, and birds, with potential for significant impacts to desert tortoise, desert bighorn sheep, American badger, and burrowing owl. However, MMs BIO-8 through BIO-16 would reduce impacts to less than significant, except for desert tortoise; impacts to desert tortoise and its habitat would be significant even after mitigation. Parameters for preconstruction surveys and the use of biological monitors would be specific to species to prevent impacts on those species. Surveys would identify the location of any special-status wildlife so avoidance measures could be incorporated. If avoidance of direct and indirect impacts to wildlife were not possible, those impacts would be mitigated by species-specific measures detailed in MMs BIO-12 through BIO-16.

As mentioned in the NEPA discussion, impacts to the desert tortoise and its habitat would be significant even after mitigation if an extensive amount of new access and/or spur roads were proposed.[6]

IMPACT BIO-3: Temporary and permanent losses of native vegetation communities
Less than significant with mitigation

The proposed project would result in impacts on sensitive desert vegetation communities, including cacti and yucca species, as discussed above in the NEPA section. However, MMs BIO-1 through BIO-3 would reduce impacts to less than significant with the use of preconstruction surveys, avoidance techniques, and post-construction restoration.

IMPACT BIO-4: Introduction of invasive, non-native, or noxious plant species
Less than significant with mitigation

The proposed project would result in impacts on sensitive vegetation and wildlife communities if invasive, non-native, or noxious plant species were introduced and/or spread within the project area as discussed above in the NEPA section. However, MM BIO-4 would reduce impacts to less than significant with implementation of a rigorous Invasive Management Plan.

IMPACT BIO-5: Adverse effects on drainages, riparian areas, and wetlands
Less than significant with mitigation

The proposed project would result in impacts on jurisdictional waters, drainages, and wetlands, as discussed in the NEPA section. However, MMs BIO-5 through BIO-7 would reduce impacts to less than significant because the applicant would perform a jurisdictional determination to identify drainages and wetlands located within the proposed project area. These areas would then be avoided. If avoidance were not possible, drainage crossings would be engineered to reduce degradation and impacts and restoration and compensation measures would be implemented.

IMPACT BIO-6: Direct or indirect loss of migratory wildlife species, corridors, or nursery sites
Less than significant with mitigation

The project would result in impacts to the movement corridors, migratory paths, or critical nursery sites for certain species. Impacts would occur to big game corridors (desert bighorn sheep), general wildlife corridors for species such as large reptiles and wild burro, lambing areas for desert bighorn sheep, and critical habitat found within the EITP area that would be potentially used as a movement corridor by desert tortoise. As discussed in the NEPA section, primary impacts to species that would also affect movement corridors and nursery areas would occur from noise and visual disturbances generated during construction, operations, and maintenance. Impacts include stress to

[6] NOTE: Final impact analysis for the tortoise will be completed pending final survey data and engineering details from the applicant.

animals, potential death, and avoidance of known corridors or nursery sites by species. Some of the proposed project occurs within an existing ROW, and disturbances would be relatively short term due to the linear nature of construction for the transmission and telecommunication lines. Operations and maintenance activities would likewise be short term due to the lower frequency of vehicle and equipment use. Impacts at the proposed Ivanpah Substation would be longer term, as existing natural vegetation would be replaced with impervious surfaces and permanent structures.

Impacts to corridors and nursery sites would be mitigated by numerous proposed mitigation measures (see NEPA discussion and Section 3.4.4 for details). Specifically, MMs BIO-1, BIO-8, BIO-10, and BIO-12 through BIO-16 would provide protection primarily through avoidance of sensitive movement and nursery areas. With the incorporation of mitigation, impacts would be reduced to less than significant.

IMPACT BIO-7: Conflict with the provisions of local ordinances or policies
Less than significant with mitigation

The proposed project could conflict with local tree preservation and riparian protection ordinances. San Bernardino County requires retention of existing native desert vegetation, in particular Joshua trees, Mojave yuccas, and creosote rings. The project could remove existing desert vegetation during construction. The county also requires setbacks from riparian areas and prohibits removal of vegetation within 200 feet of a stream. Impacts to stream riparian vegetation might occur during construction of the project.[7] The applicant proposes to minimize disturbance to vegetation by flagging and avoiding native plants and by minimizing impacts to streams (APM BIO-2 and BIO-3). However, if sensitive desert and riparian vegetation could not be avoided, the proposed project would result in significant impacts and directly conflict with the San Bernardino County ordinances.

With implementation of MMs BIO-2 and BIO-3, vegetative communities will be restored by the relocation of plants, reseeding, and/or land compensation. If communities cannot be restored, the applicant will compensate in accordance with consultation with appropriate agencies. Implementation of these measures would reduce impacts to less than significant.

NO IMPACT. Impacts to the Clark County MSHCP and the BCCE. The proposed project would result in impacts on biological resources (Impacts BIO-1 through BIO-6) on lands under the jurisdiction of the Clark County MSHCP and the BCCE, as the transmission and telecommunication lines cross lands preserved by these plans. Species specifically targeted for conservation and protection by these plans would be potentially impacted by the project. The applicant would be required to initiate discussions with Clark County and Boulder City about appropriate fee-based compliance and other mitigation strategies to ameliorate biological impacts as discussed in Section 3.9, "Land Use." This compliance would be directly based on the provisions of the MSHCP and the BCCE. Thus, by complying with these provisions, there would be no impact to habitat conservation plans within the proposed project boundaries. Additionally, construction of the EITP, as proposed along the existing ROW, would be more compatible with the primary purpose of the MSHCP, which is to minimize adverse impacts on natural resources within the BCCE, than Transmission Alternative Routes A and B, which would disturb more habitat than the proposed route.

3.4.3.6 No Project / No Action Alternative

Under the No Project Alternative, the proposed project would not be constructed, and impacts associated with the proposed project would not occur. The No Project Alternative would have no adverse impact on existing biological resources in the proposed project area. However, it would not help increase the feasibility of using alternative energy sources, although increase use of alternative energy could have beneficial impacts on biological resources.

[7] NOTE: Will be verified once JD complete.

3.4.3.7 Transmission Alternative Route A

This alternative would begin at the Eldorado Substation and deviate from the proposed transmission line between milepost (MP) 1 and MP 7 using a new 130-foot ROW adjacent to the existing Los Angeles Department of Water and Power (LADWP) transmission corridor. Critical issues for this alternative include impacts to native vegetation communities, habitat for special-status plants and wildlife, and special management areas. Transmission Alternative Route A would cross the same habitat type (creosote-white bursage scrub) as the proposed project and would result in similar types of impacts but would result in a net increase in the extent and magnitude of direct and indirect impacts associated with placement of new towers and creation of new ROW and spur roads.

Transmission Alternative Route A would reduce the number of total towers needed from five to four but require 2.3 miles of new ROW. Construction would increase total permanent impacts by 8 acres and temporary impacts by 62.2 acres in previously undisturbed desert habitat. The increase in impacted acreage could result in a net increase in the direct and indirect loss of habitat for listed or sensitive plant species. Direct loss of habitat for special-status species might result from removal of vegetation, grading of soils, or sedimentation during the course of construction. Indirect loss of habitat might result from introduction and spread of invasive and noxious weeds, loss of native seed banks, changes to the topography and drainage of a site, and dust generation from use of construction equipment and transport of materials.

The increase in acreage impacts would increase the potential for disturbing wildlife or causing wildlife mortality. The primary impact would be to desert tortoise and desert tortoise habitat, as this alternative passes through previously undisturbed suitable habitat including a section in designated desert tortoise critical habitat (Piute-Eldorado Unit). All impacts from construction activities of this alternative within designated critical habitat would be permanent in terms of restoration requirements, mitigation, and compensation. Although this alternative would decrease the total distance the transmission line would cross the Piute-Eldorado Critical Habitat Unit from approximately 8.3 miles to 7.9 miles (Table 3.4-6), the new ROW needed would increase permanent disturbance to tortoise habitat.

The results of the desert tortoise surveys for this alternative found a greater amount of tortoise sign (e.g., scat, tracks, tortoise, burrow, shell) within Alternative Route A than within the corresponding portion of the proposed project. However, density calculation of desert tortoise for this alternative and all others has not yet been compared with the density of desert tortoise activity along the proposed transmission line route, pending applicant discussions with the USFWS on appropriate methods. Although this alternative would increase the acreage of desert tortoise habitat permanently impacted, there would be no change in the duration or severity of impacts as a result of the construction of Alternative Route A. Though no additional listed or sensitive species were identified along this alternative during the biological surveys, there is the potential for listed or sensitive wildlife species to occur during construction or maintenance due to the presence of suitable habitat. Surveys are still ongoing; for instance, burrowing owl and raptor surveys will be conducted in 2010. Thus, pending results, analysis of impacts to these species for this alternative (and for other alternatives) cannot be completed. Although site-specific data is not complete at this time, analysis of potential impacts to listed and sensitive species is still possible without all the data (40 CFR 150.22) and by assuming a high likelihood of species presence. Additionally, the APMs and proposed MMs will be sufficient to reduce impacts to less than significant for these species for this alternative (and for other alternatives).

The alternative would result in impacts on the Clark County MSHCP and the BCCE, as the entire alternative lies outside a pre-existing ROW within lands preserved by these plans. Biological resources and species targeted for conservation and protection by these plans, particularly the desert tortoise, would be potentially impacted by the project. However, MM BIO-1 through BIO-16 would significantly reduce biological impacts. Furthermore, the applicant would be required to initiate discussions with Clark County and Boulder City concerning additional fee-based compliance and mitigation measures to ameliorate biological impacts. This compliance would be directly based on the provisions of the MSHCP and the BCCE. Impacts to provisions of the plans would be reduced to less than significant with the incorporation of results from biological mitigation and compliance discussions.

Both the proposed project and Transmission Alternative Route A would result in adverse, localized, short-and long-term impacts to biological resources. Impacts from the proposed project would be minor to moderate, while impacts from Alternative Route A would be moderate. From a CEQA perspective, Transmission Alternative Route A would result in less than significant impacts with the incorporation of proposed mitigation measures. However, impacts to desert tortoise critical habitat would be considered significant, adverse, and long term after mitigation because previously undisturbed designated critical habitat would be permanently removed.

3.4.3.8 Transmission Alternative Route B

Transmission Alternative Route B would begin at the existing Eldorado Substation and would replace MP 1 to MP 2 of the proposed route. Several of the overhead utility lines might have to be modified or relocated to accommodate this alternative.

Alternative Route B would result in types of impacts similar to those of the proposed route but would result in a net increase in the extent and magnitude of direct and indirect impacts associated with placement of new towers and creation of new ROW and spur roads. Alternative Route B would result in an additional 3.7 miles of transmission line and 5.6 miles of new ROW, which would increase the acreage of permanent and temporary impacts by 10 acres and 129 acres, respectively, to the native vegetation community. This alternative could result in fewer crossings of intermittent streams than the proposed project, which would be a decrease in impacts to desert wash habitat and wildlife using this habitat.

Although the magnitude of impact for the proposed project using Alternative B would be slightly greater than when using Alternative A due to the additional total miles, impact types would be the same for both alternatives. Primary impacts would include loss of habitat for and potential disturbance to wildlife and special-status species. Though no listed or sensitive species were identified along this alternative by the biological surveys, there is the potential for listed or sensitive wildlife species to occur during construction or maintenance due to the presence of suitable habitat.

Compared with the proposed project, Alternative Route B would increase impacts to desert tortoise. As previously discussed for Alternative Route A, the increase in acreage of both permanent and temporary impacts from Alternative Route B would increase the potential for direct and indirect loss of desert tortoise and direct loss of tortoise habitat. Alternative Route B does not pass through designated desert tortoise critical habitat as does Alternative Route A, but suitable habitat for the species is present. The results of the desert tortoise surveys found a similar amount of tortoise sign in Alternative Route B as in the corresponding portion of the proposed project. However, density calculations of desert tortoise in this area can only be estimated and assumed to be similar to those in adjacent critical habitat, pending applicant discussions with the USFWS on appropriate methods for these calculations.

Transmission Alternative Route B would result in impacts on the Clark County MSHCP and the BCCE, as the entire alternative lies outside a pre-existing ROW within lands preserved by these plans. Biological resources and species targeted for conservation and protection by these plans, particularly the desert tortoise, would be potentially impacted by the project. However, MM BIO-1 through BIO-16 would significantly reduce biological impacts. Furthermore, the applicant would be required to initiate discussions with Clark County and Boulder City about additional fee-based compliance and mitigation measures to ameliorate biological impacts. This compliance would be directly based on the provisions of the MSHCP and the BCCE. Impacts to provisions of the plans would be reduced to less than significant with the incorporation of biological mitigation and results of compliance discussions.

Both the proposed project and Alternative Route B would result in adverse, minor to moderate, localized, short- and long-term impacts to biological resources. Overall, there would be no change in the duration or severity of impacts between the proposed project and the alternative. From a CEQA perspective, Transmission Alternative Route B would result in less than significant impacts with the incorporation of proposed mitigation measures. However, impacts on desert tortoise critical habitat would be significant, adverse, and long term after mitigation because previously undisturbed designated critical habitat would be permanently removed.

3.4.3.9 Transmission Alternative Route C

Transmission Alternative Route C was suggested by BLM to minimize impacts to Ivanpah Dry Lake by rerouting the transmission line off the existing SCE transmission ROW, just before entering the Ivanpah Dry Lake. The line would head north around the dry lake on a new ROW and would extend a total of 5.3 miles.

Alternative Route C would reduce impacts to the dry lake bed such as crushing of saltscrub vegetation bordering the lake and disturbance to wildlife species using the vegetation and/or the lake bed as habitat. There would also be fewer crossings of intermittent streams with this alternative. However, this alternative would result in a net increase in the extent and magnitude of direct and indirect impacts associated with removal of relatively undisturbed, high quality creosote bush habitat for placement of new towers and creation of new ROW, access roads, and spur roads. Compared with the proposed transmission line route, the proposed project using Alternative Route C would result in an additional 0.7 miles of transmission line, which would increase the acreage of permanent and temporary impacts by 6.5 acres and 79 acres, respectively to the native vegetation community and any wildlife or special-status species that use this habitat.

The increase in the acreage of both permanent and temporary impacts due to creation of new ROW and roads and placement of new towers for Alternative Route C would result in a net increase in the extent and magnitude of potential impacts to biological resources. The increase in spatial extent would increase the potential for disturbing wildlife and increasing wildlife mortality, and would increase the potential for direct or indirect loss of listed or sensitive wildlife and their required habitat. Though no listed or sensitive species were identified along this alternative by the biological surveys, there is the potential for listed or sensitive wildlife species to occur during construction or maintenance due to the presence of suitable habitat. The primary issue for this alternative would be greater impacts to the desert tortoise. Compared with the proposed route, this alternative would cross higher quality desert tortoise habitat, as tortoises do not use the dry lake bed for habitat. Similar to use of Alternative Routes A or B, use of this alternative would result in an increase in both permanent and temporary impacts and increase the potential for direct or indirect loss of desert tortoise and direct loss of tortoise habitat. Alternative Route C does not pass through designated desert tortoise critical habitat as does Alternative A, but previously undisturbed suitable habitat for the species is present.

Transmission Alternative Route C would result in impacts on biological resources (Impacts BIO-1 through BIO-6) on lands that fall under the jurisdiction of the Clark County MSHCP, as the transmission and telecommunication lines cross lands preserved by these plans. Species targeted for conservation and protection by these plans would be potentially impacted by the project. The applicant would be required to initiate discussions with Clark County about appropriate fee-based compliance and other mitigation strategies to ameliorate biological impacts, based on the provisions of the MSHCP. Complying with these provisions would eliminate any potential impact to habitat conservation plans from Transmission Alternative Route C.

Alternative Route C would result in localized short-term and long-term adverse impacts of minor to moderate intensity to biological resources. Overall, there would be no difference in the duration or severity of impacts between the proposed project and Alternative Route C. From a CEQA perspective, Transmission Alternative Route C would result in less than significant impacts with the incorporation of mitigation, except for desert tortoise, as impacts to the desert tortoise and its habitat would be significant with this Alternative even after mitigation.

3.4.3.10 Transmission Alternative Route D and Subalternative E

Transmission Alternative Route D and Subalternative E were suggested by BLM to minimize impacts to the Ivanpah Dry Lake. Where feasible, Routes D and E would parallel structure-for-structure the existing LADWP Marketplace–Adelanto 500-kV transmission line through the Ivanpah Dry Lake. The line would be re-routed west and southwest on a new 130-foot ROW around Ivanpah Dry Lake for approximately 3.3 miles before rejoining the existing ROW at MP 30, Tower 203.

Compared with the proposed project, Routes D and E would reduce impacts to the dry lake bed such as crushing the saltscrub vegetation or disturbing wildlife. However, these routes would result in a net increase in the extent and magnitude of direct and indirect impacts from removal of creosote bush habitat for placement of new towers and creation of new ROW and spur roads. Compared with the proposed transmission line route, these routes would result in an additional 0.4 miles of transmission line, which would increase temporary impacts by 60 acres, and increase permanent impacts by 1.2 acres. Overall impacts to native vegetation would increase, as well as the potential for impacts to special-status species. These routes would result in impacts on the pink funnel lily, which was identified during the botanical surveys along Alternative Route D, but is absent from the proposed transmission line route.

The increase in impacts would increase the potential for disturbing wildlife and causing increased wildlife mortality, and would increase the potential for direct or indirect loss of listed or sensitive wildlife and their required habitat. Though no listed or sensitive species were identified along these routes by the biological surveys, there is the potential for listed or sensitive wildlife species to occur during construction or maintenance due to the presence of suitable habitat. Compared with the proposed transmission line route, these routes would cross a slightly greater amount of desert tortoise habitat and therefore would result in a similar potential of impacting desert tortoise.

Transmission Alternative Route D and Subalternative Route E would result in impacts on biological resources (Impacts BIO-1 through BIO-6) on lands that fall under the jurisdiction of the Clark County MSHCP, as the transmission and telecommunication lines cross lands preserved by these plans. Species targeted for conservation and protection by these plans would be potentially impacted by the project. The applicant would be required to initiate discussions with Clark County about appropriate fee-based compliance and other mitigation strategies to ameliorate biological impacts, based on the provisions of the MSHCP. Complying with these provisions would eliminate any potential impact to habitat conservation plans from Transmission Alternative Route D and Subalternative Route E.

Like the proposed project, these routes would result in minor to moderate, localized, short- and long-term adverse impacts to biological resources. Overall, there would be no difference in the duration, severity, or extent of impacts between the proposed project and the proposed project using these routes. From a CEQA perspective, Transmission Alternative Route D and Subalternative E would result in less than significant impacts with the incorporation of mitigation.

3.4.3.11 Telecommunication Alternative (Golf Course)

The Golf Course Telecommunication Alternative would consist of aboveground and underground fiber cable extending from the town of Nipton past the Primm Golf Course to the proposed Ivanpah Substation. The Golf Course Telecommunication Alternative would include two 10-mile segments. One 10-mile segment would proceed from the town of Nipton to I-15 (MP 1 to MP 10) along the north side of Nipton Road, parallel to the northern boundary of the Mojave National Preserve. This 10-mile segment would consist of 1 mile of fiber cable installed aboveground on the existing Nipton 33-kV distribution line immediately west of the town of Nipton, on the north side of Nipton Road. Approximately 9 miles of fiber optic cable would be installed in an underground duct on the north side of Nipton Road. A number of poles would also need replacement along this 10-mile segment. The second 10-mile segment would stretch from the I-15 and Nipton Road intersection to Primm Golf Course, and then west across I-15 to the Ivanpah Substation. This segment would also have aboveground and underground cable. Underground ducts would be placed beneath the golf course and at a point approximately 1.0 mile east of the Ivanpah Substation, where a cable would be installed in an underground duct for approximately 1.0 mile to enter the north side of the Ivanpah Substation.

The Golf Course Telecommunication Alternative would result in a net increase in the extent and magnitude of direct and indirect impacts associated with underground installation of cable and retrofitting, replacement, and/or addition of new distribution line poles. Compared with the proposed telecommunication system, the Golf Course Telecommunication Alternative would result in an additional 20 miles of communication line, of which approximately 10 miles would require underground installation. The 9-mile underground duct along Nipton Road would be installed within the road shoulder and require minimal vegetation clearing. However, the additional land disturbances associated with the other underground segments and with pole replacement would result in a total increase in temporary and permanent losses to the native vegetation. There would also be the potential to introduce and further spread invasive and noxious weeds with any new soil disturbances. Additionally, this alternative would impact the sensitive species Borrego milkvetch, which was identified during botanical surveys along the Golf Course Telecommunication Alternative route but was absent from the proposed telecommunication system route. The substantial increase in the acreage of habitat that would be impacted as a result of this alternative would increase the potential for impacts to special-status plants and special-status wildlife, and would increase the potential for the introduction of invasive, non-native, or noxious plant species. In addition to adverse impacts, this alternative could result in beneficial impacts to raptors in the area, compared with the impacts of the proposed project. More perching and nesting posts would be available to raptors with the increase in the number of towers to be installed.

The additional communication line located between the Town of Nipton and I-15 would cross approximately 12.9 miles of designated desert tortoise critical habitat (Ivanpah Unit), approximately 9.8 miles more than the proposed telecommunication route (Table 3.4-6). All the disturbance created within this section of this alternative would be permanent in terms of restoration, mitigation, and compensation requirements. Desert tortoise surveys for this alternative found a greater amount of tortoise sign within the Golf Course Telecommunication Alternative than within the proposed project. Additionally, when compared with the proposed project, this alternative would increase potential impacts on desert tortoise due to the significantly increased impacted critical habitat acreage. However, once final density calculations of desert tortoise are available, they should be used to compare this alternative with the proposed project.

The Golf Course Telecommunication Alternative would result in localized, short-term and long-term, adverse impacts, as would the proposed project. Overall, there would be no difference between the duration, severity, or extent of impacts from the proposed project and impacts of this alternative. From a CEQA perspective, the Golf Course Telecommunication Alternative would result in less than significant impacts with the incorporation of proposed mitigation measures. However, impacts on desert tortoise critical habitat would be considered significant, adverse, and long term even after mitigation because previously undisturbed designated critical habitat would be permanently removed.

3.4.3.12 Telecommunication Alternative (Mountain Pass)

The Mountain Pass Telecommunication Alternative would consist of fiber cable that would be located partially aboveground and partially underground from Nipton to Mountain Pass to the Ivanpah Substation. This alternative route would include one 10-mile and one 15-mile segment. The 10-mile segment would be identical to the one described above for the Golf Course Alternative; it would begin at Highway 164 near Nipton and continue to I-15 (MP 1 to MP 10) along the north side of Nipton Road, parallel to the northern boundary of the Mojave National Preserve. The 15-mile segment would begin at I-15 and go to the town of Mountain Pass and then to the Ivanpah Substation. This route would parallel I-15 in an underground duct for approximately 1.0 mile and then continue overhead on the existing Nipton 33-kV distribution line poles west to Mountain Pass and north to the Mountain Pass Substation. From the Mountain Pass Substation, the cable route would turn northeast and proceed on the existing Nipton 33-kV distribution line poles toward the Ivanpah Substation. At the last Nipton line pole, 500 feet of underground conduit would be installed and the cable would enter on the south side of the Ivanpah Substation.

The Mountain Pass Telecommunication Alternative would result in a net increase in the extent and magnitude of direct and indirect impacts associated with underground installation of fiber cable and retrofitting or replacement of distribution line poles. Compared with the proposed telecommunication system, the Mountain Pass Telecommunication Alternative would result in 25 more miles of additional communication line, with 10.5 miles of the line requiring underground installation. Impacts of the 10-mile segment are discussed above for the Golf Course Alternative.

Impacts of the 15-mile segment would include temporary and permanent losses of native vegetation communities, potential loss of special-status plants and wildlife, and potential introduction of noxious weeds. This alternative would cross a more diverse set of vegetation habitat types than the proposed communication line, including Joshua tree woodland and pinion pine-juniper, thus potentially impacting a more diverse range of plants and wildlife. Additionally, this alternative would impact numerous sensitive plant species that were identified during the botanical surveys along the Mountain Pass Telecommunication Alternative. The sensitive plant species that occur along this alternative are rough menodora, sky-blue phacelia, *Coryphantha* spp., Clark Mountain buckwheat, black grama, Aven Nelson's phacelia, and nine-awned pappus grass. The increase in the acreage of previously undisturbed habitat that would be impacted as a result of this alternative would increase the potential for introduction of invasive, non-native, or noxious plant species. Special-status wildlife would also be impacted by this alternative.

The alternative route would be directly adjacent to special management areas for desert tortoise and bighorn sheep (Clark Mountain ACEC and CDFG Zone 3 for bighorn sheep; Figure 3.4-4). Although the Clark Mountains do not provide suitable lambing habitat for desert bighorn sheep, they do provide suitable habitat for foraging. Thus, compared with the California portions of the proposed route which do not pass into the Clark Mountains, this alternative is in closer proximity to areas that would provide additional habitat for the sheep. Therefore, greater impacts from human presence and noise could result from this alternative, although these would be minor because the Clark Mountains are not crucial breeding habitat for the sheep. Increased disturbance impacts to birds could result from this alternative. Montane bird species use the upper elevations of the Clark Mountains for foraging and nesting. The Mountain Pass Substation is adjacent to this area; however, the substation already exists and thus any additional impacts from construction noise and human disturbance to nearby nesting birds would be temporary and minor. As discussed for the Golf Course Alternative, this alternative could also have some beneficial impacts not provided by the proposed project on raptors in the area, because additional new towers would be installed.

The Mountain Pass Telecommunication Alternative would cross approximately 12.8 miles of designated desert tortoise critical habitat (Ivanpah Unit); a 9.7-mile increase compared with the proposed telecommunication route (Table 3.4-6). This would include the same 10-mile segment that is part of both the Mountain Pass and the Golf Course alternative. The Mountain Pass Telecommunication Alternative would impact approximately 0.08 miles less of critical habitat than would the Golf Course Alternative (Table 3.4-6). As previously discussed, all of the disturbance created within this 10-mile section would be permanent in terms of restoration, mitigation, and compensation requirements. Desert tortoise surveys for this alternative found more tortoise sign (e.g., scat, tracks, tortoise, burrow, shell) within the Mountain Pass Telecommunication Alternative than within the proposed project. Additionally, when compared with the proposed project, this alternative would increase the potential of impacting desert tortoise due to the significantly increased amount of critical habitat that would be impacted.

Similar to the proposed project, the Mountain Pass Telecommunication Alternative would result in localized, short-term and long-term, adverse impacts of minor to moderate intensity. This alternative's impacts would be of moderate intensity. Also, the Mountain Pass Telecommunication Alternative would result in adverse short-term and long-term impacts of moderate intensity on desert tortoise and its habitat. From a CEQA perspective, the Mountain Pass Telecommunication Alternative would result in less than significant impacts with the incorporation of proposed mitigation measures. However, impacts on desert tortoise critical habitat would be considered significant, adverse, and long term even after implementation of mitigation because previously undisturbed designated critical habitat would be permanently removed.

3.4.4 Mitigation Measures

The following measures are recommended to minimize, reduce, and mitigate for impacts to biological resources with implementation of the EITP.

MM BIO-1: Preconstruction Surveys. Preconstruction surveys will be conducted by USFWS-approved biologists according to the most current USFWS protocols, where available by species. These surveys will include surveying brush clearing areas and ground disturbance areas within habitat deemed suitable for sensitive species by a qualified biologist. As part of the pre-construction surveys, the composition of the vegetation community will be surveyed to establish baseline conditions prior to construction for post-construction restoration efforts. These surveys will be conducted for the presence of special-status plants, the presence of noxious weeds, and the presence of general and special-status wildlife species, to prevent direct loss of vegetation and wildlife and to prevent the spread of noxious plant species. For the noxious weeds survey, the level of effort and extent of the surveys will be outlined by the Invasive Plant Management Plan (MM BIO-4).

MM BIO-2: Reclamation Plan. The applicant will develop a Reclamation, Restoration, and Revegetation Plan (RRRP) prior to adoption of the Final EIR/EIS that will guide restoration and revegetation activities for all disturbed lands associated with construction of the project and the eventual termination and decommissioning of the project. The RRRP will be part of the applicant's final Plan of Development for the project and should address all federal and private land disturbances. The RRRP will be developed in consultation with appropriate agencies (BLM, CPUC) and be provided to these agencies for review prior to preparation of the Final EIR/EIS. The RRRP will also provide details including but not limited to topsoil segregation and conservation, vegetation treatment and removal, salvage of succulent species, revegetation methods including seed mixes, rates and transplants, and criteria to monitor and evaluate revegetation success. Post-construction monitoring will be performed for 1 to 5 years, depending on the disturbance level and restoration level as outlined in the BLM's 2001 Restoration Plan for Energy Projects in the Las Vegas Field Office.

MM BIO-3: Special-Status Plants Restoration and Compensation. The applicant will mitigate for the loss of special-status plant species within the project area immediately following construction and within 1 year of post-construction according to the requirements of resource agency authorizations (e.g., CDFG 2081 permit). Special-status plants will be restored by relocation of plants and/or re-seeding, replacing topsoil with existing topsoil that was removed, and re-grading to pre-existing soil contours. Measures to restore special-status plants will be implemented through the Reclamation Plan (MM BIO-2). Additionally, that plan will provide a matrix showing how the applicant will address each species considered sensitive or special-status in terms of mitigation type (e.g., seed collection, transplanting, fencing certain population, and compensation measures). The CDFG will likely require land compensation and enhancement and endowment fees for the project in addition to restoration. If special-status plant communities cannot be restored, the applicant will provide compensation if required, in consultation with appropriate agencies (USFWS, BLM, CDFG, NDOW, and CPUC). In order to ensure enforceability, documentation of consultations with all appropriate agencies will be provided to the CPUC (the CEQA lead agency).

MM BIO-4: Model Invasive Plant Management Plan on the BLM Las Vegas Office DRAFT Weed Plan. The Invasive Plant Management Plan to be developed (APM BIO-10) will be modeled on the BLM Las Vegas Office DRAFT Weed Plan. The plan will include operation and maintenance activities, as well as construction activities. The content of the plan will include results of the noxious weed inventory, identification of problem areas, preventative measures, treatment methods, agency-specific requirements, monitoring requirements, and herbicide treatment protocol. The plan will be submitted to both the California and the Nevada resource agencies and to the CPUC for approval prior to construction authorization.

MM BIO-5: Jurisdictional Delineation. Conduct a formal jurisdictional delineation within the boundaries of the project area once final engineering for the location of project-specific features is complete. This will be conducted prior to construction and is required in order to apply for permits, if needed, with USACE, California RWQCBs, and CDFG. A copy of the jurisdictional delineation will be provided to the CPUC.

MM BIO-6: Drainage Crossings Design. If drainages cannot be avoided by infrastructure placement, then the applicant will design drainage crossings to accommodate estimated peak flows and ensure that natural volume capacity can be maintained throughout construction and upon post-construction restoration. This measure is necessary to minimize the amount of erosion and degradation to which drainages are subject.

MM BIO-7: Mitigation Monitoring Plan for Affected Jurisdictional Areas. The applicant will develop a Mitigation Monitoring Plan for affected jurisdictional areas within established riparian areas, as needed, for submittal to the USACE for review and approval. The plan will outline measures to accomplish restoration, provide criteria for restoration success, and/or provide compensation ratios. This measure is needed to compensate for loss of wetlands and waters that provide suitable habitat for special-status and sensitive species, and provide important hydrological and water quality functions in the desert environment. Monitoring and reporting, likely for up to 3 to 5 years post-construction, will be required, pending consultation with agencies. A copy of the approved Mitigation Monitoring Plan will be provided to the CPUC.

MM BIO-8: Reduce Night Lighting. Night lighting will be reduced in all natural areas to avoid unnecessary visual disturbance to wildlife. Night lighting during construction, operations, and maintenance will be reduced in natural areas using directed lighting, shielding methods, and/or reduced lumen intensity. The applicant will indicate anticipated measures to resource agencies for approval prior to construction. The approved measures will be provided to the CPUC.

MM BIO-9: Cover Steep-walled Trenches or Excavations during Construction. To prevent entrapment of wildlife, all steep-walled trenches, auger holes, or other excavations will be covered at the end of each day. Fencing will be maintained around the covered excavations at night. For open trenches, earthen escape ramps will be maintained at intervals of no greater than 0.25 miles. A biological monitor will inspect all trenches, auger holes, or other excavations a minimum of twice per day, and also immediately prior to back-filling. Any species found will be safely removed and relocated out of harm's way, using a pool net when applicable. For safety reasons, biological monitors will under no circumstance enter open excavations.

MM BIO-10: Biological Monitors. Biological monitors will be provided throughout construction activities in all construction zones. A minimum of one monitor per crew is needed for construction crews using heavy equipment (e.g., backhoes, large trucks). One roving monitor will monitor multiple times per day in other active construction zones where heavy equipment is not in use.

MM BIO-11: Water Usage. Water used for fugitive dust control will not be allowed to pool on access roads or other project areas, as this can attract desert tortoises. Similarly, leaks on water trucks and water tanks will be repaired to prevent pooling water.

MM BIO-12: Desert Tortoise Impacts Reduction Measures. To reduce impacts on desert tortoise, the following will be done:

- The applicant cannot begin construction until issuance and acceptance of the USFWS Biological Opinion, the CDFG 2081 permit, and NDOW authorization. Additionally, compliance discussions with Clark County and Boulder City must occur prior to construction that resolve and outline the specific compensation fees or additional mitigation measures needed for loss of desert tortoise habitat. A copy of the USFWS Biological Opinion and documentation of any compliance discussions with Clark County and Boulder City will be provided to the CPUC.
- Construction monitoring will employ a designated field contact representative, authorized biologist(s), and qualified biologist(s) approved by the USFWS, NDOW, and CDFG during the construction phase of the project.
- Qualified and/or authorized biologists will monitor all construction activities year-round in desert tortoise habitat, regardless of the time of year or weather conditions, as tortoises are often active outside their "active" season.
- Authorized biologists will conduct preconstruction surveys according to the most current USFWS protocol.
- Authorized biologists will handle desert tortoises following the most current Desert Tortoise Council handling guidelines (1999 or newer).

- Prior to commencing desert tortoise relocation activities, authorization will be obtained from NDOW, CDFG, and USFWS. The authorized biologist will not be required to receive approval to move individual desert tortoises during construction.
- Biological monitors will clear ahead of construction crews in desert tortoise habitat during all clearing and grading activities, or during any activity where undisturbed vegetation would be crushed. In addition, biological monitors will clear ahead of larger, non-rubber-tired equipment when that equipment is being driven on access and spur roads.
- Biological monitors will clear all active work sites located in desert tortoise habitat each morning before construction begins and throughout the day if crews move from tower site to site.
- Results of biological monitoring and status of construction will be detailed in daily reports by biological monitors. These reports will be submitted to the authorized biologist on a daily basis and to the CFR on a weekly basis (at minimum). The authorized biologist will notify the CFR within 24 hours of any action that involves harm to a desert tortoise, or involves a blatant disregard by construction personnel for the APMs or MMs designed to minimize impacts on desert tortoise or other wildlife. The authorized biologist will submit to the USFWS, NDOW, CDFG, and CPUC a summary of all desert tortoises seen, injured, killed, excavated, and handled at the end of the project or within 2 working days of when desert tortoises are harmed.

For California portions of the project, in addition to adhering to the most current Desert Tortoise Council handling guidelines, the following guidelines will be adhered to:

- No desert tortoise shall be captured, moved, transported, released, or purposefully caused to leave its burrow for whatever reason when the ambient air temperature is above 95 degrees Fahrenheit (35 degrees Celsius). No desert tortoise shall be captured if the ambient air temperature is anticipated to exceed 95 degrees Fahrenheit before handling or processing can be completed. If the ambient air temperature exceeds 95 degrees Fahrenheit during handling or processing, desert tortoises shall be kept shaded in an environment which does not exceed 95 degrees Fahrenheit, and the animals shall not be released until ambient air temperature declines to below 95 degrees Fahrenheit. For translocation, captured tortoises may be held overnight and moved the following morning within these temperature constraints.
- During all handling procedures, desert tortoises must be treated in a manner to ensure that they do not overheat, exhibit signs of overheating (e.g., gaping, foaming at the mouth, hyperactivity, etc.), or are placed in a situation where they cannot maintain surface and core temperatures necessary to their well-being. Desert tortoises must be kept shaded at all times until it is safe to release them. Ambient air temperature must be measured in the shade, protected from wind, and at a height of 2 inches above the ground surface.
- If a desert tortoise voids its bladder as a result of being handled, the animal shall be rehydrated. The process of rehydrating a desert tortoise will take place at the location where the animal was captured (or to be released, for translocated tortoises), and consist of placing the desert tortoise in a tub with a clean plastic disposable liner. The amount of water that is placed in the lined tub shall not be higher than the lower jaw of the animal. Each desert tortoise shall be rehydrated for a minimum of 10 to 20 minutes. During the period when the desert tortoise is in the tub, the tub will be placed in a quiet protected area. Desert tortoises shall be soaked individually.
- If a desert tortoise is injured as a result of project-related activities, it shall be immediately taken to a CDFG-approved wildlife rehabilitation or veterinary facility. The applicant shall identify the facility prior to the start of ground- or vegetation-disturbing activities. The applicant shall bear any costs associated with the care or treatment of such injured covered species. The applicant shall notify CDFG of the injury immediately unless the incident occurs outside of normal business hours. In that event CDFG shall be notified no later than noon on the next business day. Notification to CDFG shall be via telephone or email, followed by a written incident report. Notification shall include the date, time, location, and circumstances of the incident, and the name of the facility where the animal was taken.

MM BIO-13: Desert Bighorn Sheep Impacts Reduction Measures. To reduce impacts on desert bighorn sheep, the following will be done:

- Conduct preconstruction survey for desert bighorn sheep within suitable bighorn sheep habitat within 1 week prior to construction activities in the McCullough Mountains and the southern portion of the Eldorado Valley between the Highland Range and the Southern McCullough Mountains. The occurrence and location of any desert bighorn sheep will be reported to NDOW.
- Conduct biological monitoring by a qualified biologist for desert bighorn sheep during duration of construction within suitable bighorn sheep habitat. The occurrence and location of any desert bighorn sheep will be reported to NDOW. If bighorn are found to be within 500 feet of construction activities, construction in that area will be stopped until the sheep vacate the project area.
- Avoid all construction activities (with the exception of vehicle use of access roads during emergencies) in lambing areas from January to May in the North McCullough Pass area (approximately MP 9 to MP 12) during the duration of construction and all maintenance events.

MM BIO-14: American Badger Impacts Reduction Measures. To reduce impacts to American badger, the following will be done:

- Qualified biologists will be notified if badgers are observed within the project area during construction activities. Work will immediately be stopped in the area if the biologists find occupied burrows within 100 feet of construction activities during preconstruction surveys.
- Qualified biologists will ensure passive relocation of the occupied burrow by installing one-way trap doors on the burrow. The burrow will be collapsed after the badger vacates.
- Work will be allowed to resume once the burrow has relocated outside the 100-foot zone.

MM BIO-15: Migratory Birds and Raptors Impacts Reduction Measures. To reduce impacts on migratory birds and raptors, the following will be done:

- Biological monitors will monitor and enforce disturbance buffers around all active bird nests (for raptors and species protected by the MBTA) found in project areas during construction. The general bird breeding season for this area is late February to early July. For raptors specifically, the applicant will use the USFWS Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (1999) to determine appropriate survey areas and disturbance buffers for active nests, except for burrowing owl nests, for which the applicant will be in compliance with the minimum distances outlined by the California Burrowing Owl Consortium Protocol. For all non-raptor bird species, biologists will survey within project areas. Because there are no standardized disturbance buffers for active non-raptor bird nests, SCE will consult with the appropriate agencies (BLM, USFWS, CDFG, and NDOW) on a case-by-case basis when active nests are found in project areas, unless directed to do otherwise by these same agencies.
- Active bird nests will not be moved during breeding season, unless the project is expressly permitted to do so by the USFWS, BLM, CDFG, or NDOW depending on the location of the nest.
- All active nests and disturbance or harm to active nests will be reported within 24 hours to the USFWS, BLM, CDFG, and NDOW upon detection.
- The biological monitor will halt work if it is determined that active nests would be disturbed by construction activities, until further direction or approval to work is obtained from the appropriate agencies.
- Seasonal work stoppages may be required by NDOW for project areas that pass the Wee Thump Joshua Tree Wilderness if construction activities occur within the breeding season. The applicant will consult with NDOW prior to construction.
- As outlined by the *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006), the following avian safe practices will be employed during construction: cover phase conductors with manufactured

covers, include perch discouragers on crossarms and on top of poles, exceed the minimal distance between phase conductors to prevent electrocution by perched birds and their wingspan, utilize longer horizontal insulators, suspend phase conductors on pole top and cross arms, install horizontal jumper support to increase the phase-to-ground separation, replace tension members with fiberglass or non-conducting materials, cover tension members with dielectric material, utilize fiberglass poles or switches, and install standard nest discouragers.

MM BIO-16: Burrowing Owl Impacts Reduction Measures. To reduce impacts on burrowing owl, the following will be done:

- A qualified biologist will conduct preconstruction surveys within 30 days prior to construction for burrowing owl within suitable habitat prior to breeding season (February 1 through August 31). All areas within 50 m (approximately 150 feet) of the project area will be surveyed.
- If an active nest is identified, there will be no construction activities within 50 m (approximately 150 feet) of the nest location to prevent disturbance until the chicks have fledged, as determined by a qualified biologist.
- The occurrence and location of any burrowing owl will be documented by biological monitors in daily reports and submitted to the authorized biologist on a daily basis. The authorized biologist will report all incidents of disturbance or harm to burrowing owls within 24 hours to the appropriate resource agencies (USFWS, BLM, NDOW, CDFG).

If burrowing owls are found on site in the California portion of the project, the following additional measures will be included:

1) As compensation for the direct loss of burrowing owl nesting and foraging habitat, the project proponent shall mitigate by acquiring and permanently protecting known burrowing owl nesting and foraging habitat at the following ratio:

   (a) Replacement of occupied habitat with suitable habitat at 1.5 x 6.5 acres per pair or single bird;

   (b) Replacement of occupied habitat with habitat contiguous with occupied habitat at 2 x 6.5 acres per pair or single bird; and/or

   (c) Replacement of occupied habitat with suitable unoccupied habitat at 3 x 6.5 acres per pair or single bird.

2) A Burrowing Owl Mitigation and Monitoring Plan shall be submitted to CDFG for review and approval prior to relocation of owls. The Burrowing Owl Mitigation and Monitoring Plan shall describe proposed relocation and monitoring plans. The plan shall include the number and location of occupied burrow sites and details on adjacent or nearby suitable habitat available to owls for relocation. If no suitable habitat is available nearby for relocation, details regarding the creation of artificial burrows (numbers, location, and type of burrows) shall also be included in the plan. The plan shall also describe proposed off site areas to preserve to compensate for impacts to burrowing owls/occupied burrows at the project site as required under Condition 1. A copy of the approved plan will be provided to the CPUC.

3.4.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to biological resources in the ISEGS FSA/DEIS prepared by the CEC and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

3.4.5.1 ISEGS Setting

Overall

The setting of the ISEGS is very similar to the Ivanpah Substation area as described in Section 3.4.1, "Environmental Setting." The ISEGS project is located wholly in California on undisturbed, natural land. This area is surrounded by both undisturbed and developed land, including the Primm Valley Golf Course, I-15, an existing transmission line, and unpaved roads.

Drainages and Waters of the State

Although an assessment of ephemeral and intermittent drainages and Waters of the State (including jurisdictional determination by federal and state agencies) has not been completed for the EITP, the general characteristics of the drainages within the EITP area are similar in form and function to those in the ISEGS area. The ISEGS project is sited on a broad bajada that extends from the base of the Clark Mountains to the western edge of Ivanpah Dry Lake. Within the ISEGS area, the drainages range from small (1 to 4 feet wide) to large (greater than 85 feet). A total of 291 miles of channels cover 198.72 acres. Most of the drainages are small. Based on initial delineations, no wetlands or riparian areas are within the ISEGS project area. The USACE determined that the ISEGS would not discharge dredged or fill material into a Water of the United States or an adjacent wetland, and therefore would not be subject to jurisdiction under Section 404 of the Clean Water Act. However, all of the ephemeral and intermittent drainages are considered Waters of the State of California.

Wildlife

ISEGS supports a wildlife community (reptiles, mammals, and birds) similar to that of the EITP, as well as special-status wildlife species. Table 3.4-7 lists the special-status wildlife species that are known to occur or have the potential to occur within the ISEGS project area. All of the species in Table 3.4-7 were determined to occur or had the potential to occur within the EITP in California (Table 3.4-4) with the exception of the following species: Vaux's swift, gray-headed junco, hepatic tanager, summer tanager, Brewer's sparrow, Bendire's thrasher, Virginia's warbler, and gray vireo.

Table 3.4-7 Special-Status Species Known or Potentially Occurring in the ISEGS Project Area and Vicinity

Common Name	Scientific Name	Status Fed/State/BLM/CNPS
PLANTS		
Mormon needle grass	*Achnatherum aridum*	__/__/__/2.3
Clark Mountain agave*	***Agave utahensis* var. *nevadensis***	**__/__/__/4.2**
Desert ageratina	*Ageratina herbacea*	__/__/__/2.3
Coyote gilia	*Aliciella triodon*	__/__/__/2.2
Small-flowered androstephium	***Androstephium breviflorum***	**__/__/__/2.23**
White bear poppy	*Arctomecon merriamii*	__/__/__/2.2
Mojave milkweed	***Asclepias nyctaginifolia***	**__/__/__/2.1**
Cima milk-vetch	*Astragalus cimae* var. *cimae*	__/__/__/1B.2
Providence Mountain milk-vetch	*Astragalus nutans*	__/__/__/4.2
Scaly cloak fern	*Astrolepis cochisensis* ssp. *cochisensis*	__/__/__/2.3
Black grama	*Bouteloua eriopoda*	__/__/__/4.2
Red grama	*Bouteloua trifida*	__/__/__/2.3
Alkali mariposa lily	*Calochortus striatus*	__/__/__/1 B.2
Purple bird's-beak	*Cordylanthus parviflorus*	__/__/__/2.3
Desert pincushion	***Coryphantha chlorantha***	**__/__/__/2.1**
Viviparous foxtail cactus*	***Coryphantha vivipara* var. *rosea***	**__/__/__/2.2**
Winged cryptantha	*Cryptantha holoptera*	__/__/__/4.3
Gilman's cymopterus	*Cymopterus gilmanii*	__/__/__/2.3

Table 3.4-7 Special-Status Species Known or Potentially Occurring in the ISEGS Project Area and Vicinity

Common Name	Scientific Name	Status Fed/State/BLM/CNPS
Utah vine milkweed	***Cynanchum utahense***	**__/__/__/4.2**
Naked-stemmed daisy	*Enceliopsis nudicaulis* var. *nudicaulis*	__/__/__/4.3
Nine-awned pappus grass	***Enneapogon desvauxii***	**__/__/__/2.2**
Limestone daisy	*Erigeron uncialis* var. *uncialis*	__/__/__/1B.2
Forked buckwheat	*Eriogonum bifurcatum*	__/__/__/1B.2
Hairy erioneuron	*Erioneuron piosum*	__/__/__/2.3
Clark Mountain spurge	*Euphorbia exstipulata* var. *exstipulata*	__/__/__/2.1
Wright's bedstraw	*Galium wrightii*	__/__/__/2.3
Pungent glossopetalon	*Glossopetalon pungens*	__/__/__/1B.2
Parish club-cholla	***Grusonia parishii***	**__/__/__/2.2**
Hairy-podded fine-leaf hymenopappus	*Hymenopappus filifolius* var. *eriopodus*	__/__/__/2.3
Jaeger's ivesia	*Ivesia jaegeri*	__/__/__/1B.3
Knotted rush	*Juncus nodosus*	__/__/__/2.3
Hillside wheat grass	*Leymus salinus* ssp. *mojavensis*	__/__/__/2.3
Plains flax	*Linum puberulum*	__/__/__/2.3
Spearleaf	*Matelea parvifolia*	__/__/__/2.3
Rough menodora	*Menodora scabra*	__/__/__/2.3
Polished blazing star	*Mentzelia polita*	__/__/__/1B.2
Utah mortonia*	***Mortonia utahensis***	**__/__/__/4.3**
Tough muhly	*Muhlenbergia arsenei*	__/__/__/2.3
Crowned muilla	*Muilla coronata*	__/__/__/4.2
False buffalo-grass	*Munroa squarrosa*	__/__/__/2.2
Cave evening primrose*	***Oenothera cavernae***	**__/__/__/2.1**
Short-joint beavertail	*Opuntia basilaris* var. *brachyclada*	__/__/__/1B.2
Curved-spine beavertail	*Opuntia curvispina*	__/__/__/2.2
Spiny cliff-brake	*Pellaea truncata*	__/__/__/2.3
White-margined beardtongue	*Penstemon albomarginatus*	__/__/__/1B.2
Rosy two-toned beardtongue	*Penstemon bicolor* ssp. *roseus*	__/__/__/2.3
Limestone beardtongue	*Penstemon calcareous*	__/__/__/1B.3
Death Valley beardtongue	*Penstemon fruticiformis* var. *amargosae*	__/__/__/1B.3
Stephen's beardtongue	*Penstemon stephensii*	__/__/__/1B.3
Thompson's beardtongue	*Penstemon thompsoniae*	__/__/__/2.3
Utah beardtongue	*Penstemon utahensis*	__/__/__/2.3
Aven Nelson's phacelia	*Phacelia anelsonii*	__/__/__/2.3
Barneby's phacelia	*Phacelia barnebyana*	__/__/__/2.3
Sky-blue phacelia	*Phacelia coerulea*	__/__/__/2.3
Parish's phacelia	*Phacelia parishii*	__/__/__/1B.1
Jaeger's phacelia	*Phacelia perityloides* var. *jaegeri*	__/__/__/1B.3
Chambers' physaria	*Physaria chambersii*	__/__/__/2.3
Small-flowered rice grass	*Piptatherum micranthum*	__/__/__/2.3
Desert portulaca	***Portulaca halimoides***	**__/__/__/4.3**
Abert's sanvitalia	*Sanvitalia abertii*	__/__/__/2.2
Many-flowered schkuhria	*Schkuhria multiflora* var. *multiflora*	__/__/__/2.3
Johnson's bee-hive cactus	*Sclerocactus johnsonii*	__/__/__/2.2
Mojave spike-moss	*Selaginella leucobryoides*	__/__/__/4.3
Rusby's desert-mallow	***Sphaeralcea rusbyi* var. *eremicola***	**__/__/S/1B.2**
WILDLIFE		
Reptiles		
Desert tortoise	***Gopherus agassizii***	**FT/ST/__**

Table 3.4-7 Special-Status Species Known or Potentially Occurring in the ISEGS Project Area and Vicinity

Common Name	Scientific Name	Status Fed/State/BLM/CNPS
Banded gila monster	*Heloderma suspectum cinctum*	SC/__/S
Birds		
Burrowing owl	***Athene cunicularia***	**FSC/CSC/__**
Golden eagle	***Aquila chrysaetos***	**FSC/ CSC, FP /S**
Vaux's swift	***Chaetura vauxi***	**FSC/__/__**
Gray-headed junco	*Junco hyemalis caniceps*	FSC/WL/__
Loggerhead shrike	***Lanius ludovicianus***	**FSC/CSC/__**
Hepatic tanager	*Piranga flava*	FSC/WL/__
Summer tanager	*Piranga rubra*	__/CSC/__
Brewer's sparrow	***Spizella breweri***	**BCC/__/__**
Bendire's thrasher	*Toxostoma bendirei*	BCC/CSC/S
Crissal thrasher	***Toxostoma crissale***	**BCC/CSC/__**
Le Conte's thrasher	***Toxostoma lecontei***	**BSS/WL/__**
Virginia's warbler	*Vermivora virginiae*	BCC/WL/__
Gray vireo	*Vireo vicinior*	BCC/CSC/S
Mammals		
Townsend's big-eared bat	*Corynorhinus townsendii*	__/CSC/S
Pallid bat	*Antrozous pallidus*	__/CSC/S
Long-legged myotis	*Myotis volans*	__/__/S
Nelson's bighorn sheep	*Ovis canadensis nelsoni*	__/__/S
American badger	***Taxidea taxus***	**__/CSC/__**

Sources: CNDDB 2009 (Ivanpah Dry Lake, State Line Pass, Mesquite Lake, Clark Mountain, Mescal Range, Mineral Hill, Nipton, and Desert USGS quads)
Plants: CNPS 2009, CDFG 2009
Animals: CDFG Special Animals List

Notes:
Bold-face-type denotes species that were observed on or near the proposed project site, or plants observed within a 1-mile buffer of the ISEGS site during the 2007/08 field surveys.
*Found in buffer area surveys only.

Key:
CNPS = California Native Plant Society

Status Codes

BCC = Birds of Conservation Concern (Fish and Wildlife Service); identifies migratory and non-migratory bird species (beyond those already designated as federally threatened or endangered) that are highest conservation priorities (www.fws.gov/migratorybirds/reports/BCC2002.pdf)
BLM = Bureau of Land Management Sensitive; BLM Manual Section 6840 defines sensitive species as "... those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats." <www.blm.gov/ca/pdfs/pa_pdfs/biology_pdfs/SensitiveAnimals.pdf>
CSC = California Species of Special Concern; species of concern to CDFG because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction
FE = Federally listed endangered; species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened; species likely to become endangered within the foreseeable future

Stat

SE = State listed as endangered
ST = State listed as threatened
WL = State watch list

California Native Plant Society

1B = Rare, threatened, or endangered in California and elsewhere
2 = Rare, threatened, or endangered in California but more common elsewhere

Table 3.4-7 Special-Status Species Known or Potentially Occurring in the ISEGS Project Area and Vicinity

Common Name	Scientific Name	Status Fed/State/BLM/CNPS

3 = Plants for which more information is needed
4 = Limited distribution – a watch list
0.1 = Seriously threatened in California (high degree/immediacy of threat)
0.2 = Fairly threatened in California (moderate degree/immediacy of threat)
0.3 = Not very threatened in California (low degree/immediacy of threats or no current threats known)

Vegetation

Compared with the entire EITP project, the ISEGS project is characterized by fewer habitat types because it covers less area. However, because the EITP (for example, the Ivanpah Substation in California) is in the same general geographical location as ISEGS, habitat types are similar for the two projects. Within the ISEGS project area, the dominant habitat is Mojave creosote brush scrub, with small amounts of Mojave yucca-Nevada ephedra scrub and Mojave wash. Overall, the plant community is characterized by a high density and diversity of native succulents and low levels of noxious weeds. The eight species of invasive/noxious weeds that were detected within the ISEGS project area were all found within the EITP area as well. Table 3.4-7 lists the special-status plant species that are known to occur or have the potential to occur within the ISEGS project area. Species in bold in Table 3.4-7 are those that were observed within the ISEGS project area. Out of the 12 special-status plant species that were observed within the ISEGS project area, Clark Mountain agave (*Agave utahensis* var. *nevadensis)*, Utah mortonia (*Mortonia utahensis)*, cave evening-primrose (*Oenothera cavernae)*, and desert portulaca (*Portulaca halimoides*) were not observed during EITP surveys or were determined to be unlikely to occur within the EITP area in California (Table 3.4-4).

Applicable Laws, Regulations, and Standards
Due to the similarity of the desert biological resources that would be impacted by the EITP and ISEGS project and the geographical location of both projects, the same laws, regulations, and standards would apply to ISEGS as those listed in the appropriate subsections of Section 3.4.2 for EITP. Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with the EITP would not apply to ISEGS.

3.4.5.2 ISEGS Methodology

In the ISEGS FSA/DEIS, BLM and CEC staff reported on existing conditions and assessed impacts to soil and water resources. They evaluated the potential for the project to cause direct and indirect impacts to biological resources and considered compliance with the laws, ordinances, regulations, and standards associated with the project components and location. They also considered whether there would be a significant impact under CEQA using the following impact criteria:

- Would the project impact special-status species, such as state- or federally listed species, state fully protected species, candidates for state or federal listing, and/or species of special concern?
- Would the project interrupt species migration; result in reduction of native fish, wildlife, and plant habitat; or cause a fish or wildlife population to drop below self-sustaining levels?
- Would the project disturb wetlands, marshes, riparian areas, or other wildlife habitat?
- Would the project harass a protected species, even if it did not result in the loss of habitat or reduction in population numbers?

3.4.5.3 ISEGS Impacts

BLM and CEC staff determined that construction, operation, and decommissioning of the ISEGS project could impact biological resources. Where impacts were identified, they proposed mitigation measures to reduce impacts to less than significant levels.

The CEC and BLM have published the impacts discussed below related to the biological resources for the ISEGS project. Section 3.4.5.4 contains the CEC- and BLM-proposed mitigation measures for the ISEGS project.

Construction Impacts

The constructed ISEGS project would permanently impact 3,712.7 acres and temporarily impact 321.0 acres.

The construction of the ISEGS project would change the structure and species composition of the native vegetation community due to clearing and mowing the vegetation. Construction activities would result in conditions that would favor more disturbance-tolerant species and the site would be more vulnerable to invasive/noxious weed species. BLM and CEC staff determined that the direct and indirect impacts to the native vegetation community from construction would be significant.

Construction would directly impact eight special-status plant species, and the impact to five of these species (Mojave milkweed, desert pincushion, nine-awed pappus grass, Parish's club cholla, and Rusby's desert-mallow) would be significant. The impact to the remaining three special-status species (small-flowered androstephium, Utah vine milkweed, and desert portulaca) would be less than significant. To avoid impacts to special-status plant species, BLM and CEC staff concluded that the ISEGS project's layout should be reconfigured to avoid areas that support the highest density and diversity of these plant species.

Construction traffic would result in increased wind-caused erosion of the soil, which could result in degradation and loss of plants by burial and abrasion and interruption of the natural processes of nutrient accumulation, and could allow the loss of soil resources.

Vegetation clearing and grading associated with ISEGS construction would directly affect wildlife by removal and crushing of shrubs and herbaceous vegetation, resulting in loss and fragmentation of cover, breeding, and foraging habitat for wildlife.

Construction would eliminate nesting habitat as well as directly impact nests, eggs, and young of migratory/special-status birds. With implementation of the Conditions of Certification (BIO-11, BIO-15, BIO-16, BIO-17), the impacts to migratory and sensitive species birds would be less than significant.

Construction would result in the loss of American badger foraging and denning habitat and would fragment and reduce the quality of the foraging and denning habitat adjacent to the ISEGS project. BLM and CEC staff concluded that this loss of foraging and denning habitat would be a substantial contributor to the cumulative loss of the Ivanpah Valley's American badger population. Construction could also crush or entomb individuals, resulting in their injury or death. The ISEGS FSA/DEIS concluded that through implementation of Condition of Certification BIO-17 the impact to the American badger would be reduced to less than significant.

The construction of the ISEGS project would reduce the availability of seasonal foraging habitat and impact the movement corridors of Nelson's bighorn sheep. Through implementation of BMPs and creation of a water source in the eastern Clark Mountains or in the State Line Hills, the ISEGS FSA/DEIS concluded that impact to Nelson's bighorn sheep would be less than significant.

Construction could result in the loss of habitat and the direct mortality of the banded Gila monster. Though no banded Gila monsters were observed during the biological surveys, suitable habitat is present within the ISEGS project area, and therefore Gila monsters were assumed to be present. The ISEGS FSA/DEIS concluded that with the implementation of BMPs and the compensatory mitigation for desert tortoise, the impact to banded Gila monster would be less than significant.

Construction would result in the loss of approximately 4,073 acres of desert tortoise habitat and the applicant would therefore be required to translocate at least 25 desert tortoise individuals. The translocation process would result in reduced survivorship for the translocated individuals. The construction of the ISEGS would create fragmentation and loss of connectivity within the surrounding desert tortoise habitat due to the fencing surrounding the perimeter of the project area. The increased road traffic due to construction would also increase the road kill hazard to desert tortoise. Construction would also increase raven and coyote presence and would increase desert tortoise predation levels. The ISEGS FSA/DEIS concluded that even with implementation of the recommended mitigation measures, impacts to desert tortoise would be significant.

Construction would impact 198 acres of ephemeral drainages within the ISEGS project area. Minimizing impacts to the drainages during construction activities and providing offsite in-kind compensation (the applicant would acquire and enhance property that contained 198 acres of ephemeral drainages similar to the ISEGS project) would make impacts to the ISEGS project area's ephemeral drainages less than significant, according to the ISEGS FSA/DEIS conclusions.

Noise from construction activities could temporarily impact wildlife immediately adjacent to the ISEGS project by reducing the foraging and nesting behavior. However, the increased noise would be short in duration and proper mitigation would be implemented to further reduce any detrimental impact to the adjacent wildlife. The ISEGS FSA/DEIS concluded that the increased noise levels at the perimeter of the ISEGS project would not substantially impact wildlife resources.

Operational Impacts

Operational impacts from implementation of ISEGS were determined to be similar to those outlined above under "Construction." In summary, impacts would occur on vegetation and special-status plants from increased dust generation and the potential spread of noxious weeds, and on desert tortoise and other special-status wildlife species from increased road traffic, noise and disturbance, and general degradation of habitat. The operation of ISEGS would result in increased noise levels during the daytime operational hours. The increased noise levels would be much lower than the noise resulting from construction activities, and the applicant would implement noise-reducing measures as outlined in the Application for Certification. The ISEGS FSA/DEIS concluded any increase in noise levels due to operational activities would not substantially impact wildlife resources.

Potential impacts to wildlife resources that are unique to the operation of ISEGS would include impacts to birds due to collision with new structures, risk of burns to birds that flew into the reflected sunlight between the heliostats and the power towers, and effects of continuous human disturbance and lighting alteration. The ISEGS FSA/DEIS concluded that implementation of mitigation measures would reduce these listed impacts and therefore the ISEGS project would not substantially impact wildlife resources.

3.4.5.4 ISEGS Conditions of Certification / Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to biological resources if the project is approved:

BIO-1 requires the project applicant to assign at least one Designated Biologist to the project.

BIO-2 requires that the Designated Biologist perform surveys during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, or closure activities.

BIO-3 requires the applicant's BLM- and Compliance Project Manager (CPM)-approved Designated Biologist to submit a resume with at least three references and contact information for the proposed Biological Monitors to BLM's Authorized Officer and the CPM.

BIO-4 requires that the Biological Monitors assist the Designated Biologist in conducting surveys and in monitoring of mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist must remain the contact for the applicant, BLM's Authorized Officer, and the CPM.

BIO-5 requires the applicant's construction/operation manager to act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources Conditions of Certification.

BIO-6 requires the applicant to develop and implement an ISEGS-specific WEAP and to secure approval for the WEAP from USFWS, CDFG, BLM's Authorized Officer, and the CPM. The WEAP must be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP must be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure.

BIO-7 requires the applicant to develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and submit two copies of the proposed BRMIMP to the BLM Authorized Officer and the CPM (for review and approval), and to implement the measures identified in the approved BRMIMP. The BRMIMP must incorporate avoidance and minimization measures described in final versions of the Desert Tortoise Translocation Plan; the Raven Management Plan; the Closure, Revegetation and Rehabilitation Plan; the Burrowing Owl Mitigation and Monitoring Plan; and the Weed Management Plan.

BIO-8 requires the applicant to undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence installation, tortoise handling, artificial burrow construction, egg handling and other procedures must be consistent with those described in Guidelines for Handling Desert Tortoise during Construction Projects (Desert Tortoise Council 1999) or more current guidance provided by CDFG and USFWS. The project owner must also implement all terms and conditions described in the Biological Opinion prepared by USFWS.

BIO-9 requires the applicant to develop and implement a final Desert Tortoise Relocation/Translocation Plan that is consistent with current USFWS-approved guidelines and meets the approval of the BLM, USFWS, CDFG, and the CEC staff. The final plan must be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the applicant (dated May 2009) and must include all revisions deemed necessary by the BLM, USFWS, CDFG, and the CEC staff.

BIO-10 requires the applicant to provide CEC and BLM representatives with reasonable access to the project site and mitigation lands under the control of the project owner and to otherwise fully cooperate with the CEC's and BLM's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures set forth in the Conditions of Certification. The project owner must hold the Designated Biologist, the CEC, and the BLM harmless for any costs the project owner incurs in complying with the management measures, including stop work orders issued by BLM's Authorized Officer, the CPM, or the Designated Biologist.

BIO-11 requires the applicant to implement all feasible measures to avoid or minimize impacts to biological resources.

BIO-12 requires the applicant to implement a Raven Management Plan that is consistent with the most current USFWS-approved raven management guidelines and that meets the approval of the BLM, USFWS, CDFG, and the CEC staff.

BIO-13 requires the applicant to implement a Weed Management Plan that meets the approval of the BLM and the CEC staff. The draft Weed Management Plan submitted by the applicant would provide the basis for the final plan, subject to review and revisions from the BLM and CEC staff, USFWS, and CDFG.

BIO-14 requires the applicant to develop and implement a revised Closure, Revegetation, and Rehabilitation Plan in cooperation with BLM and CEC staff, USFWS, and CDFG to guide site restoration and closure activities, including methods proposed for revegetation of disturbed areas immediately following construction and rehabilitation, and revegetation upon closure of the facility. This plan must address preconstruction salvage and relocation of succulent vegetation from the site to either an onsite or a nearby nursery facility for storage and propagation of material to reclaim disturbed areas. In the case of unexpected closure, the plan should assume restoration activities could possibly take place prior to the anticipated lifespan of the plant.

BIO-15 requires the applicant to conduct preconstruction nest surveys if construction activities would occur from February 1 through August 31.

BIO-16 requires the applicant to implement burrowing owl impact avoidance and minimization measures.

BIO-17 requires the applicant to fully mitigate for habitat loss and potential take of desert tortoise. The applicant would provide compensatory mitigation at a 3:1 ratio for impacts to 4,073 acres or the area disturbed by the final project footprint. At least two-thirds of the 3:1 mitigation to satisfy the CEC's Complementary Mitigation Measures would be achieved by acquisition, in fee title or in easement, of no less than 8,146 acres of land suitable for desert tortoise. The project owner would provide funding for the acquisition, initial habitat improvements, and long-term management endowment of these CEC-complementary compensation lands. The remaining third of the 3:1 compensatory mitigation, to satisfy BLM's mitigation requirements and the balance of the CEC's mitigation requirements, would be developed in accordance with BLM's desert tortoise mitigation requirements as described in the document Northern and Eastern Mojave Desert Management Plan (BLM 2002a). BLM's compensatory mitigation plan, serving as one-third of the 3:1 mitigation ratio required to satisfy CESA, would include acquisition of up to 4,073 acres of land within the Eastern Mojave Recovery Unit, or desert tortoise habitat enhancement or rehabilitation activities that meet BLM, CDFG, USFWS, and CEC approval, or some combination of the two.

BIO-18 requires the applicant to implement measures to avoid and minimize impacts to special-status plant species.

BIO-19 requires the applicant to compensate for project impacts to Nelson's bighorn sheep by financing, constructing, and managing an artificial water source in the eastern part of the Clark Mountain Range or in the State Line Hills outside of designated Wilderness.

3.5 Cultural Resources and Native American Values

This section contains a description of the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to cultural resources. This section includes background data compiled from cultural resources records searches conducted at the San Bernardino County Archaeological Information Center, located at the San Bernardino County Museum in Redlands, California; the Harry Reid Center for Environmental Studies at the University of Nevada, Las Vegas; and online with the Nevada Cultural Resources Information System. Additional data included in this section was acquired from an intensive cultural resources field survey of the project area following the records searches. A full report of the cultural resources findings for this project is documented in *A Class III Cultural Resources Inventory Southern California Edison Eldorado – Ivanpah Transmission Project San Bernardino County, California and Clark County, Nevada* (Chambers Group 2009).

3.5.1 Environmental Setting

The environmental setting section characterizes the terrain and resources immediately surrounding the right-of-way (ROW) of the project, including data from the nearby surrounding landforms, since they may influence the nature and quantity of cultural resources in the area. A more expansive description of the cultural setting is provided, since cultural resources occur intermittently throughout time and space.

3.5.1.1 Physiography and Geology of Proposed Route and All Alternatives

The EITP is in southern Nevada and southeastern California in the Mojave Desert geologic province of the Great Basin. This linear project passes through the Eldorado Valley, McCullough Mountains, Jean Valley, Ivanpah Valley, and Clark Mountains. The proposed route skirts the eastern edge of Roach Dry Lake and passes through the northern portion of Ivanpah Dry Lake. The Mountain Pass and Golf Course alternatives for the Telecommunication Route are located south of the proposed transmission line route. These alternatives pass through Eldorado Valley between the McCullough and Highland mountain ranges, through Big Tiger Wash between the McCullough and New York ranges, through Ivanpah Valley transecting the southern edge of Ivanpah Dry Lake, and through Mountain Pass near Wheaton Springs.

The geology of the project area consists of alluvial deposits in the valleys and bedrock in the mountains. The alluvial deposits were deposited during the Holocene (which began 11,000 years ago), whereas stream deposits date to the early to late Pleistocene (1.8 million to 11,000 years ago). The bedrock is volcanic rock, primarily basalt. Some of the alluvial fan surfaces exhibit poorly to moderately well developed desert pavement with desert varnish. Recent research displaced an earlier view that desert pavements formed in an erosional environment, finding instead that the "… desert pavement surface is a single layer of clasts borne upward on an ever-accreting layer of eolian silt" (Hill 2008). This new view of desert pavement led to testing that yielded artifacts to a depth of 2.6 feet below the surface throughout the column of cobble-free eolian silt that typically makes up the substrate of desert pavements. It was concluded from this testing that artifacts worked into an older desert pavement can predict subsurface archaeological deposits, and that the occupation surface of a site on a terminal Pleistocene or early Holocene alluvial fan is likely to be several feet below the current pavement (CH2M Hill and Carrier 2008).

The alluvial deposits can be more than 80 inches deep in portions of the project area and could have buried cultural resources within them (SCE 2009).

3.5.1.2 Cultural History

This section describes human occupation of the general project area over the Prehistoric, Protohistoric or Ethnographic, and Historic periods. The division between Historic and Prehistoric time is marked by the keeping of written records. The Protohistoric period occurred before European settlement in the area; however, the Native American culture was influenced in the Protohistoric period by European culture through intertribal trade networks.

Prehistoric

The Prehistoric period encompasses the time of the first peopling of the Americas until the arrival of the first Europeans who began keeping written records of the area. The Prehistoric period is subdivided into the Paleo-Indian, Archaic, and Late Prehistoric eras. The Paleo-Indian occupation (12,000 to 10,000 calibrated years before the present [cal BP]) is thought to have occurred throughout North America and represents the first influx of people into the Mojave during the end of the last ice age. Several sites throughout the Americas have hinted at an earlier human occupation of the continents; however, no sites found in the Mojave can be attributed to pre-Clovis (a culture that first appeared 11,500 radiocarbon years cal BP). There are arguments for an even earlier occupation; however, chronological indicators for these sites are disputed.

The Paleo-Indian occupation in the Mojave Desert is poorly represented by artifacts, or at least has been poorly documented to date (Sutton 1996). Fluted Clovis points are the main diagnostic artifact representing this period, and they have been found in the region; however, such finds have generally been isolated surface finds (Sutton et al. 2007). The dearth of Paleo-Indian sites and diagnostics may be more a function of sample bias than of actual absence. To date, the archaeological community has not searched beneath the surface of desert pavement surfaces for older occupations. Research into the age of desert pavements and the potential for subsurface cultural resources may lead to significant discoveries about the Paleo-Indian presence in the Mojave Desert.

The Archaic period coincides with the early and middle Holocene epoch, a time when the climate was cooler and moister than currently. The Lake Mojave, Pinto, Deadman Lake, and Gypsum groups of artifacts (complexes) represent different shifts in technology and subsistence methods throughout the Archaic period. The Lake Mojave complex (10,000 to 8,000 cal BP), characterized by Great Basin stemmed series projectile points such as Lake Mojave and Silver Lake points, is the earliest complex represented during the Holocene. Chronologic indicators are uncommon for this complex, as many of the sites have been surface finds. Lake Mojave is well represented at Fort Irwin, China Lake, and Twentynine Palms. Lake Mojave complex sites offer evidence of long-distance trade networks to the coast and a wide foraging base for lithic raw materials (Sutton et al. 2007).

The Pinto complex (8,000 to 5,000 cal BP) is thought to have begun in the early Holocene, overlapping with the end of the Lake Mojave complex. Sites with artifacts diagnostic to the Pinto complex are widespread and well represented in the Mojave Desert. Diagnostic artifacts from this complex include Pinto series projectile points and a marked increase in the use of groundstone implements, indicating a substantial shift to a greater emphasis on plant resources. Trade with coastal communities continued during this time, as evidenced by the presence of olivella shell beads (Sutton et al. 2007).

The Gypsum complex (4,000 to 1,800 cal BP) is defined by the presence of Elko, Humboldt, and Gypsum series projectile points. The material culture from Gypsum complex assemblages implies increased trade activities and an increase in social complexity. Quartz crystals, paint, and rock art panels are commonly attributed to Gypsum components (Sutton et al. 2007).

The onset of the Late Prehistoric is demarcated from the Archaic by the introduction of the bow and arrow and the phasing out of *atlatl* (spear thrower) technology. The Rose Spring complex (1,800 to 900 cal BP) coincides with a time of increased rainfall in at least some parts of the Mojave Desert. An increase in population, the presence of Eastgate and Rose Spring series projectile points, well developed midden remains, and a marked shift in material culture are all hallmarks of the Rose Spring complex. Sites attributed to this complex are commonly found near springs and along washes and lakeshores (Sutton et al. 2007). The Rose Spring complex is sometimes discussed along with the above-described Archaic complexes; however, the use of bow and arrow technology during the time tools in this complex were used makes it more suitable to be discussed in the Late Prehistoric period.

In the post-Rose Spring complex time there appears to have been a decrease in population and the onset of a dryer, warmer climate. The habitation pattern from this era includes habitation sites with associated cemeteries surrounded by special-purpose and seasonal sites. Desert series projectile points, such as Cottonwood and Desert side-notched, and the introduction of ceramics, steatite beads, and slate pendants are hallmarks of this era. The Late Prehistoric era is not well understood in the Eastern Mojave due to a lack of both fieldwork and research (Sutton et al. 2007).

Protohistoric and Ethnographic

The Southern Paiute have been the recorded occupiers of the project area since the Protohistoric period. They are defined as a hunter-gatherer foraging culture and are particularly known for their skilled manufacture of baskets, brownware pottery, and sketched and engraved petroglyphs in the southern Great Basin. The Southern Paiute are subdivided into the Chemehuevi, Las Vegas, Moapa, Pahranagat, Gunlock, Saint George, Shivwits, Uinkaret, Cedar, Beaver, Panguitch, Kaibab, Kaiparowits, Antarianunts, and San Juan.

The habitation pattern of the Southern Paiute was largely based on the seasons, to take advantage of seasonal food resources. Winters were generally spent at higher elevations, and summers were spent in the lowland areas. The Chemehuevi lived in earth-covered dwellings and relied heavily on agave, pine nuts, other seeds, and small and large game for subsistence (Sander et al. 2009).

Historic

Francisco Garces, Francisco Atanasio Dominguez, and Silvestre Velez de Escalante were the first documented Europeans to come into contact with the Paiute, in 1776. Colonization of the Paiutes did not commence until 1810, when Spanish settlers along the upper Rio Grande began baptizing the natives. By the 1830s, the Paiute were being traded as slaves along the Old Spanish Trail. The Paiute slave trade came to an end in the 1850s due in large part to the influence of Mormon expansion into Nevada and Utah. In the 1860s the American government began resettling the Southern Paiutes onto reservations (Sander et al. 2009).

The Old Spanish Trail was established as an overland supply route from New Mexico to California. The trail passes through the southern tip of Nevada. Other than the trail, the Spanish did not have an economic interest in southern Nevada. The Goodsprings (Yellow Pine, Petosi) mining district in the Spring Mountains north of Clark Mountain was consistent from 1893 to 1905 when completion of the San Pedro, Los Angeles, and Salt Lake Railroad (SPLA&SL) stimulated increased mining development and the district became a principal source of zinc with peak production during World War 1 (Longwell et al. 1965). Mining drew many into the southern portion of the state long before the Hoover Dam was proposed. In addition to mining, the completion of the SPLA&SL in 1905 created a land boom in Las Vegas (Longwell et al. 1965). The construction of the Hoover Dam began in 1931 and was completed in 1936. The Boulder (Hoover) Dam transmission line was constructed from 1930 to 1931 over eight months. The dam required electricity, which came from 226 miles away in San Bernardino, California, through the first transmission lines in the area. Once the dam was constructed, the flow of electricity was reversed to provide hydroelectric power to the Los Angeles area. The line is still in use and is currently owned by Southern California Edison (Sander et al. 2009).

The project area crosses the boundary between California and Nevada. The first official border between the two states was established by Allexy W. Von Schmidt, a U.S. astronomer and surveyor, in 1873. Von Schmidt used solar observations to approximate the dividing line between the two states, which resulted in an error in the placement of the line by three quarters of a mile to the south of where it was supposed to be. Von Schmidt had marked the boundary with cast-iron columns and thus the line can still be seen today. The Von Schmidt line has been designated as a California Registered Historical Landmark (No. 859; Sander et al. 2009).

The San Pedro, Los Angeles, and Salt Lake Railroad Company constructed a railway line from Salt Lake City to San Pedro, California. This line crosses the current project area. The line was purchased by Union Pacific in 1921 and is still operated by that company (Sander et al. 2009).

The mountains in the project area offered mineral resources that were desirable for early miners. Gold, copper, silver, and lead were available in the region. While the records search did not yield data pertaining to mining inside the project area, closed mines are located about 1,000 feet outside both sides of the proposed and alternative EITP routes (Appendix F-1). The first mine in the area was established in 1869 in the Clark Mountains. Ivanpah Spring became the supply center to service the mine, and mills were built at Ivanpah by the mid-1870s. In 1898, the Copper World Mine was developed at Rosalie Wells. The mine was in operation until World War I. Mountain Pass was the site of gold and silver finds in 1879. The Mescal Mine was developed in 1882 and was active until 1887. Gold was discovered near Vanderbilt Spring in the New York Mountains in 1891. By 1892, there had been major development of the Gold Bronze and Boomerang mines (Fergusson 2007). It is likely that associated cultural resources such as trails, campsites, and other features associated with mining were in the general project area and may prove to be National Register of Historic Places (NRHP)-eligible resources.

The town of Nipton is a historic community located at the intersection of two wagon trails. One of the trails runs east–west from Colorado to the Ivanpah Mine; the other runs north–south from Goodsprings to the railroad and mining settlement, Goffs, near present-day Needles. A Pennsylvania man, Samuel Dunc Karns, staked a mining claim in the area in 1900 that he called Nippeno. The town's name was derived from the name of the mine. Rail lines were routed through the crossroads at the town as part of the San Pedro, Los Angeles, and Salt Lake Railroad Company line in 1905, which continued in operation until the 1950s.

Gambling was legalized in Nevada in the 1930s. This helped shape the state's economy and increase the population, as did the military's establishment of Nellis Air Force Base, Fallon Naval Air Station, and an army base at Tonopah. During Prohibition (1920 to 1933), a man local to the project area, Pete McIntyre, began a lucrative bootlegging operation. "Whiskey Pete," as he came to be known, owned a local gas station and produced moonshine in local mountain caverns. Pete's property was purchased in the 1950s by Ernie Primm, who developed a casino on the property (Sander et al. 2009).

3.5.1.3 Cultural Sites

The survey of the EITP proposed route resulted in the discovery or re-recording of cultural resources along the EITP proposed route, telecommunications route, and alternative routes. These resources are described below. No previously recorded or newly discovered cultural resources were located during the background research or field survey of the Ivanpah Substation site.

Eldorado–Ivanpah Transmission Line Route

Cultural Resource 36-1910 (CA-SBR-1910H)/26CK5685 is the historic Union Pacific Railroad constructed from 1903 to 1904. The site has retained its physical location and overall attributes as a linear transportation system. It was determined by the Harry Reid Center for Environmental Studies at the University of Nevada to be a significant linear structure and is eligible for the NRHP under Criteria A and D (see Section 3.5.3, "Impact Analysis.") It is listed as a significant frontier railroad with urban industrial centers at either terminus. The railroad connected mining communities, homesteads, and numerous towns along its path between Barstow and Salt Lake City. This line aided in furthering western expansion and the exploration and settlement of the southwestern region of the United States. The rail line is also associated with Senator William A. Clark of Montana, who became famous and wealthy from his mining ventures in Montana. He invested in the completion of the railroad and furthered his empire in mining and exploration in the Eastern Mojave and Nevada deserts.

Although this site as a whole is eligible for listing in the NRHP, the short sections of the railroad line located within the project corridor are not recommended as contributing elements of the structure. Regular maintenance and upgrades to the gravel track bed, rails and ties, and Nipton Road have replaced the original historic materials and only the original path of the railroad remains.

Cultural Resource 36-7694 (CA-SBR-7694H)/26CK4957 is the Los Angeles Department of Water and Power (LADWP) Boulder Transmission Line (lines 1, 2, and 3). The lines were built between 1933 and 1940 and were determined eligible for the NRHP in 1994. This site is eligible for listing on the NRHP under Criterion A and C and has elements that contribute to the significance of the resource within the EITP project area. At this point, the applicant intends to span over the LADWP Transmission Line using H-frame towers.

Cultural Resource 36-10315 (CA-SBR-10315H)/53-8280 is the Boulder Dam–San Bernardino 132-kV transmission line. This line was built in the early 1930s and was first recorded as a potential cultural resource in 1988. This resource has been determined eligible for the NRHP under Criteria A and C due to its association with the construction of Boulder (Hoover) Dam and expansion of the dam into California. The Proponent's Environmental Assessment indicates that towers from this line would be removed and replaced with new towers to accommodate the existing and new transmission capacity.

Cultural Resource 36-6835 (CA-SBR-6835H) is the Von Schmidt survey line demarcated in 1873 during the original survey of the boundary between California and Nevada. Located approximately 0.75 miles west of the actual state line, the Von Schmidt line was established in the wrong place due to a surveying error. Its only physical presence is a line of cast iron markers. The site is listed as California Historical Landmark No. 859 and Nevada State Historic Marker No. 196. Cultural Resource 36-6835 has been found eligible for the California Register of Historical Resources (CRHR). It has not yet been evaluated for the NRHP, but it would likely be found eligible.

Cultural Resource 36-7689 (CA-SBR-7689H) is the Arrowhead Trail highway. The highway was constructed as a through route between Los Angeles and Salt Lake City via Las Vegas. This site has been determined not eligible for listing on the NRHP.

Cultural Resource 36-13416 (CA-SBR-12574H) is the remains of a telegraph line that served as a communications system for the Boulder Dam Transmission Line. The line itself and telegraph poles have been removed from the site. The site is, therefore, lacking integrity and is recommended not eligible for the NRHP.

Cultural Resource 36-13417 (CA-SBR-12575H) is an unnamed two-track road running east to west that appears to be a route from Yates Well to Ivanpah Springs. The site does not meet the criteria for listing on the NRHP.

Cultural Resource 26CK2633 is a prehistoric lithic scatter that contained debitage, one projectile point, and two biface fragments. The area surrounding the site is characterized by desert pavement, but without any desert varnish development. This site has not been evaluated for NRHP eligibility.

Cultural Resource 26CK3023 is a small east-facing natural rock shelter in the McCullough Range. Metate fragments, potsherds and chert flakes, and a single petroglyph were recorded on the original Intermountain Archaeological Computer System (IMACS) record form. Subsequent visits to the site yielded a basalt chopper and two additional flakes. This site has been determined not eligible for listing on the NRHP.

Telecommunications Line

Cultural Resource 36-014987 (CA-SBR-1312H) is a historic trash scatter containing at least 200 beer cans, a few oil cans, an air filter for a vehicle or machine, and at least five broken bottles in a 30-square-meter area. The cans have all been opened using a church-key-style can opener. The maker's marks on the bottles indicate that they were manufactured in between the 1930s and 1950s. This site does not appear eligible for listing in the NRHP; however, a formal NRHP evaluation of site would be conducted if the Mountain Pass alternative is chosen for construction.

Cultural Resource 36-014988 (CA-SBR-13133H) is a historic trash mound measuring 4 by 2 meters. The deposit includes charcoal, cinders, rock debris, modern glass, ceramics, and metal fragments as well as sun-colored amethyst glass fragments. The site has been disturbed by relic hunters and is a dump of domestic refuse that likely originated in the nearby community of Nipton. The site is recommended as not eligible for the NRHP.

Transmission Alternative Route C

Cultural Resource 36-7689 (CA-SBR-7689H) is a segment of the Arrowhead Trail Highway (State Route 31). This historic road connects Los Angeles and Salt Lake City via Las Vegas. The road alignment that passes through the project area contains the road and an associated scatter of historic refuse, prehistoric artifacts, a corrugated metal pipe, and a brass cap surveyor's monument. This site has been determined to be not eligible for listing in the NRHP.

Cultural Resource 26CK4135 is the location of a now-demolished historic structure constructed of a late-dating adobe and cement aggregate compound. The adobe remains are degraded and visible on the ground surface. Material debris is found throughout the immediate area, though it is difficult to determine whether debris is associated with the structure or with more recent episodes of trash dumping. The site was determined not eligible for the NRHP.

Cultural Resource 36-7694 (CA-SBR-7694H)/26CK4957 is the LADWP Boulder Transmission Line (lines 1, 2, and 3). A full description of the resource can be found under the cultural resource listings for the Eldorado–Ivanpah Transmission Line Route above. The line was determined eligible for the NRHP under Criterion A in 1994.

Transmission Alternative Route D

36-13416 (CA-SBR-12574H) is the remnants of a telegraph pole line and associated dirt road. The ROW is still intact; however, the telegraph line has been removed and many of the poles have been cut down to stumps. This site has the same alignment as the Boulder Transmission Line (36-10315 [CA-SBR-10315H]) and is associated with that line. It has been recommended not eligible for listing on the NRHP.

Telecommunication Alternative (Golf Course)

36-3048 (CA-SBR-3048H) is Old Traction Road and an associated refuse scatter. The road is in poor condition in some places, with deep ruts created by rain water flowing toward the lower elevation of Ivanpah Lake; however, the road bed is still in place and clearly visible. Old Traction Road is recommended as eligible for listing in the NRHP under Criterion A for its association with the broad pattern of transportation modes dating from the early 1900s. The portions of Old Traction Road that may be affected by the EITP development are not recommended as contributing elements of the resource. Regular maintenance and upgrades to the road bed, shoulder, and Nipton Road have replaced the original historic materials and only the original path of Old Traction Road remains.

36-7802 (CA-SBR-7802H) is a historic roadside scatter of household refuse dominated by evaporated milk cans or food cans that were discarded in the early 1900s. This site has been recommended not eligible for the NRHP due to disturbances associated with road maintenance, and the site testing results from the EITP investigations support this recommendation.

36-014496 (CA-SBR-12980H) is Nipton Road. The road was originally a dirt track established as a wagon trail connecting the mines east and west of Nipton to the railroad stations in Ivanpah Valley. The Copper World Mine used the road to bring raw materials to the Ivanpah Station to be loaded onto railcars for transport. The road was also used by gold miners in Searchlight, Nevada, to send goods to Ivanpah Station. Although this road was significant to the development of the area, historic mining operations, and railroad themes, its improved state as a modern paved road degrades its historic integrity, and no sign of the original wagon trail remains. The roadway is recommended as not eligible for listing on the NRHP.

36-1910 (CA-SBR-1910H)/26CK5685 is the historic Union Pacific Railroad. The railroad was constructed from 1903 to 1904 and has retained its physical location and overall attributes as a linear transportation system. The site was evaluated by the Harry Reid Center for Environmental Studies at the University of Nevada to be a significant linear structure and is eligible for listing in the NRHP. It is listed as a significant frontier railroad with two urban industrial centers at either terminus. The railroad connected mining communities, homesteads, and numerous towns along its path between Barstow and Salt Lake City. This line helped further western expansion and the exploration and settlement of the southwestern region of the United States. The rail line is also associated with Senator William A. Clark of Montana, who became famous and wealthy due to his mining ventures in Montana. He invested in the completion of the railroad and furthered his empire in mining and exploration in the Eastern Mojave and Nevada deserts. This resource is eligible for the NRHP under Criteria A and D. However, the short sections of the railroad line located within the project corridor are not recommended as contributing elements of the structure. Regular maintenance and upgrades to the gravel track bed, rails and ties, and Nipton Road have replaced the original historic materials, and only the original path of the railroad remains.

Telecommunication Alternative (Mountain Pass)

36-7347 (CA-SBR-7347H) is a historic dirt road that crosses the transmission line from east to west. This site has not yet been determined ineligible for the NRHP.

36-014497 (CA-SBR-12981H) is a historic trash scatter within a drainage situated between a dirt road and I-15. Approximately 75 cans of various types were found, including coffee, beer, soda, and juice cans. Bottles showed maker's marks dating to the late 1940s and early 1950s. The site is likely associated with the nearby sand and gravel borrow pit. It is heavily disturbed by erosion and off-road driving, and subsurface deposits were not found during testing of the site. The site is likely a part of 36-014498. It has been recommended not eligible for the NRHP.

36-014498 (CA-SBR-12982H) consists of a large historic debris scatter located within a drainage area between a dirt road and I-15. The site contains a large scatter of historic cans, including food cans, motor oil cans, beer cans, soda cans, and evaporated milk cans. Bottles with visible maker's marks dating to the 1940s and 1950s were observed. The site is likely associated with the nearby sand and gravel borrow pit. The site is heavily disturbed by erosion and off-road driving, and subsurface deposits were not found during testing of the site. The site is likely a continuation of site 36-014497 (CA-SBR-12981H). It has been recommended not eligible for the NRHP.

3.5.1.4 Tribal Consultation

The BLM initiated consultation with Native American tribes and groups that may have knowledge of the cultural resources of the proposed project area. Twenty-three contacts from the following 11 Native American groups were given notice of the proposed project as the first step in the consultation process:

- Chemehuevi Indian Tribe;
- Colorado River Indian Tribes;
- Fort Mojave Tribal Council;
- Las Vegas Paiute Tribe;
- Moapa Band of Paiute Indians;
- Morongo Band of Mission Indians;
- Pahrump Paiute Tribe;
- San Manuel Band of Mission Indians;
- Serrano Nation of Indians;
- Timbisha Shoshone; and
- Twenty-Nine Palms Band of Mission Indians.

A search of the Native American Heritage Commission's Sacred Lands File (SLF) was conducted to determine the any known Native American cultural resources in the proposed project area. The SLF search failed to indicate the presence of any Native American cultural resources in the proposed project area. As of the date of this document, tribal consultation did not result in the identification of cultural resources or historic properties to which the tribes attach religious or cultural significance within the proposed project area.

3.5.2 Applicable Laws, Regulations, and Standards

The following section summarizes federal, state, and local laws, regulations, and standards that govern cultural resources in the project area.

3.5.2.1 Federal

Code of Federal Regulations (CFR), Title 36 Section 800

This statute protects historic properties and pertains to implementation of the regulations of Section 106 of the National Historic Preservation Act (NHPA). Section 106 requires federal agencies to take into account the effects of a proposed action on historic properties.

National Environmental Policy Act: U.S. Code (USC), Title 42 Sections 4321 et seq.

This statute requires federal agencies to consider potential environmental impacts of projects with federal involvement and to consider appropriate mitigation measures.

Federal Land Policy and Management Act: 43 USC Sections 1701 et seq.

This statute requires the Secretary of the Interior to retain and maintain public lands in a manner that will protect the quality of scientific, scenic, historic, ecological, environmental, and air and atmospheric water resources, as well as archaeological values.

Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Federal Register V.48 N. 190 Part IV p. 44738-44739)

This statute is a set of standards and guidelines for archaeologic and historic preservation. They are considered the appropriate professional methods and techniques for the preservation of archaeological and historic properties and are used by all federal agencies. The California Office of Historic Preservation and the Nevada State Historic Preservation Office refer to these standards in their requirements for selection of qualified personnel and in the mitigation of potential impacts on cultural resources on public lands in California.

Native American Graves Protection and Repatriation Act (1990): 25 USC Sections 3001 et seq.

This statute requires all federal agencies and museums receiving federal funds to inventory their collections, notify appropriate parties of sensitive collections, acknowledge requests from native groups for repatriation, review the collections and the requests, and, if appropriate, repatriate human remains, grave associations, sacred objects, and items of cultural patrimony to affiliated tribes or individuals. It establishes that Native American human remains legally belong to the nearest affiliated Indian tribe or family of known individuals, rather than with the owner of the land on which they were found. This statute also requires that archaeologists consult with land management officials prior to conducting field work on federal land or in a federal undertaking.

Executive Order 11593, May 13, 1971 (36 CFR 8921)

This order mandates the protection and enhancement of the cultural environment through providing leadership, establishing state offices of historic preservation, and developing criteria for assessing resource values.

American Indian Religious Freedom Act: Title 42, USC Section 1996

This statute protects Native American religious practices, ethnic heritage sites, and land uses.

U.S. Department of the Interior, Bureau of Land Management, the California Desert Conservation Area Plan 1980 as amended – Cultural Resources Element Goals

This plan establishes BLM goals to increase archaeological and historical knowledge of the California Desert Conservation Area (CDCA) through continuing efforts and use of existing data. It also establishes goals to identify the full array of cultural resources within the CDCA, preserve and protect a representative sample of the full array of the CDCA's cultural resources, ensure that cultural resources are given full consideration in land use planning and management decisions and that BLM-authorized actions avoid inadvertent impacts, and ensure proper data recovery of significant cultural resources where adverse impacts cannot be avoided.

Archaeological Resources Protection Act (ARPA) of 1979, Public Law 96-95; 16 USC 470aa-mm)

ARPA prohibits the excavation or removal of an archaeological resource from federal or traditional Native American lands without a permit from the appropriate land management agency. Under ARPA, the sale, purchase, exchange, transport, or possession of an archaeological resource removed without permission of the land management agency is forbidden. Violators convicted of violation of ARPA are subject to fine and imprisonment.

3.5.2.2 State

California

Public Resources Code (PRC) Sections

5020–5024. These sections are statutes that pertain to the protection of historical resources.

5097.98 (b) and (e). These sections requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until conferring with the most likely descendants (as identified by the Native American Heritage Commission) to consider treatment options.

5097.91–5097.991. These sections pertain to the establishment and authorities of the Native American Heritage Commission (NAHC). Sections 5097.91–5097.991 also prohibit the acquisition or possession of Native American artifacts or human remains taken from a Native American grave or cairn except in accordance with an agreement reached with the NAHC, and provide for Native American remains and associated grave artifacts to be repatriated.

5097.993–5097.994. These sections establishes the Native American Historic Resource Protection Act which makes it a misdemeanor crime for the unlawful and malicious excavation, removal, or destruction of Native American archaeological or historical sites on public or private lands.

6254 (r). This section established the California Public Records Act which protects Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission by protecting records of such resources from public disclosure.

21083.2. This section of the California Environmental Quality Act (CEQA) provides for protection of archaeological resources by directing the lead agency on any project undertaken, assisted, or permitted by the state to include in its environmental impact report for the project a determination of the project's effect on unique archaeological resources. It enables a lead agency to require an applicant to make reasonable efforts to preserve or mitigate impacts to any affected unique archaeological resource, and sets requirements for the applicant to provide payment to cover the costs of mitigation.

21084.1. This section of CEQA establishes that an adverse effect on a historical resource qualifies as a significant effect on the environment.

25373, 37361. These sections allows city and county legislative bodies to acquire property for the preservation or development of a historic landmark. It allows local legislative bodies to enact ordnances to provide special conditions or regulations for the protection or enhancement of places or objects of special historical or aesthetic interest or value.

65092. This section provides for notice of projects in consideration for construction to be sent to California Native American tribes who are on the contact list maintained by the Native American Heritage Commission.

Health and Safety Code (HSC) Sections

7050 – 7054. These HSC sections are statutes that pertain to disturbance and removal of human remains, felony offenses related to human remains, and depositing human remains outside of a cemetery.

8010–8011. This HSC sections establishes the California Native American Grave Protection and Repatriation Act that is consistent with and facilitates implementation of the federal Native American Graves Protection and Repatriation Act

Senate Concurrent Resolutions

Number 43. This resolution requires all state agencies to cooperate with programs of archaeological survey and excavation, and to preserve known archaeological resources whenever this is reasonable.

Number 87. This resolution provides for the identification and protection of traditional Native American resource-gathering sites on state land.

Administrative Code, Title 14, Section 4307

This code states that no person shall remove, injure, deface, or destroy any object of paleontological, archaeological, or historical interest or value.

California Code of Regulations Section 1427

This code recognizes that California's archaeological resources are endangered by urban development and population growth and by natural forces. It declares that these resources need to be preserved in order to illuminate and increase public knowledge of the historic and prehistoric past of California.

Penal Code Section 622: Destruction of Sites

This code establishes as a misdemeanor the willful injury, disfiguration, defacement, or destruction of any object or thing of archaeological or historical interest or value, whether situated on private or public lands.

Nevada

Nevada Revised Statutes (NRS)

383.150–383.190. This NRS protects Native American graves on private and public land.

451 et seq. This NRS ensures the protection of all human remains on public and private land by establishing penalties of imprisonment, fines, or a combination thereof. The penalties are applicable to both the person who collects the remains and any person who receives or purchases such remains. Section 451.045 establishes a permit obtainable from a local health officer for the disinterment or removal of human remains.

3.5.2.3 Regional and Local

No regional or local ordinances in the project area pertain to cultural resources.

3.5.3 Impact Analysis

This section defines the methodology used to evaluate impacts for cultural resources, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.5.4, "Mitigation Measures."

3.5.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to cultural resources would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

The NEPA analysis considers the overall impact of the project to the resource, including the amount of access/activity where cultural resources are present; the amount/distribution of the ground disturbance at archaeological or historical sites; the extent to which actions alter the setting of cultural resources; the amount, quality, and location of natural resource base used by the tribes, including fish, game, plants, minerals, and springs; and the presence of cultural resource sites, including ethnographic resource and traditional cultural properties.

3.5.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. cause a substantial adverse change in the significance of a historic resource as defined in Public Resources Code Section 15064.5,

b. cause a substantial adverse change in the significance of a archaeological resource as defined in Public Resources Code Section 15064.5, or

c. disturb any human remains, including those interred outside of formal cemeteries. No quantitative threshold exists.

3.5.3.3 Methodology

Impacts to identified cultural resources were evaluated based on the significance of the site according to data presented in Sander et al. (2009). For Section 106 of the NHPA, determining significance entails determining whether a resource is eligible for listing on the NRHP. The resource is eligible if it meets one of the following four criteria:

Criterion A The resource is associated with events that have made a significant contribution to the broad patterns of American history.

Criterion B The resource is associated with the lives of persons significant in our past.

Criterion C The resource embodies the distinctive characteristic of a type, period, or method of construction; represents the work of a master; possesses high artistic value; or represents a significant or distinguishable entity whose components may lack individual distinction.

Criterion D The resource has yielded or may likely yield information important in prehistory or history.

Under CEQA, the significance of a resource is determined according to California Public Resources Code Section 5024.1 and California Code of Regulations, Title 14 Section 4850 et seq. CEQA criteria for significant resources are given below.

Criterion 1 The resource is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.

Criterion 2 The resource is associated with the lives of persons important to local, California, or national history.

Criterion 3 The resource embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.

Criterion 4 The resource has yielded, or may be likely to yield, information important in prehistory or history of the local area, California, or the nation.

Sites that are not considered to be significant resources are not protected and would be deemed to not have any impacts resulting from this project.

3.5.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) related to cultural resources:

APM CR-1: Conduct Archaeological Inventory of Areas that May Be Disturbed. Conduct an intensive archaeological inventory of all areas that may be disturbed during construction and operation of the proposed project. A complete cultural resources inventory of the project area has been conducted, details of which are contained in a technical report. Should the project substantially change and areas not previously inventoried for cultural resources become part of the construction plan, the applicant would ensure that such additional areas are inventoried for cultural resources prior to any disturbance. All surveys would be conducted and documented according to applicable laws, regulations, and professional standards.

APM CR-2: Avoid and Minimize Impacts on Significant Cultural Resources Wherever Feasible. Avoid and minimize impacts on significant or potentially significant cultural resources wherever feasible. To the extent practical, the applicant would avoid or minimize impacts on archaeological resources, regardless of its CRHR or NRHP eligibility status. This includes siting all ground-disturbing activities and other project components outside a buffer zone established around each recorded archaeological site within or immediately adjacent to the right-of-way.

APM CR-2a. Avoid Direct Impacts on Significant Cultural Resources through Project Final Design. Project Final Design would avoid direct impacts on significant or potentially significant cultural resources. To the extent practical, all ground-disturbing activities and other project components would be sited to avoid or minimize impacts on cultural resources listed as or potentially eligible for listing as, unique archaeological sites, historical resources, or historic properties.

APM CR-2b. Conduct a Preconstruction Worker Environmental Awareness Program (see BIO-6, PALEO-3, and W-11). The program would be presented to all proposed project personnel who have the potential to encounter and alter unique archaeological sites, historical resources, or historic properties, or properties that may be eligible for listing in the CRHR or NRHP. This includes construction supervisors as well as field construction personnel. No construction worker would be involved in ground-disturbing activities without having participated in the Worker Environmental Awareness Program.

APM CR-2c. Protective Buffer Zones. Establish and maintain a protective buffer zone around each recorded archaeological site within or immediately adjacent to the right-of-way. A protective buffer zone would be established around each recorded archaeological site and treated as an “environmentally sensitive area” within which construction activities and personnel are not permitted. Monitoring would be conducted to ensure that the protective areas are maintained.

APM CR-3. Evaluate Significance of Unavoidable Cultural Resources. Evaluate the significance of all cultural resources that cannot be avoided. Cultural resources that cannot be avoided and which have not been evaluated to determine their eligibility for listing in the CRHR or NRHP would be evaluated to determine their historical significance. Evaluation studies would be conducted and documented according to applicable laws, regulations, guidelines, and professional standards.

APM CR-3a. Evaluate Significance of Potentially Eligible Archaeological Resources. Evaluate the significance of archaeological resources potentially eligible for CRHR or NRHP listing. Evaluation of archaeological sites could include scientific excavation of a sample of site constituents sufficient to understand the potential of a site to yield information to address important scientific research questions per CRHR eligibility Criterion 4 and NRHP eligibility Criterion D. Sites with rock art would be evaluated to consider their eligibility per CRHR Criterion 1 and NRHP Criteria A, C, and D.

APM CR-3b. Evaluate Significance of Potentially Eligible Buildings and Structures. Evaluate the significance of buildings and structures potentially eligible for CRHR or NRHP listing. Evaluation would take into account engineering, aesthetic, architectural, and other relevant attributes of each property. Buildings and structures would be evaluated for historical significance per CRHR eligibility Criteria 1, 2, and 3, and NRHP Criteria A, B, and C. A report of the evaluation of each building or structure would be prepared providing a rationale for an assessment of significance consistent with professional standards and guidelines. The report would be filed with the appropriate Information Center of the California Historical Resources Information System.

APM CR-3c. Assist with Native American Consultations. If necessary, the applicant would assist BLM in consultations with Native Americans regarding traditional cultural values that may be associated with archaeological resources. Archaeological or other cultural resources associated with the project may have cultural values ascribed to them by Native Americans. The applicant would assist the BLM during consultation with Native Americans regarding Native American cultural remains.

APM CR-4. Minimize Unavoidable Impacts on Significant Cultural Resources, including Unique Archaeological Sites, Historical Resources, and Historic Properties. The applicant would make reasonable efforts to avoid adverse project effects to unique archaeological sites, historical resources, and historic properties. Nevertheless, it may not be possible to situate all proposed project facilities to completely avoid impacts on significant cultural resources. Impacts on significant cultural resources would be minimized by implementing the measures listed in APM CR-4a.

APM CR-4a. Implement Measures to Minimize Impacts on Significant Archaeological Sites. Prior to construction and during construction, the following measures would be implemented by the applicant to minimize unavoidable impacts on significant archaeological sites:

- To the extent practical, all activities would minimize ground surface disturbance within the bounds of significant archaeological sites, historical resources, or historic properties.
- Portions of significant archaeological sites, historical resources, or historic properties that can be avoided would be protected as environmentally sensitive areas and would remain undisturbed by construction activities.
- Monitoring by qualified professionals and/or Native Americans to ensure that impacts on sites are minimized would be carried out at each affected cultural resource for the period during which construction activities pose a potential threat to the site, and for as long as there is the potential to encounter unanticipated cultural or human remains.
- Additional archaeological studies would be carried out at appropriate sites to ascertain whether project facilities could be located on a portion of a site and cause the least amount of disturbance to significant cultural materials.

- If impacts on significant archaeological (NRHP- or CRHR-eligible) sites eligible under NRHP Criterion D or CRHR Criterion 4 cannot be avoided, archaeological data recovery would be carried out in the portions of affected significant sites that would be impacted. A data recovery plan would be prepared, reviewed by the appropriate agencies, and then implemented in order to recover an adequate sample of cultural remains that can be used to address important eligibility research questions for CRHR Criterion 4 or NRHP Criterion D. Archaeological data recovery would involve scientific excavations; identification of recovered cultural and ecological remains; cataloging, scientific analysis, and interpretation of recovered materials; and preparation of a scientific technical report that describes the methods and results of the data recovery program.
- Reports of any excavations at archaeological sites would be filed with the BLM and the appropriate Information Center of the California Historical Resources Information System.

APM CR-4b. Implement Measures to Minimize Impacts on Significant Buildings and Structures. Prior to construction and during construction, the applicant would implement the following measures to minimize unavoidable impacts on significant buildings and structures:

- Locate proposed project facilities to minimize effects on significant buildings or structures.
- If impacts on significant buildings or structures cannot be avoided, document significant architectural and engineering attributes consistent with the documentation standards of the National Park Service Historic American Buildings Survey/Historic American Engineering Record.
- File reports and other documentation with the BLM, the National Park Service, if appropriate, and appropriate Information Center of the California Historical Resources Information System.

APM CR-5. Prepare and Implement a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan. During construction it is possible that previously unknown archaeological or other cultural resources or human remains could be discovered. Prior to construction, the applicant would prepare a Construction Monitoring and Unanticipated Cultural Resources Discovery Plan to be implemented if an unanticipated discovery is made. At a minimum the plan would detail the following elements:

- Worker and supervisor training in the identification of cultural remains that could be found in the proposed project area, and the implications of disturbance and collection of cultural resources pursuant with the Archaeological Resources Protection Act of 1979
- Worker and supervisor response procedures to be followed in the event of an unanticipated discovery, including appropriate points of contact for professionals qualified to make decisions about the potential significance of any find
- Identities of persons authorized to stop or redirect work that could affect the discovery, and their on-call contact information
- Procedures for monitoring construction activities in archaeologically sensitive areas
- A minimum radius around any discovery within which work would be halted until the significance of the resource has been evaluated and mitigation implemented as appropriate
- Procedures for identifying and evaluating the historical significance of a discovery
- Procedures for consulting Native Americans when identifying and evaluating the significance of discoveries involving Native American cultural materials
- Procedures to be followed for treatment of discovered human remains per current state law and protocol developed in consultation with Native Americans

APM CR-6. Inadvertent Discovery of Human Remains. Any human remains discovered during project activities in California would be protected in accordance with current state law, specifically Section 7050.5 of the California Health and Safety Code, Section 5097.98 of the California Public Resources Code, and Assembly Bill 2641. If human remains determined not to be Native American are unclaimed, they would be treated under the appropriate State of Nevada statutes, including but not limited to Nevada Revised Statutes Chapter 440 and the regulations of the applicable land management agency. In the event that human remains are recovered on private lands, the landholder would have the right to designate the repository for the remains if they are determined not to be Native American or if their family affiliation cannot be determined.

The provisions of the Native American Grave Protection and Repatriation Act are applicable when Native American human remains are found on federal land (BLM land in California and Nevada). The discovery of human remains would be treated as defined in the Construction Monitoring and Unanticipated Cultural Resources Discovery Plan.

APM CR-7. Native American Participation. Prior to construction, BLM would consult with Native Americans identified by the NAHC as having cultural ties to particular areas of the proposed project. Native Americans would be invited to participate in significance evaluations and data recovery excavations at archaeological sites with Native American cultural remains, as well as in monitoring during project construction. Native Americans would be consulted to develop a protocol for working with each group should human remains affiliated with that group be encountered during project activities.

3.5.3.5 Proposed Project / Proposed Action

Construction

Construction of the EITP would impact cultural resources because of surface and subsurface ground disturbance. This disturbance would result from new road construction, parking in areas off prepared roads, creation and use of temporary laydown areas, and drilling and leveling during construction of tower footings. Cultural resources identified in Sander et al. (2009) and the nature of the potential impact to the resource, if any, by the project are discussed below.

Eldorado–Ivanpah Transmission Line

36-1910 (CA-SBR-1910H)/26CK5685: Although the historic Union Pacific Railroad is eligible for listing on the NRHP, the portions of the resource that are within the EITP ROW have already been impacted by upgrades and have therefore been found to be noncontributing elements to the resource. Construction of the proposed route would thus have no adverse impact.

36-7694 (CA-SBR-7694)/26CK4957: The LADWP Boulder Transmission Line was determined eligible for the NRHP in 1994. The applicant intends to span over the line using H-frame towers, which would allow the EITP line to cross the historic LADWP line without impacting it. Any disturbance or destruction of the contributing elements to this resource would result in an impact. All measures of APM CR-2 would help ensure that adverse impacts would be avoided or minimized.

36-10315 (CA-SBR-10315H): The Boulder Dam–San Bernardino 132-kV Transmission Line would be impacted by the EITP because towers from this line would be removed and replaced with new towers to accommodate the existing and new transmission capacities. While this impact could not be avoided, the impact would be reduced by APM CR-4b, which would require that the resource be fully recorded before adverse impacts were made.

36-6835 (CA-SBR-6835H): The Von Schmidt Survey Line is represented on the ground by a series of cast-iron markers; however, none of these markers is located within, or would be impacted by, the EITP; therefore, the EITP would not result in any adverse impacts to this resource.

36-7689 (CA-SBR-7689H): The Arrowhead Trail Highway is not recommended as eligible for the NRHP due to upgrades and other impacts to the site. A portion of the ROW in nearby Baker was also previously determined to be not eligible for similar reasons. As the site is not a significant resource, the EITP would not have any impacts on the resources.

36-13416 (CA-SBR-12574H): The remains of a telecommunications system that served the Boulder Dam Transmission line lack integrity because the line and telegraph poles have been cut down. This site has been recommended not eligible for the NRHP, so the EITP would not result in any impacts to this resource.

36-13417 (CA-SBR-12575H): The unnamed two-track road that appears to be a route from Yates Well to Ivanpah Springs does not meet the criteria for listing on the NRHP; therefore, the EITP would not result in any impacts to this resource.

26CK2633: The prehistoric lithic scatter, which contained debitage, one projectile point, and two biface fragments, has not been evaluated for eligibility to be listed on the NRHP; however, the applicant plans to avoid this site entirely. Therefore, the EITP would not result in adverse impacts on this resource. APMs CR-2, CR-2b, and CR-2c would also help ensure there would be no adverse impacts.

26CK3023(CRNV-53-4280): The small, east-facing natural rock shelter in the McCullough Range, which contains metate fragments, potsherds, chert flakes, a single petroglyph, and a basalt chopper, has been determined not eligible for listing on the NRHP. Therefore, the EITP would not result in any impacts on this resource.

Telecommunications Line

36-014987 (CA-SBR-13132H): The historic trash scatter containing cans manufactured in the 1950s likely represents a single episode of dumping and is recommended as not eligible for the NRHP. Therefore, the EITP would not result in any impacts to this resource.

36-014988 (CA-SBR-13133H): The historic trash mound containing charcoal, cinders, rock debris, modern glass, ceramics, metal fragments, and sun-colored amethyst glass fragments has been disturbed by relic hunters and is a dump of domestic refuse that likely originated in the nearby community of Nipton. The site is recommended as not eligible for the NRHP; therefore, the EITP would not result in any impacts to this resource.

Potential for Undiscovered Cultural Resources

Assessing potential impacts to undiscovered cultural resources requires an evaluation of the sediment deposition for the project area. The sediments that could contain cultural resources throughout the proposed project ROW have been summarized below from the geology report (SCE 2009).

Eldorado–Ivanpah Transmission Line

The EITP from the McCullough Mountains to the Ivanpah Substation would cross active alluvial washes (Qaag), young playa and playa fringe sediments (Qap, Qapf, and Qypf), young and older-young alluvial fans (Qyag, Qya, Qyao, and Qyaog), young aeolian deposits (Qyae and Qye), and intermediate alluvial fan deposits (Qia and Qiag). Qia fans typically have poorly to moderately well developed desert pavement with desert varnish. The sediments crossed by this portion of the EITP have the potential for buried, and therefore previously unidentified, cultural resources or human remains, including those interred outside of formal cemeteries. Cultural resources may also be discovered on the surface of these sediments.

At the McCullough Mountains, the EITP would cross a short section of intermediate alluvial fan (Qia) deposits with some areas of mixed Qya; these sediments have the potential for buried, and therefore previously unidentified, cultural resources or human remains, including those interred outside of formal cemeteries. Cultural resources may also be discovered on the surface of these sediments. The rest of this segment passes over colluvial deposits and exposed bedrock of volcanic origin that has low potential for buried cultural resources or human remains, including those interred outside of formal cemeteries; however, cultural resources may be discovered on the surface of these sediments.

From Eldorado to the McCullough Mountains, the EITP would cross alluvial deposits consisting of young axial valley (Qyv), young alluvial fans (Qya), and intermediate alluvial fans (Qia), with some areas of mixed Qya and Qia. Qia has poorly to moderately developed desert pavement and desert varnish. The sediments crossed by this portion of the EITP have been determined to have the potential for buried, and therefore previously unidentified, cultural resources or human remains, including those interred outside of formal cemeteries. Cultural resources may also be discovered on the surface of these sediments.

Ivanpah Substation

Grading and cut-and-fill for construction of the Ivanpah Substation would disturb approximately 19 acres. The sediments characterized for the substation location include young and older-young alluvial fans (Qyag and Qyao). No data were given on the depth of these sediments. Qyag and Qyao sediments are of an age that could yield subsurface cultural resources. Cultural resources may also be discovered on the surface of these sediments.

Telecommunications Line

The on-land portion of the proposed telecommunications line traverses land that has poor to moderately well developed desert pavement with desert varnish and that has the potential for buried, and therefore previously unidentified, cultural resources or human remains, including those interred outside of formal cemeteries.

Operation and Maintenance

Operation and maintenance of the proposed project should not further disturb the ground. No impacts are expected from these activities.

NEPA Summary

Construction of the EITP would result in a direct, adverse, and permanent impact to Cultural Resources 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H)/26CK4957 by altering the setting and disturbing elements of the site that contribute to its historic significance. The construction plans call for removal of portions of historic resources; however, as discussed under mitigation measure (MM) CR-2, the resources would be documented according to Historic American Engineering Record (HAER) level 2 standards and potential impacts would be minimized or reduced to less than significant.

Additionally, the proposed project could result in impacts on human remains if there were unanticipated discoveries of human remains during construction. The applicant would reduce impacts on human remains by following the steps outlined in APM CR-6. Finally, the sediments discussed above have the potential to contain buried, and therefore previously unidentified, cultural resources. Such an unanticipated cultural resource could be impacted, as the disturbance could diminish its scientific or cultural integrity. The applicant would reduce such impacts through APMs CR-5 and CR-6. Implementation of MM CR-1 would reduce potential impacts to minor levels.

CEQA Significance Determinations

IMPACT CR-1: **Impacts to Cultural Resources 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H/26CK4957**
Less than significant without mitigation

The proposed project would result in significant adverse permanent impacts to cultural resources under CEQA if it would cause a substantial adverse change in the significance of a historic resource as defined in California Public Resources Code Section 15064.5. APM CR-1 has been conducted to identify the extent of resources in the proposed project area. APM CR-2 would reduce impacts by avoiding the resources to take care that contributing elements to the resources would not be damaged or destroyed. APM CR-3b would determine the significance of a resource to help determine whether, and how much, mitigation would be necessary (this has not yet been done for the Nevada portions of 36-10315). APM CR-4b would help minimize impacts on resources and would require documentation of the resource according to the National Park Service Historic American Buildings Survey/Historic American

Engineering Record standards. This documentation would be filed with the California Historical Resources Information System, the Nevada State Historic Preservation Office, and the BLM. Therefore, impacts under this criterion would be less than significant.

IMPACT CR-2: Impacts to Previously Unidentified Cultural Resources
Less than significant with mitigation

The sediments discussed above have the potential for buried, and therefore previously unidentified, cultural resources. If any subsurface cultural resources were discovered, major long-term direct impacts to these resources would result from disturbing the ground and altering the setting of the site, as well as disturbing the context of the find and its associations with other resources in the area. This disturbance would diminish the resource's scientific or cultural integrity. Under CEQA, the impact would result from causing a substantial change in the significance of an archaeological resource as defined in Public Resources Code Section 15064.5.

Implementation of MM CR-1 (Cultural Resources Monitoring), MM CR-3 (Archaeological Resources Protection Act Training), APM CR-5 and APM CR-6 would reduce these potential impacts to less than significant levels by requiring an onsite cultural resources monitor who would be able to stop work in an area of a find immediately, thereby limiting the amount of disturbance of the resource, and requiring all construction personnel to understand the federal requirements and implications of unauthorized treatment of archaeological resources. Additionally, implementation of APM CR-2 would reduce these potential impacts to less than significant levels by educating the construction crew on the penalties associated with not reporting a cultural find or of collecting artifacts from federal- or state-controlled land.

IMPACT CR-3: Unanticipated Discovery of Human Remains
Less than significant without mitigation

The proposed project could result in a major long-term direct impact on human remains if there were unanticipated discoveries of human remains during construction. Impacts would result from causing a substantial change in the significance of an archaeological resource as defined in Public Resources Code Section 15064.5. Although no resources with human remains or features known to be likely to contain human remains were discovered during the background research or field studies for the EITP, an APM has been written to account for inadvertent discoveries. APM CR-6 would reduce impacts on human remains because it would require the remains to be secured until appropriate authorities had been called, consultations conducted, and treatment decided.

3.5.3.6 No Project / No Action Alternative

Cultural resources are impacted by any form of ground disturbance, construction on or nearby the resource, demolition of the resource, or other forms of alteration of the resource's setting. Since the No Project Alternative would not involve any construction, demolition, or ground disturbance, there would be no impact to cultural resources.

3.5.3.7 Transmission Alternative Route A

No previously recorded cultural resources were located during the pre-field research, and no newly discovered cultural resources were found during the field survey for Transmission Alternative Route A. Due to the lack of known cultural resources, there would be no impacts to them.

Alternative A crosses active alluvial washes (Qaa), young alluvial fans (Qya), and intermediate alluvial fan (Qia) deposits with some areas of mixed Qya. Qia areas typically have poorly to moderately well developed desert pavement with desert varnish. These sediments have been determined to have the potential for buried, and therefore previously unidentified, cultural resources or human remains, including those interred outside of formal cemeteries. If any subsurface cultural resources or human remains were discovered, it would result in Impacts CR-2 and CR-3 as described above under the proposed project. Impact CR-3 would be less than significant without mitigation. Implementation of MM CR-1 would reduce Impact CR-2 to less than significant levels. Therefore, with mitigation, Transmission Alternative Route A would result in less than significant, negligible impacts.

3.5.3.8 Transmission Alternative Route B

No previously recorded cultural resources were located during the pre-field research, and no newly discovered cultural resources were found during the field survey of Transmission Alternative Route B. Due to the lack of known cultural resources, there would be no impacts to them.

Alternative B has young alluvial fans, mixed active alluvial washes, axial valley alluvium, and young alluvial fans overlying intermediate alluvial fan deposits. The areas with Qya/Qia deposits exhibit patchy, poorly to moderately well developed desert pavement with desert varnish. These sediments have the potential for buried, and therefore previously unidentified, cultural resources or human remains, including those interred outside of formal cemeteries. Discovery of any subsurface cultural resources or human remains would result in Impacts CR-2 and CR-3 as described above under the proposed project. Impact CR-3 would be less than significant without mitigation. Implementation of MM CR-1 would reduce Impact CR-2 to less than significant levels. Therefore, with mitigation, Transmission Alternative Route B would result in less than significant, negligible impacts.

3.5.3.9 Transmission Alternative Route C

This alternative would result in significant adverse permanent impacts to 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H)/26CK4957 as described above under the proposed project by altering the setting and disturbing the elements contributing to the historic significance of the sites. Such impacts would be direct, adverse, and permanent. APMs CR-1, CR-2, CR-3b, and CR-4b would reduce the impact. There would be no impacts to cultural sites 36-7689 (CA-SBR-7689H) (because it is not recommended for the NRHP) or 26CK4135 (because it is not eligible for the NRHP). The proposed project might result in impacts on human remains, if there were unanticipated discoveries of human remains during construction. Implementation of APM CR-6 would reduce impacts.

Additionally, Alternative C contains the same sediments discussed above under the proposed project, which have the potential for buried, and therefore previously unidentified, cultural resources. Discovery of a subsurface cultural resource could impact the resource because the disturbance could diminish its scientific or cultural integrity. Implementation of MM CR-1 would reduce these potential impacts to less than significant. Therefore, with mitigation, Transmission Alternative Route C would result in less than significant, negligible impacts.

3.5.3.10 Transmission Alternative Route D and Subalternative E

Construction of Transmission Alternative Route D would not result in an impact to cultural resource 36-13416 (CA-SBR-12574H) because this site has been recommended not eligible for the NRHP. However, because the line is associated with the Boulder Transmission Line, it will be included with the Historic American Engineering Record assessment for that line. Subalternative E contains no previously recorded cultural resource, and no cultural resource was discovered during the field survey for this Subalternative; therefore, no impacts to known cultural resources would occur.

Alternative D and Subalternative E cross young playa/lake bed and playa fringe sediments, and young and older-young alluvial fans and young Aeolian deposits. These sediments have the potential for buried, and therefore previously unidentified, cultural resources. Discovery of subsurface cultural resources or human remains would result in Impacts CR-2 and CR-3 as described above under the proposed project. Impact CR-3 would be less than significant without mitigation. Implementation of MM CR-1 would reduce Impact CR-2 to less than significant.

Therefore, with mitigation, Transmission Alternative Route D and Subalternative E would result in less than significant, negligible impacts.

3.5.3.11 Telecommunication Alternative (Golf Course)

The construction of the Golf Course Telecommunication Alternative would not likely result in impacts to cultural resource 36-3048 (CA-SBR-3048H) because the portions of the resource that might be affected by the proposed project development are not recommended as contributing elements of the resource. Likewise, there would be likely be no impacts to cultural resources 36-7802 (CA-SBR-7802H) and 36-014496 (CA-SBR-12980H)) because the sites are recommended not eligible for the NRHP due to disturbances associated with modern upgrades and maintenance, such as road paving. Cultural resource 36-1910 (CA-SBR-1910H)/26CK5685 would also not be impacted by the proposed project because the short sections located within the project corridor are not recommended as contributing elements of the structure. Regular maintenance and upgrades have replaced the original historic materials, and only the original path of the railroad remains.

The Golf Course Telecommunication Alternative crosses sediments described as younger alluvial deposits with no mention of desert pavement. These sediments have the potential for buried, and therefore previously unidentified, cultural resources. Discovery of any subsurface cultural resources or human remains would result in Impacts CR-2 and CR-3 as described above under the proposed project. Impact CR-3 would be less than significant without mitigation. Implementation of MM CR-1 would reduce Impact CR-2 to less than significant. Therefore, with mitigation, the Golf Course Telecommunication Alternative would result in less than significant, negligible impacts.

3.5.3.12 Telecommunication Alternative (Mountain Pass)

Construction of the Mountain Pass Telecommunication Alternative would not likely result in impacts to cultural resources 36-014497 (CA-SBR-12981H), or 36-014498 (CA-SBR-12982H) because these sites appear ineligible for the NRHP, pending formal evaluation. Impacts to cultural resource 36-7347 (CA-SBR-7347H) are unknown because no NRHP determinations have yet been made for the resource.

This alternative crosses sediments described as younger alluvial deposits with no mention of desert pavement. These sediments have the potential for buried, and therefore previously unidentified, cultural resources or human remains. If any subsurface cultural resources or human remains were discovered, impacts to these resources would result that could diminish their scientific or cultural integrity. Implementation of MM CR-1 would reduce these potential impacts to less than significant. Therefore, with mitigation, the Mountain Pass Telecommunication Alternative would result in less than significant, negligible impacts.

3.5.4 Mitigation Measures

MM CR-1: Cultural Resources Monitoring. The applicant will retain a cultural resources monitor who meets the Secretary of the Interior Standards of a Qualified Professional Archaeologist prior to commencing construction or geotechnical test trenching on the project. The archaeologist will need to be approved by the BLM and will provide construction monitoring for any geotechnical studies that require trench excavation. As mentioned in APM GEO-1, five of the tower installations and 20 percent of the ground-trenching activities are in archaeologically sensitive areas. Monitoring in these areas will be determined by the BLM prior to construction.

Monitoring is necessary because a potential for cultural resources beneath desert pavement surfaces on alluvial planes was recently determined. Such conditions exist throughout much of the EITP project area. This monitoring effort would be used to protect potential resources and to provide data to help confirm or deny the theory of desert pavement development that would allow for buried cultural resources. BLM reserves the right to increase the amount of monitoring at any time if conditions reveal the necessity.

The archaeologist will present to the BLM for approval, no less than 60 days prior to commencement of construction, a monitoring plan; copies of which will also be submitted to the CPUC by the archaeologist. The archaeologist will also provide a report of findings after the monitoring has been completed. Because this geoarchaeological sensitivity has not been widely tested, the BLM is requiring only a small sample of monitoring at this time; further monitoring will only be required if the need is proven.

MM CR-2: Historic American Engineering Record Recordation. Prior to construction of the EITP, the applicant will retain a cultural resources specialist qualified to conduct HAER recordation, meeting the Secretary of the Interior Standards. The qualified cultural resources specialist will conduct HAER recordation on Cultural Resources 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H)/26CK4957. HAER recordation will be conducted in accordance the Secretary of the Interior's Standards for Architectural and Engineering Documentation, following Documentation Criteria Level II, as appropriate, for the level of significance assigned to the resources.

MM CR-3: Archaeological Resources Protection Act (ARPA) Training. Prior to construction, the applicant will provide ARPA training with the preconstruction Worker Environmental Awareness Program (WEAP; APM CR-2b). As required for the WEAP, ARPA training will be presented to all proposed project personnel who have the potential to encounter and alter unique archaeological sites, historical resources, or historic properties, or properties that may be eligible for listing in the NRHP. This includes construction supervisors as well as field construction personnel. No construction worker would be involved in ground-disturbing activities without having participated in the ARPA training portion of the WEAP.

3.5.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to cultural resources in the ISEGS FSA/DEIS prepared by the CEC and the BLM. This section focuses on differences in setting and methodology and discloses any additional impacts or mitigation as imposed by the CEC and the BLM.

3.5.5.1 Setting

The ISEGS project is located on the bajada that overlooks the western side of the Ivanpah dry lake bed. Although the lake bed is dry now, its presence testifies to a much more humid time around the end of the Pleistocene. Throughout the Holocene, the project area became more and more arid, causing the evaporation of Ivanpah and many other lakes in the area. The lakes have been fully desiccated since the end of the mid-Holocene Altithermal at approximately 5,000 BP. The climate in the Mojave since the Altithermal has been more mesic, with likely wet periods happening at least twice between 5,000 BP and EuroAmerican discovery of the area.

The ground surface of the project area is characterized by patches of desert pavement of varying ages interspersed with intermittent stream channels.

3.5.5.2 Methodology

The ISEGS project analysis began with data collection and Native American consultation, primary field research, and cultural resources evaluation for historical significance. The area analyzed included the immediate project footprint, the area that encompasses the project site and ancillary facilities, and the surrounding area that may be impacted visually by the project.

The background research for the ISEGS project included a literature and records search at the San Bernardino Archaeological Information Center and at the BLM Needles Field Office, which has accumulated data on known cultural resources in the project area. A request was also made to the NAHC to conduct a search of the Sacred Lands File to determine whether there are any reported Native American sacred sites in the project area, and to request a list of Native American contacts who may have knowledge about or concerns related to cultural resources in the area.

The ISEGS cultural consultant, CH2M Hill, sent out letters to the Native American contact list provided by the NAHC to elicit comment from the Native American community. In October 2007, BLM sent letters to potentially affected tribes to initiate the government-to-government Section 106 Consultation procedures. A follow-up letter was sent by BLM in March 2009 to inform the tribes of the discovery of a cultural resources site (ISEGS-01) during the pedestrian survey.

Cultural resources fieldwork conducted for the ISEGS project included five separate field investigations. These included a geoarchaeological study (CH2M Hill and Carrier 2008), primary intensive pedestrian cultural resources survey and supplemental intensive pedestrian cultural resources surveys (Fergusson 2007), a pedestrian reconnaissance survey of project area inselbergs (Energy Commission Staff field notes), and a helicopter and pedestrian reconnaissance survey (Helton 2008, Lawson et al. 2008). All of the cultural resources found within the impact areas of the project site were evaluated for their eligibility to be listed on both the CRHR and the NRHP.

3.5.5.3 Impacts

The CEC has published the following impacts related to cultural resources for the ISEGS project:

One cultural resource on the ISEGS project site, CA-SBR-10315H (the Boulder Dam to San Bernardino Transmission Line), has been determined eligible for the NRHP, and is listed on the CRHR. The potential effects of the project on the resource would be cumulative rather than direct or indirect. Analysis of the impact determined that the ISEGS project would be responsible for partial (approximately 21%) destruction of the resource. Conditions of Certification CUL-8 and -9 were crafted to offset these effects.

3.5.5.4 Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to cultural resources if the project is approved:

CUL-1 calls for the project owner to retain the services of a Cultural Resources Specialist (CRS) to manage the project and oversee any Cultural Resources Monitors that may be required during project construction.

CUL-2 requires that all documentation pertaining to the development plans and maps be provided to the CRS for review, and that the CRS consult on a weekly basis with the construction manager to confirm which areas will be worked on in the following week.

CUL-3 requires that the CRS prepare and submit a Cultural Resources Monitoring and Mitigation Plan to the BLM for review and approval prior to the start of ground disturbance.

CUL-4 requires that the CRS prepare a Cultural Resources Report to the BLM at the conclusion or major suspension of ground-disturbing or construction activities. The report is to summarize all field methods, findings, sampling, and analyses undertaken as a result of monitoring finds.

CUL-5 requires that the project owner provide a Worker Environmental Awareness Program training session to all new workers within their first week of employment at the project site.

CUL-6 requires that construction and ground-disturbing activities cease in the area around any discovery of cultural resources. The CRS must be immediately notified of the find and will evaluate the NRHP and CRHR eligibility of the find.

CUL-7 establishes that monitoring may be necessary in certain areas of the project for continued ground-disturbing activities during project construction if a buried cultural resource is found.

CUL-8 requires that the services of an architectural historian be retained prior to any impacts to CA-SBR-10315H.

CUL-9 requires that Historic American Engineering Record documentation be conducted prior to any impacts to CA-SBR-10315H.

CUL-10 requires that any noncommercial soil borrow or disposal sites be surveyed for cultural resources prior to their use unless a survey has been done in those areas within the last five years.

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3.6 Geology, Soils, Minerals, and Paleontology

This section contains a description of the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to geology, soils, minerals, and paleontology.

3.6.1 Environmental Setting

The following section presents a discussion of the geology, geologic hazards, soils, mineral resources, and paleontology in the proposed project area. Data collection for this analysis consisted of (1) identifying and collecting readily available geology, soils, mineral resources, and paleontology information from local, state, and federal agency sources; and (2) reviewing readily available aerial images and topographic maps.

3.6.1.1 Geologic Setting

Topography

The topography within the proposed project area in Nevada ranges from an elevation low of less than 1,800 feet in the area of the Eldorado Substation to an elevation of approximately 5,000 feet along the redundant telecommunication line where it would cross the McCullough Mountains (California Division of Mines and Geology [CDMG] 1961). Within California, the proposed transmission line route would cross Ivanpah Dry Lake (lowest elevation approximately 2,605 feet), where it would rejoin Alternative C (at elevation approximately 2,620 feet) before continuing to the Ivanpah Substation within the alluvial fans sloping east from the Clark Mountain Range. The Mountain Pass Alternative Telecommunication Route would cross Ivanpah Dry Lake and then extend to the Mountain Pass substation, which has an elevation of just over 5,000 feet (CDMG 1961).

Regional Geology

The proposed project lies mostly within the Mojave Desert geomorphic province (Norris and Webb 1990), which is located primarily in California but extends eastward into Nevada, where it merges with the Basin and Range province (the Great Basin; Figure 3.6-1). In Nevada, the proposed project area lies within the Basin and Range province. A geomorphic province is a naturally defined geologic region with distinct and unique landforms that have developed due to a specific combination of geology units, faults and fault zones, and climate. The Great Basin province is characterized by interior drainage with lakes and playas (dry lake basins) and the typical mountain and valley structure including subparallel, fault-bounded ranges separated by down-dropped basins (California Geological Survey [CGS] 2002). Extensional tectonics (a pulling apart of the earth's crust) is predominant in the Basin and Range province, although some northwest-trending right-lateral strike-slip (mostly horizontal side-to-side motion) faulting is present.

The Mojave Desert geomorphic province is a broad interior region of isolated mountain ranges separated by expanses of desert plains. It has an interior enclosed drainage with playas being common. Fault trends largely control Mojave Desert topography. Mountain ranges in the Mojave Desert geomorphic province are composed of complexly faulted and folded basement rocks that range from pre-Cambrian (greater than 570 million years before present [mybp]) to Mesozoic (66 to 240 mybp). Volcanic and sedimentary rocks deposited in the Cenozoic (less than 66 mybp to present) are common as well. Younger faulting in the eastern half of the Mojave Desert geomorphic province is characterized by generally north- to northwest-trending normal faults associated with regional extension (pulling apart) in the Basin and Range province. Normal faulting is one of the most common types, exhibiting movement along a generally non-vertical plan such that the upper part moves downward along the plane causing an offsetting of the geologic unit(s).

Geology in the Clark Mountain Range, located along the western extent of the proposed project area and eastward into Nevada, is characteristic of both the Mojave Desert and Basin and Range geomorphic provinces. The Clark Mountain Range is bounded on the west side by the Halloran Hills Detachment Fault (Fowler and Calzia 1999). Although these mountains have been subjected to considerable faulting, the core of the range has remained unaffected by stretching of the crust in this region (regional extension). The adjacent Ivanpah Valley, with a lakebed elevation of 2,605 feet, could be primarily a product of the same relatively recent regional extension and normal faulting. The McCullough Mountains to the east, however, have also been affected by this crustal extension, and very low angle (detachment) faulting that has been dated as Miocene, with an age between 16.5 and 11.0 mybp (U.S. Geological Survey [USGS] 2006). Numerous unconformities (areas where rocks of different compositional types or structural orientations are in direct contact) and major thrust faults (locations where older rocks have been pushed up and over younger rocks) are present in these mountains.

Project Site Geology

The geologic units exposed in the proposed project area occur as three types:

- Alluvium: sedimentary deposits derived from the physical and chemical breakdown and transport in the flatter valley portions of the desert plains and along the slopes of alluvial fans;
- Alluvial fans: cone-shaped accumulations of alluvial material along the bases of mountains; and
- Bedrock: igneous, metamorphic, and sedimentary rock exposed in the mountain areas, typically surrounded by alluvium and alluvial fans.

Refer to Figure 3.6-1 for a simplified geologic map of the proposed project area.

Alluvium ranges from modern (Holocene; 0 to 11,000 years old) stream deposits to early- to late-Pleistocene (11,000 to 1.8 million years old) alluvial fan deposits usually flanking the mountain ranges. Bedrock is composed of Miocene (5.3 million years before present [mybp] to 23 mybp) volcanic (igneous) rock, and basement rock is Ordovician through Precambrian (greater than 435 mybp to at least 570 mybp) metamorphic rocks.

Although the alluvial units have been extensively subdivided (Nevada Bureau of Mines and Geology [NBMG] 2006), the approach taken here is to present a more utilitarian summary based on major characteristics rather than minor variations. To this end, a summary of the exposed geologic units in the proposed project area by state is provided in Table 3.6-1 and Figure 3.6-1. The text below provides more data from more detailed data sets than those used to produce Table 3.6-1 and Figure 3.6-1.

Nevada

In Nevada, alluvium ranges from Quaternary to Tertiary (as old as 66 mybp) alluvial and rocky fragments and debris (talus) deposits, alluvial fan deposits, and flat-lying playa deposits. These deposits generally overlie and/or are marginal to bedrock units that include Tertiary (1.6 to 66 mybp) volcanic flows; Paleozoic- to Mesozoic (66 to 570 mybp) sedimentary rocks; and Precambrian (greater than 570 mybp) metamorphic rocks.

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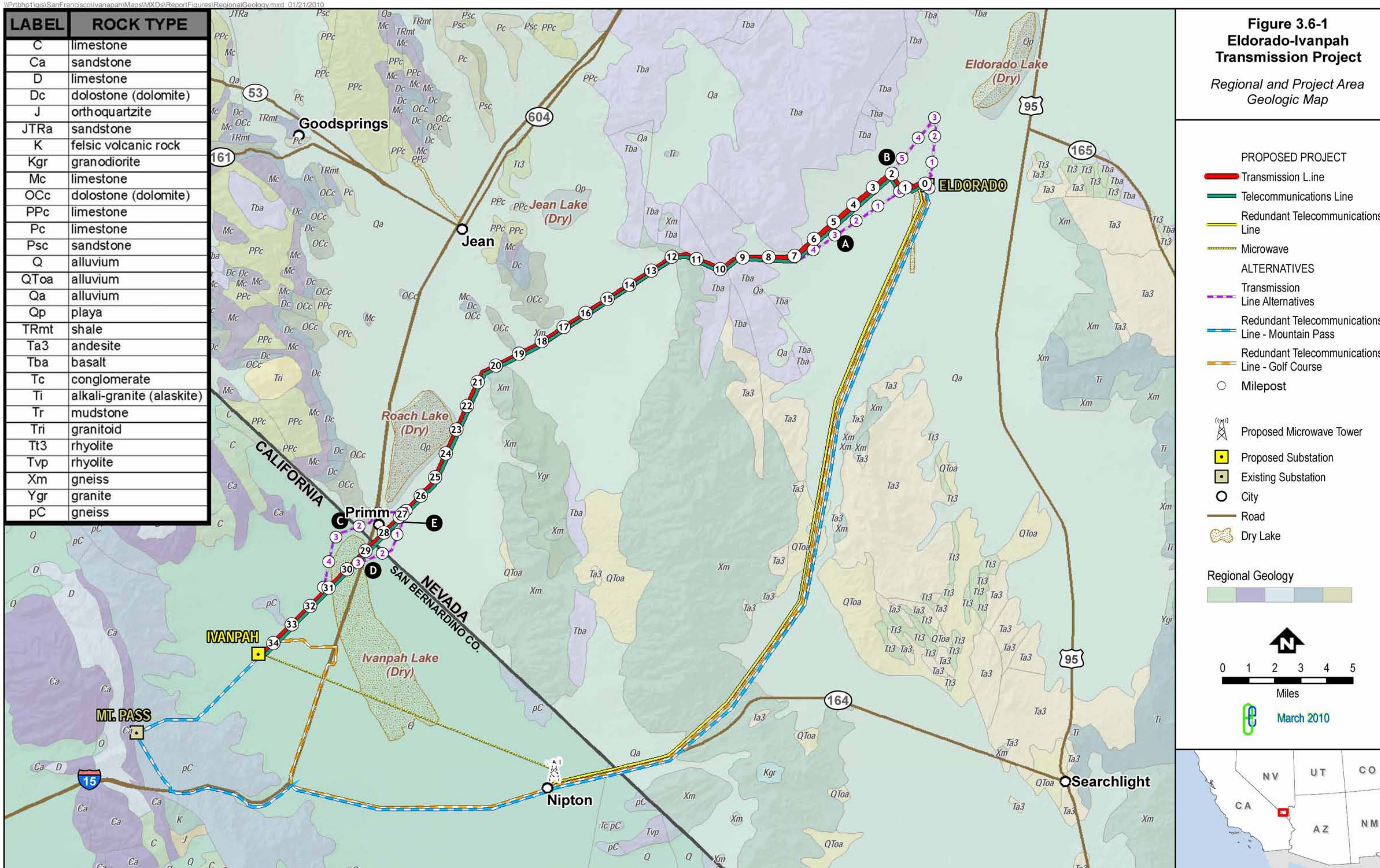
Figure 3.6-1
Eldorado-Ivanpah Transmission Project

Regional and Project Area Geologic Map



LABEL	ROCK TYPE
C	limestone
Ca	sandstone
D	limestone
Dc	dolostone (dolomite)
J	orthoquartzite
JTRa	sandstone
K	felsic volcanic rock
Kgr	granodiorite
Mc	limestone
OCc	dolostone (dolomite)
PPc	limestone
Pc	limestone
Psc	sandstone
Q	alluvium
QToa	alluvium
Qa	alluvium
Qp	playa
TRmt	shale
Ta3	andesite
Tba	basalt
Tc	conglomerate
Ti	alkali-granite (alaskite)
Tr	mudstone
Tri	granitoid
Tt3	rhyolite
Tvp	rhyolite
Xm	gneiss
Ygr	granite
pC	gneiss

Table 3.6-1 Summary of Surficial and Bedrock Geologic Units

Map Symbol	Age	Formation Description
Nevada		
Qa	Quaternary (Holocene and Pleistocene) [< 1.8 mybp]	<u>Surficial Deposits (undivided)</u>: Mixture of alluvial and broken rock deposits.
QToa	Quaternary–Tertiary (Early Pleistocene to late Miocene) [0.8 to 5 mybp]	<u>Old Alluvium (undivided)</u>: Old alluvial fan deposits.
Tba (Tv)	Tertiary (Late to middle Miocene) [5 to 13 mybp]	<u>Andesite and Basalt Flows</u>: Numerous volcanic rocks.
OЄc (MzPzs)	Paleozoic to Mesozoic–(Cretaceous to Cambrian) [66 to 570 mybp]	<u>Old Sedimentary Rocks (undivided)</u>
Xm	Precambrian [>570 mybp]	<u>Metamorphic Rocks</u>
California		
Q	Quaternary (Pleistocene to Holocene) [0 to 1.8 mybp]	<u>Quaternary Alluvium</u>
pC (epЄ)	Precambrian [>570 mybp]	<u>Earlier Precambrian Metamorphic Rocks</u>

Source: USGS 2005
Key:
mybp = million years before present

Alluvial deposits have been mapped to various degrees of detail ranging from a generalized approach (CDMG 1961, Stewart and Carlson 1978, Miller et al. 1999) to a careful segregation of younger and older, active to inactive units (NBMG 2006, USGS 2006). Undivided Holocene to Pleistocene Surficial Deposits (Qa/Q) are composed of a mixture of alluvial and talus deposits consisting of poorly consolidated sand, silt, and gravel. Older young alluvial deposits are made up of sand and gravel fragments from granitic sources that weather and are characterized by weakly developed pavements that generally lack varnish (chemical staining). These pavements are composed predominantly of gravels from which the wind has removed most of the fine-grained sand and silt, giving an appearance like a paved surface. Older units are characterized by a covering of varnished desert pavement with a fairly rough surface topography and have been identified principally in Ivanpah Valley between Clark Mountain and the Lucy Gray Mountains, although they are likely much more widespread.

In the valley bottoms and flat areas, latest Holocene to late Pleistocene playa deposits of are characterized as predominately playas actively receiving water and sediment from the surrounding areas and include Ivanpah, Roach, and Jean dry lakes. These deposits are weakly bedded and poorly sorted (exhibit a range of grain sizes from clay to gravel). The areas are generally flat and prone to flooding and receiving stream flow and standing water, and are subject to wind-blown accumulation and wind erosion.

In summary, approximately 76 percent of the proposed project footprint and alternatives are located on alluvium (mostly alluvial fans), 46 percent on bedrock, and 17 percent on playa deposits. Less than one percent is located on land disturbed by human activities.

Most alluvial deposits in this region, with the exception of lake deposits, are formed within a larger deposition system called alluvial fans. Alluvial fans are significant because they are subjected to random flood events, which can be unpredictable. Early Pleistocene- to late Miocene alluvial fan deposits, indentified as undivided Old Alluvium (QToa), are derived from granitic bedrock sources consisting predominantly of gravel of varying sizes. These deposits are fairly dense to cemented and of mixed composition, and generally lack visual evidence of older surfaces and/or soil horizons. These deposits form deeply cut, steep topography with little or no evidence of previous surface topography being retained. These deposits are largely undivided (not segregated into other distinct identifiable geologic units) in terms of how the deposits were accumulated. The only extensive area within the proposed project area where this unit is directly observable is in the valley between the McCullough and Lucy Gray mountains.

Numerous Tertiary volcanic (andesite and basalt) flows (Tba/Tv) are exposed within the proposed project area and may contain some interbedded sedimentary rocks. Exposures of Paleozoic- to Mesozoic carbonate (limestone and dolomite) and siliclastic (sandstone, mudstone, and conglomerate) rocks are present within the proposed project area and are mapped as dolostone (OЄc). These rocks make up the bulk of Sheep Mountain north of the Lucy Gray Mountains, the Bird Spring Range, and the Spring Mountains.

The oldest metamorphic rocks (Xm) exposed in the proposed project area include highly metamorphosed, compositionally-layered, Precambrian rocks that overlie older basement rocks (Miller et al. 1999).

California

In California, Quaternary stream and valley alluvium, alluvial fan deposits (both younger and older), and lake and playa deposits are exposed along slopes and low-lying flats and valleys. These deposits generally overlie and/or are marginal to bedrock units that include Tertiary undifferentiated volcanic flows with some interbedded sedimentary rocks and Precambrian metamorphic and granitic rocks.

Alluvial fan deposits have been mapped mostly as generalized units (CDMG 1961, Miller et al. 1999), with some detailed segregation of younger and older, active to inactive units (USGS 2006). Recent Holocene alluvium (Qal) is a poorly sorted mixture of sand and gravel, typically uncemented, unconsolidated, and easily eroded by water or wind. The surface appears as an undulating topography, with little erosional cutting by stream channels. The alluvial fan deposits associated with this unit are characterized by surfaces and stream channels actively receiving sediments within the last few years or decades from ephemeral streams. These deposits may be prone to flooding in some areas. Unnamed lake and playa deposits in the valley bottoms and low-lying flat areas are identified as Quaternary Lake Deposits (Ql/Q). These deposits are similar to the playa deposits (Qp) mapped in Nevada. Older fan gravels that are characteristically elevated above the adjacent topography and eroded are identified as Middle and Early Pleistocene old alluvial fan deposits (Qoa) consisting of poorly sorted silt, sand, and gravel (CDMG 1971).

Earlier Precambrian Metamorphic rocks (pC/epЄ) are exposed within the proposed project area. These contain undifferentiated metamorphic rocks cut by roughly vertical igneous intrusions (dikes). These rocks are exposed in the Clark Mountains at and surrounding the Mountain Pass substation.

The above-described geological units are located within the proposed project area; however, the proposed routes do not intersect all of the above units. In general, longer routes encounter more geologically different units, although some of the more limited sections and alternatives may encounter a wider range of units as well. Table 3.6-2 provides a summary of the proposed routes, alternative routes, and associated geological unit(s).

In general, the important factors that affect construction in these units are foundation bearing capacity, slope/excavation stability (unit strength and slope angle), surface stability for roads/pads, excavatability (how easily the units can be excavated using standard earth-moving equipment), and chemical reactivity (typically corrosion) with concrete and steel. The cohesion (how well the sediments stick together) and composition (affects how easily the sediments can be made denser) of sediments down to tower foundation depths (20 to 40 feet) will impact foundation stability and excavatability. Material strength and cohesion and slope angles will affect slope stability (the tendency to slide); the steeper the slope and/or the weaker the unit, the more likely that the area is susceptible to landslides. Geologic unit cohesiveness and particle size gradation (a variety of particle sizes versus only one particle size) will impact road surface stability and pier excavation stability. Material type, age, and the natural environment within which the sediments were deposited will affect chemical characteristics, particularly corrosion potential.

Table 3.6-2 Geologic and Surficial Units Associated with the Proposed Project and Alternatives

Alternatives													
El Dorado–Ivanpah 220-kV Transmission Line – Telecommunication Line		Alternative Routes		State	Geologic Units								
					XM	pC (ep€)	O€c (MzPzs)	Tba	QToa		Qa	Q	
		(Proposed)		CA/NV	X			X			X	X	
		A		NV							X		
		B		NV							X		
		C		CA/NV			X				X	X	
		D		CA/NV							X	X	
		E (sub-)		NV							X		
Ivanpah Substation				State	Geologic Units								
					XM	pC (ep€)	O€c (MzPzs)	Tba	QToa		Qa	Q	
				CA							X		
Redundant Telecommunication Line + Alternatives	Section	Alternative Routes	Description	State	Geologic Units								
					XM	pC (ep€)	O€c (MzPzs)	Tba	QToa		Qa	Q	
	1		Mountain Pass + Golf Course	NV	X				X		X		
	2		Mountain Pass + Golf Course	CA/NV							X		
	3	1 + 2	Mountain Pass + Golf Course	CA							X		
	3	1	Mountain Pass	CA		X					X		
	3	2	Golf Course	CA							X	X	
	3A	MW Route		CA							X	X	

Source: USGS 2005

Slope stability issues are most important in the sections of the proposed and alternative transmission line routes where topography is steep and bedrock/basement rock is present (the McCullough Mountains and the hill northwest of Primm), which is a small portion of the overall project. Since most of the proposed project area is within the alluvial fan deposits, and most is underlain by younger and intermediate-age alluvial fan materials, foundation and excavation stability, chemical characteristics, and surface trafficability (ability of a given vehicle to traverse a specified terrain) are important.

Faulting and Seismicity

Several active (fault rupture within the past 11,000 years) and potentially active (fault rupture within the past 1.6 million years) faults related to regional strike-slip (mostly horizontal side-to-side motion) faulting, as well as to extensional tectonics (a pulling apart of the earth's crust) in the Great Basin and eastern Mojave Desert are present within 100 miles of the proposed project area (Table 3.6-3). The fault locations can be found on the Fault Activity Map of California (CDMG 1994).

Table 3.6-3 Summary of Active and Potentially Active Faults within 100-mile Radius of Proposed Project Area

Fault Name, Zone, or System	Approximate Distance[a] (miles)	Estimated Maximum Earthquake Event: Maximum Earthquake Magnitude (Mw)	Peak Site Surface Acceleration (g)	Estimated Site Intensity (Modified Mercali Scale)
Stateline Fault System	**3[a] (28)[b]**	**7.0[c]**	N/A	VII
Black Hills	**34[a] (3)[b]**	**6.8**	N/A	VI
Death Valley (south)	50	7.1	0.080	VII
Garlock (East)	50	7.5	0.098	VII
Owl Lake	65	6.5	0.047	VI
Pisgah-Bullion Mountain – Mesquite Lake	75	7.3	0.065	VI
Black Mountains	76	N/A	N/A	na
Death Valley (Graben)	78	7.1	0.069	VI
Panamint Valley	80	7.4	0.065	VI
Calico – Hidalgo	83	7.3	0.060	VI
Landers	91	7.3	0.056	VI
Camp Rock-Emerson South – Copper Mountain	92	7.0	0.047	VI
Gravel Hills – Harper Lake	94	7.1	0.050	VI
Blackwater	93	7.1	0.049	VI
Johnston Valley (Northern)	97	6.7	0.039	V
Tank Canyon	98	6.4	0.040	V
Lenwood-Lockhart-Old Woman Springs	99	7.5	0.059	VI

Source: CEC and BLM 2009 (Active fault data modified from Table 2.)
Notes:
[a]Distance measured from the Ivanpah substation location
[b]Distance measured from the El Dorado substation location
[c]Guest et al. (2007)
Key:
Bold Text = Faults that are near or cross the proposed project
N/A = Not available

Potential earthquake capable (active) faults close to the proposed project area are shown in Figure 3.6-2. One active fault (Black Hills) is located just north of the proposed project on the eastern flank of the McCullough Mountains trending toward the proposed transmission line route and possibly Transmission Alternative Routes A and B. A second active fault (the Stateline Fault System [SFS]) trending northwest-southeast and parallel to the state line just within California crosses the proposed transmission line route and Alternative Routes C and D. Earthquake activity on distant (greater than 50 miles), larger-scale active fault zones (e.g., the Garlock, Eastern California Shear Zone, Panamint Valley, Death Valley, Sevier-Toroweap) and the San Andreas could produce large-magnitude earthquakes that would be felt in the project area.

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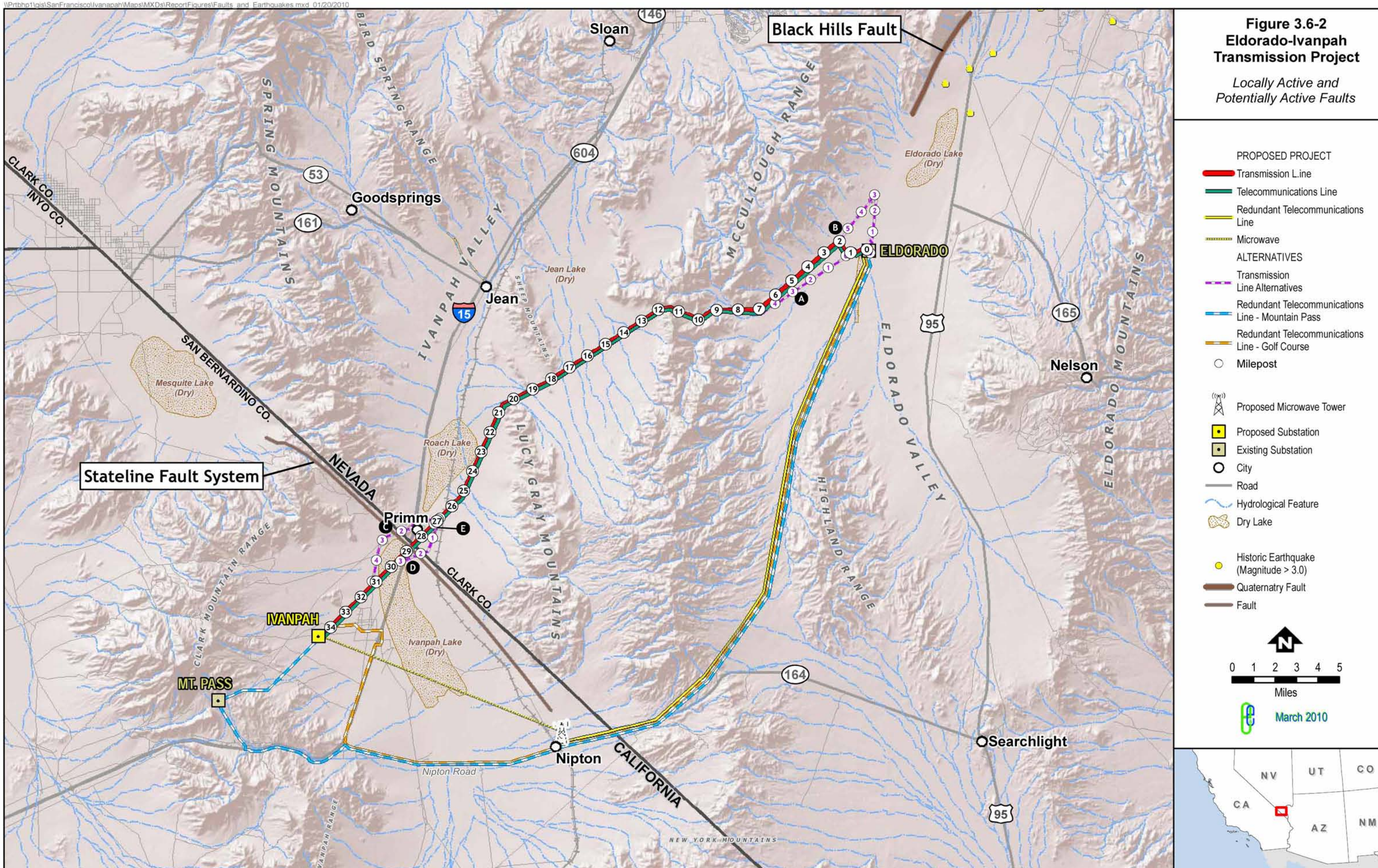

Figure 3.6-2
Eldorado-Ivanpah Transmission Project

Locally Active and Potentially Active Faults

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The Black Hills Fault is a complex, northeast trending, east-dipping (eastward sloping fault beneath the earth's surface) normal fault zone located in the northern McCullough Range along the western edge of Eldorado Valley that forms the northwestern structural boundary of the Eldorado Basin. A geologic basin is a structural depression in the earth's surface, a low area often filled with sediments, which may be folded or warped. The Black Hills Fault may be capable of producing a magnitude 6.4 to 6.8 earthquake.[1]

The SFS is the southern segment of the Pahrump Valley Fault Zone. This fault is an active right lateral (right-handed movement) shear zone and includes several previously recognized faults that are inactive, as well as some discontinuously exposed Quaternary faults (Guest et al. 2007). A shear zone is similar to a fault, but (unlike a fault) exhibits movement over a disperse area as opposed to movement that is offset along a distinct fracture. The SFS lies at the northeastern edge of the Eastern California shear zone, an active north–northwest trending, 124-mile-long right-lateral strike-slip shear zone (Guest et al. 2007, USGS 2006) located at the California-Nevada border. The SFS is defined as a continuous zone of faults and shear zones separated into three segments (the Amargosa Valley, Pahrump, and Mesquite segments), with the Mesquite segment passing through the proposed project Area (CDMG 1961, 1994; San Bernardino County 2007). These data suggest that earthquakes on the SFS may be large but infrequent. Although available evidence suggests that earthquakes greater than magnitude 7 occur on the SFS (Menges et al. 2003), recurrence intervals on the SFS have been estimated to be greater than 10,000 years (Anderson 1998, Menges et al. 2003), suggesting a low probability for a large earthquake associated with the fault system (Guest et al. 2007). Other faults in the proposed project area are pre-Quaternary (not active or potentially active based on existing data) and cross or project toward the proposed transmission line route in the McCullough Mountains (Stewart and Carlson 1978). Two of these faults (unnamed) appear to cross the route. It is likely that these faults are represented by highly fractured basement rock (rock beneath the overlying sediments) that may affect engineering qualities of the material and serve as conduits (pathways) for spring flow.

There are few earthquakes (USGS 2008b) greater than magnitude 3.0 reported within 50 miles of the central portion of the proposed project area (at the north end of the Lucy Gray Mountains). One event of magnitude 6.1 (November 1911) was reported about 40 miles to the southwest of the proposed project area, just north of Baker, California; no specific information was found for this event and its location is considered poorly defined. Approximately 30 to 45 miles to the northeast, four events of magnitude 4.5 to 5.0 occurred just north of Boulder City, Nevada. A cluster of nine magnitude 3.0 to 3.9 events occurred west-northwest of the proposed project area on the California side of the border between Pahrump and Mesquite valleys. At least seven magnitude 3.0 to 3.9 events occurred on a northeast to southwest trend from Boulder City to the north end of Eldorado Lake, likely associated with the active Black Hills Fault.

Soils

The soils within the proposed project area generally reflect the underlying geologic unit(s). Soil formation depends on the extent of weathering of the unit(s), which is governed by the ground surface slope, the long-term climate, vegetation cover, the degree of human modification, and time. All but a small portion of the proposed project is within close proximity to existing transmission lines towers and roads that pass through otherwise undeveloped land. Small portions are proposed to traverse the east or north edges of Primm, Nevada (proposed transmission line route, Transmission Alternative Routes C and D, and Transmission Sub-Alternative route E), and along State Route (SR) 164 or the Union Pacific Railroad (UPRR) tracks near Nipton. No agricultural or rural residential land is within the proposed project area.

[1] The most common measurements of earthquake magnitude are the moment magnitude (Mw) and Richter (local) magnitude, although sometimes surface wave magnitude or body wave magnitude may be used. Some data sources do not state which is provided, so the original source and further referenced sources should be consulted for more certain indication of which measurement was used.

A summary of the significant characteristics of the major soil associations (National Resources Conservation Service [NRCS] 2008) traversed by the Eldorado–Ivanpah route segments is presented in Table 3.6-4. The soil associations are listed in numerical, rather than geographic, order. There are 19 soil units identified; 14 are in Nevada and five are in California. Included in the table are the NRCS soil unit identification number, the soil association name, the estimated expansion potential, and the concrete and steel corrosion potential. The NRCS information is generalized data gathered at widely spaced locations and should be considered for planning purposes, rather than for site-specific engineering. The majority of the soils in the proposed project area are sand and gravel-rich and excessively drained to well-drained, which reduces erosion potential.

Table 3.6-4 Summary of the Significant Characteristics of Major Soil Associations

NRCS Unit ID	Soil Association	Description	Shrink/Swell Potential[1]	Concrete Corrosion[2]	Uncoated Steel Corrosion[2]
Nevada					
140 and 143	Haleburu	Colluvium and/or weathered from volcanic rock; well-drained.	L	L	H
150	Hypoint	Mixed alluvium; somewhat excessively drained.	L	L	H
313	Weiser-Oldspan-Wechech	Alluvium parent material derived from limestone and dolomite; well-drained.	L–M	L	H
380	Tonopah-Arizo	Alluvium parent material derived from mixed sources; excessively well-drained.	L–M	L	H
391	Tipnat-Bluepoint-Hypoint	Mixed alluvium parent material; well-drained.	L–M	H	H
400	Arizo-Cafetal	Mixed alluvium parent material; excessively drained.	L–M	L	H
430	Bluepoint-Tipnat-Grapevine	Eolian (wind blown) sands parent material; excessively drained.	L–M	L	H
450	Arizo	Mixed alluvium parent material; excessively drained.	L	H	H
500	Playa	Lacustrine (lake) deposits parent material; very poorly drained.	M–H	H	H
622	Orwash-Arizo-Lanip	Mixed alluvium parent material derived from granite; somewhat excessively drained.	L	L	H
651	Peskah-Arizo	Alluvium parent material derived from volcanic rock; well-drained	L–M	L	H
754	Haleburu-Hiddensun	Colluvium and/or weathered from volcanic rock; well-drained.	L	L	H
780	Prisonear	Eolian (wind blown) sands over alluvium derived from limestone; well-drained.	L	L	H
California					
3520	Arizo	Alluvium derived from metamorphic and sedimentary rock; excessively well-drained.	L–M	L	H
3650	Weiser	Alluvium parent material derived from limestone and dolomite; well-drained.	L–M	H	L
3660	Colosseum	Alluvium parent material derived from limestone and dolomite; somewhat excessively drained.	L–M	L	H

Table 3.6-4 Summary of the Significant Characteristics of Major Soil Associations

NRCS Unit ID	Soil Association	Description	Shrink/Swell Potential[1]	Concrete Corrosion[2]	Uncoated Steel Corrosion[2]
4180	Peskah-Arizo	Alluvium parent material derived from volcanic rock; well-drained.	L–M	L	H
Playa (see Nevada 500)	Playa	Lacustrine (lake) deposits parent material; very poorly drained.	M–H	H	H

Source: NCRS 2008

Notes:

[1]Shrink/swell potential (expansion potential) characteristics are very generally defined as "low = L", "moderate = M", or "high = H" based on the NCRS Unified Soil Classification of the soil unit. Shrink/swell characteristic descriptions are general in nature and adequate for planning purposes; the actual expansion coefficient for each soil unit may vary widely depending on site-specific subsurface conditions, which must be determined by site-specific geotechnical sampling, testing, and analysis.

[2]Corrosion risks for concrete and uncoated steel are generally defined as "low = L", "medium = M", or "high = H" based on the NCRS Unified Soil Classification of the soil unit. Corrosion characteristic descriptions are general in nature and adequate for planning purposes; the actual corrosion indices for each soil unit may vary widely depending on site-specific subsurface conditions, which must be determined by site-specific geotechnical sampling, testing, and analysis.

Key:
H = High
L = Low
M = Medium

3.6.1.2 Geologic Hazards

Fault Rupture

A factor considered in the seismic (earthquake) design of project structures is the location of active faults that may cross a transmission line route or affect a substation or other structures. An estimate of the amount and type of potential surface fault displacement (offset) within the proposed project area considers the SFS Mesquite segment and the Black Hills Fault (Figure 3.6-2). There is substantial uncertainty as to the location of these faults. The Mesquite Fault segment crosses the proposed transmission line route and Transmission Alternative Routes C and D along the California-Nevada border at Primm nearly perpendicular to the proposed transmission line route, at a 20- to 70-degree angle to Alternative Route C and at a 60- to 70-degree angle to Sub-Alternative Route D.

Ground Shaking

The intensity of the seismic shaking (strong ground motion) during an earthquake in the project area would depend on the distance between the area and the epicenter (point at the earth's surface directly above the initial movement of the fault at depth) of the earthquake, the magnitude (seismic energy released) of the earthquake, and the geologic conditions underlying and surrounding the proposed project area. Earthquakes occurring on faults closest to the project area would most likely generate the largest ground motion.

The USGS provides a uniform estimate of the intensity (strength; not to be confused with magnitude) of earthquake-induced ground motion based on an up-to-date assessment of potential earthquake faults or other sources. A commonly used benchmark is peak horizontal ground acceleration. The probability of occurrence for this peak is given as a fraction of the acceleration of gravity (g; 0.2). The approximate estimated range of peak ground acceleration for a probability of 2 percent (0.02) in 50 years in the proposed project area is presented in Table 3.6-5. Applying the peak ground acceleration shaking map for the 7.3 magnitude Landers earthquake (CISN 2008) to the Mesquite segment of the SFS, the peak ground accelerations would have been similar to those shown in the table. Overall, this estimate of earthquake intensity at the Mesquite segment of the SFS suggests that strong ground shaking would be within the levels experienced in the Landers earthquake area in 1992 and the Hector Mine earthquake in 1999, both in the Mojave Desert region. Electrical transmission lines experienced some damage in each of these earthquakes.

Table 3.6-5 Approximate Estimated Range of Peak Ground Acceleration

Project Facility	Estimate Based on 2% in 50 Years Peak Horizontal Ground Acceleration (g)	Estimate of SFS Earthquake Intensity Based on Magnitude 7.3 Landers 1992 Earthquake (g)
Proposed Transmission Line Route Segments		
Eldorado to McCullough Mountains	0.16 to 0.20	0.20 to 0.25
McCullough Mountains	0.15 to 0.16	0.20 to 0.25
McCullough Mountains to Ivanpah	0.12 to 0.15	0.18 to 0.50
Transmission Alternative/Subalternative Routes		
A	0.16 to 0.17	0.18 to 0.20
B	0.17 to 0.20	0.15 to 0.18
C	0.13	0.40 to 0.50
D	0.13	0.40 to 0.50
E	0.13	0.40 to 0.50
Ivanpah Substation		
Ivanpah Substation	0.12	0.35
Telecommunications Alternatives and Microwave Tower		
Conduit Near Ivanpah Substation	0.13	0.35
Conduit East of Nipton	0.12 to 0.13	0.30 to 0.45
Conduit West of Nipton	0.12 to 0.14	0.30 to 0.45
Microwave Tower	0.12 to 0.13	0.30 to 0.45

Source: USGS 2008a, CISN 2008
Key:
g = Acceleration of gravity

Liquefaction

Liquefaction occurs primarily in saturated, loose, fine- to medium-grained soils in areas where the groundwater table is within approximately 50 feet of the ground surface. Shaking causes the soils to lose strength (that is, lose their ability to stick together) and behave as a liquid. Liquefaction, which can include lateral spreading, subsidence, buoyancy effects, and loss of bearing strength (the ability to support a load such as a building foundation), is caused when these sediments temporarily lose their shear strength during strong ground shaking. Susceptibility to liquefaction is a function of the sediment density, water content, depth, and peak ground acceleration. Over most of the proposed project area liquefaction would be very unlikely due to groundwater depth (generally much greater than 50 feet). Geologic material in the project area have the potential to include substantial clay- and silt-rich units (playas and playa fringe areas) and areas with a high percentage of coarse sedimentary particles such as gravel, cobbles, and boulders (intermediate and older alluvial fans), and some units with calcium carbonate cementation (some intermediate and older alluvial fans). Neither the San Bernardino County General Plan Safety Element nor the Clark County Comprehensive Plan indicates liquefaction potential within the proposed project area. The most likely exceptions would be around the perimeter of playas (playa fringes) where sand layers could be saturated with perched water; that is, shallow groundwater of limited extent that is situated on top of a layer of clay. Such conditions where liquefaction could be produced by rupture of a fault would be determined by geotechnical investigations as recommended in APM GEO-1.

Landslides

Landslides, rockfalls, and debris flows occur continuously on all slopes; some processes act very slowly, while others occur very suddenly, with potentially disastrous results. Rockfalls and debris flows are examples of earth movements that occur rapidly, often without warning. Landslides do occur rapidly without warning but can also provide signs of movement before the slide moves completely. Most of the proposed project area is in low to moderately sloping topography containing sandy and gravelly alluvium that is not susceptible to landslide effects. About 10 percent of the proposed transmission line route (McCullough Mountains segment) and 20 percent of Transmission Alternative Route C pass through areas with moderately steep to very steep topography containing highly weathered and fractured bedrock/basement rock. These areas may be susceptible to rockfall and rotational (landslide) movement of moderate to large sections of hillslope within or adjacent to the route. Such movements can have damaging effects. No landslides have been designated on maps reviewed for this study; however, rockfall hazards could include blocks from a few feet to over 10 feet in diameter.

Subsidence

Subsidence is the settling of the ground surface due to compaction (consolidation) of underlying unconsolidated (loosely packed) sediments. Subsidence is most common in uncompacted soil, thick unconsolidated alluvial material, and improperly constructed artificial fill. Subsidence due to groundwater withdrawal is possible due to substantial pumping; however, there are no known records of such conditions in the proposed project area. Continued and/or increased groundwater withdrawal or dewatering from the Ivanpah and Eldorado valleys may cause an overdraft condition (where groundwater removal exceeds recharge). If that occurs, signs of subsidence could be observed. Many years or decades may be needed for the effects of excessive removal of groundwater to be manifested. Local subsidence in the form of sinkholes has been observed along the northern edge of Ivanpah Dry Lake. While groundwater withdrawal or other factors may cause subsidence, in this case the cause is believed to be from dehydration of clays between the soil surface and the water table due to fluctuations in hydrology. This dehydration can result in a major loss of volume, and thus the collapse of overlying soils (CEC and BLM 2009).

Earthquake-induced ground cracking may have many causes, but on low to moderate slopes (a few to several degrees) there would be little to no impact expected from ground cracking for transmission line towers with deep foundations. Within the proposed project area, ground cracking potential exists along the McCullough Mountains segment and the bedrock portion of Alternative Route C.

Expansive Soil

Expansive soils shrink or swell with changes in moisture content. This characteristic is typically associated with high clay content soils. Changes in soil moisture could result from a number of factors, including rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine-grained with high to very high percentages of clay. In Nevada, the soils encountered in the areas of the proposed project and alternative routes exhibit expansion potential that is generally low or low to moderate, with one unit (playa) having a moderate to high potential. In California overall, the potential for expansive soils is generally low to moderate, with one high unit (playa).

Collapsible Soils

Collapsible soils are those that decrease in volume and settle when soil structure changes due to wetting of partially saturated subsoil. Typically, collapsible soils occur predominantly at the base of mountains, where Holocene alluvial fan and wash sediments have been deposited during rapid runoff events. Moreover, seismically-induced ground settlement can occur during strong ground shaking in alluvium if deposits have a low relative density and are dynamically compacted and their volume is thereby reduced. Differential settlement can damage structures placed across such susceptible areas.

3.6.1.3 Mineral Resources

Mineral resources consist of oil and gas and deposits of rock, sand, and gravel. Publically available literature, maps, and online sources were used to evaluate potential impact to mineral resources in the proposed project area. Non-metallic and metallic mineral deposits occur within the general proposed project area and to the west in the Clark Mountains (CDMG 1953). However, no mining of metallic deposits was identified within 1,000 feet of the project components considered herein. Non-metallic deposits within the project area include pumice, feldspar, limestone, and sand and gravel, with sand and gravel potential being the highest along the transmission and telecommunication routes.

North and south of SR 164, between 6 and 17 miles east of Nipton, in the general proximity of the proposed redundant telecommunications Line (Path 2), there are operations for perlite, gold, silver, lead, molybdenum, copper, fluorite, and feldspar (USGS 2009). The proposed Mountain Pass Telecommunications Line intersects the Molycorp Mine, a large rare-earth mine near Mountain Pass, California, hereafter called the Mountain Pass Mine. This may be the only active mine near the California portion of the project. Proximal to the proposed transmission line route in Jean Valley and the McCullough Mountains are sand and gravel and pumice surface mines. As shown in Figure 3.6-3, there are areas (green squares) within BLM land all along the proposed and alternative routes for which there have been mining claim activity. Based on 1996 claims data, approximately two-thirds of the claims are "closed" (Hyndman and Campbell 1999). Davis (2002) indicated that the "Money Pit" in Jean Valley more than 1 mile north of the proposed transmission line route may be the only active mine near the Nevada portion of the project area. However, the Jean Quarry and Sierra Ready Mix Quarry, which are both listed as active operations, are also located less than 1 mile north of the proposed transmission line route (NBMG 2006). While several other operations and mines are in the general area of the proposed routes, they do not appear to be close enough to experience any impact from the project.

The USGS Mineral Resource Data System (MRDS) indicates that there are a few past and current mining locations in the vicinity of the proposed project, but none are located within 1,000 feet of either side of the proposed transmission line route or alternative routes. Based on the available data, the proposed project is not expected to impact any mining activities. This is explained further below.

Eldorado to McCullough Mountains (Proposed Route)
There are no active mines identified in the USGS MRDS database within 1,000 feet of this segment, and there is no known ongoing mineral resource recovery near this segment. In addition, there is almost no mining claim activity along the segment.

McCullough Mountains (Proposed Route)
While there are mining claims in the general area along the segment, there is no known ongoing mineral resource recovery near or close to this segment that would potentially be impacted, and there are no active mines identified in the USGS MRDS database within 1,000 feet of this segment.

McCullough Mountains to Ivanpah Substation (Proposed Route)
There is substantial mining claim activity several miles to the northwest of this segment in the Spring Mountains. Other activity along this proposed route is recorded, but is typically set back 1 or more miles from the segment. There is no known ongoing mineral resource recovery close to this segment that would potentially be impacted; no active mines are identified in the USGS MRDS database within 1,000 feet of this segment.

<u>Alternative Route A (South and West of Eldorado Substation)</u>
There is no mining claim activity along this segment and no known ongoing mineral resource recovery near this segment, and no active mines are identified in the USGS MRDS database within 1,000 feet of this segment.

<u>Alternative B (North and West of Eldorado Substation)</u>
There is no mining claim activity along this segment, no known mineral resource recovery ongoing near this segment, and no active mines are identified in the USGS MRDS database within 1,000 feet of this segment.

<u>Alternative Route C (West and Southwest of Primm, Nevada)</u>
While there is substantial mining claim activity along this segment, there are no active mines identified in the USGS MRDS database within 1,000 feet of this segment, and there is no known ongoing mineral resource recovery near this segment.

<u>Alternative Route D and Subalternative E (South and East of Primm, Nevada)</u>
There is substantial mining claim activity along this segment; however, there are no active mines identified in the USGS MRDS database within 1,000 feet of this segment and there is no known ongoing mineral resource recovery near this segment.

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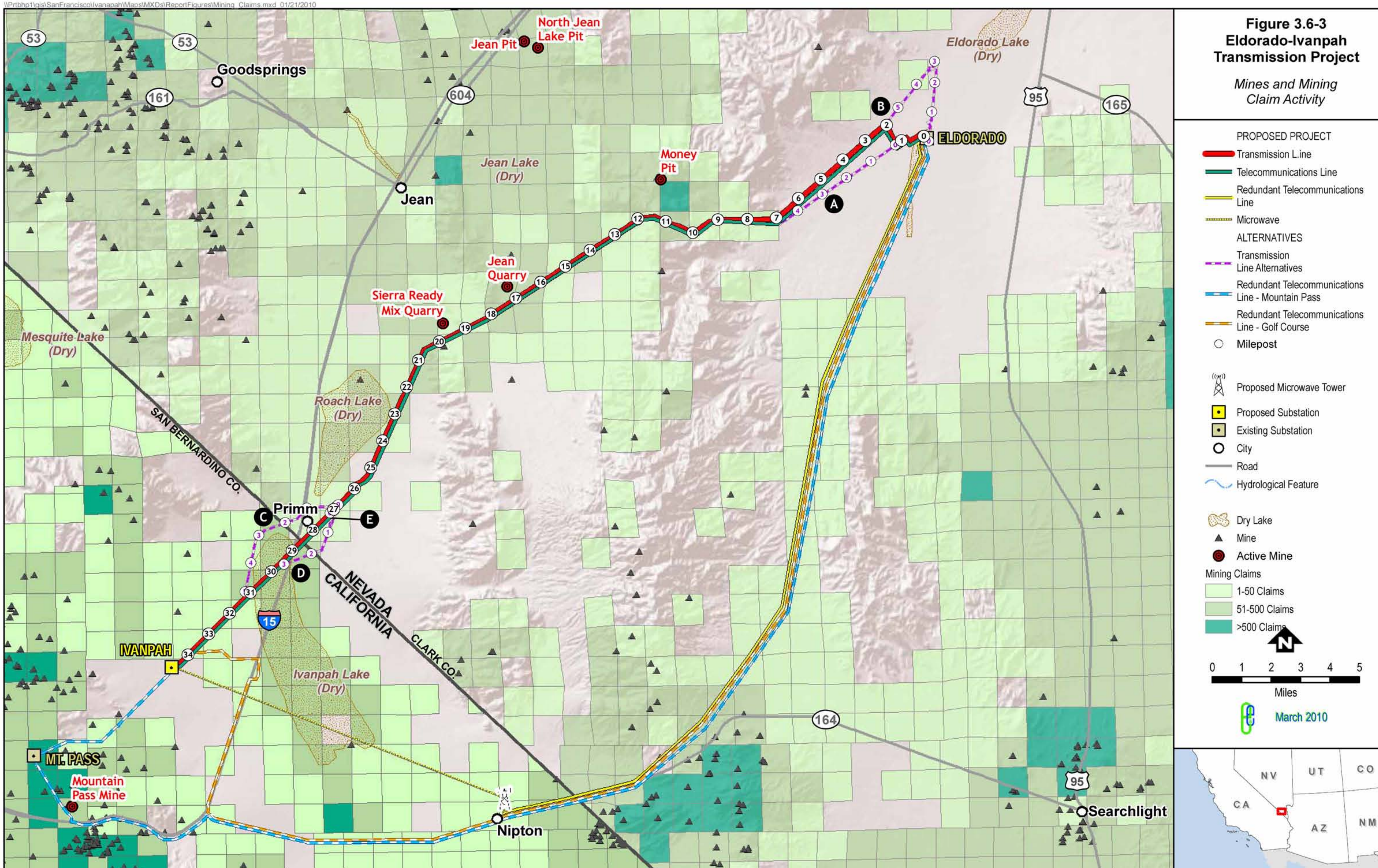

Figure 3.6-3
Eldorado-Ivanpah Transmission Project
Mines and Mining Claim Activity

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Ivanpah Substation

The USGS MRDS database indicates no mining claim activity at the substation site, no known ongoing mineral resource recovery near the site, and no active mines identified within 1,000 feet of the site.

Redundant Telecommunication System and the Microwave Tower

Mountain Pass Alternative and Golf Course Alternative

There is mining claim activity in the vicinity of these short conduit routes, but no known ongoing mineral resource recovery is near these segments, and no active mines are identified in the USGS MRDS database within 1,000 feet of these segment.

Microwave Tower Northeast of Nipton

There is some mining claim activity in the area of this site, including one operation about one-half mile east of this location and one active mining operation about one-half mile to the northeast, but there are no active mines identified in the USGS MRDS database within 1,000 feet of this site.

3.6.1.4 Paleontology

Regional Setting

The proposed project crosses over a number of geologic rock units (Table 3.6-2). The following section describes each geologic unit's extent, rock type, and age, with an emphasis on paleontology and paleontological sensitivity (likelihood of containing scientifically significant fossils). To provide more detailed paleontological data, the geologic unit classifications below are drawn from a different data set than that used to compile Figure 3.6-1. Therefore, not every unit described below is displayed in Figure 3.6-1.

The BLM's Potential Fossil Yield Classification (PFYC) system is used to classify geologic units (BLM 2007). The BLM established the PFYC system to quantify the occurrence of paleontological resources on public lands and the risk of impacting them. Geologic units are assigned a classification between 1 (lowest) and 5 (highest). The PFYC system is used by BLM to assess impacts to paleontological resources and suggest appropriate mitigation measures.

Table 3.6-6 shows that units in the project area have either a high or a low sensitivity for paleontological resources that may be present on the surface or could be exposed during ground-disturbing construction activities, based on the Society of Vertebrate Paleontology (SVP) guidelines (1995). The BLM PFYC is also included in the table.

Table 3.6-6 Paleontological Sensitivity of the Lithologic Units Underlying Portions of the Project Area in San Bernardino County, California ,and Clark County, Nevada

Lithologic Unit	Paleontological Sensitivity[a]	PFYC[b]
Quaternary alluvium	High	4
Quaternary lake/playa deposits	High	4
Quaternary nonmarine (Quaternary older alluvium)	High	3
Late Tertiary–Quaternary older alluvium	High	3
Tertiary volcanics	Low[c]	2
Paleozoic–Mesozoic sedimentary rocks	Low[d]	3
Precambrian intrusive and metamorphic rocks	Low	1

Notes:
[a]SVP 1995
[b]BLM 2007
[c]High, if sedimentary rocks are present
[d]High, if solution caves and/or vertebrates are present
Key:
PFYC = Potential Fossil Yield Classification (scale of 1–5, with 1 the lowest)

Quaternary alluvium (Qa, Qal)

Quaternary alluvium (late Pleistocene and Holocene) has been mapped at the surface along the length of the project corridor in California and Nevada (Jennings 1961, Longwell et al. 1965, NBMG 2006). Throughout southern California these units have been repeatedly demonstrated to be highly fossiliferous, yielding the remains of large extinct Ice-Age (Pleistocene) mammals such as mammoths, mastodons, camels, sabertoothed cats, tapirs, sloths, and horses as well as amphibians (salamanders, frogs, toads), reptiles, birds, and small mammals (Jefferson 1991a, 1991b; Reynolds et al. 1991e; Woodburne 1991; Springer and Scott 1994; Scott 1997; Springer et al. 1998, 1999, 2007; Anderson et al. 2002) and the Mojave Desert (Jefferson 1989, 1991a, 1991b; Reynolds 1989; Scott 1997; Scott and Cox 2002, 2008). Near the northern end of Ivanpah Dry Lake, for example, large mammal bone fragments were recovered from sediments mapped as Quaternary alluvium identical to that along portions of the proposed route (Longwell et al. 1965). Similarly, surface exposures of Quaternary alluvium near Glendale, Nevada, yielded mammal fossils including a tooth of extinct horse (*Equus* sp.). These sediments would have a high potential to contain significant paleontological resources. Under the BLM PFYC system, the units would be rated Class 4.

Quaternary lake/playa deposits (Ql/Qp)

These flat-lying deposits in Ivanpah and Roach Dry Lakes consist of light gray to light brown silt, clay, and minor sand. Although modern at the surface, these lake/ playa sediments increase in age with depth, perhaps to the late Pleistocene. These fine-grained sediments often preserve late Pleistocene and Holocene invertebrates (freshwater clams and snails; Taylor 1967, Reynolds et al. 1991d, Jefferson et al. 2004), smaller vertebrates (fish, amphibians, reptiles, birds, and small to medium-sized mammals), and larger extinct vertebrate fossils such as mammoths, mastodons, horses, sloths, and camels (Jefferson 1991b, Reynolds et al. 1991d, Jefferson et al. 2004). Mifflin and Carlson (1979) in their study of pluvial (late Pleistocene) lakes of Nevada could not find shoreline features or an overflow channel and interpreted the age of Ivanpah-Roach Dry Lake basin as recent. However, the Ivanpah-Roach Dry Lake may have been combined into one larger lake than the present lakebed and possibly present during the late Pleistocene, based on clasts of tufa (fragments of carbonate-based minerals deposited in a lake environment) from an Ivanpah Lake Dry high stand or shoreline. These sediments would have a high potential to contain significant paleontological resources. These units would be rated Class 4.

Quaternary non-marine deposits (Qoa/Qc)

Quaternary non-marine deposits (mapped as Quaternary older alluvium) have been mapped at the surface along the project corridor in the vicinity of the Clark Mountains in California (Jennings 1961). These deposits consist of poorly sorted debris that range from pebble to boulder in a matrix of brown silt derived from Clark Mountain. Elsewhere, older Pleistocene sediments throughout southern California (Jefferson 1991a, b; Reynolds and Reynolds 1991e; Woodburne 1991; Springer and Scott 1994; Scott 1997; Springer et al. 1998, 1999, 2007; Anderson et al. 2002) and the Mojave Desert (Jefferson 1989, 1991a, 1991b; Reynolds 1989; Scott 1997; Scott and Cox 2002, 2008) have been repeatedly demonstrated to be highly fossiliferous. Where present at the surface or at depth, these sediments have the potential to contain significant paleontological resources. The units would be rated Class 3.

Quaternary Tertiary Older Alluvium (Qtoa)

These alluvial fan deposits are derived from granitic rocks sources in the vicinity of the McCullogh and Lucy Gray mountains and are Late Miocene to early Pleistocene in age. Although these sediments are predominately coarse grained, that is, sand and gravel, old buried soils (paleosols) are present in several horizons (NBMG 2006). These soil horizons, which could yield significant vertebrate fossils such as small mammals, were present at the surface or at depth along the proposed project. These sediments would have high potential to contain significant paleontological resources. The units would be rated Class 3.

Tertiary volcanic rocks (Tba/Tv)

Surface exposures of these rocks have been mapped along the project corridor in the McCullough Range in Nevada (Longwell et al. 1965). Tertiary volcanic rocks in the Mojave Desert have low potential to contain significant fossil resources. However, it is possible to have inclusions of sedimentary rocks within volcanic rocks. These sedimentary inclusions have the potential to contain significant fossil resources; therefore, these volcanic rocks would be assigned a high paleontological sensitivity. To the south near Needles, ash-rich lacustrine sediments within volcanic rocks yielded middle Miocene (15 mybp) flora and fauna consisting of the fossil remains of a sequoia, wood, conifer needles, ostracods, flamingo footprints, a pika, a coyote-sized dog, a bobcat-sized cat, a rodent, an antelope-sized cervoid, two camels, and a rhino. The rocks would be rated Class 2.

Paleozoic and Mesozoic sedimentary rocks (OЄc/MzPzs)

Undivided Paleozoic and Mesozoic rocks have been mapped at the surface along the proposed project corridor in the Clark Mountain vicinity, California (Jennings 1961, NBMG 2006). Because of mapping difficulties, Paleozoic-Mesozoic carbonate rocks such as limestone and dolomites, and terrigenous rocks such as sandstones, mudstones, and conglomerates, have been placed in this broad rock unit. In this area, some of these rocks were deposited in ancient shallow seas and generally yield a wide variety of marine fossil invertebrates such as sponges, brachiopods (primitive clams), gastropods (snails), pelecypods (advanced clams), trilobites, graptolites (marine kelp-like animals), and echinoderm crinoids (related to starfish, sand dollars, and sea urchins; Dames and Moore 1992). Fossils of this nature are abundant and widespread throughout the southern Nevada and eastern California region, to such a degree that these fossils are not generally considered to have high paleontological significance. Near Stateline, California, paleontology monitors on the Intermountain Power Project found many marine invertebrates in rocks of the Mississippian Monte Cristo Formation (Hewitt 1931, Reynolds 1986, Moore 1991). Also, during construction on the Kern River Pipeline project, marine invertebrates (clams, snails, corals) were collected from rocks of the Bird Spring Formation (Pennsylvanian) and Kaibab Limestone (Dames and Moore 1992). Time-diagnostic invertebrates from these limestone rocks have somewhat higher significance, but are still relatively common in the region. Elsewhere, middle- to late-Paleozoic limestone in this area has the potential to yield teeth and bones of early bony fishes and sharks. For example, just north of the City of Las Vegas, fossil shark teeth were collected from the surfaces of Mississippian limestone of the Battleship Wash Formation in the Arrow Canyon Range (Langenheim et al. 1962). Also, during construction of the Kern River Pipeline project, the first fossil bony fish remains (teeth) were recovered from the Mississippian Monte Cristo Formation and Kaibab Limestone in Nevada (Dames and Moore 1992). Any vertebrate remains recovered from Paleozoic or Mesozoic sedimentary rocks would be highly significant. There is a potential for vertebrate fossils and trackways in the Mesozoic sedimentary rocks. Recently, fossil dinosaur and pterosaur (flying reptiles) tracks have been reported from the early middle Jurassic Aztec Sandstone of the nearby Mescal Range in eastern San Bernardino County (Reynolds 2006a, 2006b).

The undivided Paleozoic and Mesozoic rocks have a low potential to contain significant paleontological resources, but in limestone and marble, there is a potential for solution caves that contain significant fossils. In the past, these caves were often open at the surface, and accumulated bones of various kinds of animals from raptors and other predators dropping remains into the opening, or from the remains of animals that inhabited the cave. Other animals such as pack rats built nests and also collected bones from around the cave entrance. Many of these caves are older than 10,000 years and elsewhere in the Mojave Desert have yielded the remains of large, extinct, late Pleistocene mammals such as camel, horse, and sloth (Mead and Murray 1991, Reynolds et al. 1991a, Whistler 1991, Gromney 2003, Jefferson et al. 2004, Museum of Paleontology, University of California, Berkeley 2009) as well as smaller mammals, amphibians, reptiles, and birds (Goodwin and Reynolds 1989; Force 1991; Reynolds et al. 1991a, 1991b, 1991c; Jefferson et al. 2004). If cave deposits were encountered during construction at depth anywhere along the proposed project, they would be considered scientifically significant. The Paleozoic-Mesozoic sedimentary rocks would be rated Class 3.

Earlier Precambrian intrusive and metamorphic rocks, undivided (pC/ePЄ) in California and Ancient intrusive and metamorphic rocks (Xm) (undivided Proterozoic) in Nevada

Two similar metamorphic (rocks that have been altered by heat and pressure) basement rocks occur in the southern McCullough Range in Nevada and in the Clark Mountain in California. Earlier Precambrian metamorphic rocks in the Clark Mountains (Jennings 1961, Longwell et al. 1965) and the ancient intrusive and metamorphic rock (NBMG 2006) undivided (Proterozoic) in the McCullough Range in the proposed project area consist of granite, granite gneiss, schist, granitic augen gneiss, quart monzonite, marble, and schist. Due to the heat and pressure associated with the formation of igneous and metamorphic rocks, these rocks have low potential to contain significant paleontological resources (SVP 1995). The rocks would be rated Class 1.

Records Search

The Regional Paleontological Locality Inventory at the San Bernardino County Museum (SBCM) shows that several paleontological resource localities are recorded within 1 mile of the proposed project. The applicant-prepared PEA stated that the nearest paleontological resource locality (SBCM 1.2.5) is located on the California-Nevada border approximately 300 feet northwest of the proposed route. This locality yielded indeterminate large mammal bone fragments from sediments mapped as Quaternary alluvium by Longwell et al. (1965). Additionally, localities SBCM 1.2.1 through 1.2.4 near the proposed route in Sections 35 and 36 of T 17N, R 14E have produced fossil remains of tortoise (*Gopherus* sp.), kangaroo rat (*Dipodomys* sp.), wood rat (*Neotoma* sp.), and other small vertebrates, as well as a partial hackberry seed (*Celtis* sp.) and clasts of tufa from the high stand of Ivanpah Dry Lake. Fossil hackberry seeds are abundant in nearby cave deposits which contain Pleistocene vertebrate faunas (Reynolds et al. 1991b). Tufa is common at the top of the sedimentary section at several Pleistocene lakes in San Bernardino County, including Piute Valley and Cadiz. However, none of the localities near Ivanpah Dry Lake has yielded temporally diagnostic fossil remains. For this reason, a Pleistocene age for these faunas can be suggested, but not demonstrated.

The online records search for microfossil, plant, invertebrate (clams and snails), and vertebrate (animals with backbones) localities conducted at the Museum of Paleontology, University of California, Berkeley (Museum of Paleontology, University of California, Berkeley 2009) indicated no previously recorded paleontological resources within a mile of the proposed project area.

A search of the data base of Late Pleistocene vertebrate localities for California (Jefferson 1991a, 1991b) and for Nevada (Jefferson et al. 2004), which included institutional records and published references, indicated no known paleontological resource localities are recorded within a mile of the proposed project.

3.6.2 Applicable Laws, Regulations, and Standards

Geologic resources and hazards are governed primarily by local jurisdictions. The conservation elements and seismic safety elements of city and county general plans contain policies for protection of geologic features and avoidance of hazards, but do not specifically address transmission line construction projects. Local grading ordinances establish detailed procedures for construction. The following section provides a summary of federal, state, and local laws, regulations, and standards that govern geology, soils, minerals, and paleontology in the project area.

3.6.2.1 Federal

National Environmental Policy Act of 1969, as amended

The National Environmental Policy Act (NEPA; 42 USC 4321 et seq.) was signed into law on January 1, 1970. NEPA establishes national environmental policy and goals for the protection, maintenance, and enhancement of the environment and it provides a process for implementing these goals within the federal agencies. The NEPA process consists of an evaluation of the environmental effects of a federal undertaking. It includes an evaluation of alternatives. There are three levels of analysis depending on whether an undertaking could significantly affect the environment. From least to greatest complexity, these are (1) categorical exclusion determination, (2) preparation of an Environmental Assessment/Finding of No Significant Impact, and (3) preparation of an EIS.

Under NEPA, the terms "effects" and "impacts" are used synonymously. Direct or primary impacts are those caused on site by the project itself, and that occur at the same time and place as the project. Indirect impacts can be reasonably foreseen to be caused by the project but that occur later or further away. Under NEPA, indirect impacts also may be referred to as secondary effects. The potential effects on geological, soil, mineral, and paleontological resources from construction and operation of the proposed project are considered in this analysis. The BLM is responsible for NEPA analysis for this project.

International Building Code

The 2006 International Building Code (IBC) is a model building code developed by the International Code Council (ICC). The IBC sets rules specifying the minimum acceptable level of safety for constructed objects such as buildings. It has been adopted throughout most of the U.S. The IBC has no legal status until it is adopted or adapted by government regulation, which it has been by both California and Nevada. The IBC was developed to consolidate existing building codes into one uniform code that provides minimum standards to ensure the public safety, health, and welfare insofar as they are affected by building construction and to secure safety to life and property from all hazards incident to the occupancy of buildings, structures, or premises. The IBC replaced the Uniform Building Code (UBC) in 2000.

Federal Land Policy and Management Act of 1976, as amended

The Federal Land Policy and Management Act (FLPMA) established policies and goals to be followed in the administration of public lands by the BLM. The intent of the FLPMA is to protect and administer public lands within the framework of a program of multiple-use and sustained yield, and to maintain environmental quality. Particular emphasis is placed on protection of the quality of scientific, scenic, historic, ecological, environmental, air and atmospheric, water resources, and archeological values. The FLPMA dictates how BLM regulates mineral resources extraction on BLM land.

Bureau of Land Management

The BLM, an agency within the U.S. Department of the Interior, administers 261 million surface acres of public lands, located primarily in 12 western states. The BLM's mission is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations. The public lands provide myriad opportunities for commercial activities. Commercially valuable natural resources include energy and mineral commodities, forest products, grazing forage, and special uses such as rights-of-way (ROWs) for pipelines and transmission lines. The BLM is responsible for managing commercial energy and mineral production from the public lands in an environmentally sound and responsible manner, including leasing related to oil and gas and geothermal minerals. Geothermal resources include all products and byproducts capable of producing geothermal energy. The BLM is also responsible for supervising the exploration, development, and production operations of these resources on both federal and Native American lands. The BLM is responsible for maintaining viable national policies and processes for solid mineral resources under federal jurisdiction.

Classification and Multiple Use Act of 1964

Authorized the Secretary of the Interior to classify and manage BLM land for retention or disposal and for multiple use, including specification of dominant uses and preclusion of inconsistent uses in an area.

Mining and Mineral Policy Act of 1970

This act declared that the federal government policy is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) plan defines multiple-use classes for BLM-managed lands in the CDCA, which includes the land area encompassing the proposed project location in California. With respect to geological resources, the CDCA plan aims to maintain the availability of mineral resources on public lands for exploration and development.

Paleontological Resources Preservation Act of 2009

The Paleontological Resources Preservation Act calls on the Secretary of the Interior to protect vertebrate paleontological resources on federal lands by allowing only permitted and qualified researchers to collect vertebrate fossils and scientifically important fossils.

Federal Antiquities Act of 1906

The Antiquities Act was the first law enacted to specifically establish that archaeological sites on public lands are important public resources, and it obligated federal agencies that manage public lands to preserve the scientific, commemorative, and cultural values of such sites (National Park Service [NPS] 2007). This act does not refer to paleontological resources specifically; however, the act does provide for protection of "objects of antiquity" (understood to include paleontological resources) by various federal agencies, including the BLM and the NPS.

3.6.2.2 State

California

California Building Code (2007)

The California Building Code (CBC 2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control). The 2007 CBC edition is based on the 2006 IBC (excluding Appendix Chapter 1) as published by the ICC, with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC defines seismic sources and outlines the procedure used to calculate seismic forces on structures. Design of the proposed project should follow the requirements of that CBC chapter because the route lies within a seismic zone (UBC Seismic Zone 3).

Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code Sections 2621–2630

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 (formerly the Special Studies Zoning Act) is documented in the Public Resources Code (PRC). It regulates development and construction of buildings intended for human occupancy, to avoid hazards from surface fault rupture. This act mitigates against surface fault rupture of known active faults beneath occupied structures. It requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. While this act does not specifically regulate overhead transmission lines, it does help define areas where fault rupture is most likely to occur. This act categorizes faults as active, potentially active, and inactive. The proposed project area (in California) is not located within a designated Alquist-Priolo fault zone.

Seismic Hazards Mapping Act, PRC Sections 2690–2699

The Seismic Hazards Mapping Act of 1990 (PRC Chapter 7.8, Division 2) directs the California Department of Conservation, Division of Mines and Geology (now called California Geological Survey) to delineate seismic hazard zones. The purpose of the act is to reduce the threat to public health and safety and to minimize the loss of life and property by identifying and mitigating seismic hazards. These include identified areas that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches (waves in confined bodies of water resulting from seismic activity). City, county, and state agencies are directed to use seismic hazard zone maps developed by CGS in their land use planning and permitting processes. The act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

PRC Chapter 1.7, Sections 5097.5, 5097.9, and 30244

This section of the PRC regulates the removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites. Since the EITP would be located on federal lands, this code would not apply.

Warren-Alquist Act, PRC Sections 25527 and 25550.5(i)

The Warren-Alquist Act requires the California Energy Commission (CEC) to "give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites…." With respect to paleontological resources, the CEC relies on guidelines from the SVP.

California Surface Mining and Reclamation Act

The State Mining and Geology Board implements state policy and regulations for reclamation of mined lands and conservation of mineral resources. The Surface Mining and Reclamation Act of 1975 (PRC Sections 2710–2796) set forth these policies in the California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1, and requires local governments within California to regulate mining operations and to develop planning policies that balance mineral production with maintenance of environmental quality. Since the EITP would be located on federal lands, this act would not apply.

Nevada

Mining

There is no single agency that regulates the use of mineral resources within Nevada. The Nevada Division of Minerals is responsible for permitting oil and gas and geothermal leases. The Division of Environmental Protection, Bureau of Mining Regulation and Reclamation is responsible for issuing permits for mining. The NBMG is a research and public service unit of the University of Nevada and is the state geological survey organization. NBMG scientists conduct research and publish reports on mineral resources, engineering geology, environmental geology, hydrogeology, and geologic mapping. NBMG cooperates with numerous state and federal agencies in conducting research and providing geologic and resource information, including information on mining claims and mineral leases.

Building Code

The State of Nevada has no statewide building code. All building standards and regulations for structures are deferred to counties and cities, which rely primarily on the IBC.

Nevada Revised Statutes

The Nevada Revised Statutes are the state laws that apply to a project's impacts on cultural resources. Nevada Revised Statutes Sections 381.195– 381.227 and 383.400–383.440 apply the term "prehistoric site" to paleontological sites (including fossilized footprints and other impressions) as well as archaeological sites, ruins, deposits, petroglyphs, pictographs, habitation caves, rock shelters, natural caves, burial grounds, and sites of religious or cultural importance to a tribe.

3.6.2.3 Regional and Local

California

Most counties and cities in California have regulations that address geologic, seismic, and soils hazards, as well as mineral resources. For hazards that could impact construction projects, these regulations generally adopt the state building standards, which for California are embodied in the 2007 CBC, and follow the geologic and seismic hazards mapping and investigation protocols discussed above. Projects requiring county approvals are permitted by the San Bernardino County Building and Safety Division. Transmission line construction projects are not specifically addressed.

San Bernardino County General Plan

The Safety Element of the San Bernardino County General Plan (2007) provides for mitigation of geologic hazards through a combination of engineering, construction, land use, and development standards. The plan addresses the geologic hazards present within the county, including fault rupture, ground shaking, liquefaction, seismically generated subsidence, inundation from seiches or dam breaches, landslides/mudslides, non-seismic subsidence, erosion, and volcanic activity. The county has prepared Hazard Overlay Maps to address fault rupture, liquefaction hazards, and landslide hazards. Special consideration, including possible engineering/geologic evaluation, is required for development of sites designated on the maps.

San Bernardino County 2007 Development Code

The County of San Bernardino (Development Code §82.20.030) requires that paleontologic mitigation programs include site evaluation for paleontological resources in the county including not limited to preliminary field surveys; monitoring during construction; specimens recovery; preparation, identification, and curation of specimens; and report of findings. Also defines qualifications of professional paleontologists.

Nevada

Clark County Building Code

The Building Code of Clark County, Nevada, consists of the 2006 IBC with Southern Nevada Amendments (County Code Chapter 22.04) that regulate residential and commercial construction in Clark County under the Building Services Division of the Development Services Department (Clark County Code Chapter 22.04). Transmission line construction projects are not specifically regulated by the county.

3.6.3 Impact Analysis

This section defines the methodology used to evaluate impacts for geologic, soil, mineral, and paleontological resources, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.6.4.

3.6.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to geology, soils, mineral, and paleontological resources would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

Geologic resources that were evaluated included the geologic setting, geologic hazards, and unique geologic features within the proposed project area. Geologic effects are assessed in two distinct ways: 1) project development's potential to affect a sensitive soil or geologic unit; or 2) project development's potential to increase the risk associated with geologic hazards by installing project components impose additional risk or damage to people or the environment. The impact analysis considered the likelihood of physical alteration, damage, or destruction of geologic features that would result from the project. The analysis also considered the amount of access/activity where scientifically important paleontological resources are present. The analysis evaluated damage to the project components and subsequent risk to humans and the environment that could result from seismic-related activity, and also evaluated other unique geological phenomena. The potential of the project to restrict or remove from access potential sources of salable mineral resources was also evaluated.

Compliance with the laws, ordinances, regulations, and standards associated with the project components and location were considered during the evaluation process. Impacts resulting from the proposed project and its alternatives, whether direct or indirect, were identified and the associated feasible, reasonable, and practical mitigation measures to avoid or minimize those identified impacts are proposed in this document.

3.6.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving (i) rupture of a known earthquake fault; (ii) strong seismic ground shaking; (iii) seismic-related ground failure, including liquefaction; or (iv) landslides;

b. Result in substantial soil erosion or loss of topsoil;

c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse;

d. Be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property;

e. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state;

f. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan; or

g. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

3.6.3.3 Methodology

The geology, soils, minerals, and paleontology impacts of the proposed project are discussed below under subheadings corresponding to each of the significance criterion presented in the preceding section. The analysis describes the impacts of the proposed project related to geologic hazards, soils, minerals, and paleontological resources for each criterion. The analysis also determines whether implementation of the project would result in significant impacts by evaluating effects of construction and operation against the affected environment described above in Section 3.6.1.

The potential impact to the geology, soils, minerals, and paleontological resources resulting from the project was evaluated in two ways. First, geologic hazards were assessed that could impact the proper functioning of the proposed facility and create life/safety concerns. Second, the potential impacts of the proposed facility on existing geologic, mineralogical, and paleontological resources in the area were evaluated. Available published resources including books, journals, maps, and government websites were reviewed. This information was evaluated within the context of the applicable federal, state, and local regulations. In addition, information in the Final Staff Assessment/Draft Environmental Impact Statement (FSA/DEIS) prepared for the proposed ISEGS project located near the proposed Ivanpah Substation was also evaluated. Published geologic maps and reports provided information on regional and project-specific geology. Geologic maps used included quadrangles at various scales from 1:50,000 to 1:250,000 and state-wide maps at a scale of 1:750,000. The geologic units identified in the geologic mapping were not consistent either between Nevada and California or by mapped scale. For example, some maps identified only surficial units, while others indicated both surficial units and bedrocks. Mapping of the surficial units also varied in level of detail and segregation. This analysis tended more to generalizing (grouping) the numerous alluvial surficial units while maintaining the unique identity between units of different genesis. Other important sources were government websites, including databases maintained and updated by both federal and state governmental agencies providing information on topics such as seismic hazards, faulting, and soil classification.

To evaluate potential paleontological impacts due to construction of the transmission lines, substation, and other facilities, the BLM's PFYC system was used. This system rates the potential of each geologic unit to yield significant fossils. The BLM established the PFYC system to quantify the occurrence of paleontological resources on public lands and the risk of impacting them. Geologic units are assigned a classification between 1 (lowest) and 5 (highest). The PFYC system is used by the BLM to assess impacts to paleontological resources and suggest appropriate mitigation measures. Additionally, a paleontological records and literature search was conducted. Pertinent published literature and unpublished manuscripts on the geology and paleontology of eastern California (San Bernardino County) and southern Nevada (Clark County) were reviewed. These included published articles on late Pleistocene vertebrate localities of California (Jefferson 1991a and 1991b) and Nevada (Jefferson et al. 2004). An online records search was conducted at the Museum of Paleontology, University of California, Berkeley (Museum of Paleontology, University of California, Berkeley, 2009). Also, persons with knowledge of the geology and paleontological resources of the proposed project area were consulted.

3.6.3.4 Applicant Proposed Measures

The applicant would implement the applicant proposed measures (APMs) described below to reduce adverse effects to geologic, soil, minerals, and paleontological resources and reduce impacts from geologic hazards.

APM GEO-1: Geotechnical Engineering and Engineering Geology Study. Prior to final design of substation facilities and transmission and subtransmission line tower foundations, a combined geotechnical engineering and engineering geology study would be conducted to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering practices.

APM GEO-2: Recommended Practices for Seismic Design of Substations. For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronics Engineers Standard 693, "Recommended Practices for Seismic Design of Substations," which includes probabilistic earthquake hazard analysis. Other project elements would be designed and constructed in accordance with the appropriate industry standards, as well as good engineering and construction practices and methods.

APM GEO-3: Project Construction Stormwater Pollution Prevention Plan Protection Measures Regarding Soil Erosion/Water Quality. Transmission line and substation construction activities would be conducted in accordance with the soil erosion/water quality protection measures to be specified in the project construction stormwater pollution prevention plan (SWPPP). New access roads would be designed to minimize ground disturbance from grading. They would follow natural ground contours as closely as possible, and would include specific features for road drainage. Measures could include water bars, drainage dips, side ditches, slope drains, and velocity reducers. Where temporary crossings would be constructed, they would be restored and repaired as soon as possible after completion of the discrete action associated with construction of the line in the area.

APM PALEO-1: Retention of Paleontologist and Preparation of a Paleontological Resource Management Plan. Prior to construction, a certified paleontologist would be retained by SCE to supervise monitoring of construction excavations and to produce a Paleontological Resource Management and Monitoring Plan (PRMMP) for the proposed project. This PRMMP would be prepared and implemented under the direction of the paleontologist and would address and incorporate APMs PALEO-2 through PALEO-8. Paleontological monitoring would include inspection of exposed rock units and microscopic examination of matrix to determine whether fossils are present. The monitor would have authority to temporarily divert grading away from exposed fossils in order to recover the fossil specimens. More specific guidelines for paleontological resource monitoring could be found in the PRMMP.

APM PALEO-2: Pre-construction Paleontological Field Survey. The paleontologist and/or his or her designated representative would conduct a pre-construction field survey of the project area underlain by Tertiary rock units and older alluvium. Results of the field inventory and associated recommendations would be incorporated into the PRMMP.

APM PALEO-3: Worker Environmental Awareness Program (see BIO-6, CR-2b, W-11). A Worker Environmental Awareness Program would be provided to construction supervisors and crew for awareness of requirements regarding the protection of paleontological resources and procedures to be implemented in the event fossil remains are encountered by ground-disturbing activities.

APM PALEO-4: Construction Monitoring. Ground-disturbing activities would be monitored on a part-time or full-time basis by a paleontological construction monitor only in those parts of the project area where these activities would disturb previously undisturbed strata in rock units of moderate and high sensitivity. Quaternary alluvium, colluvium, and Quaternary landslide deposits have a low paleontological sensitivity level and would be spot-checked on a periodic basis to ensure that older underlying sediments were not being penetrated. Monitoring would not be implemented in areas underlain by younger alluvium unless these activities had reached a depth 5 feet below the present ground surface and fine-grained strata were present. Ground-disturbing activities in areas underlain by rock units of low sensitivity would be monitored on a quarter-time basis or spot-checked if fine grained strata were present.

APM PALEO-5: Recovery and Testing. If fossils were encountered during construction, construction activities would be temporarily diverted from the discovery and the monitor would notify all concerned parties and collect matrix for testing and processing as directed by the project paleontologist. In order to expedite removal of fossil-bearing matrix, the monitor may request heavy machinery to assist in moving large quantities of matrix out of the path of construction to designated stockpile areas. Construction would resume at the discovery location once the necessary matrix was stockpiled, as determined by the paleontological monitor. Testing of stockpiles would consist of screen washing small samples to determine if important fossils were present. If such fossils were present, the additional matrix from the stockpiles would be water screened to ensure recovery of a scientifically significant sample. Samples collected would be limited to a maximum of 6,000 pounds per locality.

APM PALEO-6: Monthly Progress Reports. The project paleontologist would document interim results of the construction monitoring program with monthly progress reports. Additionally, at each fossil locality, field data forms would record the locality, stratigraphic columns would be measured, and appropriate scientific samples would be submitted for analysis.

APM PALEO-7: Analysis of and Preparation of Final Paleontological Resource Recovery Report. The project paleontologist would direct identification, laboratory processing, cataloging, analysis, and documentation of the fossil collections. When appropriate, and in consultation with SCE, splits of rock or sediment samples would be submitted to commercial laboratories for microfossil, pollen, or radiometric dating analysis. After analysis, the collections would be prepared for curation (see APM PALEO-8). A final technical report would be prepared to summarize construction monitoring and present the results of the fossil recovery program. The report would be prepared in accordance with SCE, Society of Vertebrate Paleontology guidelines, and lead agency requirements. The final report would be submitted to SCE, the lead agency, and the curation repository.

APM PALEO-8: Curation. Prior to construction, SCE would enter into a formal agreement with a recognized museum repository, and would curate the fossil collections, appropriate field and laboratory documentation, and final Paleontological Resource Recovery Report in a timely manner following construction.

3.6.3.5 Proposed Project / Proposed Action

<u>Construction</u>

Eldorado–Ivanpah Transmission Line

The potential to expose people to adverse effects due to fault rupture during construction of the transmission line would be negligible, localized, and short term. Fault rupture can result in structural failure that poses a risk to people. The Mesquite segment of the SFS crosses the proposed transmission line route along the California-Nevada border at Primm nearly perpendicular to the proposed transmission line route, although there is substantial uncertainty about the location of this fault. No other faults within the proposed project area known to have the potential for earthquake ground rupture cross the transmission line route. Due to the infrequent nature of movement along the SFS relative to the construction period, fault rupture resulting in impact to construction of the transmission line would be unlikely. Therefore, the impact to people due to fault rupture would be less than significant without mitigation.

The potential impact on people and structures by exposing them to adverse effects due to seismic ground shaking during construction would be negligible, localized, and short term. Ground movement associated with earthquakes can cause structural damage that poses a risk to human safety. Earthquakes occurring on faults closest to the transmission line would most likely generate the largest ground motion. Applying the Landers earthquake peak ground acceleration data to the Mesquite segment of the SFS, an approximate ground acceleration ranging from 0.12 g to 0.50 g can be expected along the transmission line route, with the higher value possible at the location where this fault crosses the transmission line route. Overall, strong ground shaking would be within the levels experienced in the Landers earthquake area in 1992 and the Hector Mine earthquake in 1999, both in the Mojave Desert region and where electrical transmission lines experienced some damage in each of these earthquakes. Due to the short duration of construction and infrequent nature of significant ground shaking in the project area, potential adverse effects to people associated with seismic ground shaking during construction would be less than significant without mitigation. Additionally, design measures would reduce the impact of risk to people associated with a considerable ground shaking event to less than significant without mitigation.

Seismic-related ground failure is not expected over most of the transmission line route due to the general lack of shallow groundwater. Liquefaction typically occurs primarily in saturated, loose, fine- to medium-grained soils in areas where the groundwater table is within approximately 50 feet of the ground surface; soils may temporarily lose their shear strength during strong ground shaking. Neither the San Bernardino County General Plan Safety Element nor the Clark County Comprehensive Plan indicates liquefaction potential within the project area. The most likely exceptions could be at the playa fringes, where sand layers could be saturated with perched water. In this case, the potential for negligible impact to human safety would be localized and short term; therefore, less than significant impact without mitigation would be expected.

Landslides effects are assessed in two distinct ways: 1) project development could destabilize a soil or geologic unit and induce a landslide; or 2) project components could be transported in a landslide and introduce additional risk or damage to people or the environment. Construction activities, including service roads, may cause minor adverse conditions suitable for landslides at locations where geologic conditions are susceptible to this type of hazard. These geologic conditions along the transmission line route would be expected to occur in areas on or adjacent to hill slopes. About 10 percent of the proposed transmission line route (in the McCullough Mountains) passes through areas with moderately steep to very steep topography containing highly weathered and fractured bedrock/basement rock. These areas may be susceptible to rockfall and rotational movement of moderate to large sections of hillslope within or adjacent to the route. Such movements can have potentially damaging effects. MM GEO-2 requires the applicant to complete a geotechnical analysis to assess site-specific geologic conditions and hazards and adjust engineering and design practices accordingly. Although these conditions would be local in extent, their potential for impact may extend over a long period of time but would be less than significant with mitigation.

Activities associated with construction of access road and tower footings along the transmission line route would disturb the existing ground surface and natural drainage(s), causing minor adverse erosion-related adverse impacts at these locations. This adverse impact would be localized and expected to act over the entire construction period. As required by law, the applicant would adhere to a SWPPP (APM GEO-3). MM W-1 (Erosion Control Plan and Compliance with Water Quality Permits) would further reduce potential adverse impacts related to soil erosion. Therefore, this impact would be less than significant with mitigation.

Construction of the transmission line route in areas of unstable geologic units or expansive soil could result in further destabilization of geologic units and/or structural failure of the towers. The adverse impacts of construction in these areas, ranging from negligible to minor over most of the transmission line route, could be localized to extensive, depending on conditions and type of impact. For example, the impact to existing surface topography related to subsidence due to groundwater withdrawal would be possible if substantial pumping were to occur related to development in the region; continued and/or increased groundwater withdrawal from the Ivanpah and Eldorado valleys may cause an overdraft condition resulting in settling of the ground surface due to compaction of underlying unconsolidated sediments resulting in unsafe changes in surface topography. Impact to towers due to earthquake-induced ground cracking would be negligible to non-existent for transmission line towers with deep foundations. Expansive soils, which shrink or swell with changes in moisture content and can affect the stability of foundations, could be encountered. Soils along the transmission line route in Nevada exhibit expansion potential that is generally low or low to moderate, with one united rated as moderate to high (playa). In the California portions of the project area, the potential for expansive soils is generally low to moderate, with one unit rated as high (playa). MM GEO-2 requires the applicant to complete a geotechnical analysis to assess site-specific geologic conditions and hazards and adjust engineering and design practices accordingly. MM GEO-4 requires the applicant to expand on the geotechnical analysis to mitigate specifically for expansive soils. These potential impacts from expansive soils on project structures would be less than significant with mitigation.

Numerous non-metallic and metallic mineral deposits occur along or near the transmission line route. No mining of metallic deposits was identified within 1,000 feet of the proposed project area. Non-metallic deposits within the general project area include rare earth minerals from the Molycorp Mine, pumice, feldspar, limestone, and sand and gravel, with sand and gravel potential being the highest along the routes. There are a few past and current mining locations in the vicinity of the proposed project, but none located within 1,000 feet of either side of the proposed transmission line route or alternative routes. Any adverse impacts to the availability of currently-identified mineral resources would be negligible; the potential resource is area-wide but would be only locally developed. The development of mineral deposits within the proposed project area would result in a less than significant impact to no impact.

Construction of the transmission line could cause direct impacts to buried paleontological resources due to ground-disturbing activities. The potential for direct impacts to paleontological resources during construction of the transmission line would be adverse, negligible, area-wide, and short term. Preconstruction ground-disturbing activities (augering and trenching) as part of geotechnical investigations of transmission tower locations might impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. During tower construction, ground-disturbing activities such as augering and trenching for support footings and grading for tower pads, service roads, and staging areas might impact paleontological resources in areas where underlying formations have high paleontological sensitivity. The rock units of high paleontological sensitivity (see Table 3.6-6) along the proposed line route are Quaternary alluvium (Qa/Qal), and Quaternary lake/playa deposits (Ql/Qp). All other underlying rock units present along the proposed transmission line, including ancient intrusive and metamorphic rocks (Xm; undivided Proterozoic) and Tertiary volcanic (Tba) rocks are of low paleontological sensitivity. However, as part of construction of the proposed project, the applicant would implement APMs PALEO-1 through PALEO-8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, possible impacts would be less than significant without mitigation.

Ivanpah Substation

The potential impact on people and structures by exposing them to adverse effects of fault rupture during construction of the Ivanpah Substation would not be expected since known faults do not cross the site. However, the potential does exist for exposure of people to adverse effects of seismic ground shaking during construction. Although considered minor and negligible, earthquakes occurring on SFS would most likely generate the largest ground motion (up to 0.35 g), similar to the motion that would be experienced by the transmission line route. Any impact experienced would be short term and localized, although an earthquake event would affect a larger region. Due to the infrequent nature of movement along the SFS relative to the short duration of the construction period, the impact of fault rupture on people would be less than significant without mitigation.

Seismic-related ground failure is not expected in the substation area due to the general lack of shallow groundwater. Construction activities related to the substation would not be expected to cause temporary conditions suitable for landslides, nor would service roads expose people or structures to adverse landslide effects, because the topography slopes gently at this location.

Construction associated with access roads and the substation would disturb the existing ground surface and natural drainage(s), causing a minor, adverse impact of erosion or loss of topsoil that would be localized but could act over a long term. Grading at the substation location would be permitted as part of the ISEGS project. MM W-6 requires the applicant to submit the ISEGS Drainage, Erosion, and Sedimentation Control Plan (DESCP) and SWPPP to CPUC. Implementation of proper engineering control measures outlined in the DESCP and SWPPP, this impact would be less than significant with mitigation.

The proposed location of the substation is in an area that may be susceptible to subsidence caused by removal of groundwater and in an area of expansive soil. Construction in such an area may result in negligible to minor impacts of local extent; subsidence could occur over a more extensive area with the impact to the proposed project being localized to the substation. Expansive soils shrink or swell with changes in moisture content, affecting the stability of foundations. Either impact would have a long-term effect on the project. MM GEO-2 requires the applicant to complete a geotechnical analysis to assess site-specific geologic conditions and hazards and adjust engineering and design practices accordingly. With the implementation of proper engineering control measures, this impact would be less than significant with mitigation.

Non-metallic mineral deposits occur near the proposed substation area. Any currently identified adverse impacts to the availability of mineral resources would be negligible; the potential resource is area-wide but would be only locally developed. The development of mineral deposits within the proposed project area would result in a less than significant impact to no impact on the availability of currently-identified mineral resources. Non-metallic deposits within the general project area include rare earth minerals from the Molycorp Mine, pumice, feldspar, limestone, and sand and gravel, with sand and gravel potential being the highest. There are a few past and current mining locations in the vicinity of the proposed project, but none located within 1,000 feet of the substation. Any adverse impacts are negligible; the potential resource is area-wide but would be only locally developed. The development of mineral deposits within the proposed project area would result in a less than significant impact or no impact.

Construction of the Ivanpah Substation could cause direct impacts to buried paleontological resources due to ground-disturbing activities. The potential for direct impacts to paleontological resources during construction of the Ivanpah Substation would be adverse, negligible, localized, and short term. Preconstruction ground-disturbing activities (augering and trenching) as part of geotechnical investigations of substation foundation(s) might impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. Ground-disturbing activities such as grading and trenching the substation foundation(s), attendant facilities, and utilities could impact paleontological resources in areas where underlying formations have high paleontological sensitivity. The rock units of high paleontological sensitivity (see Table 3.6-6) within the substation footprint are Quaternary non-marine or older alluvium (Qc/Qoa) and Quaternary alluvium (Qa/Qal). However, as part of construction of the proposed project, the applicant would include APMs PALEO-1 through PALEO-8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, impacts would be less than significant without mitigation.

Telecommunications Line

The potential impact to people and structures by exposing them to adverse effects due to fault rupture during construction of the telecommunications line would be non-existent since the proposed route does not cross any active faults. However, the potential to expose people to adverse effects due to seismic ground shaking during construction would be negligible, localized, and short term. Earthquakes occurring on faults closest to the telecommunications line route would most likely generate the largest ground motion, with expected approximate ground acceleration ranging from 0.12 g to 0.45 g. Overall, strong ground shaking would be within the levels experienced in the Landers earthquake area in 1992 and the Hector Mine earthquake in 1999, both in the Mojave Desert region, where some damage in each of these earthquakes was experienced. Design considerations can be implemented so the impact would be less than significant without mitigation.

Seismic-related ground failure is not expected in the project area due to the general lack of shallow groundwater along the proposed route. Construction activities, including service roads, may cause temporary conditions suitable for landslides at locations where geologic conditions are susceptible to this type of hazard. These geologic conditions along the telecommunications line route would be expected to occur in areas on or adjacent to hill slopes. About 10 percent of the proposed telecommunications line route (along the southern end of the McCullough Mountains) passes through areas with moderately steep to very steep topography containing highly weathered and fractured bedrock/basement rock. These areas may be susceptible to rockfall and rotational movement of moderate to large sections of hillslope within or adjacent to the route. Such movements can have potentially damaging effects. These conditions would be local in extent, but their potential for impact on the project could extend over a long period of time. MM GEO-2 requires the applicant to complete a geotechnical analysis to assess site-specific geologic conditions and hazards and adjust engineering and design practices accordingly. The impact of these conditions would be less than significant with mitigation.

Activities associated with the construction of access roads and tower footings along the proposed telecommunications line route would disturb the existing ground surface and natural drainage(s), causing minor adverse erosion-related impact at these locations. This impact would be localized but expected to act over the entire construction period. However, with the implementation of proper engineering control measures such as those outlined in the SWPPP, this impact would be less than significant with mitigation.

Construction of the proposed telecommunications line route in areas of unstable geologic units or expansive soil could result in further destabilization of geologic units and/or structural failure of the towers. The adverse impacts of construction in these areas, ranging from negligible to minor over most of the telecommunications line route, could be localized to extensive, depending on conditions and type of impact. For example, the impact to existing surface topography related to subsidence due to groundwater withdrawal would be possible if substantial pumping were to occur related to construction of the proposed project; continued and/or increased groundwater withdrawal from the Ivanpah and Eldorado valleys may cause an overdraft condition resulting in settling of the ground surface due to compaction of underlying unconsolidated sediments resulting in unsafe changes in surface topography. Impact to telecommunication structures due to earthquake-induced ground cracking would be negligible to no impact for towers with deep foundations. Expansive soils, which shrink or swell with changes in moisture content and can affect the stability of foundations, could be encountered. Soils along the telecommunications line route in Nevada exhibit expansion potential that is generally low or low to moderate, with one unit rated as moderate to high (playa). In the California portions of the project area, the potential for expansive soils is generally low to moderate, with one unit rated as high (playa). MM GEO-2 requires the applicant to complete a geotechnical analysis to assess site-specific geologic conditions and hazards and adjust engineering and design practices accordingly. MM GEO-4 requires the applicant to expand on the geotechnical analysis to mitigate specifically for expansive soils. These potential impacts from expansive soils on project structures would be less than significant with mitigation.

Numerous non-metallic and metallic mineral deposits occur along or near the telecommunications line route. No mining of metallic deposits was identified within 1,000 feet of the proposed project area. Non-metallic deposits within the general project area include rare earth minerals, pumice, feldspar, limestone, and sand and gravel, with sand and gravel potential being the highest along the routes. There are a few past and current mining locations in the vicinity of the proposed project, but none located within 1,000 feet of either side of the proposed telecommunications line route or alternative routes. Any adverse impacts to the availability of currently-identified mineral resources would be negligible; the potential resource is area-wide but would be only locally developed. The development of mineral deposits within the proposed project area would result in a less than significant impact to no impact.

Construction of the redundant telecommunication system (partially underground) could cause direct impacts to buried paleontological resources due to ground-disturbing activities associated with trenching and tower placement. The potential for direct impacts to paleontological resources during construction of the redundant telecommunication system would be adverse, moderate, area-wide, and short term. Preconstruction ground-disturbing activities (augering and trenching) performed as part of geotechnical investigations along the route of the telecommunications line could impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. During construction, ground-disturbing activities such as trenching for installation and burial of the line could impact paleontological resources in areas where underlying formations have high paleontological sensitivity. The rock units of high paleontological sensitivity (see Table 3.6-6) along the proposed telecommunication line route are Quaternary alluvium (Qa/Qal) and Quaternary lake/playa deposits (Ql/Qp). All other underlying rock units present along the proposed transmission line that include Ancient intrusive and metamorphic rocks (Xm; undivided Proterozoic) and Tertiary volcanic (Tba) rocks are of low paleontological sensitivity. However, as part of construction of the proposed project, the applicant would implement APMs PALEO-1 through PALEO-8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, possible impacts would be less than significant without mitigation.

Because the primary telecommunication line would be above ground and strung along the transmission towers, construction would not result in any additional impacts to buried paleontological resources. These possible impacts would be less than significant.

Operation & Maintenance

Eldorado–Ivanpah Transmission Line

The potential impact to people and structures by exposing them to adverse effects due to fault rupture and/or seismic ground shaking during the operation and maintenance would be negligible during the life of the proposed project. Fault rupture can result in structural failure that poses a risk to people. Although the probability of some occurrence of seismic ground shaking increases as longer time periods are considered, the likelihood of exposing people to adverse effects still remains negligible. Seismic-related ground failure such as liquefaction would not be expected in the project area due to the general lack of shallow groundwater, although areas in the valley bottoms (old lake deposits and playas) could pose a negligible impact; therefore, the impact would be less than significant without mitigation.

Maintenance of service roads could expose people or structures to minor adverse landslide effects over the life of the proposed project. In addition, operation and maintenance activities could expose people and structures to landslide hazards during the life of the project. Geologic conditions along the transmission line route favorable to landslides would be expected to occur in areas on or adjacent to hill slopes, particularly where access roads have been built. Although these landslide-prone conditions would be local in extent, their potential for impact could extend over a long period of time. The impact of landslide conditions on the project would be less than significant with mitigation. Operation and maintenance of service roads would cause continued ground disturbance that would result in sites of potential erosion, particularly in areas of hill slopes. These activities would continue to disturb the existing ground surface and natural drainage(s), causing minor adverse erosion-related impact. This impact would be localized but would act over the entire life of the proposed project. However, with the implementation of proper engineering control measures, this impact would be less than significant without mitigation.

The proposed transmission line could experience adverse negligible to minor impacts during operation and maintenance due to subsidence related to potentially unstable geologic units or expansive soil causing structural failure of the towers. These impacts could be localized to extensive, depending on geologic conditions and degree of subsidence. For example, subsidence due to groundwater withdrawal would be possible due to substantial pumping; continued and/or increased groundwater withdrawal from the Ivanpah and Eldorado valleys may cause an overdraft condition, resulting in settling of the ground surface due to compaction of underlying unconsolidated sediments. As part of MM GEO-1, the applicant will contact the California Department of Water Resources and the Nevada Division of Water Resources on an annual basis to determine if groundwater withdrawals in the area are causing ground subsidence. If subsidence threatens any project facility, the applicant will develop a mitigation plan to prevent damage to structures. However, with the implementation of proper engineering control measures, this impact from subsidence on project structures would be less than significant with mitigation.

Numerous non-metallic and metallic mineral deposits occur along or are near the transmission line route; however, no mining of these deposits was identified within 1,000 feet of the proposed project area. Any adverse impacts to the availability of currently-identified mineral resources would be negligible; the potential resource is area-wide but would be only locally developed. The development of mineral deposits within the proposed project area would result in less than significant impacts.

Operation and maintenance of the proposed project would not result in additional ground disturbance beyond the areas disturbed during construction. Areas where fossils are located would be identified during preconstruction surveys and construction monitoring. Therefore, there would be no additional potential impacts to paleontological resources during operation and maintenance.

Ivanpah Substation

The potential impact to people and structures by exposing them to adverse effects due to fault rupture during operation and maintenance of the substation would not be expected, since known faults do not cross the site. However, the potential does exist for the negligible exposure of people and structures to adverse effects due to seismic ground shaking during the operation and maintenance of the substation. Earthquakes occurring on faults closest to the substation (such as the SFS) would most likely generate the largest ground motion (up to 0.35 g), similar to that experienced by the transmission line route. Any impact experienced would be short term and localized, although the causative event would affect a larger region. However, design considerations (APM GEO-2 Recommended Practices for Seismic Design of Substations) would be implemented so the impact would be less than significant without mitigation.

Operation and maintenance activities associated with the substation and access roads would disturb the existing ground surface and cause minor adverse erosion impacts that would be localized in extent but could be long term. Erosion could result from re-directed stormwater and wind. However, with the implementation of proper engineering control measures, this impact would be less than significant without mitigation.

The proposed location of the substation is in an area that may be susceptible to subsidence caused by the removal of groundwater and in an area of expansive soil. This could cause a negligible to minor adverse impact to the project during its operation and maintenance. Although expected to be of local extent; subsidence could occur over a more extensive area. The long-term impact on the project; however, with the implementation of proper engineering control measures, would be less than significant with mitigation.

Numerous non-metallic and metallic mineral deposits occur along or are near the proposed substation; however, no mining of these deposits was identified within 1,000 feet of the proposed project. Any adverse impacts to the availability of currently-identified mineral resources would be negligible; the potential resource is area-wide but would be only locally developed. The development of mineral deposits within the proposed project would result in less than significant impacts.

Operation and maintenance of the proposed project would not result in additional ground disturbance beyond the areas disturbed during construction. Areas where fossils are located would be identified during preconstruction surveys and construction monitoring. Therefore, there would be no additional potential impacts to paleontological resources during operation and maintenance.

Telecommunications Line

Operation and maintenance of the telecommunications line would result in impact conditions consistent with the operation and maintenance of the transmission line.

The potential impact to people and structures by exposing them to adverse effects of fault rupture and/or seismic ground shaking during operation and maintenance would be negligible during the life of the proposed telecommunications line. Fault rupture can result in structural failure that poses a risk to people. Although the probability of an occurrence of seismic ground shaking increases as longer periods of time are considered, the likelihood of exposing people to adverse effects still remains negligible. Seismic-related ground failure such as liquefaction is not expected in the project area due to the general lack of shallow groundwater, although areas in the valley bottoms (old lake deposits and playas) may pose a negligible potential for a highly localized impact.

Maintenance of service roads could expose people or structures to minor adverse landslide effects over the life of the proposed telecommunications line. In addition, operation and maintenance activities could expose people to landslide hazards during the life of the project. Geologic conditions along the telecommunications line route favorable to landslides would be expected to occur in areas on or adjacent to hill slopes, particularly where access roads have been built. Although these landslide-prone conditions would be local in extent, their potential for impact may extend over a long period of time. The impact of these conditions on the project would be less than significant with mitigation. Operation and maintenance of service roads would lead to continued ground disturbance that would result in sites of potential erosion, particularly in areas of hill slopes. These activities would continue to disturb the existing ground surface and natural drainage(s) over the entire life of the proposed project, causing minor adverse erosion-related impacts. However, with the implementation of proper engineering control measures, this impact would be less than significant without mitigation.

The proposed telecommunications line may experience adverse negligible to minor impacts during the operation and maintenance period due to subsidence related to potentially unstable geologic units or expansive soil causing structural failure of the towers. The impacts from subsidence or expansive soil to the towers could be localized to extensive, depending on geological conditions and degree of subsidence. Subsidence due to groundwater withdrawal is possible due to substantial pumping; continued and/or increased groundwater withdrawal from the Ivanpah and Eldorado valleys could cause an overdraft condition resulting in the settling of the ground surface due to compaction of underlying unconsolidated sediments. As part of MM GEO-1, the applicant will contact the California Department of Water Resources and the Nevada Division of Water Resources on an annual basis to determine if groundwater withdrawals in the area are causing ground subsidence. If subsidence threatens any project facility, the applicant will develop a mitigation plan to prevent damage to structures. However, with the implementation of proper engineering control measures, this impact on project structures would be less than significant with mitigation.

Numerous non-metallic and metallic mineral deposits occur along or are near the telecommunications line route; however, no mining of these deposits was identified within 1,000 feet of the proposed project area. In the region, the potential resource is area-wide but would be only locally developed. The development of mineral deposits within the proposed project area would result in less than significant impacts without mitigation.

Operation and maintenance of the proposed project would not result in additional ground disturbance beyond the areas disturbed during construction. Areas where fossils are located would be identified during preconstruction surveys and construction monitoring. Therefore, there would be no additional potential impacts to paleontological resources during operation and maintenance.

NEPA Summary

The proposed project would result in direct negligible to minor geology- and soils-related impacts due to the construction of the transmission line, substation, and telecommunications line. The impacts would be local in extent for most of the proposed project, but could be extensive to area-wide. The impacts would occur over either short- or long-term time spans. Impacts associated with operation and maintenance of the transmission line, substation, and telecommunications line would mostly be related to the occasional presence of people engaged in maintaining the facilities during the life of the project, and would be potentially due to changing geologic conditions including seismic events (fault rupture and ground shaking), subsidence, and/or liquefaction.

The proposed project would result in direct negligible impacts to paleontological resources during construction of the transmission line, substation, and telecommunications line. However, as part of construction of the proposed project, the applicant would include APMs PALEO-1 through PALEO-8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts.

Therefore, possible impacts would be less than significant. Operation and maintenance of the proposed project would not result in additional ground disturbance beyond the areas disturbed during construction. Therefore, there would be no impacts to paleontological resources during operation and maintenance.

CEQA Significance Determinations

IMPACT GEO-1: Rupture of Earthquake Fault Across the Transmission Line Route
Less than significant without mitigation

The proposed project would result in impacts related to the potential for damage to transmission line towers resulting from the rupture of an earthquake fault that crosses the transmission line route. The potential for exposure of people to fault rupture during construction of the transmission line is very low. The Mesquite segment of the SFS crosses the proposed transmission line route along the California-Nevada border at Primm nearly perpendicular to the proposed transmission line route, although there is substantial uncertainty as to the location of this fault. No other faults within the proposed project area known to have the potential for earthquake ground rupture cross the transmission line route, and APM GEO-1 states that the applicant would complete a geotechnical engineering and engineering geology study to identify site-specific geologic conditions and potential geologic hazards prior to final engineering. MM GEO-2 strengthens APM GEO-1 by stating that the applicant will use the findings of the geotechnical analysis to guide engineering and design. Therefore, the impact would be less than significant with mitigation.

The potential for exposing people to adverse effects of fault rupture during operation and maintenance is also unlikely during the life of the proposed project. Although the probability of an earthquake occurring increases as longer time periods are considered, the likelihood of exposing people to adverse effects still remains negligible. Given the relative lack of active faults in the project area and the fact that the applicant would conduct preconstruction geotechnical engineering and engineering geology studies, the impact would be less than significant without mitigation.

IMPACT GEO-2: Exposure of People or Structures to Potential Adverse Effects Due to Seismic Ground Shaking
Less than significant without mitigation

The project could impact people and structures by exposing them to adverse effects due to seismic ground shaking during construction. Earthquakes occurring on faults closest to the transmission line and substation facility would most likely generate the largest ground motion experienced at that location. Estimated approximate ground accelerations range from 0.12 g to 0.50 g for the transmission line route, could be up to 0.35 g for the substation facility, and range from 0.12 g to 0.45 g along the telecommunications route. Due to the short nature of construction and infrequent nature of significant ground shaking in the project area, potential adverse effects to people associated with seismic ground shaking during construction would be less than significant without mitigation. Additionally, design measures would reduce the impact of risk to people associated with a considerable ground shaking event to less than significant without mitigation. Design considerations outlined in APM GEO-2 (Recommended Practices for Seismic Design of Substations) would further lessen the potential for adverse effects due to seismic ground shaking at the substation to less than significant levels without mitigation.

The potential exists to expose people and structures to adverse effects of seismic ground shaking during operation and maintenance of the facilities. Earthquakes occurring on faults closest to the proposed project would most likely generate the largest ground motion experienced by the transmission line route, substation, and telecommunications line. However, although the probability of an occurrence of seismic ground shaking increases as longer time periods are considered, the likelihood that people would be exposed to adverse effects is limited; structures would be more likely to experience an impact. Any impact would be short term and localized for the proposed project, although the causative event would affect a larger region. Design considerations outlined in APM GEO-2 would lessen the potential for adverse effects due to seismic ground shaking at the substation to less than significant levels without mitigation. MM GEO-1 requires the applicant to design structures to withstand site-specific geologic conditions. With this mitigation measure in place, potential adverse effects to people and structures associated with ground shaking would be reduce to less than significant levels with mitigation.

IMPACT GEO-3: Exposure of People or Structures to Potential Adverse Effects Due to Seismic-Related Ground Failure
Less than significant without mitigation

The proposed project would result in impacts on people and structures due to seismic-related ground failure only for those areas where conditions are potentially conducive to ground failure. Areas within the proposed project area that may be susceptible to seismic-related ground failure during construction include structures located at or near playa fringes, where sand layers could be saturated with perched water. In this case, the potential for negligible impact would be highly localized. For most of the proposed project area, seismic-related ground failure is not expected, due to the general lack of shallow groundwater. In addition, neither the San Bernardino County General Plan Safety Element nor the Clark County Comprehensive Plan indicates liquefaction potential within the proposed project area.

The potential exists for exposure of people or structures to seismic-related ground failure during operation and maintenance of the proposed project. Areas within the proposed project near playa fringes where sand layers could be saturated with perched water are the most likely places for this impact to occur. For most of the proposed project area, seismic-related ground failure would not be expected due to the general lack of shallow groundwater. In addition, neither the San Bernardino County General Plan Safety Element nor the Clark County Comprehensive Plan indicates liquefaction potential within the proposed project area. APM GEO-1 states that the applicant would complete a geotechnical engineering study to identify site-specific geologic conditions and potential geologic hazards prior to final engineering; therefore, the impact would be less than significant without mitigation.

IMPACT GEO-4: Exposure of People or Structures to Adverse Effects Due to Landslides
Less than significant without mitigation

The proposed project would result in impacts on people or structures along the access roads for the transmission line and telecommunication line routes during construction. Installing, upgrading, or re-grading access roads could lead to landslides at locations where geologic conditions are conducive to this type of hazard. Such geologic conditions occur in areas on or adjacent to hill slopes. About 10 percent of the proposed transmission line route (in the McCullough Mountains) and the telecommunications line route (along the southern end of the McCullough Mountains) passes through areas with moderately steep to very steep topography containing highly weathered and fractured bedrock/basement rock. These areas may be susceptible to rockfall and rotational movement of moderate to large sections of hillslope within or adjacent to the route. Such movements can have potentially damaging effects. Although these conditions would be local so the impact from construction-caused landslides on people or structures would be localized, the potential for these impacts could extend over a long time.

In addition, operation and maintenance activities could expose people and structures to landslide hazards during the life of the project. Geologic conditions along the transmission line and telecommunications line routes favorable to landslides would occur in areas on or adjacent to hill slopes, particularly where access roads have been built and maintained. Although these conditions would be local so the impact from operation- or maintenance-caused landslides on people or structures would be localized, the potential for these impacts could extend over a long time. APM GEO-1 states that the applicant would complete a geotechnical engineering study to identify site-specific geologic conditions and potential geologic hazards prior to final engineering. MM GEO-2 requires the applicant to complete a incorporate the results of the geotechnical analysis to assess site-specific geologic conditions and hazards and adjust engineering and design practices accordingly. Therefore, the impact would be less than significant with mitigation.

IMPACT GEO-5: Erosion of Soil at Towers and the Substation and Along Access Roads
Less than significant with mitigation

The proposed project would impact soil by resulting in erosion at the transmission and telecommunication towers, at the substation, and along the access roads. Construction of access roads and tower footings along the transmission line and telecommunications line routes would disturb the existing ground surface and natural drainage(s), causing minor adverse erosion-related impacts on soil at these locations. This impact would be localized but would act over the entire construction period.

Operation and maintenance of transmission and telecommunication line service roads would lead to continued ground disturbance that would result in sites of potential erosion, particularly in areas of hill slopes. These activities would continue to disturb the existing ground surface and natural drainage(s), causing minor adverse erosion-related impacts on soil and water resources (further discussed in Section 3.8, "Hydrology and Water Resources"). Erosion associated with the substation could result from re-directed stormwater and wind. This impact would be localized (hilly areas and substation area) but could act over the life of the proposed project. Although a SWPPP would be followed (APM GEO-3), impacts soil conditions due to construction and operation of the project could be significant. With the implementation of MM W-1, however, impacts under this criterion would be less than significant.

IMPACT GEO-6: Structural Failure of Towers and Substation Facility Due to Unstable Soil Conditions Resulting in Subsidence or Collapse
Less than significant with mitigation

Ground subsidence or collapse due to groundwater withdrawal could lead to the structural failure of the transmission line and telecommunication line towers and substation facility. This adverse impact on the project, ranging from negligible to minor, could be localized to extensive, depending on the degree to which continued and/or increased groundwater withdrawal from the Ivanpah and Eldorado valleys causes an overdraft condition resulting in settling of the ground surface due to compaction of underlying unconsolidated sediments. The likelihood of this impact could increase over time with continued and/or increased groundwater withdrawal. Although prior to final design a geotechnical engineering study would be performed (APM GEO-1), impacts on proposed project facilities could still be significant. With the implementation of MM W-2, MM GEO-1 and MM GEO-2, however, impacts under this criterion would be less than significant.

IMPACT GEO-7: Structural Failure of Towers or Substation Facility Due to Expansive Soils
Less than significant with mitigation

Building on expansive soils could lead to the structural failure of the transmission line and telecommunication line towers and substation facility. Expansive soils shrink or swell with changes in moisture content, affecting the stability of foundations. Soils encountered along the transmission line route in Nevada exhibit expansion potential that is generally low and low to moderate, but the expansion potential along the route is moderate to high in one unit (playas). In California, the potential for expansive soils is generally low to moderate, but also is high in one unit (playas). The areas most prone to experience expansive soils lie within or adjacent to playas or old lake deposits with clay rich sediments. Although prior to final design a geotechnical engineering study would be performed (APM GEO-1), impacts on proposed project facilities could be significant. With the implementation of MM GEO-4, however, impacts under this criterion would be less than significant.

IMPACT MR-1: Loss of Mineral Resource of Value to Region and the Residents of the State
Less than significant without mitigation

Numerous non-metallic and metallic mineral deposits occur along or near the telecommunications line route. No mining of metallic deposits was identified within 1,000 feet of the proposed project. Non-metallic deposits within the general project area include rare earth minerals from the Molycorp Mine, pumice, feldspar, limestone, and sand and gravel, with sand

and gravel potential being the highest along the routes. There are a few past and current mining locations in the vicinity of the proposed project, but none are within 1,000 feet of either side of the proposed telecommunications line route or alternative routes. Proposed future activities at mines can easily avoid the proposed project area. Any identified adverse impacts at current mines are negligible. The potential for mineral resources in the project vicinity is area-wide. However, since no specific locations for valuable mineral resources have been identified within the project area, there would be no loss of availability of a known mineral resource as a result of the proposed project. Impacts under this criterion would be less than significant without mitigation.

NO IMPACT. Loss of Locally Important Mineral Resource Recovery Site Delineated on a Local General Plan, Specific Plan, or Other Land Use Plan. The proposed project would have no impact under this criterion because there are no identified mineral resources delineated on a local general plan, specific plan, or other land use plan that would result in loss of availability due to the construction, operation, or maintenance of the proposed project.

IMPACT PALEO-1: Direct or Indirect Damage or Destruction of Paleontological Resources
Less than significant without mitigation

The proposed project would include ground disturbance that could impact buried and undiscovered paleontological resources. Various actions would help reduce impacts on paleontological resources discovered during the preconstruction and construction phases of the proposed project. These actions include APMs PALEO-1 through PALEO-8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, impacts would be less than significant without mitigation.

3.6.3.6 No Project / No Action Alternative

In the No Project/No Action Alternative, the proposed action would not be undertaken. The BLM land on which the project is proposed would continue to be managed within BLM's framework of a program of multi-role use, sustained yield, and maintenance of environmental quality [43 USC 1781 (b)] in conformance with applicable statutes, regulations, policy, and land use plans.

Under the No Project / No Action Alternative, the impacts of the proposed project would not occur. However, except for the Ivanpah Substation, the land on which the project is proposed would not become available to other uses that are consistent with BLM's land use plan. The No Project / No Action Alternative would leave the proposed project area in its current use and would therefore have no additional effect on existing geologic or paleontological resources in the area other than to maintain their availability for potential future development. No impacts would occur.

3.6.3.7 Transmission Alternative Route A

Transmission Alternative Route A is similar to the proposed transmission line route in that it is located in similar geology, soils, and mineralogical materials. It is also similar in topography. Several direct impacts would be associated with this alternative route. Negligible localized short-term impacts would include those associated with seismic ground shaking and seismic-related ground failure. With the implementation of APMs GEO-1 and GEO-2, the impacts would be less than significant without mitigation. A minor localized long-term impact to soils from erosion would occur. With the implementation of MM GEO-3, this impact would be less than significant with mitigation. A minor extensive long-term impact on the structures of the alternative route would be associated unstable geologic units (subsidence). With the implementation of MMs GEO-1 and GEO-2, this impact would be less than significant with mitigation. A negligible localized long-term impact would be associated with expansive soil. With the implementation of MM GEO-4, this impact would be less than significant with mitigation. A negligible area-wide long-term impact would be associated with non-metallic mineral resources. However, this impact would be less than significant without mitigation.

Construction of the Transmission Alternative Route A may cause direct impacts to buried paleontological resources due to ground-disturbing activities. Potential direct impacts to paleontological resources during construction of Transmission Alternative Route A would be adverse, negligible, localized, and short term. Preconstruction ground-disturbing activities (augering and trenching) as part of geotechnical investigations along the route of Alternative Route A could impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. During later tower construction, ground-disturbing activities such as augering and trenching for support footings and grading for tower pads, service roads, and staging areas could impact paleontological resources in areas where underlying formations have high paleontological sensitivity. The rock unit of high paleontological sensitivity (see Table 3.6-6) along Transmission Alternative Route A is Quaternary alluvium (Qa/Qal). However, as part of construction of the proposed project, the applicant would implement APMs PALEO-1 through PALEO-8. These measures (provision of the project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, impacts would be less than significant without mitigation.

3.6.3.8 Transmission Alternative Route B

Transmission Alternative Route B is similar to the proposed transmission line route in that it is located in similar geology, soils, and mineralogical materials. It is also similar in topography. The direct impacts and mitigation associated with this alternative route are similar to those for Alternative Route A.

3.6.3.9 Transmission Alternative Route C

Transmission Alternative Route C would relocate a portion of the proposed transmission line to the west of the proposed project route, a portion of which crosses near the southern tip of the Spring Mountains near Milepost 2. This route is similar to the proposed transmission line route in this area in that it is located in similar geology, soils, and mineralogical materials. It is also similar in topography. However, the exposed geologic unit at the southern tip of the Spring Mountains includes exposures of Paleozoic- to Mesozoic carbonate (limestone and dolomite) and siliclastic (sandstone, mudstone, and conglomerate) bedrock (MzPzs).

Several direct impacts are associated with this alternative route. The Mesquite segment of the SFS crosses the Transmission Alternative Route C along the California-Nevada border at Primm nearly perpendicular to the proposed route. This impact to people and structures associated with fault rupture would be negligible and localized, and would be short term relative to construction but long term with respect to operations and maintenance. With the implementation of APM GEO-1, this impact would be less than significant without mitigation. Negligible localized short-term impacts related to this alternative route include those associated with seismic ground shaking and seismic-related ground failure. With the implementation of APMs GEO-1 and GEO-2, impacts would be less than significant without mitigation. A minor localized long-term impact on soils would be associated with erosion. With the implementation of MM GEO-3, this impact would be less than significant with mitigation. A minor extensive long-term impact would be associated with unstable geologic units (subsidence). With the implementation of MMs GEO-1 and GEO-2, this impact would be less than significant with mitigation. A negligible, localized, long-term impact on project structures would be associated with expansive soil. With the implementation of MM GEO-4, this impact would be less than significant with mitigation. The project could result in a negligible, area-wide, long-term impact to the availability of currently-identified non-metallic mineral resources. However, since no specific locations for valuable mineral resources have been identified within the project area, there would be no loss of availability of a known mineral resource as a result of the proposed project. This impact would be less than significant without mitigation.

Construction of the Transmission Alternative Route C could cause direct impacts to buried paleontological resources from ground-disturbing activities. Potential direct impacts to paleontological resources during construction of Transmission Alternative Route C would be adverse, negligible, localized, and short term. Preconstruction ground-disturbing activities (augering and trenching) as part of geotechnical investigations along the route could impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. During later tower construction, ground-disturbing activities such as augering and trenching for support footings and grading for tower pads, service roads, and staging areas could impact paleontological resources in areas where underlying formations have high paleontological sensitivity. The rock units of high paleontological sensitivity (see Table 3.6-6) along Transmission Alternative Route C are Quaternary lake/playa deposits (Ql/Qp) and Quaternary alluvium (Qa/Qal). Another underlying rock unit present along Alternative Route C is composed of Paleozoic and Mesozoic sedimentary rocks (PzMzs) of low paleontological sensitivity. As part of construction of the proposed project, the applicant would implement APMs PALEO-1 through PALEO-8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, impacts would be less than significant with mitigation.

3.6.3.10 Transmission Alternative Route D and Subalternative E

With the exception of crossing a portion of Paleozoic- to Mesozoic bedrock at the southern tip of the Spring Mountains, Transmission Line Alternative Route D and Subalternative E are both similar to the proposed Transmission Line Alternative Route C and the proposed project route. They both are located in similar geology, soils, and mineralogical materials. The alternative routes are also similar in topography. The direct impacts and mitigation associated with these alternative and subalternative routes are similar to those in Alternative Route C.

3.6.3.11 Telecommunication Alternative (Golf Course)

The Golf Course Telecommunication Alternative is similar to the proposed route, except it does not cross the SFS Mesquite segment. This route extends along an alluvial apron (fan) from the Clark Mountains near Mountain Pass, and is parallel to the I-15 ROW. The Golf Course Telecommunication Alternative is located in similar geology, soils, and mineralogical materials. Negligible, localized, short-term impacts related to this alternative would include those occurring to the project from seismic ground shaking and seismic-related ground failure. With the implementation of APMs GEO-1 and GEO-2, those impacts would be less than significant without mitigation. The project would result in a minor, localized, long-term impact on soils due to erosion. With the implementation of MM GEO-3, this impact would be less than significant with mitigation. A minor, extensive, long-term impact on the project would be associated with unstable geologic units (subsidence). With the implementation of MMs GEO-1 and GEO-2, this impact would be less than significant with mitigation. A negligible, localized, long-term impact on the project would be associated with expansive soil. With the implementation of MM GEO-4, this impact would be less than significant with mitigation. The project would result in a negligible, area-wide, long-term impact on non-metallic mineral resources. However, since no specific locations for valuable mineral resources have been identified within the project area, there would be no loss of availability of a known mineral resource as a result of the proposed project. This impact would be less than significant without mitigation.

Construction of the Golf Course Telecommunication Alternative could cause direct impacts to buried paleontological resources due to ground-disturbing activities associated with positioning the line underground along Nipton Road. Potential direct impacts to paleontological resources during construction of the Golf Course Telecommunication Alternative would be adverse, negligible, localized, and short term. Preconstruction ground-disturbing activities (augering and trenching) as part of geotechnical investigations along the route of the Golf Course Telecommunication Alternative could impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. During later tower construction, ground-disturbing activities such as augering and trenching for support footings and grading for tower pads, service roads, and staging areas could impact paleontological resources in areas where underlying formations have high paleontological sensitivity. The rock units of high paleontological sensitivity (see Table 3.6-6) along the proposed Golf Course Telecommunication Alternative are Quaternary Tertiary older alluvium (QT0a), Quaternary non-marine (Qc/Qoa), Quaternary alluvium (Qa/Qal), and Quaternary lake/playa deposits (Ql/Qp). Another underlying rock unit present along the Golf Course Telecommunication Alternative is Ancient intrusive and metamorphic rocks (Xm), which are of low paleontological sensitivity. As part of construction of the proposed project, the applicant would implement APMs PALEO-1 through PALEO-8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, impacts would be less than significant with mitigation.

3.6.3.12 Telecommunication Alternative (Mountain Pass)

The Mountain Pass Telecommunication Alternative is located in similar geology, soils, and mineralogical materials as Transmission Alternative Routes C and D and Subalternative E in the lower elevations, but also includes earlier Precambrian metamorphic bedrock of the Clark Mountains. The topography ranges from relatively flat low-lying valley bottoms and playa to moderately steep hill slopes of the Clark Mountains in the area of Mountain Pass substation.

Several direct impacts are associated with this alternative route. Negligible, localized, short-term impacts include those associated with seismic ground shaking and seismic-related ground failure. With the implementation of APMs GEO-1 and GEO-2, the impacts would be less than significant without mitigation. Minor, localized, long-term impacts of the project could result from both landslides and erosion. With the implementation of MMs GEO-2 and GEO-3 these impacts would be less than significant with mitigation. A minor, extensive, long-term impact to project structures could result from unstable geologic units (subsidence). With the implementation of MMs GEO-1 and GEO-2, this impact would be less than significant with mitigation. A negligible, localized, long-term impact to people and structures could result from building in expansive soil. With the implementation of MM GEO-4, this impact would be less than significant with mitigation. The project could result in negligible, area-wide, long-term impact to the availability of currently identified non-metallic mineral resources. However, since no specific locations for valuable mineral resources have been identified within the project area, there would be no loss of availability of a known mineral resource as a result of the proposed project. This impact would be less than significant without mitigation.

A portion of the Mountain Pass Telecommunication Alternative would go through the Molycorp Mine. Negligible to minor, short-term, adverse impacts from construction, operation, and maintenance of the project on mining operations are anticipated. Contaminated soils from the mine could be encountered during project construction. If that were to happen, the project could result in adverse impacts to water quality in local streams and spreading of contamination. As part of APM GEO-1, the applicant would identify contaminated soils along this alternative. Careful planning of soil segregation and treatment along the Mountain Pass Telecommunication Alternative route would minimize these impacts.

Construction of the Mountain Pass Telecommunication Alternative could cause direct impacts to buried paleontological resources due to ground-disturbing activities. Potential direct impacts to paleontological resources during construction of the Mountain Pass Telecommunication Alternative would be adverse, negligible, localized, and short term. Preconstruction ground-disturbing activities (augering and trenching) as part of geotechnical investigations along the route of the Mountain Pass Telecommunication Alternative could impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. During later tower construction, ground-disturbing activities such as augering and trenching for support footings and grading for tower pads, service roads, and staging areas could impact paleontological resources in areas where underlying formations have high paleontological sensitivity. The rock units of high paleontological sensitivity (see Table 3.6-6) along the proposed Mountain Pass Telecommunication Alternative are Quaternary Tertiary older alluvium (Qtoa), Quaternary non-marine (Qc/Qoa), and Quaternary alluvium (Qa/Qal). Another underlying rock unit present along the Mountain Pass Telecommunication Alternative is undivided Earlier Precambrian intrusive and metamorphic rocks (epC), which are of low paleontological sensitivity. As part of construction of the proposed project, the applicant would implement APMs PALEO 1 through PALEO 8. These measures (provision of a project paleontologist to oversee potential impacts; pre-construction surveys; construction worker awareness programs; construction monitoring; and recovery, testing, and curation of any significant paleontological findings) would prevent significant impacts. Therefore, impacts would be less than significant with mitigation.

3.6.4 Mitigation Measures

MM GEO-1: Monitor and Mitigate Damage to Tower Structures. SCE will contact the California Department of Water Resources and the Nevada Division of Water Resources on an annual basis to determine if groundwater withdrawals are threatening to cause ground subsidence within the project area. If subsidence threatens tower locations, SCE will develop a plan to mitigate potential damage to tower structures using standard foundation remediation techniques available.

MM GEO-2: Geotechnical Engineering Study. The applicant will prepare a geotechnical engineering study prior to the final project design to identify site-specific geological conditions and potential geologic hazards. The data collected from the study will be used to guide sound engineering practices and to mitigate potential geologic hazards.

MM GEO-3: Preparation and Implementation of SWPPP. The applicant will prepare a SWPPP for review and approval by the Lahontan Regional Water Quality Control Board (Region 6) and the Clark County Stormwater Quality Management Committee that addresses construction and post-construction project-related ground disturbances and associated erosion. The plan will provide the necessary engineering controls and procedures to minimize impact to the ground surface caused by construction, operation, and maintenance activities. A copy of the approved plan will also be submitted to the CPUC.

MM GEO-4: Expansive Soils Mitigation. The applicant will prepare a geotechnical study of the areas of expansive soil(s) identified in APM GEO-1 to develop appropriate design and mitigation measures prior to construction.

3.6.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to geology, mineral, and paleontological resources in the ISEGS FSA/DEIS prepared by the CEC and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

3.6.5.1 ISEGS Setting

The ISEGS project would be constructed on the west side of Ivanpah Valley. Existing conditions for the ISEGS project site are primarily consistent with the EITP as described in Section 3.6.1. Any discrepancies between the ISEGS project site and the EITP site are described below.

Project Site Geology

The three ISEGS power plant sections (from south to north, Ivanpah 1, 2, and 3) would be located on a broad alluvial slope of coalescing alluvial fans along the eastern flank of the Clark Mountain Range. These alluvial fans may be relatively thin near the margins where carbonate and metamorphic rock are exposed, and there is only limited data on its thickness away from these margins.

Geologic Hazards

Fault Rupture

No active faults have been identified crossing the boundary of new construction on the proposed ISEGS site or in the vicinity of the proposed gas pipeline. The potential for surface rupture on a fault at any of the three power plant sites (Ivanpah 1, 2, and 3) is very low since no faults are known to have ruptured the ground surface of the proposed ISEGS location.

Groundshaking

The intensity of seismic shaking expected in the area of the Ivanpah Substation site is consistent with the EITP site. Due to the uncertainty in the uppermost soil profile, a design-level geotechnical investigation is proposed as part of the

Condition of Certification (GEO-1) to further evaluate this potential hazard and provide appropriate seismic design parameters.

Liquefaction

The potential for liquefaction in the area of the Ivanpah Substation is consistent with the EITP site and is low within the ISEGS project area based on a soil boring in one of the power plant sites (Ivanpah 2). Due to the uncertainty of the liquefaction potential in the other two power plant sites (Ivanpah 1 and 3), a geotechnical investigation is proposed as part of the Condition of Certification (GEO-1) to further evaluate this potential hazard.

Landslides

The landslide potential at the ISEGS site is negligible since ISEGS is located on a broad, gently east-sloping alluvial fan.

Expansive Soils

The potential for expansive soils within the ISEGS project area is uncertain, although the soil encountered in the boring in power plant site Ivanpah 2 were not expansive. There are no data for the other two (Ivanpah 1 and 3) power plant areas. Due to the lack of expansion testing in power plant site Ivanpah 2, and the uncertainty of the expansion potential in the other two power plant sites (Ivanpah 1 and 3), a geotechnical investigation is proposed as part of the Condition of Certification (GEO-1) to further evaluate this potential hazard.

Collapsible Soils

The potential for collapsible soils within the ISEGS project area is uncertain, although the soils encountered in the boring in power plant site Ivanpah 2 were not susceptible to either dynamic compaction or hydrocompaction, due to their medium dense to very dense granular composition. There are no soil composition data for the other two (Ivanpah 1 and 3) power plant areas; a geotechnical investigation is proposed as part of the Condition of Certification (GEO-1) to further evaluate this potential hazard.

Mineral Resources

There are a variety of active mining operations in the general area near the ISEGS project location, but no active operations occur within the proposed ISEGS project boundaries. In addition, the general area is considered to have low potential for leasable minerals such as oil and gas. The applicant may need to move sand and gravel off site, or between different units of the facility, which would require compliance with BLM regulations (40 CFR Part 3600). Other adjacent claims along the western boundary, Limestone Hill, have two active locatable minerals claims with underground workings; the current extent is unknown, and there is no indication that these would become active economic commercial operations. The ISEGS project area is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals.

Paleontological Resources

The ISEGS project area is underlain by two surficial geologic units (Quaternary alluvium and Quaternary older alluvium). These are alluvial fan deposits developed on the base of the Clark Mountain Range. Because of the coarseness and youth of Quaternary alluvium and Quaternary older alluvium, the ISEGS FSA/DEIS rates paleontological sensitivity of this rock unit as low. Because fossil resources were found in Quaternary older alluvium in adjacent areas, the EITP DEIS rated paleontological sensitivity of this rock unit high at the Ivanpah Substation. The ISEGS FSA/DEIS notes that there would be the potential to encounter geologic units with a higher paleontological sensitivity below the alluvium during construction and site grading. The Staff rates these units (Quaternary lacustrine sediments and Paleozoic carbonate rock) as having high paleontological sensitivity. The pre-Cambrian to Cambrian metamorphic rocks have been rated as having negligible paleontological sensitivity. No paleontological resources were identified by the paleontological record searches conducted for the ISEGS project area.

Applicable Laws, Regulations, and Standards

Due to the variation in project components and location between EITP and ISEGS, different laws, regulations, and standards would apply to ISEGS than those listed in Section 3.6.2. Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with the EITP would not apply Table 3.6.7 identifies the laws, regulations, and standards that are applicable to the ISEGS project but not the EITP.

Table 3.6-7 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
Federal		
The Natural Gas Pipeline Safety Act of 1968	The Natural Gas Pipeline Safety Act of 1968 as amended through March 2006 (Title 49 Section VIII USC Chapter 601) specifies, among others, the minimum safety standards for designing, installing, constructing, initially inspecting, and initially testing a new natural gas pipeline facility. These standards include the characteristics of the material used in constructing the facility, design factors for specific locations, and the public safety factors, particularly its ability to prevent and contain a natural gas spill. The design standards for specific locations reflect site-specific geological, topographical, seismic, and soils conditions.	Natural gas pipeline
State		
CEQA, PRC Sections 15000 et seq., Appendix G	CEQA mandates that public and private entities identify the potential impacts on the environment during proposed activities. Appendix G outlines the requirements for compliance with CEQA and defines significant impacts.	Geological, soil, mineral, and paleontological resources
CPUC General Order 112-E	CPUC General Order 112-E establishes minimum requirements for the design, construction, quality of materials, locations, testing, operations and maintenance of facilities to safeguard life or limb, health, property, and public welfare and to provide that adequate service will be maintained by gas utilities operating under the jurisdiction of the CPUC.	Natural gas pipeline
Local		
San Bernardino County Ordinance Code, Title 3, Division 3, Chapter 8, Waste Management, Article 5, Liquid Waste Disposal	This ordinance requires the following compliance for all liquid waste disposal systems: (1) compliance with applicable portions of the Uniform Plumbing Code and the San Bernardino County Department of Environmental Health (DEHS) standards; (2) approval by the DEHS and building authority with jurisdiction over the system; or (3) for alternative systems, approval by the DEHS, the appropriate building official of this jurisdiction, and the appropriate California Regional Water Quality Control Board.	New septic tank and leach field
San Bernardino County Ordinance Code, Title 6, Division 3, Chapter 3, Uniform Plumbing Code	This ordinance describes the installation and inspection requirements for locating disposal/leach fields and seepage pits.	New septic tank and leach field

3.6.5.2 ISEGS Methodology

In the ISEGS FSA/DEIS, BLM and CEC staff (Staff) reported on existing conditions and assessed impacts to geology, mineral, and paleontological resources in the same section. In addition, staff evaluated the potential of the ISEGS project to restrict or remove from access potential sources of salable mineral resources. Staff considered compliance with the laws, ordinances, regulations, and standards associated with the project components and location. Staff also considered whether there would be a significant impact under CEQA using the impact criteria described in Section 3.6.3.

3.6.5.3 ISEGS Impacts

The Staff determined that construction, operation, and decommissioning of the ISEGS project could impact geologic, mineralogical, or paleontological resources. Where impacts were identified, the Staff proposed mitigation measures (Conditions of Certification) to reduce impacts to less than significant levels.

The CEC and BLM have published the following impacts related to geology, soils, minerals, and paleontological resources for the ISGES project:

Construction Impacts

Geologic hazards have been identified associated with the ISEGS project area and include strong ground shaking, liquefaction, settlement due to compressible soils, subsidence associated with shrinkage of clay soils, hydrocompaction (or dynamic compaction), and the presence of expansive clays.

The ISEGS project would directly remove approximately 4,072.5 acres from potential use for sand and gravel production under BLM's salable mineral program. The ISEGS FSA/DEIS states that this removal is not expected to have any significant impact since it represents a small fraction of the total sand and gravel resource available within the valley. In addition, the applicant may need or desire to move sand and gravel either off site or between the different units of the facility. Should this occur, the applicant would be required to comply with BLM regulations in 43 CFR Part 3600, which regulates the production and use of sand and gravel from public lands. Use of sand and gravel or other mineral materials within the boundaries of an authorized ROW is permitted; however, removal of these materials from an authorized ROW would require payment to the U.S. of the fair market value of those materials. The ISEGS project would not have any direct or indirect impact on the production of locatable or leasable minerals outside of the ISEGS project boundaries. The only potential conflict would occur if the claimant or another person located a new claim, for locatable minerals underneath the proposed project, within the project boundaries. This could occur, as the proposed project location has not been withdrawn from mineral entry. The potential for this scenario is expected to be low. If it did occur, conflicts between the surface use of the land for solar energy production and access to the subsurface minerals would be addressed in accordance with appropriate regulations. Therefore, the ISEGS FSA/DEIS states that the ISEGS project would not impact any current or reasonably foreseeable development of mineral resources.

The ISEGS FSA/DEIS states that paleontological resources are known to exist in the region but that no paleontological resources have been documented on the ISEGS site. If they were encountered, potential impacts to them from construction activities would be minimized through worker training and monitoring by qualified paleontologists. The ISEGS project would include grading, foundation excavation, utility trenching, and possibly drilled shafts. The ISEGS FSA/DEIS considers the probability of encountering paleontological resources to be generally high on portions of the site, particularly the west side of Ivanpah 3, based on the soils profile, SVP assessment criteria, and the near surface occurrence of the sensitive geologic units. The potential for encountering fossils hosted in Quaternary lake bed sediments will increase with the depth of cut. Excavations for ancillary facilities and new pipelines and onsite excavations deeper than 5 feet may have a higher probability of encountering potentially high sensitivity materials, although sensitive materials could occur nearer the surface.

Based on the literature and archives search, field surveys, and compliance documentation for the ISEGS, the applicant has proposed monitoring and mitigation measures (Conditions of Certification) to be followed during the construction of the ISEGS project. The ISEGS FSA/DEIS states that the facility can be designed and constructed to minimize the effect of geologic hazards at the site during project design life and that impacts to vertebrate fossils encountered during construction of the power plant and associated linear projects would be mitigated to a level of insignificance.

Operational Impacts

The ISEGS FSA/DEIS states that operation of the ISEGS project facilities would not have any adverse impact on geologic, mineralogical, or paleontological resources. The ISEGS FSA/DEIS also states that the potential geologic hazards, including strong ground shaking; liquefaction; settlement due to compressible soils, subsidence associated with shrinkage of clay soils, hydrocompaction, or dynamic compaction; and the presence of expansive clay soils could be effectively mitigated through facility design such that these potential hazards should not affect operation of the facility.

Decommissioning Impacts

The ISEGS project would be decommissioned at the end of its 50-year life by removing all facilities to 3 feet below grade, restoring original contours, and revegetating the site. The ISEGS FSA/DEIS states that this removal should not negatively affect geologic, mineralogical, or paleontological resources since the majority of the ground disturbed during plant decommissioning and closure would have been already disturbed, and mitigated as required, during construction and operation of the project. Facility closure would make land occupied by the proposed project once again available for potential future development of geologic or mineralogical resources within the former project borders.

3.6.5.4 ISEGS Conditions of Certification

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to related to geology, paleontology, and mineral resources if the project is approved. This document presents a summary for the ISEGS Conditions of Certification. For the complete language of the Conditions of Certification, refer to the ISEGS FSA/DEIS. Since the ISEGS document presented geology, mineral, and paleontological resources in one section, the Conditions of Certification listed below apply to these resource areas. The ISEGS documents presented soil and water resources in one chapter. The applicable Conditions of Certification for soil resources are presented in Section 3.8, “Hydrology and Water Quality.”

GEO-1 requires the ISEGS project applicant to prepare a Soils Engineering Report required that meets Section 1802A of the 2007 CBC to specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of the potential for liquefaction; settlement due to compressible soils, subsidence associated with shrinkage of clay soils, hydrocompaction, or dynamic compaction; and the presence of expansive clay soils. The report would also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present.

PAL-1 requires the project applicant to provide BLM’s Authorized Officer and the Compliance Project Manager (CPM) with the resume and qualifications of its Paleontological Resource Specialist (PRS) for review and approval. Any changes to the PRS will be approved by the BLM’s Authorized Officer and CPM.

PAL-2 requires the project applicant to provide to the PRS, BLM’s Authorized Officer, and the CPM, for approval, maps and drawings showing the footprint of the power plants, construction lay down areas, and all related facilities identifying all areas of the project where ground disturbance is anticipated. Any changes must be approved by the PRS, BLM’s Authorized Officer and CPM. A letter identifying the proposed schedule of each project power plant shall be provided to the PRS, BLM’s Authorized Officer and CPM. At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s)

PAL-3 requires, if after review of the plans provided pursuant to **PAL-2**, the PRS determines that materials with moderate, high, or unknown paleontological sensitivity could be impacted, the project applicant to ensure that the PRS prepares, and the project owner submits to BLM’s Authorized Officer and the CPM for review and approval, a PRMMP to identify general and specific measures to minimize potential impacts to paleontological resources. Approval of the PRMMP by BLM’s Authorized Officer and the CPM shall occur prior to any ground disturbance.

PAL-4 requires, if after review of the plans provided pursuant to **PAL-2**, the PRS determines that materials with moderate, high, or unknown paleontological sensitivity could be impacted then, prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project applicant and the PRS shall prepare and conduct weekly BLM Authorized Officer- and CPM-approved training for the following workers: project managers, construction supervisors, foremen and general workers involved with or who operate ground-disturbing equipment or tools.

PAL-5 requires the project applicant to ensure that the PRS and PRM(s) monitor consistent with the PRMMP all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil-bearing in the PRMMP, the project owner shall notify and seek the concurrence of BLM's Authorized Officer and the CPM.

PAL-6 requires the project applicant, through the designated PRS, to ensure that all components of the PRMMP are adequately performed including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all paleontological resource materials encountered and collected during project construction.

PAL-7 requires the project applicant to ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of the ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information, and submit it to the CPM for review and approval.

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3.7 Hazards, Health, and Safety

This section contains a description of the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to hazards and health and safety issues that may currently exist in the project area. Seismic conditions are addressed in Section 3.6, "Geology, Soils, Minerals, and Paleontology"; flooding is addressed in Section 3.8, "Hydrology and Water Quality"; emergency services and waste management are discussed in Section 3.11, "Public Services and Utilities"; and traffic is addressed in Section 3.14, "Traffic and Transportation."

3.7.1 Environmental Setting

The EITP traverses land used for various purposes including open-space recreation and preserve, residential housing, and commercial businesses. Hazardous material sites may be encountered in the area during construction and operation due to the fuel facilities, underground gas storage tanks, and pipelines in the project vicinity. Existing and past land use activities are potential indicators of hazardous material storage and use. Past and current land uses that could have resulted in unknown contamination include (1) rural residences and farms that could have old or inactive underground fuel tanks (USTs), (2) agricultural properties that could have pesticide-polluted runoff from farming operations, and (3) commercial and industrial sites (historical and current) that could have soil or groundwater contamination from unreported hazardous substance spills. The primary reason to define potentially hazardous sites is to protect the health and safety of EITP construction and operations personnel and to minimize public exposure to hazardous materials during construction and waste handling. If encountered, contaminated soil may qualify as hazardous waste, thus requiring handling and disposal according to local, state, and federal regulations.

The following are summary definitions of hazardous materials and hazardous waste:

- **Hazard:** Any naturally occurring or human-made physical condition in the surrounding environment that would pose a public safety risk.
- **Hazardous Material:** Hazardous materials can be in the form of explosives, flammable and combustible substances, poisons, radioactive materials, pesticides, and petroleum products. These substances are most often released as a result of motor vehicle or equipment accidents or because of chemical accidents during industrial use. These substances have the potential to leach into soils, surface water, and groundwater due to spills if not properly contained (Federal Emergency Management Agency [FEMA] n.d.).
- **Hazardous Waste:** A waste may be considered hazardous if it exhibits certain hazardous properties ("characteristics") or if it is included on a specific list of wastes the U.S. Environmental Protection Agency (U.S. EPA) has determined are hazardous ("listing" a waste as hazardous). U.S. EPA's regulations in the Code of Federal Regulations (CFR) define four hazardous waste characteristic properties: ignitability, corrosivity, reactivity, and toxicity (40 CFR 261.21-261.24; U.S. EPA 2010a).

Exposure to hazardous materials or wastes can occur during normal use, handling, storage, transportation, and disposal. Exposure may also occur due to hazardous compounds existing in the environment such as fuels in underground storage tanks, pipelines, or areas where chemicals have leaked into the soil or groundwater.

3.7.1.1 Hazardous Waste Sites and Permitted Facilities in California and Nevada

As required by the CEQA, the Cortese list data sources were reviewed to determine sites potentially containing hazardous material or waste near the project right-of-way (ROW) within California. The Cortese list includes hazardous waste facilities subject to corrective action, and sites designated as hazardous waste property, hazardous waste disposal areas, contaminated sites, and abandoned sites. Review of readily available online environmental databases, including the California State Water Resources Control Board (SWRCB) Geotracker (SWRCB 2010) and the California Department of Toxic Substances Control (DTSC) EnviroStor (DTSC 2009) databases, indicates there are two hazardous facilities sites in California and Nevada (Table 3.7-1).

Table 3.7-1 Hazardous Waste Facilities in California and Nevada

Site Name	Address	City, County, State	Site/Facility Type	Cleanup Status	Distance from Proposed Route	Distance from Nearest Alternative
Molycorp – Mountain Pass	PO Box 124	Mountain Pass, San Bernardino County, California	Cleanup Program Site	Open Case (Site Assessment) The Molycorp Mine, a lanthanide mining and milling operation, discharged contaminated wastewater to the Ivanpah Dry Lake between 1980 and 1998. An agreement with the RWQCB requires cleanup and abatement of a groundwater plume that developed below the discharge points.	<6.5 miles (actual distance is undetermined)	Near the Mountain Pass Telecom. Alternative
Biogen Power Plant	Off I-15, near Ivanpah	Primm, Clark County, Nevada	Land Disposal Site	Closed Case	The landfill is closed and is located underneath the Primm Golf Course (greater 0.4 miles from the project)	Near the Primm Golf Course Telecom. Alternative

Source: https://Geotracker.Waterboards.Ca.Gov
Key:
RWQCB = Regional Water Quality Control Board

Molycorp Mine

The Molycorp Mine was originally opened in the early 1950s near the town of Mountain Pass, California, and is an active lanthanide mining and milling operation. According to the Toxic Release Inventory Database, the Molycorp Mine emits air quality contaminates, but there are no surface water discharges and no underground injection. Lead compounds are shipped off-site for disposal (EPA 2010a). The Molycorp Mine has a history of contamination. Under a 1994 settlement, Molycorp agreed to close the drum yard and the concrete casting and staging areas at the Mountain Pass Facility in order to remove all drummed wastes and close all lead waste impacted areas. By the end of 2003, DTSC Geology, Permitting, and Corrective Action Branch accepted the closure certification of these units and released Molycorp from closure financial responsibility (DTSC 2010). According to Envirostor, the Molycorp Mountain Pass Facility currently has a non-operating hazardous waste facility (DTSC 2010). There is also groundwater contamination associated with the on-site evaporation pond (Cass 2010).

The Mountain Pass Telecommunication Alternative follows the route of the Molycorp wastewater pipeline down the mountain, and both the Mountain Pass and Golf Course Telecommunication Alternatives follow its path along a portion of Nipton Road. The Molycorp Pipeline also has a history of contamination. Between 1984 and 1993, Molycorp reported over 40 spills from the pipeline, totaling 727,000 gallons. In 1996, there were at least 11 spills from pipeline ruptures, totaling in excess of 350,000 gallons. Some of the waste contained heavy metals and low levels of radioactivity, up to 100 times acceptable (background) levels. In 1997, the Lahontan Regional Water Quality Control Board (RWQCB) issued Cleanup and Abatement Order 6-97-66, and Molycorp completed the cleanup in 1998. More than half of the wastes were radioactive. In 1998, the Lahontan RWQCB issued orders requiring Molycorp to cease disposing of and clean up radioactive and hazardous waste in ponds on the playa and at the mill site and subsequently identified additional areas of the pipeline that required remediation and developed a plan for pipeline removal. Following a civil suit from county prosecutors for violating state drinking water safety laws, Molycorp temporarily suspended operations at the mine and mill in September 1998 until environmental reviews were complete and a solution to its wastewater issues was reached (EPA 2010b). Much of the contamination along the pipeline has been removed (Cass 2010).

Contamination has also occurred at the evaporation pond sites. The wastewater pipeline discharged to two different sets evaporation ponds. From 1980 to 1987, wastewater was discharged to the Old Ivanpah Evaporation Ponds located approximately 10 miles east of the mine along Nipton Road. Operations at the Old Ivanpah Evaporation Ponds were discontinued when it was discovered that the underlying groundwater was contaminated with total dissolved solids, nitrate, and strontium that appeared to be related to the ponds. In 1987, wastewater discharge was moved to the New Ivanpah Evaporation Ponds, located approximately three miles north of the Old Ivanpah Evaporation Ponds near the center of the Ivanpah Playa. The New Ivanpah Evaporation Ponds location was selected based on naturally poor groundwater quality (high saline and total dissolved solids) that exists beneath the dry lakebed. The wastewater discharged to the New Ivanpah Evaporation Ponds contained elevated total dissolved solids, primarily chloride and sodium with lower concentrations of strontium, nitrate, barium, lead, and radionuclides. The media of concern at the New Ivanpah Evaporation Ponds is surface soils and groundwater. The New Ivanpah Evaporation Ponds has not been formally closed. Groundwater monitoring for total dissolved solids, nitrates/nitrites, strontium, and lead is on-going around the New Ivanpah Evaporation Ponds (Arcadis 2009).

Other Potential Hazardous Materials Sites

The Golf Course Telecommunication Alternative could cross two sites that contain potentially hazardous materials. The Biogen Power Plant, a closed land disposal site, is buried underneath the Primm Golf Course in Primm, Nevada, near milepost (MP) 6 of the telecommunication line. In addition, there are several non-contaminated permitted facilities including gas stations, underground storage tanks (USTs) and land disposal sites near the project ROW and the proposed alternatives. The USTs and land disposal sites are located in both California and Nevada (see Table 3.7-2).

In addition, an underground storage tank may be located at the southeast quadrant of the Interstate 15 (I-15)/Yates Well Road interchange in Nipton, California, near MP 4 of the Golf Course Telecommunication Alternative; a house trailer is currently located at the site (CEC and BLM 2009). Although this site was not listed as a contaminated site and additional information is not known, the site will be reviewed as part of the Phase 1 Environmental Site Assessment for the project. Additional potential sources of contamination to soil and water could pertain to the transport, use, storage, and disposal of fuels and chemicals that would be used for construction and operation activities. The applicant, Southern California Edison (SCE), has committed to conducting Phase I Environmental Site Assessment studies in areas of planned ground disturbance prior to project construction to identify potential contamination in areas to be graded or excavated as part of the proposed project.

3.7.1.2 Airports

Aboveground transmission lines may pose a threat to aviation safety if they are near airports or flight paths. Currently, the Jean Sport Aviation Center is the only operating airport in the project area. Additionally, the Clark County Department of Aviation (CCDOA) is proposing to build the Southern Nevada Supplemental Airport (SNSA) and the Southern Nevada Regional Heliport near the proposed project.

Table 3.7-2 Permitted Facilities (UST and Disposal) in California and Nevada

Site Name	Address	City	Site/Facility Type	Cleanup Status	Distance from Proposed Route	Distance from Nearest Alternative
San Bernardino County, California [a, b]						
Atc-Mountain Pass #89344	Bailey Road 16n 13e Sec11	Mountain Pass	Permitted UST	Active Permit	5.3 miles west-southwest of Ivanpah Substation terminus	Approx. 0.5 miles west of Mountain Pass Telecom. Alternative
North Tailing Pond P-16 (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
Community & Co Landfills (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
Mountain Pass Mine & Mill Ops (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
New Ivanpah Dry Lake Evap. Pond (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
Onsite Evap. Ponds (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
Old Evap Pond Closure (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
Mountain Pass P-1 Closure (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
East Tailings Pond (at Molycorp facility)	67750 Bailey Road	Mountain Pass	Land Disposal Site	Open	6.5 miles south of MP 1	0.35 miles north of the Mountain Pass Telecom. Alternative
St-Cal Trans/Mtn Pass	94200 Clark Mountain Road	Nipton	Permitted UST	Active Permit		In ROW of the Mountain Pass Telecom. Alternative
Hidden Hills Lake Test Site[2]	Near Ivanpah Dry Lake	Ivanpah	Military Facility		0.6 miles from MP 31	MP 5 from Alt C.

Table 3.7-2 Permitted Facilities (UST and Disposal) in California and Nevada

Site Name	Address	City	Site/Facility Type	Cleanup Status	Distance from Proposed Route	Distance from Nearest Alternative
Clark County, Nevada [c]						
Primm Valley Texaco	31960 Las Vegas Blvd. South	Primm	Permitted UST	Active Permit	0.25 miles northwest of MP 28	0.5 miles southwest of Alternative C. 0.9 miles west of Alternative D and Subalternative E
Whiskey Pete's Chevron Truck Stop	115 W. Primm Blvd.	Primm	UST for Diesel and Gasoline		0.5 miles east of MP 28	0.8 miles from Alternative E and Subalternative D
Primm Valley Texaco	31960 Las Vegas Blvd. South at Primadonna Hotel & Casino	Primm	UST for Diesel and Gasoline		0.3 miles east of MP 28	0.8 miles from Alternative D and Subalternative E
Primm Valley Travel Center	31900 South Las Vegas Blvd.	Jean	Permitted UST	Active Permit	0.25 miles northwest of MP 28	0.5 miles southwest of Alternative C. 0.9 miles west of Alternative D and Subalternative E
Gold Strike Auto/Truck Plaza	Goodsprings Rd, Hwy 53	Jean	UST for Diesel and Gasoline		6.0 miles northwest of MP 14	12 miles from Alternative D and Subalternative E
Jean Fuel West Shell	2 Goodsprings Rd	Jean	UST for Gasoline		6.0 miles northwest MP 14	12 miles from Alternative D and Subalternative E
South Jean Quarry	Township 26 S Range 60 E Section 06	Jean	Permitted UST Diesel*	Active Permit	Approx. 0.5 miles northwest of MP 19 and 20	Approx. 7.2 miles northeast of Alternatives C, D, and E.

Sources:
[a] https://Geotracker.Waterboards.Ca.Gov
[b] http://www.envirostor.dtsc.ca.gov/public
[c] Nevada Division of Environmental Protection 2009a
* Storage tanks are not federally regulated USTs. Examples of non-regulated tanks are ASTs, farm tanks, and residential tanks.
Key:
MP = Milepost
UST = Underground storage tank

Jean Sport Aviation Center

The Jean Sport Aviation Center is 20 miles south of Las Vegas off of I-15. This public airport, also known as the Jean Airport, is owned and managed by the Clark County Department of Aviation (CCDOA 2006). It is mainly used for sports aviation such as gliding and skydiving. The airport is approximately 5 miles (26,400 feet) north of the proposed project, near MP 20.

Proposed Southern Nevada Supplemental Airport

The proposed SNSA airport, also known as the Ivanpah Valley Airport, would be located south of Jean, Nevada, northwest of the EITP. If approved, the proposed SNSA boundary would be located within 0.5 miles (2,640 feet) north of the MP 26 of the EITP 230-kV transmission line. Additionally, the EITP would cross the Ivanpah Airport Environs Overlay as discussed in Section 3.9, "Land Use." The proposed SNSA is expected to be operational in year 2020, after the scheduled completion of the EITP, which is projected to be operational in 2013. The exact locations of SNSA components, such as runways and navigational equipment, are unknown pending project approval, although several alternatives have been proposed (CCDOA 2006). The SNSA is currently undergoing environmental review and an EIS is being prepared jointly by the BLM and the Federal Aviation Administration (FAA). The EIS is projected to be complete by the fourth quarter of 2012 (FAA and BLM n.d.). For more information about the SNSA land transfer, see Section 3.9, "Land Use."

Proposed Southern Nevada Regional Heliport

The Southern Nevada Regional Heliport is proposed to be located east of I-15 on a vacant, unincorporated Clark County parcel, 5 miles south of Saint Rose Parkway. The proposed heliport would be built to accommodate the demand for helicopter tour services in the Las Vegas area (Southern Nevada Regional Heliport n.d.). The proposed Southern Nevada Regional Heliport would be located approximately 8 miles (42,240 feet) north of the EITP, closest to MP 14 of the proposed transmission line.

Private Airports

There are no private airstrips located within the vicinity of the proposed project.

3.7.1.3 Schools

There are no schools within 50 miles of the proposed project.

3.7.1.4 Emergency Evacuation Routes

Emergency evacuation routes in the Desert region of San Bernardino County are as follows: Interstates 15 and 40, US 95 and 395, and State Routes (SRs) 18, 58, 62, 127, 138, 178, and 247 (SB County 2007b). The emergency evacuation routes in the Desert region of Clark County, Nevada, are as follows: I-15, SRs 164, 161, and 604, and US 95 (Clark County). Further discussion of transportation routes may be found in Section 3.14, "Transportation and Traffic."

The existing 115-kV transmission line aerially spans I-15 in the vicinity of MP 29. The proposed transmission line and telecommunications Path 1 would also span I-15 in the vicinity of MP 29. Transmission Alternative Routes C and D and Subalternative E, and the Golf Course Telecommunications Alternative, would span I-15. The Eldorado Substation and Transmission Alternative Routes A and B would be located in remote areas and would not affect routes identified in emergency response or evacuation plans.

3.7.1.5 Emergency Response Plans

San Bernardino County, California

The San Bernardino Hazardous Waste Management Plan (HWMP) was adopted by the County of San Bernardino Board of Supervisors and approved by the California Department of Health Services in February 1990. The HWMP identifies the types and amounts of wastes generated in the county; establishes programs for managing these wastes; identifies an application review process for siting specified hazardous waste facilities; identifies mechanisms for reducing the amount of waste generated in the county; and identifies goals, policies, and actions for achieving effective hazardous waste management (SB County 2009).

The State Secretary for Environmental Protection designates an agency to serve as the Certified Unified Program Agency (CUPA) for each county. The CUPA structure is designed to focus management of certain environmental programs at the local government level, reducing overlapping and sometimes conflicting requirements that arise if different governmental agencies independently manage health and hazards programs. More specifically, the CUPA program consolidates, coordinates, and uniformly and consistently administers permits, inspection activities, and enforcement activities. CUPAs are charged with providing a comprehensive and balanced environmental management approach to resolve issues using both education and enforcement to minimize risk to human health and the environment and promote fair business practices.

The CUPA for San Bernardino County (except the city of Victorville) is the Hazardous Materials Division of the County Fire Department. The Fire Department manages six hazardous material and hazardous waste programs, which are:

- Hazardous Materials Release Response Plans and Inventory (Business Plan)
- California Accidental Release Program
- Underground Storage Tanks
- Aboveground Petroleum Storage Act/Spill Prevention, Control, and Countermeasure (SPCC)
- Hazardous Waste Generation and Onsite Treatment
- Hazardous Materials Management Plans and Inventory Statements under Uniform Fire Code Article 80

The County Fire Department is also responsible for the continued update of emergency evacuation plans for wildland fire incidents as an extension of the agency's responsibility for Hazard Mitigation Planning in San Bernardino County.

Clark County Hazardous Materials Emergency Response Plan

The Clark County Hazardous Materials Emergency Response Plan (Clark County 2008) establishes guidelines for responding to hazardous material incidents throughout the county. The plan provides emergency response procedures and evacuation plans for dealing with accidental chemical releases and establishes notification procedures for response. The plan also provides information on how to notify the public and on emergency equipment available to the community if an accidental release occurs. A training schedule for local emergency response workers is outlined, and community and facility coordinators are designated. The responsibility for control of hazardous materials lies with the owner; however, if an incident results in loss of control of a hazardous material, local governments must take action to limit the effect on life, property, and the environment.

Clark County Multi-Jurisdictional Hazard Mitigation Plan

The Clark County Multi-Jurisdictional Hazard Mitigation Plan establishes a strategy to implement improvements and programs to reduce community and regional impacts in the event of a natural disaster. The Hazard Mitigation Plan identifies the potential hazards, the extent of the risks posed by the hazards, the vulnerabilities of each jurisdiction to these hazards, and actions that are currently in place or would be initiated to mitigate or reduce the potential impact of the hazards The Clark County Fire Department is the lead agency for hazardous events. The Clark County and Las Vegas Fire Departments are responsible for the continued update of emergency evacuation plans for wildland fire incidents as an extension of the agency's responsibility for Hazard Mitigation Planning in Clark County (Clark County 2005).

3.7.1.6 Electromagnetic Fields

Due to public concern about electromagnetic fields (EMFs), this section defines the phenomenon and presents a summary of research about EMFs to inform both the public and decision-makers. Health effects from exposure to the electrical field component of EMFs from power lines is typically not of concern, since these fields are effectively shielded by materials such as trees and walls. Therefore, most of the following information focuses on exposure to magnetic fields from power lines. Moreover, the CPUC does not consider EMFs, in the context of CEQA, as an environmental impact because there is no agreement among scientists that EMFs create a potential health risk and because CEQA does not define or adopt standards for defining any potential risk from EMFs.

Defining Electric and Magnetic Fields

Electric and magnetic fields are components of electromagnetic fields. Electric fields are produced by stationary electric charges, and magnetic fields are produced by moving electrical charges. Naturally occurring electromagnetic fields produced by weather and the Earth's geomagnetic field are not of concern. Electric and magnetic fields are also caused by human activity such as communications, appliances, and the generation, transmission, and local distribution of electricity. Both types of fields exist near power lines.

The frequency of a power line is determined by the rate at which electric and magnetic fields change their direction each second. For power lines in the United States, the frequency of change is 60 times per second, or 60 Hertz (Hz). In Europe and many other countries, the frequency of electric power is 50 Hz. Radio and communication waves operate at much higher frequencies, 500,000 to 1 billion Hz. The information presented in this document is limited to the EMFs from power lines operating at frequencies of 50 or 60 Hz.

Electric power flows across transmission systems from generating sources to serve electrical loads (demands) within the community. The apparent power (measured in multiples of watts) passing through a transmission line is determined by the transmission line's voltage and the current, which is measured in amperes, or amps. The higher the voltage of the transmission line, the lower the amount of current needed to deliver the same amount of power. For example, a 115-kV transmission line with 200 amps of current will transmit approximately 40,000 kilowatts (kW) of power, but a 230-kV transmission line requires only 100 amps of current to deliver the same 40,000 kW.

Electric Fields

Electric fields from power lines are created whenever the lines are energized, with the strength of the field directly dependent on the voltage of the line creating it. Electric field strength is typically described in terms of kilovolts per meter (kV/m). Electric field strength is attenuated (reduced) rapidly as the distance from the source increases. Electric fields are attenuated at many receptors because they are effectively shielded by most objects such as trees, houses, or the human body. Measuring an electric field with instruments is difficult because the devices themselves alter the levels recorded. Determining an individual's exposure to electric fields requires understanding of many variables, including the electric field itself, how effectively the person is grounded, and his or her body surface area within the electric field.

Electric fields in the vicinity of power lines can cause the same phenomenon as the static electricity experienced on a dry winter day, or with clothing just removed from a clothes dryer, and may result in small nuisance electric discharges when a person touches long metal fences, pipelines, or large vehicles. Electric shock may occur if people come into contact with energized wires, which generally occurs accidentally.

Magnetic Fields

Magnetic fields from power lines are created whenever current flows through power lines. The strength of the field is directly dependent on the current in the line. Magnetic field strength is typically measured in milliGauss (mG). Similar to electric fields, magnetic field strength attenuates rapidly with distance from the source. However, unlike electric fields, magnetic fields are not easily shielded by objects or materials.

The nature of a magnetic field can be illustrated by considering a household appliance. When the appliance is energized by being plugged into an outlet but not turned on, no current flows through it. Under such circumstances, an electric field is generated around the cord and appliance, but no magnetic field is present. If the appliance is switched on, the electric field would still be present and a magnetic field would also be created. The electric field strength is directly related to the magnitude of the voltage from the outlet, and the magnetic field strength is directly related to the magnitude of the current flowing in the cord and appliance.

EMFs in the Proposed Project Area

Subtransmission Lines

The project consists of replacing approximately 35 miles of single-circuit 115-kV subtransmission with 35 miles of 230-kV transmission line. With the exception of a short segment of the transmission line that would run adjacent to the city of Primm, Nevada, near the Desert Oasis Apartment Complex, the line is located in undeveloped, rural areas.

In undeveloped and natural areas, measurable EMFs are not present except in the vicinity of existing power line corridors. Public exposure to EMFs from power lines in undeveloped areas is limited, primarily due to the absence of the public; however, periodic and transient uses of these areas for activities such as recreation would result in public exposure to EMFs when people were in the vicinity of existing electric transmission lines.

In developed areas, public exposure to EMFs is more widespread and encompasses a very broad range of field intensities and durations. In the developed areas of the proposed 230-kV route, EMFs are prevalent from the use of electronic appliances or equipment and existing electric distribution lines. In general, distribution lines exist throughout developed portions of the community and are the predominant source of public exposure to power line EMFs except in the immediate vicinity of transmission corridors.

The proposed transmission line and telecommunications system would cross lands in Boulder City and Primm, Nevada, and predominantly undeveloped land managed by the BLM. Most land that would be crossed by the proposed transmission line and telecommunications system is undeveloped, including the land under the jurisdiction of Boulder City.

Substations

At substations, station buswork, substation equipment, and subtransmission and distribution lines all contribute electromagnetic fields to the immediate environment. However, the most significant contributors to the EMFs are the transmission, subtransmission, and distribution lines. Therefore, the transmission line magnetic fields described above are also produced in the immediate area of substations.

The project substation would be located on undeveloped land managed by the BLM. The proposed Ivanpah Substation would be approximately 2 miles from the Primm Valley Golf Course and approximately 6 miles from Primm, Nevada.

Scientific Background and Regulations Applicable to EMFs

EMF Research

The potential health effects of EMFs from power lines have been researched for more than 20 years. Earlier studies focused primarily on interactions with the electric fields from power lines. In the late 1970s, magnetic field interactions began to receive additional public attention and research levels have increased. A substantial amount of research investigating both electric and magnetic fields has been conducted over the past several decades; however, much of the body of national and international research on EMFs and public health risks remains contradictory or inconclusive.

Extremely low frequency (ELF) fields are known to interact with tissues by inducing electric fields and currents in these fields. However, the electric currents induced by ELF fields commonly found in our environment are normally much lower than the strongest electric currents naturally occurring in the body such as those that control the beating of the heart.

Research related to EMFs can be grouped into three general categories: cellular level studies, animal and human experiments, and epidemiological studies. These studies have provided mixed results, with some studies showing an apparent relationship between magnetic fields and health effects and other similar studies not showing a relationship.

Since 1979, public interest and concern specifically focused on magnetic fields from power lines has increased. This increase has generally been attributed to publication of the results of a single epidemiological study (Wertheimer and Leeper 1979). This study observed an association between the wiring configuration on electric power lines outside of homes in Denver and the incidence of childhood cancer. Following publication of the Wertheimer and Leeper study, many epidemiological, laboratory, and animal studies of EMFs have been conducted. Research on ambient magnetic fields in homes and buildings in several western states found average magnetic field levels within most rooms to be approximately 1 mG, while in a room with appliances present, the measured values ranged from 9 to 20 mG (Severson et al. 1988, Silva 1988). Immediately adjacent to appliances (within 12 inches), field values are much higher, as illustrated in Tables 3.7-3 and 3.7-4. These tables indicate typical sources and levels of electric and magnetic field exposure the general public experiences from appliances.

Table 3.7-3 Typical Electric Field Values for Appliances, at 12 Inches Distance

Appliance	Electric Field Strength (kV/m)
Electric Blanket	0.25*
Broiler	0.13
Stereo	0.09
Refrigerator	0.06
Iron	0.06
Hand Mixer	0.05
Phonograph	.04
Coffee Pot	.03
* 1–10 kV/m next to blanket wires	

Source: Enertech 1985
Key: kV/m = Kilovolts per meter

Table 3.7-4 Magnetic Fields from Household Appliances

Appliance	Magnetic Field (mG) 12” Distant	Magnetic Field (mG) Maximum
Electric Range	3–30	100–1,200
Electric Oven	2–25	10–50
Garbage Disposal	10–20	850–1,250
Refrigerator	0.3–3	4–15
Clothes Washer	2–20	10–400

Table 3.7-4 Magnetic Fields from Household Appliances

Appliance	Magnetic Field (mG) 12" Distant	Magnetic Field (mG) Maximum
Clothes Dryer	1–3	3–80
Coffee Maker	0.8–1	15–250
Toaster	0.6–8	70–150
Crock Pot	0.8–1	15–80
Iron	1–3	90–300
Can Opener	35–250	10,000–20,000
Mixer	6–100	500–7,000
Blender, popper, processor	6–20	250–1,050
Vacuum Cleaner	20–200	2,000–8,000
Portable Heater	1–40	100–1,100
Fan/Blower	0.4–40	20–300
Hair Dryer	1–70	60–20,000
Electric Shaver	1–100	150–15,000
Color TV	9–20	150–500
Florescent Fixture	2–40	140–2,000
Florescent Desk Lamp	6–20	400–3,500
Circular Saw	10–250	2,000–10,000
Electric Drill	25–35	4,000–8,000

Source: Gauger 1985

Methods to Reduce EMF

EMF levels from transmission lines can be reduced in three primary ways: shielding, field cancellation, or increasing the distance from the source. Shielding, which reduces exposure to electric fields but not to magnetic fields, can be actively accomplished by placing trees or other physical barriers along the transmission line ROW. Shielding also results from existing structures the public may use or occupy along the line.

Magnetic fields can be reduced either by cancellation or by increasing distance from the source. Cancellation is achieved in two ways. A transmission line circuit consists of three "phases": three separate wires (conductors) on a transmission tower. The configuration of these three conductors can reduce magnetic fields. First, when the configuration places the three conductors closer together, the interference or cancellation of the fields from each wire is enhanced. This technique has practical limitations because of the potential for short circuits if the wires are placed too close together. There are also worker safety issues to consider if spacing is reduced. Second, in instances where there are two circuits (more than three phase wires), such as in portions of the Project, cancellation can be accomplished by arranging phase wires from the different circuits near each other. In underground lines, the three phases are typically much closer together than in overhead lines because the cables are insulated (coated).

The distance between the source of fields and the public can be increased either by placing the wires higher aboveground, burying underground cables deeper, or increasing the width of the ROW. For transmission lines, these methods can prove effective in reducing fields because the reduction of the field strength drops rapidly with distance.

Scientific Panel Reviews

Numerous panels of expert scientists have convened to review the data relevant to the question of whether exposure to power-frequency EMFs is associated with adverse health effects. These evaluations have been conducted in order to advise governmental agencies or professional standard-setting groups. These panels of scientists first evaluate the available studies individually, not only to determine what specific information they can offer, but also to assess the validity of their experimental design, methods of data collection, analytical rigor, and conclusions relative to the nature and quality of the data presented. Subsequently, the individual studies, with their previously identified strengths and weaknesses, are evaluated collectively in an effort to identify whether there is a consistent pattern or trend in the data that would lead to a determination of possible or probable hazards to human health resulting from exposure to these fields.

These reviews include those prepared by international agencies such as the World Health Organization (WHO) (WHO 1984, 1987, and 2001), as well as governmental agencies of a number of countries, such as the U.S. EPA, the National Radiological Protection Board of the United Kingdom, the Health Council of the Netherlands, and the French and Danish Ministries of Health. As explained further below, these scientific panels have varied conclusions on the strength of the scientific evidence suggesting that power-frequency EMF exposures pose any health risk.

In May 1999, the National Institute of Environmental Health Sciences (NIEHS) submitted to Congress its report, Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, containing the following conclusion on EMFs and health effects:

> "Using criteria developed by the International Agency for Research on Cancer (IARC), none of the Working Group considered the evidence strong enough to label ELF-EMF exposure as a known human carcinogen or probable human carcinogen. However, a majority of the members of this Working Group concluded that exposure to power-line frequency ELF-EMF is a possible carcinogen."

In June 2001, a scientific working group of IARC (an agency of WHO) reviewed studies related to the carcinogenicity of EMFs. Using standard IARC classification, magnetic fields were classified as "possibly carcinogenic to humans" based on epidemiological studies. "Possibly carcinogenic to humans" is a classification used to denote an agent for which there is limited evidence of carcinogenicity in humans and less than sufficient evidence of carcinogenicity in experimental animals. Other agents identified as "possibly carcinogenic to humans" include gasoline exhaust, styrene, welding fumes, and coffee (WHO 2001).

On behalf of the CPUC, the California Department of Health Services (DHS) completed a comprehensive review of existing studies related to EMFs from power lines and potential health risks. This risk evaluation was undertaken by three DHS staff scientists from 2000 to 2002. Each of these scientists is identified in the review results as an epidemiologist. The results of this review, An Evaluation of the Possible Risks from EMFs from Power Lines, Internal Wiring, Electrical Occupations, and Appliances, were published in June 2002. The conclusions were:

- To one degree or another, all three of the DHS scientists are inclined to believe that EMFs can cause some degree of increased risk of childhood leukemia, adult brain cancer, Lou Gehrig's Disease, and miscarriage.
- They strongly believe that EMFs do not increase the risk of birth defects or low birth weight.
- They strongly believe that EMFs are not universal carcinogens, since there are a number of cancer types that are not associated with EMF exposure.
- To one degree or another they are inclined to believe that EMFs do not cause an increased risk of breast cancer, heart disease, Alzheimer's Disease, depression, or symptoms attributed by some to sensitivity to EMFs. However, all three scientists had judgments that were "close to the dividing line between believing and not believing" that EMFs cause some degree of increased risk of suicide.
- For adult leukemia, two of the scientists are "close to the dividing line between believing or not believing" and one was "prone to believe" that EMFs cause some degree of increased risk.

The report indicates that the DHS scientists are more inclined to believe that EMF exposure increases the risk of the above health problems than the majority of the members of scientific committees that have previously convened to evaluate the scientific literature. Addressing why the DHS review's conclusions differ from those of other recent reviews, the report states:

> "The three DHS scientists thought there were reasons why animal and test tube experiments might have failed to pick up a mechanism or a health problem; hence, the absence of much support from such animal and test tube studies did not reduce their confidence much or lead them to strongly distrust epidemiological evidence from statistical studies in human populations. They therefore had more faith in the quality of the epidemiological studies in human populations and hence gave more credence to them." (DHS 2002)

While the results of the DHS report indicate these scientists believe that EMFs can cause some degree of increased risk for certain health problems, the report did not quantify the degree of risk or make any specific recommendations to the CPUC.

In addition to the uncertainty about the level of health risk posed by EMFs, individual studies and scientific panels have not been able to determine or reach consensus on what level of magnetic field exposure might constitute a health risk. In some early epidemiological studies, increased health risks were discussed for daily time-weighted average field levels greater than 2 mG. However, the IARC scientific working group indicated that studies with average magnetic field levels of 3 to 4 mG played a pivotal role in their classification of EMFs as a possible carcinogen.

Policies, Standards, and Regulations

A number of counties, states, and local governments have adopted or considered regulations or policies related to EMF exposure. The reasons for these actions have been varied; in general, however, the actions can be attributed to addressing public reaction to and perception of EMFs, as opposed to responding to the findings of any specific scientific research. Following is a summary of the guidelines and regulatory activity regarding EMFs.

International Guidelines

The International Radiation Protection Association, in cooperation with WHO, has published recommended guidelines (INRC 1998) for electric and magnetic field exposures. For the general public, the limits are 4.2 kV/m for electric fields, and 833 mG for magnetic fields. Neither of these organizations has any governmental authority or recognized jurisdiction to enforce these guidelines. However, because they were developed by a broad base of scientists, these guidelines are considered by utilities and regulators when reviewing EMF levels from electric power lines.

National Guidelines

Although the U.S. EPA has conducted investigations into EMFs related to power lines and health risks, no national standards have been established. There have been a number of studies sponsored by the U.S. EPA, the Electric Power Research Institute (EPRI), and other institutions. Several bills addressing EMFs have been introduced at the congressional level and have provided funding for research; however, no bill has been enacted that would regulate EMF levels.

The 1999 NIEHS report to Congress suggested that the evidence supporting EMF exposure as a health hazard was insufficient to warrant aggressive regulatory actions. The report did suggest passive measures to educate the public and regulators on means aimed at reducing exposures. NIEHS also suggested the power industry continue its practice of siting lines to reduce public exposure to EMFs and explore ways to reduce the creation of magnetic fields around lines.

State Guidelines

Several states have adopted limits for electric field strength within transmission line ROWs. Florida and New York are the only states that currently limit the intensity of magnetic fields from transmission lines. These regulations include limits within the ROW as well as at the edge of the ROW and cover a broad range of values. Table 3.7-5 lists the states regulating EMFs and their respective limits. The magnetic field limits were based on an objective of preventing field levels from increasing beyond levels currently experienced by the public and are not based upon any link between scientific data and health risks (Morgan 1991).

Table 3.7-5 EMF Regulated Limits (by State)

State	Electric Field (kV/M)	Magnetic Field (mG)	Location	Application
Florida (codified)	N/A	N/A	N/A	N/A
500-kV lines	10		In ROW	Single-circuit
	2	200	Edge of ROW	Single-circuit
	2	250	Edge of ROW	Double-circuit
230-kV Lines or less	8	N/A	In ROW	N/A
	2	150	Edge of ROW	230 kV or less
Minnesota	8	N/A	In ROW	>200 kV
Montana (codified)	1 7	N/A	Edge of ROW In ROW	>69 kV Road crossings
New Jersey	3	N/A	Edge of ROW	Guideline for complaints
New York	1.6 7 11 11.8	200 N/A N/A	Edge of ROW In ROW In ROW In ROW	>125 kV, >1 mile Public roads Public roads Other terrain
North Dakota	9	N/A	In ROW	Informal
Oregon (codified)	9	N/A	In ROW	230-kV, 10 miles

Source: Public Utilities Commission of Texas

Elsewhere in the United States, several agencies and municipalities have taken various actions related to EMF policies. These actions have included requirements that EMFs be considered in the siting of new facilities. In a few instances, a concept referred to as "prudent avoidance" has been formally adopted. Prudent avoidance, a concept proposed by Dr. Granger Morgan of Carnegie-Mellon University, is defined as ". . . limiting exposures which can be avoided with small investments of money and effort" (Morgan 1991). Some municipalities or regulating agencies have proposed limitations on field strength, requirements for siting lines away from residences and schools, and, in some instances, moratoria on the construction of new transmission lines. The origin of these individual actions has been varied, with some initiated by regulators at the time of new transmission line proposals within their community and some by public grass-roots efforts.

California Department of Education's Standards for Siting New Schools Adjacent to Electric Power Lines Rated 50 kV and Above

The California Department of Education (CDE) evaluates potential school sites under a range of criteria, including environmental and safety issues. There are no EMF guidelines that apply to existing school sites; information is presented here on guidelines for new school siting in order to demonstrate the range of existing guidelines that address EMFs. Exposures to power-frequency EMFs are one of the criteria. CDE has established the following setbacks for locating any part of a school site property line near the edge of easements for any electrical power lines rated 50 kV and above:

- 100 feet for lines from 50 to 133 kV

- 150 feet for lines from 220 to 230 kV
- 350 feet for lines from 500 to 550 kV

School districts that have sites that do not meet the CDE setbacks may still obtain construction approval from the state by submitting an EMF mitigation plan. The mitigation plan should consider possible reductions of EMF exposures from all potential sources, including power lines, internal wiring, office equipment, and mechanical equipment.

CPUC Guidelines

In 1991, the CPUC initiated an investigation into electric and magnetic fields associated with electric power facilities. This investigation explored the approach to potential mitigation measures (MMs) for reducing public health impacts and possible development of policies, procedures, or regulations. Following input from interested parties, the CPUC implemented a decision (D.93-11-013) that requires that utilities use "low-cost or no-cost" MMs for facilities requiring certification under General Order 131-D. The decision directed the utilities to use a 4% benchmark on the low-cost mitigation. This decision also implemented a number of EMF measurement, research, and education programs, and provided the direction that led to preparation of the DHS study described above. The CPUC did not adopt any specific numerical limits or regulations on EMF exposure levels related to electric power facilities.

In Decision D.93-11-013, the CPUC addressed mitigation of EMFs of utility facilities and adopted the following recommendations:

- No-cost and low-cost steps to reduce EMF levels
- Workshops to develop EMF design guidelines
- Uniform residential and workplace programs
- Stakeholder and public involvement
- A four-year education program
- A four-year non-experimental and administrative research program
- An authorization of federal experimental research conducted under the National Energy Policy Act of 1992.

Most recently, the CPUC issued Decision D.06-01-042, on January 26, 2006, affirming the low-cost/no-cost policy to mitigate EMF exposure from new utility transmission and substation projects. This decision also adopted rules and policies to improve utility design guidelines for reducing EMF. The CPUC stated "at this time we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences." The CPUC has not adopted any specific limits or regulation on EMF exposure related to electric power facilities.

3.7.1.7 Other Safety Considerations

Transmission line structures used to support overhead transmission lines must meet the requirements of the CPUC, General Order No. 95, Rules for Overhead Electric Line Construction. Transmission support structures are designed to withstand different combinations of loading conditions including extreme winds. This design code and the National Electrical Safety Code include loading requirements related to wind conditions. Failures of transmission line support structures are extremely rare. Earthquake conditions could result in damage or faults to underground transmission lines; however, the project would be designed for dynamic loading under variable wind conditions that generally exceed earthquake loads; seismic conditions are discussed under Section 3.8, "Geology, Soils, Minerals, and Paleontology."

Pipeline Crossings

The proposed Eldorado–Ivanpah Transmission Line would be near or immediately adjacent to various pipelines that transmit gasoline, diesel, jet fuel, and natural gas (Clark County 2006b). There are also at least three major gas pipelines buried underground in both California and Nevada that may be located near the transmission ROW. The proposed telecommunications route would cross the Calnev pipeline (underground gas pipeline) at MP 6. Transmission Alternative Routes C and D and the Mountain Pass and Golf Telecommunications Alternatives would also cross the Calnev pipeline at various MPs as shown in Table 3.7-6 and Figure 2-3a Maps 1 through 5.

Table 3.7-6 Pipeline Crossings

MP	EITP Component
4.46	Transmission Alternative Route C
0.87	Transmission Alternative Route D
6.26	Proposed Telecommunications Route
7.02	Mountain Pass Telecommunications Alternative
9.10	Mountain Pass Telecommunications Alternative
9.10	Golf Course Telecommunications Alternative
12.91	Mountain Pass Telecommunications Alternative
13.70	Mountain Pass Telecommunications Alternative
13.70	Golf Course Telecommunications Alternative

Powerline Crossings

The proposed Eldorado–Ivanpah Transmission Line would be near or immediately adjacent to the Los Angeles Department of Water and Power (LADWP) powerlines for most of its length and NV Energy powerlines for a portion of its length. The proposed transmission line would cross below existing powerlines at multiple locations. Alternative A would eliminate several transmission crossovers near the Eldorado Substation by using a new ROW adjacent to the LADWP Alternating Current (AC) transmission corridor near McCullough Pass. Overhead lines that would be near or immediately adjacent to the proposed Eldorado–Ivanpah Transmission Line would be identified by the applicant (APM W-13), and a power outage associated with the crossings is not anticipated.

3.6.1.8 Fire Hazards

Wildfires consist of uncontrolled fire spreading through vegetative fuels and they increase safety risks for people and structures. Wildfires are caused by arson, campfires, the improper burning of debris, accidental ignition caused by the use of gas powered vehicles or tools or other anthropogenic activities, and lightning. Wildfire behavior may vary due to individual fire characteristics, topography, fuels (type and quantity of available flammable material, referred to as the fuel load) and weather conditions (temperature, humidity, wind, and lightning).

The proposed project area is situated primarily in open desert characterized by minimal vegetation and vacant land with sparse development areas in both Clark and San Bernardino counties. California has a system called CalFire to characterize the fire risks of areas. CalFire produces Fire Hazard Severity Zone maps that assign a hazard score based on the factors that influence fire likelihood and behavior. Many factors are considered such as fire history, existing and potential fuel (natural vegetation), flame length, blowing embers, terrain (steep terrain has a greater fire hazard severity), topography, and typical weather for the area. The 2008 Fire Hazard Severity Zone maps include areas where local governments have financial responsibility for wildland fire protection, known as local responsibility areas. Only lands zoned very high were identified within local responsibility areas. The portion of the project area along I-15 in San Bernardino County, California, is classified as a moderate fire zone according to the San Bernardino County fire hazards maps (San Bernardino County Fire Department 2010).

According to the Nevada Community Wildfire Risk/Hazard Assessment Project (RCI 2005), Primm is classified as a low hazard community with respect to fire. The vegetative fuel density in the Primm area is generally light, dominated by widely spaced creosote bush, Joshua trees, and yucca. Primm has a low wildfire ignition risk potential. There is no significant wildfire history in the area surrounding the community, and the recorded history of lightning strikes and other ignitions shows only one incident.

The applicant has developed a Fire Management Plan (APM HAZ-4) that addresses construction and operation activities for the proposed project by establishing standards and practices that would minimize the risk of fire danger, and, in the case of fire, provide for immediate suppression and notification. The Fire Management Plan addresses spark arrestors, smoking and fire rules, storage and parking areas, use of gasoline-powered tools, road closures, use of a fire guard, and fire suppression equipment and training requirements. In addition, all vehicle parking, storage areas, stationary engine sites, and welding areas would be cleared of all vegetation and flammable materials. All areas used for dispensing or storage of gasoline, diesel fuel, or other oil products would be cleared of vegetation and other flammable materials; these areas would be posted with a sign identifying them as “No Smoking” areas.

3.7.2 Applicable Laws, Regulations, and Standards

The following section provides a summary of the federal, state, and local regulatory framework and the laws, regulations, and standards that govern hazards, health, and safety in the project area.

3.7.2.1 Federal

U.S. Department of Transportation

The U.S. Department of Transportation has regulatory responsibility for the safe transportation of hazardous materials under the Hazardous Materials Transportation Act, as amended and codified in 49 U.S.C. 5101 et seq. Vehicles transporting hazardous materials must comply with strict containment, safety, labeling, and manifesting requirements.

Federal Toxic Substances Control Act and Resource Conservation and Recovery Act 42 U.S.C. §6901 et seq.

The Federal Toxic Substances Control Act (1976) and the Resource Conservation and Recovery Act (RCRA) of 1976 established a program administered by the U.S. EPA for regulating the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the “cradle to grave” system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by HSWA.

RCRA regulates hazardous waste from the time that waste is generated through to its management, storage, transport, and treatment, and final disposal. Hazardous waste is regulated under RCRA subtitle C. The U.S. EPA has authorized the DTSC in California and the Nevada Division of Environmental Protection to administer their respective RCRA programs. A RCRA hazardous waste is a waste that appears on one of the four hazardous wastes lists or exhibits at least one of four characteristics—ignitability, corrosivity, reactivity, or toxicity. To keep track of hazardous waste activities, treatment, storage, and disposal (TSD) facility owners and operators must keep certain records and submit reports to the U.S. EPA at regular intervals. All facilities that generate, transport, recycle, treat, store, or dispose of hazardous waste are required to notify the U.S. EPA (or its state agency) of their hazardous waste activities. A U.S. EPA Identification Number must be obtained unless the solid waste has been excluded from regulation or the hazardous waste has been exempted. National Biennial RCRA Hazardous Waste Reports – §3002 and 3004 of RCRA require that the U.S. EPA collect information pertaining to hazardous waste management from hazardous waste generators and hazardous waste TSD facilities on a two-year cycle.

Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) of 1980, 42 U.S.C. §9601 et seq.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a federal Superfund to clean up uncontrolled or abandoned hazardous waste sites, as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. The U.S. EPA generally administers CERLCA. The U.S. EPA has the power to seek out those parties responsible for any release and require their cooperation in the cleanup. Congress enacted CERCLA, commonly known as Superfund, on December 11, 1980. This law provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that could endanger public health or the environment. CERCLA established requirements for closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants. The NCP also established the National Priorities List. CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

The Superfund Amendments and Reauthorization Act of 1986, Title III 40 CFR § 68.110 et seq.

SARA amended CERCLA, establishing a nationwide emergency planning and response program and imposing reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials. Administered by the U.S. EPA, the act requires states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. Additionally, SARA identifies requirements for planning, reporting, and notification concerning hazardous materials.

Clean Water Act, 33 U.S.C. Section 1251 et seq.

The Clean Water Act (CWA) is the principal federal statute protecting navigable waters and adjoining shorelines from pollution. The law was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. Since its enactment, the CWA has formed the foundation for regulations detailing specific requirements for pollution prevention and response measures. The U.S. EPA implements provisions of the CWA through a variety of regulations, including the NCP and the Oil Pollution and Prevention Regulations. Implementation of the CWA is the responsibility of each state. The CWA establishes basic structure for regulating discharges of pollutants into the waters of the United States, establishes pollution control programs such as setting wastewater standards for industry, and sets water quality standards for all contaminants in surface waters. Under CWA, it is unlawful for any person to discharge any pollutant from a point source into navigable waters without a permit.

Oil Pollution Prevention, 40 CFR Part 112

The goal of the oil pollution prevention regulation in 40 CFR Part 112 is to prevent oil discharges from reaching navigable waters of the United States or adjoining shorelines. The rule was also written to ensure effective responses to oil discharges. The rule further specifies that proactive measures be used to respond to oil discharges. The oil pollution regulation contains two major types of requirements: prevention requirements (Spill Prevention, Control, and Countermeasure [SPCC] rule), and Facility Response Plan (FRP) requirements.

Facilities that could reasonably be expected to discharge oil into navigable waters in quantities that may be harmful are required to develop and implement SPCC plans per the SPCC rule. U.S. EPA amended the SPCC Rule in 2006 to extend the SPCC compliance dates in §112.3(a), (b), and (c) for all facilities until October 31, 2007. SPCC plans must be prepared, certified (by a professional engineer), and implemented by facilities that store, process, transfer, distribute, use, drill, produce, or refine oil or oil production.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) administers Occupational Safety and Health Standards (29 CFR §§1910 and 1926). These standards (1) provide regulations for safety in the workplace, (2) regulate construction safety, and (3) require a Hazard Communication Plan. The Hazard Communication Plan must include identification and inventorying of all hazardous materials for which Material Safety Data Sheets would be maintained, and must provide for employee training in safe handling of said materials.

Title 29 CFR, Part 1910.302, Sub-part S: Design Safety Standards for Electrical Systems, and 1910.331, Electrical Safety-Related Work Practices Standard (1990), describes concepts and principles associated with electrical hazards and basic electrical safety for individuals. OSHA's electrical standards for construction recommend general industry electrical standards whenever possible for hazards that are not addressed by industry-specific standards. The standards address concerns that relate to electrical hazards and exposures to dangers such as electrical shock, electrocution, burns, fires, and explosions. OSHA's electrical standards help minimize these potential hazards by specifying safety aspects in the design and use of electrical equipment and systems.

Federal Aviation Administration Regulations

FAA regulations address potential aircraft obstruction for structures taller than 200 feet or within 20,000 feet of an airport. Specifically, Federal Regulation Title 14, Part 77, established standards and notification requirements for objects that have the potential to affect navigable airspace. In 1993, Part 77.13(a)(5)(ii) was revised to include only those airports under construction and excluded proposed airports (FAA 1993). Nonetheless, the Part 77 standards are intended to (1) evaluate the effect of the construction or alteration of structures on airport operating procedures; (2) determine if there is a potential hazard to air navigation; and (3) identify measures to enhance safety. Specifically, the FAA requires notification through the filing of FAA Form 7460, Notice of Proposed Construction or Alteration, if a structure is over 200 feet in height or closer than 20,000 feet to an existing airport or airport under construction (Title 14, Part 77.13).

3.7.2.2 State

Nevada

Nevada State Plan

The Nevada State Plan is administered by the Division of Industrial Relations, Department of Business and Industry. Enforcement of the plan is provided by the Nevada Occupational Safety and Health Administration, and consultation is provided by the Nevada Safety Consultation and Training Section. The State of Nevada, under an agreement with OSHA, operates an occupational safety and health program in accordance with Section 18 of the Occupational Safety and Health Act of 1970. Initial approval of the Nevada state plan was published on January 4, 1974, and final approval was published on April 18, 2000 (Nevada Occupational Safety and Health Administration 2000).

Nevada Revised Statute – Hazardous Materials, Chapters 459 and 477

The Nevada Revised Statutes (NRS) Chapter 459 regulates hazardous materials in Nevada, including radioactive materials, highly hazardous substances, and explosives. Section 459.400 et seq. also includes provisions, definitions and jurisdictional responsibilities for hazardous waste disposal. NRS 477.045 and NRS 477.047 establish provisions for training programs for response to spills, permits for the storage of hazardous materials, surcharges for permits, and a mobile training team for volunteer firefighters to respond to incidents involving hazardous materials. This regulation states that the Nevada State Fire Marshal must establish a statewide training program for response to spills of hazardous materials and related fires, and also requires persons who store hazardous materials to obtain a permit to do so. The revenue derived by the State Fire Marshal pursuant to this section is deposited to the Contingency Account for Hazardous Materials.

Nevada Revised Statute – Emergency Management, Chapter 414

General provisions of the Emergency Management Statute (NRS 414.200 et seq.) include the following:

- Eliminating or reducing the probability that an emergency would occur, or reducing the effects of unavoidable disasters;
- Testing periodically the plans for emergency operations to ensure that the activities of state and local government agencies, private organizations, and other persons are coordinated;
- Restoring the operation of vital community life-support systems and returning persons and property affected by an emergency or disaster to a condition that is comparable to, or better than, what existed before the emergency or disaster occurred.

Nevada Division of Environmental Protection, Department of Conservation and Natural Resources

Nevada Department of Environmental Protection is the state agency responsible for the response and remediation of hazardous materials incidents, as designated by the State Comprehensive Emergency Management Plan.

Nevada Division of Emergency Management, Nevada Department of Public Safety

The Nevada Division of Emergency Management operates under the authority of NRS 414. The Nevada Division of Emergency Management is responsible for staffing the State Emergency Operations Center when a disaster or emergency threatens, as well as prior to and during large-scale events. The Clark County and Las Vegas Fire Departments provide emergency response.

Nevada Task Force 1

Nevada Task Force 1 is one of 28 Federal Emergency Management Agency (FEMA) Urban Search and Rescue task forces that are prepared to respond to state or federal disasters throughout the United States. The task force can be deployed by FEMA to rescue victims of human-caused or natural disasters. Nevada Task Force 1 consists of members from the Clark County Fire Department, Las Vegas Fire and Rescue, and the Henderson and North Las Vegas fire departments, as well as civilians from several private companies.

California

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) was created in 1991. Cal/EPA unified California's environmental authority under one agency, consolidating the California Air Resources Board, SWRCB, RWQCBs, the Integrated Waste Management Board, the DTSC, the Office of Environmental Health Hazard Assessment, and the Department of Pesticide Regulation. These agencies were placed under the Cal/EPA umbrella to create a cabinet-level voice to protect human health and the environment and to ensure the coordinated deployment of state resources. Cal/EPA's mission is to restore, protect, and enhance the environment, and to ensure public health, environmental quality, and economic vitality.

The California Hazardous Waste Control Law (HWCL) is administered by Cal/EPA to regulate hazardous wastes. While the HWCL is generally more stringent than RCRA, until the EPA approves the California program, both the state and federal laws apply in California. The HWCL lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, packaging and labeling hazardous wastes; prescribes management controls; establishes permit requirements for TSD and transportation; and identifies some wastes that cannot be disposed of in landfills.

Department of Toxic Substance Control

DTSC is a department of Cal/EPA and is the primary agency in California that regulates hazardous waste, administers clean-ups of existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. DTSC manages, maintains, and monitors the CORTESE list of hazardous waste sites.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety in handling and use of chemicals in the workplace. Cal/OSHA standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 California Code of Regulations [CCR] Sections 337–340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. A Hazard Communication Plan would be required for the project, to include identification and inventorying of all hazardous materials with Material Safety Data Sheets, and outlining employee training in safe handling of those materials.

California Emergency Management Agency

The California Emergency Management Agency (Cal/EMA) was formed January 1, 2009, as the result of a merger between the Governor's Office of Emergency Services (OES) and the Office of Homeland Security. The Hazardous Materials Unit of the Cal/EMA is responsible for hazardous materials (HAZMAT) emergency planning and response, spill release and notification, and HAZMAT enforcement of the Unified Program. OES provides emergency response services in support of local jurisdictions.

California-Nevada Supplemental Interstate Compact for Emergency Mutual Assistance, July 2007

Under the Supplemental Interstate Compact, the states of California and Nevada agree to provide emergency mutual aid assistance, whether an emergency has or has not been a governor-declared state of emergency. This compact supplements the EMA Compact agreed to by both states, which specifically addresses state-declared emergencies.

3.7.2.3 Regional and Local

Clark County, Nevada, and San Bernardino County, California, are parties to a “civil defense mutual aid compact” that allows for both county agencies to provide emergency services, supply material and equipment, and allow for the exchange of information when a declared disaster exists within either jurisdiction.

<u>Clark County</u>

Clark County Fire Department

The Clark County Fire Department maintains first responder responsibility for incidents within unincorporated areas of Clark County. Specific responsibilities include Urban Fire Services; Rural Fire Services; Aircraft Rescue Fire Fighting; Emergency Medical Services including Basic, Intermediate and Advanced Life Support (Paramedic Program); Hazardous Materials Response Team; Fire Prevention; Fire Investigation; Disaster and Emergency Preparedness; Public Education; and Technical Rescue including:

- Urban Search and Rescue Team (FEMA National Response Team)
- Confined Space Rescue

- Heavy Rescue
- Swift Water Rescue

Clark County Office of Emergency Management (Code, Chapter 3.04)

The Clark County Office of Emergency Management created an integrated emergency management public safety division that facilitates coordination of multi-agency public safety projects, including emergency management planning, preparation activities such as training and exercises, and response support coordination during emergencies (Ord. 2762 (part), 2002; Ord. 1881 §1 (part), 1996). The agency provides coordination support for the mitigation, preparation, response, and recovery activities necessary for protection of lives and property within Clark County (Clark County 2005).

Clark County Multi-Jurisdictional Hazard Mitigation Plan

The Clark County Multi-Jurisdictional Hazard Mitigation Plan establishes a strategy to implement improvements and programs to reduce community and regional impacts in the event of a natural disaster. The plan covers the unincorporated area of Clark County and the cities of Boulder, Henderson, Las Vegas, North Las Vegas, and Mesquite. The Clark County Fire Department is the lead agency for hazardous events. The Clark County and Las Vegas fire departments are responsible for continued update of emergency evacuation plans for wildland fire incidents as an extension of the agency's responsibility for Hazard Mitigation Planning in Clark County (Clark County 2005).

San Bernardino County

San Bernardino County Fire Department

The San Bernardino County Fire Department (SBCFD) acts as the CUPA and is responsible for reviewing Hazardous Materials Business Plans. The SBCFD is responsible for protection of the health and safety of the public and the environment of the County of San Bernardino by assuring that hazardous materials are properly handled and stored. The Department accomplishes this through inspection, emergency response, site remediation, and hazardous waste management services (SB County 2009a). Specific responsibilities include:

- Inspecting hazardous material handlers and hazardous waste generators to ensure full compliance with laws and regulations. Implementing CUPA programs for the development of accident prevention and emergency plans, proper installation, monitoring, and closure of underground tanks, and the handling, storage, transportation, and disposal of hazardous wastes.
- Providing 24-hour response to emergency incidents involving hazardous materials or wastes to protect the public and the environment from accidental releases and illegal activities.
- Overseeing the investigation and remediation of environmental contamination due to releases from USTs, hazardous waste containers, chemical processes, or the transportation of hazardous materials.
- Conducting investigations and taking enforcement action as necessary against anyone who disposes of hazardous waste illegally or otherwise manages hazardous materials or wastes in violation of federal, state, or local laws and regulations.

3.7.3 Impact Analysis

This section defines the methodology used to evaluate impacts for hazards, health, and safety, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.7.4.

3.7.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to hazards, health, and safety would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

Under NEPA, significant effects to health and safety would occur if the proposed project would:

- Use, store, or dispose of oil and/or hazardous materials in a manner that results in a release to the environment in an amount equal to or greater than the reportable quantity for that material or creates a substantial risk to human health;
- Result in mobilization of contaminants currently existing in the soil, creating potential pathways of exposure to humans or other sensitive receptors;
- Cause contamination of soils or groundwater within the project area during operation of the project, resulting in exposure of workers and/or the public to contaminated or hazardous materials at levels in excess of those permitted by CAL/OSHA in CCR Title B and the federal OSHA in Title 29 CFR Part 1910;
- Threaten a violation of federal, state, or local law or requirements imposed for the protection of the environment; or
- Present an obstruction or hazard to air navigation as determined by FAA under 14 CFR Part 77.

3.7.3.2 CEQA Impact Significance Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create significant hazard to the public or the environment;
e. Be located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, and would result in a safety hazard for people residing or working in the project vicinity;
f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan; or
g. Expose people or structures to a significant risk of loss, injury, or death involving wildfires.

3.7.3.3 Methodology

Baseline conditions for the impact analysis were established in Section 3.7.1, “Environmental Setting,” and Section 3.7.2, “Regulatory Setting.” The thresholds applicable to the analysis of potential impacts on hazards under CEQA or

NEPA include reportable quantities under CERCLA and quantitative exposure thresholds under OSHA/Cal/OSHA. The criteria were defined based on a review of EIR/EIS documents for similar projects in the vicinity of the proposed project (SCE 2008) and Appendix G of the CEQA Guidelines.

County maps were reviewed to determine the project's proximity to schools and airports. In addition, the potential risk of fire based on local hazard maps was considered, and local agencies' relevant emergency response plans and airport land use plans were reviewed. Emergency plans and hazard management plans and evacuation routes for Clark and San Bernardino counties were also reviewed.

To help evaluate impacts from project-related contamination, sites with known or potential contamination along or near the proposed transmission line route were researched by review of online environmental databases and identification of land uses associated with hazardous material use. The purpose of this review was to better define the areas where hazardous waste-contaminated sites could impact construction activities. The primary reason to define potentially hazardous sites is to protect worker health and safety and to minimize public exposure to hazardous materials during construction and waste handling. If encountered, contaminated soil may qualify as hazardous waste, thus requiring transport, handling, and disposal according to local, state, and federal regulations.

3.7.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) related to hazards, health, and safety:

APM HAZ-1: Phase I Environmental Site Assessment. A Phase I Environmental Site Assessment would be performed at each new or expanded substation location and along newly acquired transmission or subtransmission line ROWs. The Phase I Environmental Site Assessments would include an electronic records search of federal, state, and local databases. The electronic records search would be contracted to a company that specializes in this type of work and that would produce a comprehensive report for the new or expanded ROW. The comprehensive report is used to identify sites in federal, state, and local government agency databases that may have the potential to impact the proposed project; based on a review of the report, any potential areas of concern along the ROW would be identified for further assessment. In addition, a Phase I Environmental Site Assessment that is compliant with American Society for Testing Materials (ASTM) Standard 1927-05 would be performed on all property to be acquired. Based on the results of the Phase I Environmental Site Assessment, additional assessment, characterization, and remediation of potential or known subsurface impacts may be conducted prior to construction activities. Such remediation could include the relocation of transmission line structures as necessary to avoid impacted areas, or the removal and disposal of impacted soils and/or groundwater according to applicable regulations.

APM HAZ-2: Hazardous Materials and Waste Handling Management Plan. The applicant would develop programs and policies for management of hazardous materials including a Hazardous Materials and Hazardous Waste Handling Program, Construction Stormwater Pollution Prevention Plan, and procedures for Transport of Hazardous Materials, Fueling and Maintenance of Construction Equipment, Fueling and Maintenance of Helicopters, and Emergency Release Response. This plan would be valid during project construction and operation.

APM HAZ-3: Soil Management Plan. The applicant would develop a Soil Management Plan that would provide guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities.

APM HAZ-4: Fire Management Plan. The applicant would implement a Fire Management Plan.

APM HAZ-5: SPCCP and Hazardous Materials Business Plan. The applicant would implement a Spill Prevention, Countermeasure, and Control Plan (SPCCP) for preventing, containing, and controlling potential releases; provisions for quick and safe cleanup and a Hazardous Materials Business Plan (HMBP) that would include hazardous waste management procedures; and emergency response procedures including emergency spill cleanup supplies and equipment. This plan would be valid during project construction and operation.

APM LU-1: Aeronautical Considerations. The applicant would submit notice to FAA electronically in accordance with FAA procedures and as far in advance of construction as possible.

APM AES-8: Substation Lighting Control. The substation lighting would be designed to be manually operated so that it could be turned on only when required for non-routine nighttime work. The lighting would be directed downward and shielded to eliminate offsite light spill at times when the lighting might be in use.

APM PUSVC-1: Work around High-Pressure Pipelines. No mechanical equipment will be permitted to operate within 3 feet of the high-pressure pipelines, and work within 3 feet must be done by hand or as otherwise directed by the pipeline company.

APM PUSVC-2: Monitoring by Pipeline Companies. Representatives of applicable owners and operators of major pipeline companies must observe the excavation around or near their facilities to ensure protection and to record pertinent data necessary for operations.

APM TRA-1: Obtain Permits. If any work required modifications or activities within local roadway and railroad ROWs, appropriate permits would be obtained prior to the commencement of construction activities, including any necessary local permits and encroachment permits.

APM TRA-2: Traffic Management and Control Plans. Traffic control and other management plans would be prepared where necessary to minimize project impacts on local streets and railroad operations.

APM TRA-3: Minimize Street Use. Construction activities would be designed to minimize work on, or use of, local streets.

APM W-13: Identify Location of Underground Utilities Prior to Excavation. Prior to excavation, the applicant or its contractors would locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, or other underground structures that may reasonably be expected to be encountered during excavation work.

3.7.3.5 Proposed Project / Proposed Action

Construction and operation activities of the EITP would take place within the transmission line ROW within the BLM-designated utility corridor. Potential hazardous impacts include accidental spill or release of fuels or chemicals, mobilization of existing contamination, interference with emergency response and evacuation, and wildfires.

Accidental spill or release of fuels or chemicals

During construction and operation of the all of the EITP components (transmission lines, substations, telecommunication lines), there would be a potential for incidents involving release of gasoline, diesel fuel, oil, hydraulic fluid, and lubricants from improperly maintained vehicles or other equipment. In addition, spills or accidental release of paints, solvents, adhesives, or cleaning chemicals may occur.

The EITP would have six fenced temporary construction yards (one in San Bernardino County, California, and five within Clark County, Nevada) that would house employee vehicles, construction equipment and materials, and tanker trucks that would hold roughly 500 gallons of gas or diesel, and aviation (100LL) fuels for project vehicles and equipment. Routine maintenance of construction vehicles and equipment would be conducted within the construction yards. Hazardous materials that would be used, transported, and stored on the site are as follows:

- Transformer oil
- Dielectric fluids

- Fuels (diesel, gas)
- Lube oils and grease
- Used oil
- Solvents, coatings, and paints
- Compressed gas
- Propane
- Sulfur hexafluoride (SF_6) gas

Additional hazardous materials include joint compounds that are applied from 1-pound tubes to compression fittings to protect aluminum components from water-induced corrosion. Certain joint compounds, such as Alcoa's Electrical Joint Compound No. 2, may contain hydrogen fluoride, a component listed in California as a hazardous substance.

Upgrades to the existing Eldorado Substation would involve removal of the existing 220/115-kV transformer, which would be placed in emergency stock or salvaged for reuse. Transformer removal would involve a sequence of activities: (1) oil testing for polychlorinated biphenyl (PCB) identification, (2) oil removal and disposal/recycle by specialized contractors, (3) disconnection of all primary and secondary conductors, (4) installation of cap plates to cover bushings mount holes on transformers, (5) removal of all hazardous materials from control cabinets, (6) removal of welded end bed plates, and (7) transportation and shipping to emergency stock or salvage storage room. The new Ivanpah Substation would have associated land disturbances due to the establishment of new yards. The proposed telecommunication system would consist of an optical ground wire and combined microwave system, and approximately 5 miles of fiber optic cable would be placed in an underground duct.

The applicant's Hazardous Materials and Waste Handling Management Plan (APM HAZ–2) would provide project-specific training for workers to ensure that all hazardous materials and wastes were handled in a safe and environmentally sound manner including proper storage and handling of hazardous materials and written procedures for fueling and maintaining construction equipment to ensure that chemicals do not come into contact with the ground. Equipment would be inspected daily for potential leakage or failures, and fuel tanks would be surrounded by a secondary containment area or be placed in an area where the ground was covered with an impermeable liner. Hazardous materials such as paints, solvents, and penetrants would be kept in an approved locker or storage cabinet (APM HAZ-2). The applicant's SPCC Plan and Hazardous Materials Business Plan (APM HAZ-5) would guide quick and safe cleanup of accidental spills of hazardous materials. Additionally, MM HAZ-1 requires that the applicant conduct a worker safety and environmental training program, which would further reduce risks associated with hazardous materials and releases.

The SPCC Plan would be required by law at the Ivanpah Substation during construction and operation and maintenance, since the proposed 230/115-kV transformers would be in excess of 1,320 gallons of mineral oil (40 CFR 112). The applicant would implement temporary and permanent spill control measures prior to the delivery of transformers to the substation site. Substation personnel would be trained in the execution of the SPCC Plan during operations and maintenance.

Soil Contamination / Mobilization of Contamination/ Contaminated Sites

During construction and operation, contamination of soils and/or mobilization of contaminated soils could occur as a result of land disturbance such as installation of asphalt and concrete, inappropriate handling of transformer fluids, improper disposal of hazardous materials, and accidental spills or encounters of unknown contaminated sites during trenching and grading activities. However, release or mobilization of contamination and/or PCBs in soils or fuels is expected to be localized and minimal with the incorporation of APMs HAZ-2 and HAZ-3 during construction and APMs HAZ-3 and HAZ-5 during operations.

Within the project area, facilities handling hazardous materials or fuels are the Molycorp Rare Earth Mineral Facility (nine land disposal facilities), three USTs in Primm, and the Primm Valley Golf Course. There are also four USTs in Jean. The Molycorp Mine at Mountain Pass facility is an active mining facility that is undergoing remediation to reduce existing contamination. The Molycorp location is approximately 6.5 miles from the project at its closest point and would not be impacted by the project. The Primm Valley Golf Course, which is located on top of a former landfill, is more than 0.4 miles from the proposed project at its closest point and would not be impacted by the EITP. The UST locations within Primm are located at gas stations and therefore would not be impacted by the project.

It is unlikely that previously unknown contaminated sites would be discovered during grading and trenching for installation of project towers and underground cables. The applicant has committed to conducting a Phase I ESA (APM HAZ-1) to determine the presence or absence of recognized environmental conditions in areas of planned ground disturbance prior to initiation of construction. If it is determined that an existing environmental contamination site may be encountered along the proposed EITP project route, a minor re-route could occur within the ROW to avoid disturbance of a contaminated site or, if appropriate, the contaminated soil could be addressed so that the project would not have to be re-routed. To minimize, avoid, and/or clean up unforeseen spill of hazardous materials during construction and operation, for each EITP component, workers would follow the Soil Management Plan (APM HAZ-3) guidelines for identification and handling of contamination, as well as the plans and procedures named in APM HAZ–5.

Pipeline Crossings, Transmission Crossings and EMF

Portions of the EITP could be located close to underground pipelines and overhead powerlines. Prior to commencement of any grading activities in California or Nevada, the applicant would be required by law to contact the appropriate Underground Service Alert organization to identify the location of underground utilities and pipelines. In addition, the applicant would not use mechanical equipment within 3 feet of high-pressure pipelines (APM PUSVC-1), and a representative for the pipelines would be present to observe excavation activities around buried pipelines during construction (APM PUSVC-2). Overhead lines that would be near or immediately adjacent to the proposed transmission line would be identified by the applicant (APM W-13), and it is not anticipated that there would be a power outage associated with the crossings. Furthermore, in response to public concern, Section 3.7.1.6 presents an overview of the effects of exposure to EMFs for the consideration of both lawmakers and the public.

Hazardous Waste Disposal

Construction of the EITP transmission lines and telecommunication lines would involve removal of six wood poles and 23 H-frames that support the existing 115-kV transmission line. The wood poles are chemically treated (that is, they will be hazardous waste) and they would need to be disposed in a permitted Class I hazardous waste landfill, returned to the manufacturer, or recycled for an unrelated project(s). The wood poles would be replaced with lattice steel towers (LSTs) or tubular steel poles (TSPs). The new TSPs and LSTs that would be installed to support the new transmission and telecommunication towers would require multiple drilled, poured-in-place, concrete footings to form the structure foundation. The foundation process would start with drilling the boreholes for each footing.

Interference with Emergency Response and Evacuation Routes

During construction and operation, activities that could affect traffic and emergency routes include equipment delivery necessitating lane closures and stringing lines across major and local roadways. The proposed transmission line would cross I-15 near MP 29 at the California/Nevada border. The proposed project would be serviced by I-15, a major north–south divided freeway through San Bernardino County in California and Clark County in Nevada. This stretch of I-15 varies in width from four to six lanes. In Nevada, I-15 is the major transportation route between the California-Nevada border (MP 28) and the Las Vegas metropolitan area. If lane closures were necessary for construction or maintenance of the EITP, the applicant would have to obtain an encroachment permit from the appropriate authorities (California or Nevada Department of Transportions [CalTrans or NDOT]) for work that would be performed within roadways and railroad ROWs (APM TRA-1). A Traffic Management and Control Plan (APM TRA-2) would specify how the flow of traffic would be controlled and how emergency situations would be addressed.

The applicant would also implement best management practices (BMPs) such as use of flaggers, identification of detours, and appropriate communications with stakeholders. Traffic impacts are further discussed in Section 3.14, "Traffic and Transportation."

Safety Hazards within 2 Miles of a Public Airport or Public Use Airport

Jean Sport Aviation Center, the closest public or private airport to the EITP, is 5 miles from the EITP. Therefore, the proposed project would not increase safety hazards related to existing public or private airports within 2 miles of the project during construction.

An EIS for the SNSA, which would be within 0.5 miles of the EITP, is in progress and is expected to be completed by the fourth quarter of 2012. However, it is not possible to determine whether the EITP would impact the future SNSA until completion of the SNSA EIS and approval of that project. Regardless, the EITP applicant has included APM LU-1, which states that the applicant would notify the FAA as far in advance of construction as possible. As currently proposed, the SNSA boundary would be within 0.5 miles (2,640 feet) north of MP 26 of the EITP transmission line, and the LSTs that would support the transmission line would be 180 feet tall. Ordinarily, the FAA requires the filing of a Hazard/No Hazard Determination for structures closer than 20,000 feet to an airport boundary and for structures that are 200 feet tall. While the proposed SNSA would not complete construction until 2020 (after construction of the EITP), to reduce hazards associated with future flight path obstruction and electromagnetic interference, the applicant will implement MM HAZ-2. MM HAZ-2 requires that the applicant consult with the FAA on final project design and whether a Hazard/No Hazard Determination is required. For further discussion of the SNSA, see Section 3.9, "Land Use," and Chapter 5, "Cumulative Scenario and Impacts."

Fire Risk

The risk of fire danger from the proposed project would be related to the combustion of native materials due to smoking, refueling, and operating vehicles and other equipment off roadways. Welding during construction of towers or support structures could result in the combustion of native materials close to the welding site. Brushing activities for vegetation control and removal during construction could result in fire. Electrical arcing from power lines could create a fire hazard. Fire hazards from high voltage transmission lines are greatly reduced through the use of taller structures and wider ROWs.

The proposed project is located within low fire hazard areas, and the applicant would implement a Fire Management Plan (APM HAZ-4) to minimize impacts associated with wildfire hazards. APM HAZ-4 establishes standards and practices that would minimize the risk of fire danger and, in the case of fire, provide for immediate suppression and notification. The Fire Management Plan addresses spark arrestors, smoking and fire rules, storage and parking areas, use of gasoline powered tools, road closures, use of a fire guard, and fire suppression equipment and training requirements. In addition, all vehicle parking, storage areas, stationary engine sites, and welding areas would be cleared of all vegetation and flammable materials. All areas used for dispensing or storage of gasoline, diesel fuel, or other oil products would be cleared of vegetation and other flammable materials. These areas would be posted with a sign identifying them as "No Smoking" areas. Furthermore, the proposed project is not located in an area designated as a high fire risk area in either Clark County, Nevada, or San Bernardino County, California.

NEPA Summary

During construction and operation of the EITP (transmission lines, substations, telecommunication lines), hazards such as accidents or spills from improper use, storage, or disposal of oil and/or hazardous materials would be minor, short term, and localized. Impacts from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would likely be minor, localized, and short term. During construction, the applicant would use their Hazardous Materials and Waste Handling Management Program (APM HAZ-2), which includes use, proper storage, and handling procedures as well as standards for hazardous waste transport. During operation and maintenance, the applicant would implement their SPCC Plan and Hazardous Materials Business Plan (APM HAZ-5) to facilitate quick and safe cleanup of accidental spills of hazardous materials. Implementation of a Worker Health and Safety Plan (MM HAZ-1) would reduce the risk of exposure to workers and the public and minimize the potential for release of hazardous materials.

During construction and operation of the EITP, the potential to expose the public to previously unidentified contamination or to mobilize existing contaminants already existing in soils could result in only a minor, short-term, and localized impact because of the precautions that would be taken by the applicant and the unlikelihood of encountering contamination. The proposed project would not traverse any known contaminated sites, but it would cross or would be in close proximity to fuel pipelines. The applicant would conduct a Phase 1 ESA (APM HAZ-1) to identify recognized environmental conditions in the vicinity of the ROW prior to the start of construction. Before any grading activities would occur in California or Nevada, the applicant would be required to utilize the appropriate Underground Service Alert organization to identify the location of underground utilities and pipelines. In addition, the applicant would not use mechanical equipment within 3 feet of high-pressure pipelines (APM PUSVC-1), and a representative for the pipelines would be present to observe excavation activities around buried pipelines during construction (APM PUSVC-2). In addition, the applicant's Soil Management Plan (APM HAZ-3) provides guidance for the proper handling, onsite management, and disposal of impacted soil that might be encountered during construction activities. With respect to potential hazards to aviation, FAA has recommended distances between power lines and navigational equipment. The applicant would coordinate with FAA (MM HAZ-2) and notify the FAA in advance of construction (APM LU-1) to ensure that the EITP did not interfere with proposed navigational facilities and flight paths.

CEQA Significance Determinations

IMPACT HAZ-1: Create Hazards to the Public or the Environment through Routine Transport, Use, or Disposal of Hazardous Materials
Less than significant with mitigation

During construction of the EITP, hazards to the public or the environment might be caused by the transport, use, or disposal of hazardous materials including (but not limited to) gasoline, diesel fuel, oil, paints, chemicals, waste oils, and construction waste. The applicant's Hazardous Materials and Waste Handling Management plan (APM HAZ-2) would facilitate safe and environmentally sound handling of hazardous materials and wastes to prevent releases. Equipment would be inspected daily for potential leakage or failures, and fuel tanks would also be placed within a secondary containment area or an area where the ground was covered with an impermeable liner to ensure that any accidental spillage would not escape to the environment. APM HAZ-2 would also ensure that waste would be handled and disposed of in a landfill facility authorized to accept treated wood pole waste in accordance with California Health and Safety Code 25143.1.4(b).

During operation and maintenance of the EITP, hazards to the public or the environment also could be caused by the improper transport, storage, use or disposal of hazardous materials. The applicant's SPCC Plan and Hazardous Materials Business Plan (HAZ-5) would also help ensure that the applicant would minimize, avoid, and/or clean up spills of hazardous materials. Implementation of a Worker Health and Safety Plan (MM HAZ-1) would help protect the workforce during construction and operation of the EITP. Therefore, impacts would be less than significant with mitigation.

IMPACT HAZ-2: Create Hazards through Accidental Release of Hazardous Materials into the Environment
Less than significant with mitigation

The proposed project would not traverse any known contaminated sites, but would traverse and be in close proximity to fuel product pipelines where there could be soil contamination. During construction and operation of the EITP, contamination of soils and/or mobilization of contaminated soils could occur. Prior to commencement of any grading activities, the applicant would be required by law to use an Underground Service Alert organization to identify the location of underground utilities and pipelines. In addition, the applicant would not use mechanical equipment within 3 feet of high-pressure pipelines (APM PUSVC-1), and a representative for the pipelines would be present to observe excavation activities around buried pipelines during construction (APM PUSVC-2). The applicant's Hazardous Materials and Waste Handling Management Program (APM HAZ-2) would include procedures for proper storage, handling, and disposal of hazardous wastes. In addition, the applicant's Soil Management Plan (APM HAZ-3) would provide guidance for the proper handling, onsite management, and disposal of impacted soil. Implementation of a Worker Health and Safety Plan (MM HAZ-1) would help protect the workforce during construction and operation of the EITP. Therefore, impacts would be less than significant with mitigation.

IMPACT HAZ-3: Expose the Public or Environment to Existing Contaminated Soil or Groundwater
Less than significant without mitigation

As discussed in Section 3.7.1.1, the proposed EITP components may encounter undocumented hazardous waste sites during construction. However, the applicant has committed to conducting a Phase 1 ESA (APM HAZ-1) to identify recognized environmental conditions in the vicinity of the ROW prior to the start of construction to ensure that contaminated areas would be avoided. Therefore, impacts would be less than significant without mitigation.

IMPACT HAZ-4: Increase Safety Hazards for People Residing or Working within 2 Miles of a Public Airport or Public Use Airport
Less than significant with mitigation

The only existing airport within the project area is the Jean Airport, 5 miles away; therefore, there would be no impact associated with existing airports within 2 miles of the proposed project. The proposed boundary for the SNSA would be within 0.5 miles (2,640 feet) north of MP 26 of the EITP transmission line; however, as discussed above, the EIS for the SNSA is currently in progress and is not expected to be completed until the fourth quarter of 2012. Therefore, it is not possible to state conclusively whether the EITP would impact the future SNSA. Regardless, the applicant has included APM LU-1, which states that they would notify the FAA as far in advance of construction as possible. To further reduce potential hazards associated with the future airport, the applicant will implement MM HAZ-2, which requires that the applicant consult with the FAA regarding final project design and whether a Hazard/No Hazard Determination is required. With implementation of MM HAZ-2, impacts from increased safety hazards for people residing or working within 2 miles of an airport would be reduced to less than significant. For further discussion of impacts associated with the SNSA, see Chapter 5, "Cumulative Scenario and Impacts."

IMPACT HAZ-5: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan
Less than significant without mitigation

During construction and operation, activities that could affect traffic and emergency routes include equipment delivery necessitating lane closures and stringing lines across major and local roadways. If lane closures were necessary for construction or maintenance of the EITP, the applicant would have to obtain an encroachment permit from the appropriate authorities (CalTrans or NDOT) for work that would be performed within roadways and railroad ROWs (APM TRA-1). A Traffic Management and Control Plan (APM TRA-2) would specify how the flow of traffic would be controlled and how emergency situations would be addressed. The applicant would also implement BMPs, such as use of flaggers, identification of detours, and appropriate communications with stakeholders. Therefore, impacts on emergency response plans and evacuation routes would be less than significant without mitigation.

IMPACT HAZ-6: Expose People or Structures to an Increased Risk of Wildland Fires
Less than significant without mitigation

During construction and operation of the EITP (all components), fires might be caused by combustion of native materials due to smoking, refueling, or operating vehicles and other equipment off roadways; welding; electrical arcing; or a fallen conductor. The applicant's Fire Management Plan (APM HAZ-4) establishes standards and practices that would minimize the risk of fire and, in the event of fire, provide for immediate suppression and notification. Therefore, potential impacts from wildland fires would be less than significant without mitigation.

NO IMPACT: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. There are no schools within 0.25 miles of the EITP transmission lines, substations, or telecommunications improvements in California or Nevada. Therefore, no impacts on existing or proposed schools are anticipated from the construction, operations, or maintenance of the EITP.

3.7.3.6 No Project / No Action Alternative

The No Project Alternative assumes that existing transmission lines and power plants would continue to operate. Impacts currently caused by these facilities on the existing environment would not change, so no new hazards or health safety impacts would occur from continuing operation of the existing transmission lines and power plants. The No Project Alternative would have no impact on health and safety, schools, emergency response/evacuation routes, airports, or the risk of wildfires.

3.7.3.7 Transmission Alternative Route A

Transmission Alternative Route A would eliminate several transmission crossovers near the Eldorado Substation by using a new ROW adjacent to the LADWP AC transmission corridor near McCullough Pass. This route would be shorter than the segment of the proposed alignment it replaces and would require fewer transmission structures. In addition, this route would cross fewer intermittent streams.

Similar to the proposed project, impacts associated with the improper management or release of hazardous materials would be short term, minor, and localized, but would be incrementally less because this alternative is shorter than the proposed project and thereby construction time would be shorter. This incrementally decreases the risk of improper management of hazardous materials or of a spill. With the implementation of MM HAZ-1, impacts would be less than significant. The potential to encounter contaminated soil would also incrementally decrease and the impact, if contaminated soils were encountered, would remain short term, minor, and less than significant. As discussed above, there would be no impact on schools. Potential impacts on health and safety, emergency response/evacuation routes, airports, and the risk of wildfires would be less than significant.

3.7.3.8 Transmission Alternative Route B

Transmission Alternative Route B would involve deviating from the proposed route near the Eldorado Substation. Several of these overhead utility lines might have to be modified or relocated to accommodate this alternative. Similar to the proposed project, impacts associated with the improper management or release of hazardous materials would be short term, minor, and localized, but would be incrementally greater because this route is longer than the proposed project. With the implementation of MM HAZ-1, impacts would be less than significant. The potential to encounter contaminated soil would incrementally increase and the impact, if contaminated soils were encountered, would be short term, minor, and less than significant. As discussed above, there would be no impacts on schools. Potential impacts on health and safety, emergency response/evacuation routes, airports, and the risk of wildfires would be less than significant.

3.7.3.9 Transmission Alternative Route C

Transmission Alternative Route C would avoid crossing Ivanpah Dry Lake. Impact on intermittent streams would be reduced due to fewer crossings, and the likelihood of impacting water resources would be reduced. However, Alternative C would be closer to the proposed SNSA than would the proposed project, which could result in project components being more likely to present obstruction and/or hazards to aviation than the proposed project; however, with the implementation of MM HAZ-2, this impact would likely be reduced to less than significant. This alternative could have a greater potential for ground-disturbing activities such as construction of access and spur roads and towers, additional pulling and tensioning sites, and construction within 5.2 miles of new ROWs.

Similar to the proposed project, impacts associated with the improper management or release of hazardous materials would be short term, minor, and localized, but would be incrementally greater because this route is longer than the proposed project. With the implementation of MM HAZ-1, impacts would be less than significant. The potential to encounter contaminated soil would incrementally increase and the impact, if contaminated soils were encountered, would be short term, minor, and less than significant. As discussed above, there would be no impact on schools. Potential impacts on health and safety, emergency response/evacuation routes, airports, and the risk of wildfires would be less than significant.

3.7.3.10 Transmission Alternative Route D and Subalternative E

Transmission Alternative Route D and Subalternative E would follow to the extent feasible the existing LADWP Marketplace–Adelanto 500-kV transmission line ROW, thus reducing the overall transmission footprint across the Ivanpah Dry Lake. Alternative D and Subalternative E would also move the transmission line away from the Desert Oasis Apartment complex and be further away from the proposed SNSA than would the proposed project and Alternative C, which could result in project components being less likely to present obstructions and/or hazards to aviation than the proposed project or Alternative C. The length of the transmission line would be shorter than the proposed project; however, new access roads and new ROWs would be required.

Similar to the proposed project, impacts associated with the improper management or release of hazardous materials would be short term, minor, and localized, and would be equivalent to those of the proposed project. Because this alternative is shorter, it would incrementally decrease the risk of improper management of hazardous materials or of a spill, although impacts would be similar to the proposed project. With the implementation of MM HAZ-1, impacts would be less than significant. The potential to encounter contaminated soil would also incrementally decrease and the impact, if contaminated soils were encountered, would remain short term, minor, and less than significant. As discussed above, there would be no impacts on schools. Potential impacts on health and safety, emergency response/evacuation routes, airports, and the risk of wildfires would be less than significant.

3.7.3.11 Telecommunication Alternative (Golf Course)

The Golf Course Telecommunication Alternative would include installation of overhead and underground telecommunications lines only; no microwave towers would be installed. This telecommunication line would be 20 miles longer than the telecommunication line of the proposed project, which would increase the risk of accidents associated with hazardous materials due to the increased length of the construction period. Removal of the treated wood poles, trenching and grading activities for access roads, and installation of additional LSTs or TSPs would cause greater ground disturbance than would the telecommunication line proposed for the project. With incorporation of APMs HAZ-1 through HAZ–5 and MM HAZ-1, there would be a less than significant impact.

The Golf Course Telecommunication Alternative might cross over a closed land disposal site (Biogen Plant) that is buried underneath the Primm Valley Golf Course near MP 6 of the telecommunication line, and might also cross over a possible underground storage tank at the southeast quadrant of the I-15/Yates Well Road interchange in Nipton, California, near MP 4 of the telecommunication line. This alternative could result in moderate, adverse direct impacts due to the potential of exposing potential contamination along this route.

As discussed above, there would be no impact on schools. Potential impacts on health and safety, emergency response/evacuation routes, airports, and the risk of wildfires would be less than significant.

3.7.3.12 Telecommunication Alternative (Mountain Pass)

The Mountain Pass Telecommunication Alternative includes installation of overhead and underground telecommunications lines only; no microwave towers would be installed. The telecommunication line would be 20 miles longer than the line for the proposed project. The increased length of this alternative would increase the risk of accidents associated with the management of hazardous materials because the construction period would be longer. Removal of the treated wood poles, trenching and grading activities for access roads, and installation of additional LSTs or TSPs would cause greater ground disturbance than would the proposed telecommunication route for the project. APMs HAZ-1 through HAZ-5 would be incorporated to reduce impacts. With the implementation of MM HAZ-1, there would be a less than significant impact of potential risks associated with improper management of (or accidental release of) hazardous material, but there would be incrementally greater potential impacts than under the proposed project.

The Mountain Pass Telecommunication Alternative would cross through Molycorp Mine, which is listed as a hazardous site (DTSC 2009). Molycorp is a large active lanthanide mining and milling operation; however, this portion of the telecommunication line would be an overhead wire. Construction through this type of facility would increase the potential for exposing workers to hazardous materials or wastes. Project workers would have to comply with the health and safety requirements of the mining facility and those of the applicant’s Health and Safety Plan (MM HAZ-1). Implementation of this mitigation measure would reduce the risks associated with this impact such that the impact would be minor, short term, and less than significant with mitigation, although incrementally greater than the proposed project.

As discussed above, there would be no impact on schools. Potential impacts on health and safety, emergency response/evacuation routes, airports, and the risk of wildfires would be less than significant.

3.7.4 Mitigation Measures

MM HAZ-1: Worker Health and Safety and Environmental Training and Monitoring Program. Prior to construction, the applicant will conduct a worker safety and environmental training program. As part of the program, the applicant will develop and implement a Health and Safety Plan. The Health and Safety Plan should address all potential situations that workers could encounter during construction and maintenance, including safety issues that may be unique to any of the alternatives. The Health and Safety Plan, at minimum, must require that first aid kits be stored in each construction vehicle and that a worker trained in first aid be included in each work group. The purpose and goal of the worker safety and environmental training will be to communicate project-related environmental concerns and appropriate work practices, including spill prevention, emergency response measures, and BMPs, to all field and construction personnel prior to the start of construction. SCE will also conduct health and safety training for Operation and Maintenance activities.

MM HAZ-2: Consultation with FAA Regarding Final Project Design and Possible Hazard/No Hazard Determination. Prior to final project design and as far in advance as possible, the applicant will initiate consultation with the FAA regarding potential requirements due to the proximity of the EITP to the proposed SNSA. Depending upon the FAA’s recommendations, the applicant may be required to obtain a Hazard/No Hazard Determination. The FAA may also require lighting of EITP structures or make additional recommendations regarding safety. The applicant will submit documentation of this consultation to the CPUC and BLM.

3.7.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to hazards, health, and safety in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

ISEGS project components and operational features that were evaluated for hazards and health and safety are:

- A power plant that requires process cooling water
- Stacks that would emit fumes
- Solar panels that would use natural gas for operation
- Power plants that would use natural gas for operation
- Safety measures that would use natural gas for operation
- Site security cameras
- Driver certifications for transport of hazardous materials and site access

3.7.5.1 Hazardous Materials Management

The Hazardous Materials Management Section of the ISEGS FSA/DEIS includes regulations related to worker and public protection from accidental releases of hazardous materials.

Setting

ISEGS evaluated several setting characteristics related to the ability of accidental release of hazardous materials to affect the public, including meteorological conditions, terrain, and location of population centers and sensitive receptors relative to the project.

Meteorological conditions including wind speed, wind direction, and air temperature affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. The location of elevated terrain is often an important factor in assessing potential exposure. The topography of the ISEGS site is essentially flat but sloping from west to east. The stack height is not of concern for the project. No sensitive receptors are located within 6 miles of the ISEGS project vicinity, and the nearest residence is 5 miles from the ISEGS site.

Methodology

BLM and CEC staff (Staff) examined the plausible potential spills of hazardous materials that are to be used, handled, stored, or transported at the project site, and evaluated the potential impacts on public health from accidental releases/loss of containment incidents of these hazardous materials. The worst-case scenario was evaluated. Both engineering and administrative controls for hazardous material use were evaluated. Engineering controls are physical or mechanical systems such as storage tanks or automatic shut-off valves that can prevent a spill of hazardous material from occurring, or that can limit the spill to a small amount or confine it to a small area. Administrative controls are rules and procedures that workers must follow to help either prevent accidents or keep them small if they do occur. Both engineering and administrative controls can act as either methods of prevention or methods of response and minimization. In both cases, the goal is to prevent a spill from moving off site and harming the public. The list of the known hazardous materials that would be used for the ISEGS project was categorized into small quantity and large quantity hazardous materials. Staff considered two additional potential impacts: (1) nearby school operations and (2) transportation of hazardous materials. No schools are located within 30 miles of ISEGS site, so the FSA/DEIS did not analyze impacts to schools. However, the impacts of transporting hazardous materials were analyzed in the Operation Impacts and Mitigation section.

ISEGS provided maximum anticipated volumes of hazardous materials anticipated to be used on the project. EITP did not evaluate the worst-case scenario. The EITP does not discuss the maximum anticipated volumes and the type and location of storage of hazardous materials.

Construction Impacts

Hazardous materials would be transported, handled, used, and stored on the ISEGS site. Small quantity hazardous materials used during the construction phase of the project would include paint, cleaners, solvents, gasoline, diesel fuel, motor oil, welding gases, and lubricants. Potential impacts would include spills due to accidents, failure of hazardous containment tanks due to seismic activity, and site security issues (unauthorized access, vandalism, or domestic/foreign terrorist attacks). The potential for accidents resulting in the release of hazardous materials would be reduced by the implementation of a Safety Management Program, which would include both engineering and administrative controls. In addition, ISEGS would develop and implement a Worker Health and Safety Program; designate and provide a project Health and Safety Officer; prepare and implement an HMBP, which would incorporate state requirements for the handling of hazardous materials; prepare and implement an SPCC Plan; and implement site security measures such as perimeter fencing and breach detectors, alarms, and site access procedures for employees and vendors. The ISEGS FSA/DEIS concluded that there would be no significant impact from construction-generated hazardous materials with the use of BMPs and compliance with all laws, ordinances, regulations, and standards.

Operational Impacts

During operations, hazardous chemicals such as cleaning agents, lubrication oil, sulfuric acid, sodium hydroxide, ammonium hydroxide, diesel fuel, and other chemicals would be used and stored on site but would be a limited off-site hazard due to their small quantities, low volatility, and/or low toxicity. In addition, the ISEGS project would use natural gas to heat a partial load steam boiler when solar conditions were insufficient. The natural gas would be used in significant quantities and is considered a large quantity hazardous material as described under the above methodology section. The natural gas would not be stored on site, but would be delivered via an existing underground pipeline that runs within a half-mile of the northern perimeter of the ISEGS site.

Natural gas poses an explosion and fire risk because of its flammability. The risk of a fire and/or explosion on site would be reduced to insignificant levels through adherence to applicable codes including the use of double block and bleed valves for gas shut-off and automated combustion controls. In addition, the applicant's Safety Management Plan would reduce the potential for injuries and accidents related to the use of equipment and hazardous materials.

The EITP would have some fire risks associated with transmission lines, unmaintained vegetation clearances around structures, and use of fuel for the substation equipment. However, no natural gas from underground pipelines would be used for EITP construction and/or operation.

Decommissioning Impacts

The ISEGS project would be decommissioned at the end of its 50-year life by removing all facilities to 3 feet below grade, restoring original contours, and revegetating the site. The requirements for handling of hazardous materials remain in effect until such materials are removed from the site. If the site were to be abandoned, and if there were any unacceptable risk to the public, emergency action could be taken and it would be paid for by a performance bond required from the applicant (LAND-1).

The EITP discussion does not cover decommissioning and there is no requirement for a performance bond for decommissioning of the site.

ISEGS Mitigation Measures

Mitigation measures related to hazardous materials used for ISEGS are as follows:

HAZ-1 requires that the applicant use only hazardous materials listed in Hazardous Materials Appendix A, and not use hazardous materials in greater quantities than those associated with materials identified by chemical name in Hazardous Materials Appendix A, unless approved in advance by the BLM's Authorized Officer and Compliance Project Manager (CPM).

HAZ-2 requires the applicant to develop and implement an HMBP to notify local emergency response services of the amounts and locations of hazardous materials associated with the ISEGS project.

HAZ-3 requires the applicant to develop and implement a Safety Management Plan for the delivery of liquid hazardous materials.

HAZ-4 requires the applicant to develop and implement a site-specific Construction Site Security Plan applicable to all construction phases.

HAZ-5 requires that the applicant to develop and implement a site-specific Operation Security Plan addressing physical site security and hazardous materials storage.

HAZ-6 requires that the applicant comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) regarding any toxic substances that are used, generated, or stored on the ROW or on facilities authorized under this ROW grant.

3.7.5.2 Public Health and Safety

The Public Health and Safety Section of the ISEGS FSA/DEIS evaluated potential effects on the public from emissions of toxic air contaminants. The public health impacts related to emissions is further discussed in Section 3.3, "Air Quality," of this EITP EIR/EIS.

Setting

The natural gas pipeline proposed for construction for the ISEGS project would be approximately 5.3 miles long, running from the Kern River Gas Transmission Company pipeline through Ivanpah 3 and 2 and ending at Ivanpah 1. The nearest residence is approximately 5 miles from the site in the community of Primm, Nevada. According to the Application for Certification, there are no sensitive receptors within 6 miles of the ISEGS project site. There is a house trailer used as a residence near the southeast quadrant of the I-15/Yates Well Road interchange.

The ISEGS would have three exhaust stacks associated with the start-up boilers, one for each plant (Ivanpah 1, 2, and 3). The stack heights would be 130 feet (Table 5.1 D-2 in BSE 2007a). The location of elevated terrain (above the stack height) is important in assessing potential exposure, as an emission plume may impact high elevations before impacting lower elevations. The proposed site is within the jurisdiction of the Mojave Desert Air Quality Management District.

Additional setting characteristics that were evaluated included meteorology, terrain, and existing public health concerns. No existing health issues were reported within a 6-mile radius of the ISEGS project.

Methodology

The Public Health and Safety section of the ISEGS FSA/DEIS discusses toxic emissions to which the public could be exposed during project construction, routine operation, and closure/decommissioning. Potential emissions were identified and then quantified by conducting a "worst case" analysis to determine acute (short-term; e.g., 1-hour) exposure non-cancer health effects, chronic (long-term) non-cancer health effects, and cancer risk.

Construction of the three power plants of ISEGS is anticipated to take place over 48 months, with each phase taking about 24 months to complete and with 12 months of overlap between the construction of any of the two power plants at one time (Section 2.2.15 in BSE 2007a). As noted earlier, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time, typically from eight to 70 years.

Construction Impacts

Risks to public health during construction of ISEGS would include potential exposure to toxic substances such as diesel fumes from gas-powered equipment and contact with contaminated water and/or soil from excavation, grading, and earth-moving activities. A Phase I ESA conducted for this site in 2007 identified no “Recognized Environmental Conditions” according to the ASTM definition, and the report concluded that the ISEGS project site has never been used for commercial or industrial activities (Appendix 5.14A in BSE 2007a). If unexpected contamination were to be discovered during ground-disturbing activities, proposed Waste Management Conditions of Certification (COCs) Waste-1 and Waste-2 mandate a professional geologist (PG) or professional engineer (PE) be available during excavation and grading to ensure proper handling and disposal of contaminated soil.

To minimize particulate matter in the air, which could be inhaled or ingested, ISEGS will implement extensive fugitive dust control measures in accordance with Air Quality COC AQ-SC-3 and AQ-SC-7. In accordance with AQ-SC-5 and in order to further mitigate potential impacts from particulate emissions during the operation of diesel-powered construction equipment, CEC staff recommends the use of ultra-low sulfur diesel fuel and Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines.

A Phase 1 ESA has not been conducted for the EITP; however, the applicant has proposed to conduct a Phase 1 prior to construction.

Operational Impacts

No short-or long-term adverse health effects are expected from emissions during the operation of the ISEGS project. Total worst-case individual cancer risk was calculated by the applicant to be 0.065 in 1 million at the location of maximum impact.

Decommissioning Impacts

Staff concluded that public-health–related impacts from closure and decommissioning of the ISEGS would be insignificant.

Mitigation Measures

No mitigation measures or conditions are proposed. Staff analyzed the potential public health risks of toxic emissions resulting from the ISEGS project and determined that there would be no significant health risks to any members of the public including sensitive receptors (for example, infants and the elderly).

3.7.5.3 Transmission Line Safety and Nuisance

Setting

The total area required for the three facilities (Ivanpah 1, 2, and 3) that would constitute the proposed ISEGS would be 4,073 acres of BLM land. Each of these facilities would consist of a solar field and related electric-power–generating equipment from which the generated power would be interconnected to SCE’s power grid via a new 220/115- kV SCE substation (Ivanpah Substation) to be located between Ivanpah 1 and Ivanpah 2. The connection to the SCE grid would be through SCE’s existing 115-kV line that would be upgraded to 230 kV for 36 miles between the new Ivanpah Substation and the existing Eldorado Substation in Nevada. This transmission line passes through the site on a northeast-southwest ROW. The site is in an uninhabited open space with transmission line corridors.

Methodology

The Transmission Line Safety and Nuisance Section of the ISEGS FSA/DEIS evaluated potential effects associated with proposed transmission lines including aviation safety, interference with radio-frequency communication, audible noise, fire hazards, hazardous shocks, nuisance shocks, and EMF exposure.

Construction Impacts

No aviation impacts are anticipated from the proposed ISEGS project because structures would not be located within the runway area, and transmission structures would be 85 in height; which is well below the 200-foot height limit that requires review by FAA. The FAA has determined that even the tallest structures of the proposed ISEGS, the 459-foot-high solar power towers, would not pose a hazard to aviation. However, this determination may be in conflict with the FAA requirement to review structures over 200 feet in height.

Transmission-line–related radio-frequency interference is an indirect effect of line operation and is produced by the physical interactions of line electric fields. The degree of radio-frequency communication interference is usually related to the magnitude of involved electric fields and the proximity of the line to inhabited areas. No radio-frequency interference is anticipated since the transmission lines associated with the ISEGS project would not be located near any inhabited areas.

Audible noise results from the action of the electric field at the surface of the line conductor and is usually perceived as a characteristic crackling, frying, humming, or hissing sound. Substantial audible noise is not expected from lines less than 345 kV, such as proposed for the ISEGS project.

Fire hazards could be caused by sparks from conductors of overhead lines or from direct contact with combustible objects. Fire risks would be minimized by adherence to clearance requirements of GO-95. In addition, Staff would require the ISEGS owner to keep the ROW free of combustible material (COC TLSN-3) and would require an independent inspection for the first five years of plant operation to verify compliance with this condition.

Hazardous shocks may occur from contact with high-voltage overhead or underground transmission lines. To minimize the risk of shocks, the project would adhere to the clearance requirements of GO-95 safety measures for energized lines to maintain clearance and a safe distance from the public. The Staff would also require ISEGS to comply with COC TLSN-1, which requires verification from a California-registered electrical engineer affirming that the lines would be constructed according to the requirements stated in the condition.

Nuisance shocks may also occur from human contact from the energized lines. Shocks may be minimized through standard industry grounding practices specified in the National Electrical Safety Code and joint guidelines of the American National Standards Institute and Institute of Electrical and Electronics Engineers. The Staff would require ISEGS compliance with COC TLSN-4 to ensure such grounding for ISEGS.

As described earlier, electric and magnetic fields occur together whenever electricity flows, and exposure to them together is generally referred to as “EMF exposure.” Human health impacts of EMF exposure from transmission have been neither established nor ruled out, and there are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. COC TLSN-2 is intended to validate the ISEGS applicant’s assumed reduction efficiency.

The EITP does not address interference with radio-frequency communication, audible noise, or shocks within the hazards, health, and safety section.

Operational Impacts

No impacts were identified for operation of the transmission lines associated with the ISEGS project.

Decommissioning Impacts

Removal of the ISEGS transmission structures and tie-in lines would eliminate or reduce EMF exposure, aviation safety, and noise as well as reduce or eliminate the risk of electric shocks and fire hazards.

Mitigation Measures

TLSN-1 requires that the applicant construct the proposed transmission lines according to the requirements of CPUC's GO-95, GO-52, GO-131-D, Title 8, and Group 2 High Voltage Electrical Safety Orders Sections 2700 through 297 of the California Code of Regulations, and SCE's EMF-reduction guidelines.

TLSN-2 requires that the applicant use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity before and after energizing according to the American National Institute Standards/Institute of Electrical and Electronics Engineers standard procedures. These measurements must be completed no later than 6 months after the start of operations.

TLSN-3 requires that the ROW of the proposed transmission line be kept free of combustible material as required under the provisions of Section 4292 of the Public Resources Code and Section 1250 of Title 14 of the California Code of Regulations.

TLSN-4 requires that all permanent metallic objects within the ROW of lines related to the ISEGS project be grounded according to industry standards regardless of ownership.

3.7.5.4 Waste Management

The Waste Management Section of the ISEGS FSA/DEIS evaluated issues associated with wastes generated from construction and operation of the project and included non-hazardous and hazardous waste, quantities, and waste management that would reduce health and safety risks for the public and environment from disposal of hazardous wastes.

The EITP Waste Management is discussed in Section 3.11, "Public Services and Utilities," of this EIR/EIS.

Setting

The ISEGS project would cause permanent disturbance of about 3,713 acres and temporary disturbance of 321 acres. Including the existing transmission line corridor of about 39 acres within the Construction Logistics Area, ISEGS would use about 4,073 acres (6.4 square miles) of federal land managed by BLM (CH2ML 2009f).

Raw water for the project would be supplied by two groundwater wells northwest of Ivanpah 1 and within the Construction Logistics Area. The water would be treated and used as boiler make-up water and to wash the heliostats.

A septic system for sanitary wastewater would be located at the administration building/operations and maintenance area.

Process wastewater from all equipment, including the boilers and water treatment equipment, would be recycled. If necessary, a small filter/purification system would be used to treat project groundwater and provide potable water at the administration building. Any reject streams from water treatment would be trucked off site for treatment or disposal at either a Class I or a Class II waste facility, as appropriate.

All non-hazardous wastes would be recycled to the extent possible and non-recyclable wastes would be collected by a licensed hauler and disposed in a Class III solid waste disposal facility. Hazardous wastes would be recycled to the extent possible and disposed in either a Class I or a Class II waste facility, as appropriate.

The EITP discusses disposal of waste and sewer services under the Public Services Section (3.11), and Water Quality is discussed in Section 3.8.

Methodology

The waste management analysis for ISEGS addressed: (1) existing project site conditions and the potential for contamination associated with prior activities on or near the project site and (2) the impacts from the generation and management of wastes during project construction and operation.

Construction Impacts

Non-hazardous and hazardous wastes in solid and liquid forms would be generated during construction of the ISEGS facilities. There would be approximately 280 tons of non–hazardous solid wastes (scrap wood, concrete, steel/metal, paper, glass, scrap metals, plastic waste, and liquid wastes such as sanitary wastes and wastewater). It is estimated that the 4 tons of hazardous waste from the ISEGS project requiring offsite disposal would occupy less than 10 cubic yards. Prior to construction, the project owner would be required to develop and implement a Construction Waste Management Plan and obtain a unique hazardous waste generator identification number for the site (WASTE-4). The CEC's CPM would also be notified if any enforcement action related to construction waste management were taken (WASTE-5). In addition, construction activities such as excavation, grading, or trenching might expose contaminated soils and safety precautions for handling; proper disposal would be required (WASTE 1 and WASTE 2).

The EITP discussion does not identify a specific list of hazardous materials, nor quantities of hazardous and non hazardous waste that would be accumulated during construction and operation and decommissioning of the project.

Operational Impacts

During operation, the ISEGS project would generate approximately 240 tons per year of non-hazardous solid wastes from equipment/supplies such as used air filters, resins, sand, and office wastes such as office paper, aluminum cans, plastic, and glass. All non-hazardous wastes would be recycled to the extent possible, and non-recyclable wastes would be regularly transported off site to a local solid waste disposal facility. Prior to operations, the project owner would be required to develop and implement an Operations Waste Management Plan (WASTE-6).

Hazardous wastes that might be accumulated during routine project operation are similar to construction wastes. In addition, accidental releases of hazardous materials might require corrective action. The CEC's CPM would also be notified if any enforcement actions related to waste management during operations were taken (WASTE-5). Spill control plans and prevention measures would reduce risks of contamination (WASTE-7).

Decommissioning Impacts

Decommissioning the ISEGS project would produce both hazardous and non-hazardous solid and liquid waste. The ISEGS facility closure plan would document nonhazardous and hazardous waste management practices including the inventorying, management, and disposal of hazardous materials and wastes and permanent disposal of permitted hazardous materials and waste storage units (Compliance-11, -12, and -13). The waste would also be prioritized as follows: (1) materials that reduce waste generation would be used, (2) waste would be reused or recycled, and (3) non-recyclable waste would be treated prior to storage or transport to a permitted disposal facility, and COCs WASTE-4 through WASTE-7 would be applied during decommissioning of the project.

ISEGS Mitigation Measures

WASTE-1 requires the applicant to provide authority to a PG or PE to oversee any earth-moving activities that have the potential to disturb contaminated soil and impact public health, safety, and the environment.

WASTE-2 requires the applicant to contact BLM's Authorized Officer and the CPM and representatives of the Department of Toxic Substances Control or the Regional Water Quality control Board for guidance and possible oversight of disturbance or encounter of contaminated soils.

WASTE-3 requires the applicant to develop and implement a Construction Waste Management Plan for all construction wastes including projections of frequency, amounts generated, hazard classifications, and management methods.

WASTE-4 requires the applicant to obtain a hazardous waste generator identification number from the U.S. EPA prior to generating any hazardous waste during project construction and operations.

WASTE-5 requires the applicant to notify BLM's Authorized Officer and the CPM for enforcement action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

WASTE-6 requires the applicant to develop and implement an Operations Waste Management Plan for all wastes generated during operation of the ISEGS project. The plan would include a detailed description of all operations and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications.

WASTE-7 requires that the applicant ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are reported, cleaned up, and remediated as necessary, in accordance with all applicable federal, state, and local requirements.

3.7.5.5 Worker Safety and Fire Protection

The purpose of the Worker Safety and Fire Protection section of the ISEGS FSA/DEIS is to assess the worker safety and fire protection measures proposed by the ISEGS applicant and determine whether the applicant has proposed adequate measures to (1) comply with applicable safety laws, ordinances, regulations, standards, and Laws, Ordinance, Regulations, and Standards (LORS); (2) protect workers during the construction and operation of the facility and protect against fire; and (3) provide adequate emergency response procedures.

Setting

ISEGS includes the construction of a hybrid, combined-cycle, natural-gas–fired power plant and solar thermal generating equipment. For the Power Block, workers would be exposed to hazards typical of construction and operation of a gas-fired simple-cycle facility, while the solar component would present similar construction risks and minimal operational risks to workers.

Fire support services to the site would be under the jurisdiction of the SBCFD. Station 53 is 40 miles from the project site, located at 65 Kingston Circle, Baker, California, and would be the first responder to ISEGS, with a response time of approximately 45 minutes. The response time to the project site with full resources capabilities including those needed for large-scale hazardous materials spills would be 3 to 4 hours. Hazardous materials service is provided out of the SBCFD station in the town of Fontana, Station #78.

The EITP is located in California and Nevada and there are emergency plans for Clark County and Nevada. The police and fire services for EITP are discussed in Section 3.11, "Public Services and Utilities."

Methodology

The Worker Safety and Fire Protection Section of the ISEGS FSA/DEIS assessed, for activities occurring during demolition, construction, operations, and closure and decommissioning, (1) the potential for impacts on the safety of workers and (2) fire prevention/protection, emergency medical response, and hazardous materials spill response.

Worker safety is essentially a LORS compliance matter. If all LORS are followed, workers will be adequately protected. Thus, the standard for Staff's review and determination of significant impacts on worker health is whether the applicant has demonstrated adequate knowledge of and commitment to implementation of all pertinent and relevant Cal/OSHA standards. Staff also reviewed and evaluated the onsite fire-fighting systems proposed by the applicant, as well as the time needed for offsite local fire departments to respond to a fire, medical, or hazardous material emergency at the ISEGS site, and determined that the presence of the power plant would cause a significant impact on a local fire department.

Construction Impacts

During construction of ISEGS there would be the potential for small fires, major structural fires, and wildfires. Fires and explosions of natural gas or other flammable gases or liquids are rare. Accidents, fires, and a worker death have occurred at CEC-certified power plants in the recent past because of the failure to recognize and control safety hazards. Fire protective measures that would help reduce the potential for harm to plant personnel and damage to facilities include removal of all vegetation in the vicinity of the solar power towers, cutting and maintaining vegetation, use of access roads as fire breaks, installation of portable fire extinguishers throughout the site, use of safety procedures, and training. The potential for both work-related and non-work-related heart attacks exists at power plants from work- and non-work-related causes.

The area under the solar arrays would need to be kept free from weeds, and herbicides would be used on a year-round basis. Workers might be exposed and herbicides could contaminate either surface water or groundwater. The ISEGS applicant has indicated that workers would be adequately trained and protected, but has not included precautions against exposure to herbicides.

Prior to construction and operation of ISEGS, all health and safety programs and plans and fire protection measures would be provided (WORKER SAFETY-1 and -2). The applicant/project owner would be required to designate and provide for a project site construction safety supervisor (WORKER SAFETY-3). Staff recommended an Automatic External Defibrillator (AED) be located on site and workers be trained in its use (WORKER SAFETY-5). Proper herbicide storage and application would mitigate potential risks to workers from exposure to herbicides (WORKER SAFETY-6 and BIO-13).

Operational Impacts

Operational impacts would be similar to construction impacts.

Decommissioning Impacts

Upon final facility closure, no workers would remain at the site, except for those necessary to maintain security over any remaining hazardous materials until they were removed from the site. During decommissioning, worker safety would be ensured by the same CAL/OSHA and other regulations requiring safety plans and training as were needed for construction and operations. Safety plans, training, and an Illness and Injury Prevention Plan would be included as part of the decommissioning plan. Facility fire protection systems would remain functional while hazardous materials remained on site.

ISEGS Mitigation Measures

WORKER SAFETY-1 requires the applicant to develop and implement a Project Construction Safety and Health Program.

WORKER SAFETY-2 requires the applicant to develop and implement a Project Operations and Maintenance Safety and Health Program.

WORKER SAFETY-3 requires the applicant to provide a site Construction Safety Supervisor.

WORKER SAFETY-5 requires the applicant to keep a portable AED on site during construction of the ISEGS project.

WORKER SAFETY-6 requires the applicant to prepare and implement BMPs for the storage and application of herbicides used to control weeds beneath and around the solar array.

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3.8 Hydrology and Water Quality

This section contains a description of the environmental and regulatory setting and potential impacts associated with construction and operation of the proposed project and alternatives with respect to hydrology and water quality. Water resources that would be used during construction and operation and maintenance are also discussed.

3.8.1 Environmental Setting

3.8.1.1 Surface Water Resources and Flooding

The proposed project site is in the western portion of the Basin and Range Physiographic Province in southeastern California and southwestern Nevada. Basins are valleys or depressions juxtaposed to mountainous terrains. A typical elevation difference between the two is about 4,000 vertical feet (see Figure 3.8-1). The province, which covers an area from central Utah to eastern California, may have been created by crustal extension, which produced vertical faults along which the basins and ranges developed (Blakley et al. 2000).

The proposed project area includes two basins, the Eldorado Valley and the Ivanpah Valley, and three mountain ranges, which are (from east to west) the Highland Range, the McCullough Range, and the Lucy Gray Mountains. Within Eldorado Valley, the proposed project crosses or is relatively close to Eldorado Dry Lake (in the northern part of Eldorado Valley) and at least 15 dry washes. A dry wash, or desert wash, is a gravelly, dry bed of an intermittent stream that usually only flows during precipitation events. In Ivanpah Valley, the proposed project crosses Ivanpah Dry Lake and is relatively close to Roach Dry Lake, Jean Dry Lake, and at least 15 dry washes (see Figure 3.8-2). There are likely many more dry washes within the proposed project area that are unmapped and could be impacted by the proposed project. In hydrological terms, basins are areas drained by a single major river or a more complex drainage system comprised of several surface water features such as rivers and lakes, principally dry lakes (lakes that receive surface water from desert washes in an internal drainage setting, then evaporate back into the atmosphere and/or contribute to groundwater). Basins can be divided into sub-basins, which in turn are divided into consecutively smaller units such as watersheds, subwatersheds, and catchments. Annual precipitation in these watersheds is quite low, ranging from 4 to 10 inches (California Department of Water Resources [CDWR] 2004, Nevada Department of Air Quality and Environment Management [NDAQEM] 2009). Surface water within the watershed drains into a number of dry lakes. Dry lakes are ephemeral water features; in the project area, they are located in the central valley (NDAQEM 2009).

The surface of the proposed project site contains desert scrub vegetation, desert washes, and dry lakes. More than 90 percent of the site is sparsely to moderately vegetated, with the remaining area made up of dry lakes, desert washes, and disturbed (human-made) areas that consist of roads and sediment berms. Alluvium in the area is composed of clay, sand, and gravel material. The soils and alluvium are highly susceptible to erosion as evidenced by incised scouring and braided drainage channels.

The desert washes, which are typical in the Mojave Desert region, are braided (streams that exhibit numerous channels that split off and rejoin each other to give a braided appearance). These streams flow only intermittently during seasonal precipitation events. Such streams are unstable and can migrate laterally during significant runoff occurrences. Water in the project area commonly flows into dry lakes. It is also possible for water in the dry washes to flow to perennial streams during significant precipitation events. Generally, significant drainage in the area appears to be internal; that is, dry washes transport water to dry lakes, where the water either evaporates or contributes to groundwater.

Dry washes can also carry destructive bedloads (boulders and gravels) during rain events. The portion of the proposed project located in Clark County, Nevada, has been mapped as primarily outside the 100-year and 500- year floodplains, with the exception of the dry lakes that are mapped as Federal Emergency Management Agency (FEMA) Zone A, within the 100-year floodplain. The portion of the proposed project in San Bernardino County, California, is mapped as FEMA Zone D, indicating that there are possible but undetermined flood hazards in the area.

Geologically, the site is located on a series of alluvial fan lobes that form large cone-shaped sedimentary deposits. This is a common depositional environment in this region (Reading 1980). It is likely that most of the proposed project area is on alluvial fans that have originated from significant amounts of flowing water carrying and subsequently depositing sediments across their entire extent during their lifespan. The hydrologic processes that occur on alluvial fans can be random and difficult to model. Sediments, which can range from clay to large boulders, are transported across alluvial fans by water in desert washes, debris flows, and sheet floods. Flood events on alluvial fans in arid climates are triggered by significant storms. In the Mojave Desert region, these would include the random summer cloudbursts that occur infrequently but can supply a large amount of water to a small area, as well as larger storms such as tropical storms that occur on a 100-year time scale. Any of these storms could result in flooding that could cause significant damage across the proposed project area and could cause significant localized destruction.

A specific approach to understanding and assessing flood hazards on alluvial fans has been developed for arid alluvial fans near Laughlin, Nevada. This approach uses geologic mapping to determine active and inactive portions of alluvial fans. Physical features such as stratigraphic relationships, topography, drainage patterns, soil development, and surface morphology are used to determine active and inactive portions of fans (House 2005). Certain portions of alluvial fans can become inactive and remain inactive for thousands of years. Those areas would be considered suitable for building. Conversely, very active portions of alluvial fans may need additional hydrological surveys and appropriate engineering controls to assure that any impacts to the public and the environment would be within acceptable constraints. This approach may improve the accuracy of surface water modeling on alluvial fans and reduce the associated flood hazards.

3.8.1.2 Surface Water Quality

Although ephemeral streams and washes do not have beneficial use designations assigned by the states of California and Nevada, these systems do provide natural distribution of water and sediments on floodplains, recharge for groundwater in the region, and a sporadic but local water supply for wildlife. No information is available on the surface water quality at the site during rain events, but the nature of the flooding that occurs there would tend to result in flood waters of high turbidity. Highly turbid waters would be more able to contain any contaminants that had been present on the soil surface. As this is a rural, undeveloped area, anthropogenic contaminants on the surface are expected to be low to non-existent.

3.8.1.3 Groundwater Resources

The proposed project site lies within the Basin and Range Physiographic Province, which has principal aquifer media of volcanic rocks, carbonates, and basin-fill sediments. Together, these aquifers are called the Basin and Range Aquifer System. The Basin and Range Physiographic Province is divided into hydrographic basins at the regional level, depending on geologic drainage features such as the drainage boundaries of a large river or stream.

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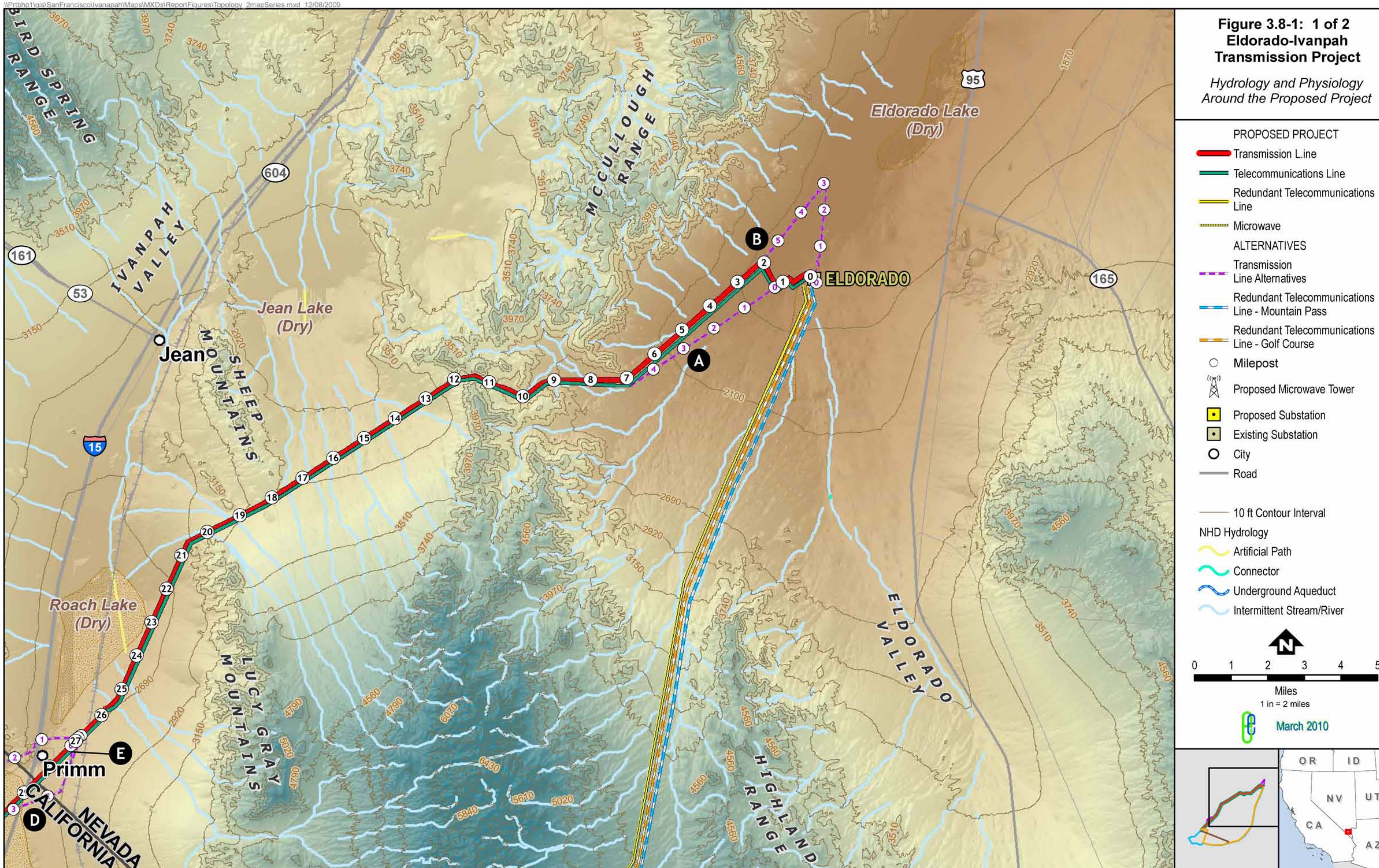

Figure 3.8-1: 1 of 2
Eldorado-Ivanpah Transmission Project

Hydrology and Physiology Around the Proposed Project

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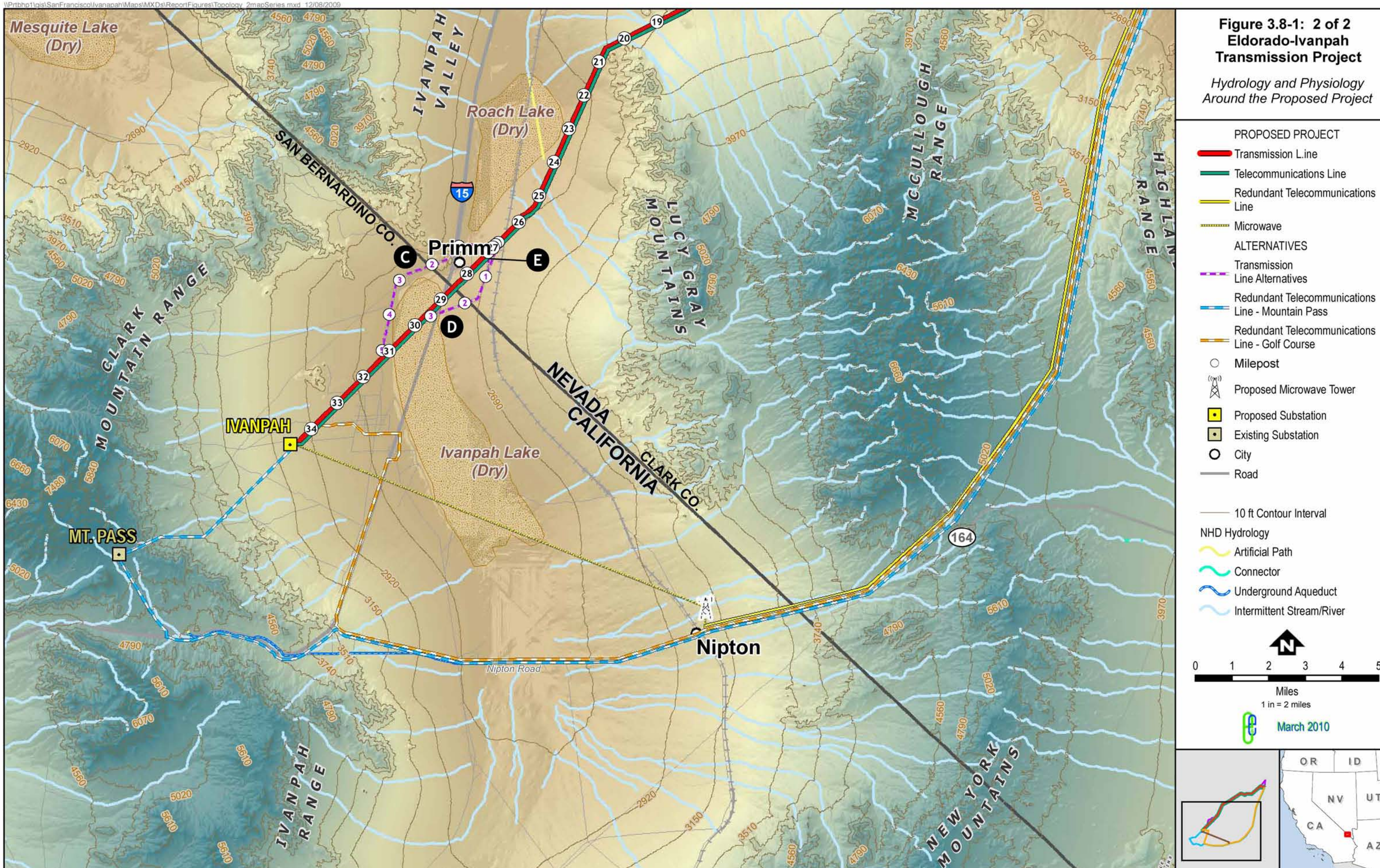

Figure 3.8-1: 2 of 2
Eldorado-Ivanpah Transmission Project

Hydrology and Physiology Around the Proposed Project

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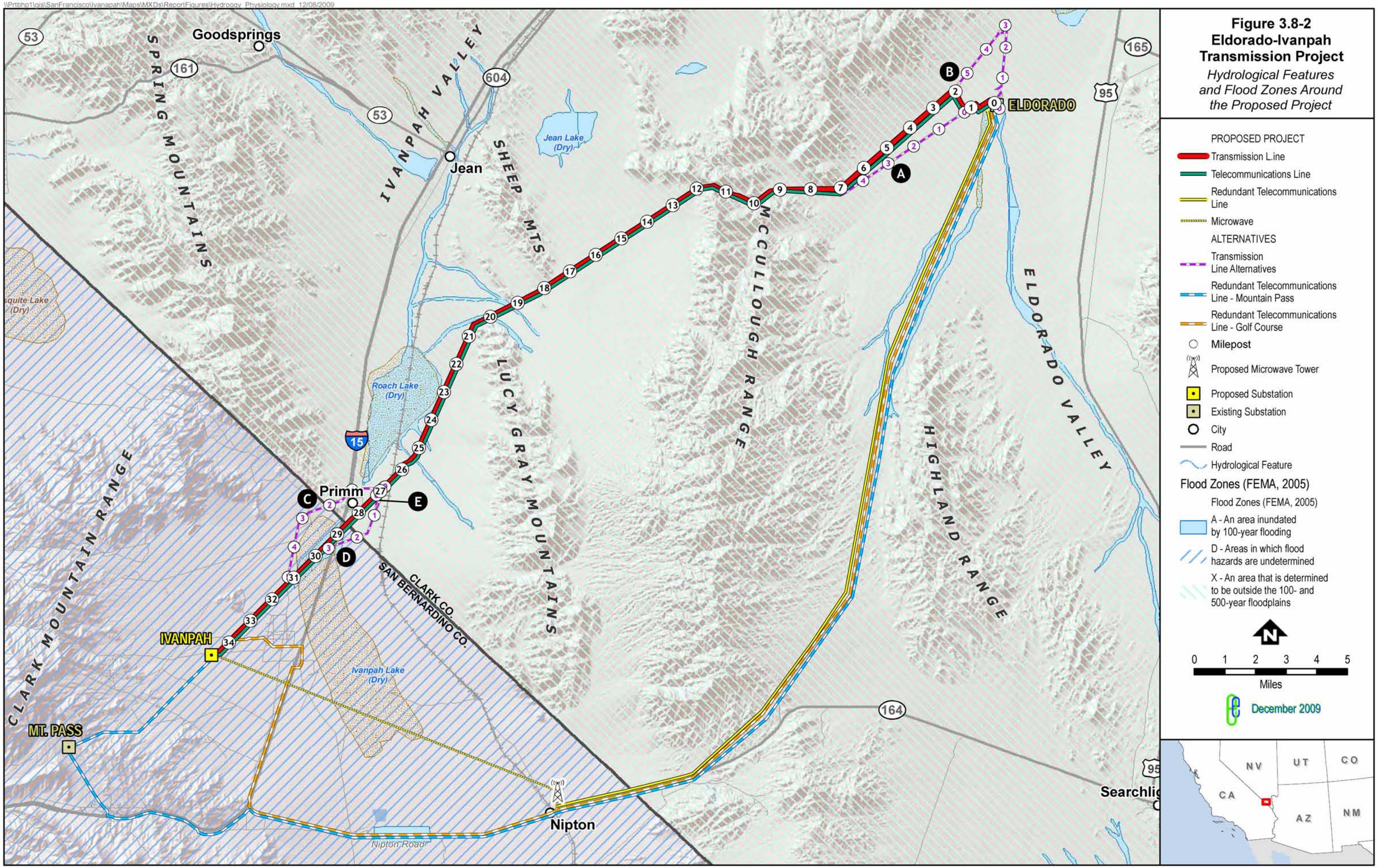

Figure 3.8-2
Eldorado-Ivanpah Transmission Project
Hydrological Features and Flood Zones Around the Proposed Project

Four groundwater basins underlie the proposed project area. Three are solely in Nevada, and one connects California and Nevada as shown in Figure 3.8-3 (CDWR 2004, NDCNR n.d.). In general, the groundwater basins lie beneath the Ivanpah and Eldorado desert valleys and are confined by local mountain ranges. Smaller portions of the proposed project facilities span the Jean Lake Valley and the Piute Valley groundwater basins. Recharge is primarily via percolation through alluvial deposits at ephemeral washes and the bases of neighboring mountain ranges. The coarse-grained alluvial deposits allow for infiltration of water during precipitation events. In Basin and Range aquifers, water is withdrawn primarily for agricultural uses (77 percent in 1985). Other uses include public supply (18 percent), mining, industrial, and thermoelectric power use (4 percent), and domestic and commercial use (1 percent; Planert and Williams 1995).

All of the sub-basins crossed by the Nevada portion of the proposed project are designated groundwater sub-basins that require additional administration to protect groundwater resources and declare preferred uses.

The Ivanpah Valley Groundwater Basin spans over 630 square miles across the California-Nevada state line. In California, basin number 6-30 is located in the eastern part of the South Lahontan Hydrologic Region. In Nevada, Ivanpah Valley Northern (164A) and Southern (164B) basins are in the southwestern part of the Central Hydrologic Region. This basin is confined by the Clark Mountains to the northwest, the Ivanpah Range to the west, the New York Mountains to the southwest, and the Lucy Gray Mountains to the east. This groundwater basin consists of Quaternary alluvium deposits up to 825 feet thick bound by northwest-trending faults. As with surface drainage, groundwater flows northward and is discharged via pumping and flow to Las Vegas Valley (CDWR 2004).

The Jean Lake Valley Groundwater Basin (basin 165) covers 96 square miles in the Central Hydrographic Region. This basin is confined by the Sheep Mountains and Lucy Gray Mountains to the west, the McCullough Range to the east, and the Bird Spring Range to the north. Water is withdrawn primarily for mining and milling processes. A small amount is withdrawn for stockwater (NDCNR n.d., NDWR 2009).

The Piute Valley Groundwater Basin (basin 214) covers 331 square miles in the Colorado River Basin Hydrographic Region. This basin is confined by the McCullough Range on the northwest, the New York Mountains and Castle Mountains on the west, and the Highland Range, Newberry Mountains, and Dead Mountains on the east. This basin crosses into California. Water is withdrawn primarily for municipal use. Small amounts are withdrawn for quasi-municipal use, mining and milling processes, stockwater, and commercial use (NDCNR n.d.).

The Eldorado Valley Groundwater Basin (basin 167) covers 530 square miles in the Central Hydrographic Region. This basin is confined by the Highland Range on the southwest, the McCullough Range and Black Mountains on the northwest, and the Eldorado Mountains on the east. Water is withdrawn primarily for mining and milling processes. Smaller amounts are withdrawn for municipal use, stockwater, and industrial use (NDCNR n.d.).

3.8.1.4 Groundwater Quality

Groundwater quality in the Basin and Range aquifers varies by basin. Generally, groundwater quality is high near the alluvial fan deposits at the base of mountain ranges. Groundwater quality decreases where increased discharge or excessive evaporation in confined basins resulted in salination of groundwater (Planert and Williams 1995).

One U.S. Geological Service (USGS) monitoring well is present near the proposed project area near Jean, Nevada. The well has been monitored since September 1990. Typical well elevations are between 535 and 595 feet below ground surface. This well samples the Ivanpah Valley sub-basin of the Basin and Range Aquifer (USGS 2009).

Water Supply Wells and Springs

Table 3.8-1 identifies water supply wells and springs/seeps within 1 mile of the proposed project and alternatives. These wells span the four groundwater basins described above. Water supply wells and springs are also displayed in Figure 3.8-3.

Table 3.8-1 Water Supply Wells and Springs/Seeps within 1 Mile of the Proposed Project and Alternatives

Alignment	Number of Wells and Springs
Eldorado–Ivanpah Transmission Line	52
Telecommunications Line	20
Ivanpah Substation	0
Transmission Alternative A	5
Transmission Alternative B	8
Transmission Alternative C	37
Transmission Alternative D	25
Transmission Subalternative E	24
Telecommunication Alternative (Golf Course)	35
Telecommunication Alternative (Mountain Pass)	38

No U.S. Environmental Protection Agency (U.S. EPA)-designated sole-source aquifers would be crossed by the proposed project in either California or Nevada. Sole-source aquifers are groundwater basins that supply at least 50% of the drinking water in the area overlying the aquifer and are in areas where there are no alternative drinking water source(s) available that could physically, legally, and economically supply all drinking water needed (U.S. EPA 2008).

3.8.1.5 Water Use and Discharge

The applicant has indicated that water would be used for dust suppression in daily construction activities and for sanitary and fire suppression purposes during operation of the Ivanpah Substation. The applicant has been requested to prepare a Water Use Plan, through mitigation measure W-2, that identifies sources and quantities of water to be used in these activities. It is anticipated that wastewater in the region would increase significantly if the Southern Nevada Supplemental Airport is built. In 2006, the wastewater treatment facility in Primm had a daily flow of 0.48 million gallons per day (mgd). If the Ivanpah airport is developed fully, it is projected that a maximum of 40 million passengers per year would pass through the airport, which would increase wastewater generation by 0.78 mgd. However, this wastewater would be treated on the airport site, not at the Primm wastewater treatment facility.

Presently, a maximum of 252 acre-feet per year (acre-ft/yr) of water is reclaimed/recycled from non-potable sources in the Primm area. Some of this could be used for the Bighorn Power Plant, a 580-MW combined-cycle gas-fired power plant located in Primm. The Bighorn Power Plant currently uses reclaimed water supplied by the Primm wastewater treatment plant as its primary water source (NDEP 2008). An additional 3 acre-ft/yr is supplied by a groundwater well on the power plant site.

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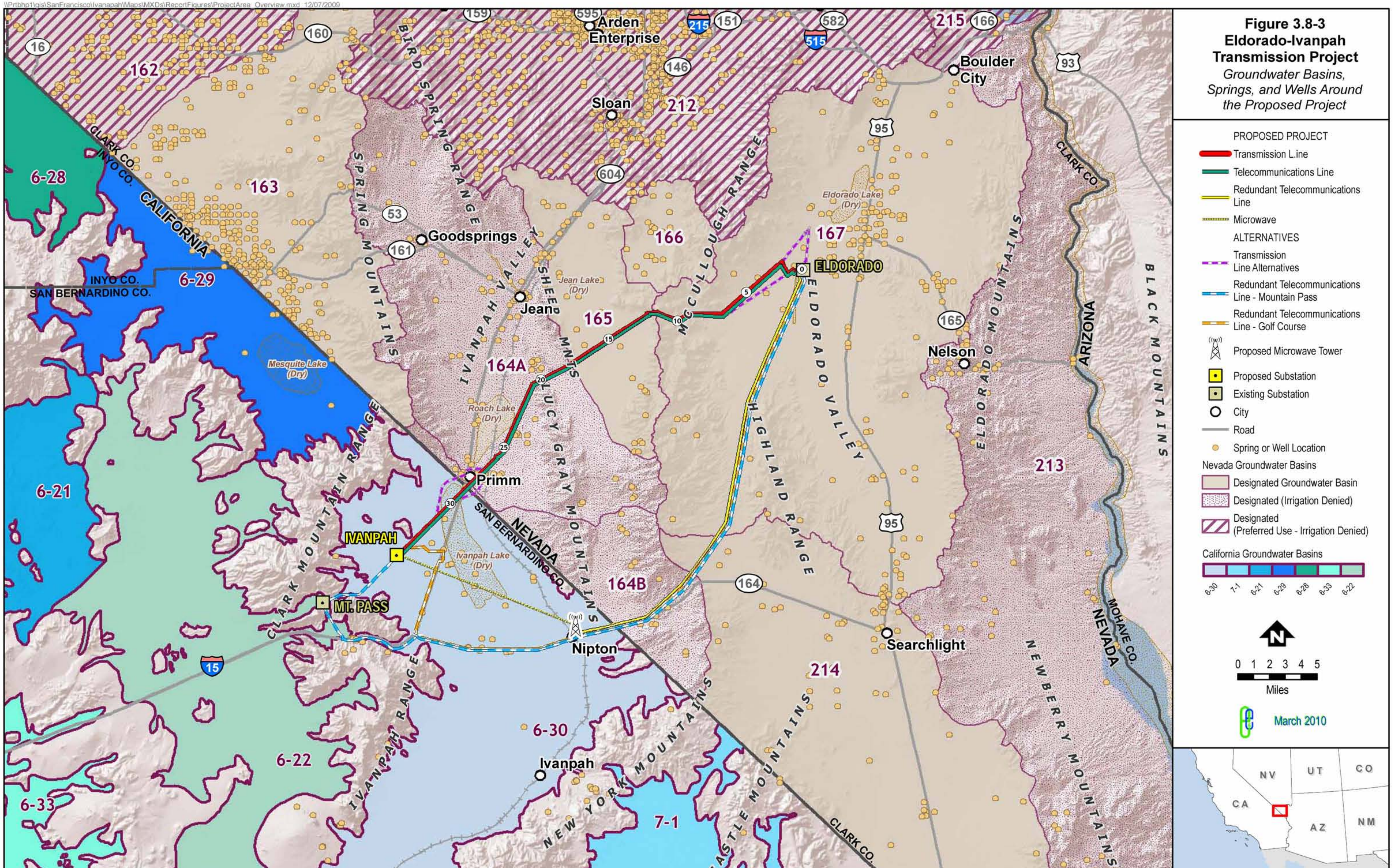

3.8.2 Applicable Laws, Regulations, and Standards

3.8.2.1 Federal

Clean Water Act

In 1972, Congress passed the Federal Water Pollution Control Act, which was reauthorized in 1977, 1981, 1987, and 2000 as the Clean Water Act (CWA). The goal of the law is to eliminate pollution in the nation's waters by imposing uniform standards on all municipal and industrial wastewater sources based on the best available technology.

Sections 301 and 402 Permitting

Sections 301 and 402 of the CWA prohibit the discharge of pollutants from point sources to "Waters of the U.S.," unless authorized under a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits can be issued by the U.S. EPA or by agencies in delegated states. The NPDES permit program has been delegated in California to the State Water Resources Control Board (SWRCB) and in Nevada to the Bureau of Water Quality Planning.

Safe Drinking Water Act

This act was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources, which are rivers, lakes, reservoirs, springs, and groundwater wells. This act authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and manufactured contaminants that may be found in drinking water. The act also mandates a Groundwater/Wellhead Protection Program be developed by each state to protect groundwater resources that are a source for public drinking water.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is administered by the FEMA, a component of the U.S. Department of Homeland Security. The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding.

In support of the NFIP, FEMA identifies flood hazard areas throughout the U.S. and its territories by producing Flood Hazard Boundary Maps, Flood Insurance Rate Maps, and Flood Boundary and Floodway Maps. Several areas of flood hazards are commonly identified on these maps. One of these areas is the Special Flood Hazard Area, a high-risk area defined as any land that would be inundated by a flood having a 1 percent chance of occurring in any given year (also referred to as the base flood).

Participation in the NFIP is based on an agreement between local communities and the federal government. The agreement states that if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government will make flood insurance available to the community.

3.8.2.2 State

Governing Agencies

In California, water resource supplies are regulated by the SWRCB and Regional Water Quality Control Boards (RWQCBs). Water resource quality is regulated by the California Department of Public Health Drinking Water Source Assessment and Protection Program. State water quality standards allow waterbodies to be managed by establishing goals based on (1) designated uses of the water, (2) criteria set to protect human and aquatic organism health, and (3) anti-degradation requirements to prevent current water quality from deterioration. Waters listed as "impaired" do not fully support their designated uses. Section 305(b) of the CWA requires states to submit water quality reports to the EPA every two years that provide a state-wide assessment of all waters. Section 303(d) requires states to provide a list of impaired waters only, identifying possible pollutants and prioritizing those waters for further pollution controls.

Natural resources in the State of Nevada are managed by the Department of Conservation and Natural Resources. Water resources are regulated by Nevada Division of Water Resources (NDWR), which is part of the Department of Conservation and Natural Resources. NDWR has defined a number of goals and objectives to conserve and manage Nevada's water resources for the citizens of Nevada. The Water Rights Section maintains a detailed Water Rights database and quantifies existing water rights, determines whether adequate water is available for new developments, manages surface and flood control, and manages and issues permits for the use of all water rights within the state. NDWR manages both surface and subsurface water rights. Water pollution and permitting are managed by the Nevada Division of Environmental Protection.

Statutes and Regulations

California Porter-Cologne Water Quality Control Act

This act was passed in 1969. It regulates surface water and groundwater within California and assigns responsibility for implementing CWA §401 through 402 and 303(d). It established the SWRCB and divided the state into nine regions, each overseen by an RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. In California, the proposed project area is administered by the Lahontan RWQCB (LRWQCB), Region 6, in San Bernardino County. The regional board governs protection of surface waters by assessing attainment of designated beneficial uses. Currently, 23 uses are established for surface waters within the state.

Nevada Revised Statute 444A.420 and Nevada Administrative Code 445A.118-225

The Nevada Revised Statute and Administrative Code laws regulate surface water within the state and assign responsibility for implementing CWA §401 through 402 and 303(d) in Nevada. The Nevada Bureau of Water Pollution Control is the state entity in charge of governing the water statutes. Nevada establishes both numeric and narrative water quality standards for surface waters. None of the drainage features encountered by the project in Nevada have established numeric water quality standards. However, Roach and Ivanpah dry lakes and all ephemeral washes must meet narrative water quality standards, which primarily address protection of the features from pollutants and toxics (Heggeness 2008).

Construction General Stormwater Permit

CWA §402 regulates construction-related stormwater discharges to surface waters through the NPDES program. In California, the EPA has delegated to the SWRCB the authority to administer the NPDES program through the RWQCBs, and has developed a general permit for Storm Water Discharges Associated with Construction Activities, the Construction General Permit (Water Quality Order 99-08-DWQ). Because the proposed project would disturb more than 5 acres, the applicant is required to obtain an NPDES Construction General Permit from the SWRCB, which requires them to prepare a SWPPP or obtain individual stormwater permits. The proposed project area is under the jurisdiction of the LRWQCB; therefore, the LRWQCB would need to be notified of the applicant's intent to proceed. No specific California SWRCB regulations exist pertaining to the treatment of fuel spills during construction, although petroleum-contaminated materials must be disposed of in accordance with applicable state and local regulations.

The Nevada Division of Environmental Protection (NDEP) has been delegated the authority by the EPA to administer the NPDES program in Nevada, through the Bureau of Water Pollution Control, which manages construction stormwater permits. The construction stormwater permit is required for all sites larger than 1 acre. A waiver is possible if the site is less than 5 acres and meets certain stipulations. The permit requires applicants to prepare and enforce a SWPPP during construction. Industrial stormwater permits and septic system permits are also managed under NDEP. No specific Nevada regulations exist pertaining to the treatment of fuel spills during construction, although petroleum-contaminated materials must be disposed of in accordance with applicable state and local regulations.

Groundwater Protection Areas and Wellhead Protection

The overall concept behind wellhead protection is to develop a reasonable distance between point sources of pollution and public drinking water wells so that releases from point sources are unlikely to impact groundwater from the well. The California Department of Public Health established the Drinking Water Source Assessment and Protection Program, which guides local agencies in protecting surface water and groundwater that are sources of drinking water. The California Department of Pesticide Regulation's Groundwater Protection Program is charged with identifying areas sensitive to pesticide contamination and develops mitigation measures and regulations to prevent pesticide movement into groundwater systems. In Nevada, the NDEP administers the Wellhead Protection Program, which is developed and implemented at the local level, such as the public water system, city, or township (Clark County 2008). The NDEP offers guidance to the local districts, endorses local wellhead protection programs, enforces regulatory setbacks to protected groundwater and wellhead areas, and tracks specific areas delineated as wellhead and source water protection areas.

3.8.2.3 Regional and Local

Basin management for the proposed project area is administered by the Mojave Water Agency in San Bernardino County and the Southern Nevada Water Authority in Clark County. The Mojave Water Agency Regional Water Management Plan was developed in 1994 and is still in place (CDWR 2004). A primary mandate of these entities is to ensure long-term public water supply by protecting surface water and groundwater resources, including supply, storage, recharge capability, and chemical quality. The applicant would confer with the Mojave Water Agency and Southern Nevada Water Authority during implementation of the proposed project to ensure protection of groundwater resources and compliance with any established groundwater management plans, and, if necessary, to secure permits needed for encroachment on water district easements. The applicant would also confer with the Clark County Water Management Team.

San Bernardino County

Floodplain Management

The San Bernardino County Flood Control District was formed as a progressive measure to preserve and promote public peace, health, and safety in the aftermath of disastrous 1938 floods. The district exercises control over all main streams in the county, acquires a right-of-way (ROW) for all main channels, constructs channels, and carries out an active program of permanent channel improvements in coordination with the U.S. Army Corps of Engineers (USACE). The district administers encroachment permits needed for flood channel crossings or any work within the district's ROW, if they are required.

Stormwater Management

The LRWQCB requires the unincorporated areas of San Bernardino County and the San Bernardino Flood Control District, as permittees, to be included in the NPDES Municipal Stormwater Permit. The Municipal Stormwater Permit and §4 of the Report of Waste Discharge, dated April 1995, require the development and adoption of New Development/Redevelopment Guidelines (the Guidelines).

The Guidelines are to be used by the permittees of the San Bernardino County Stormwater Program as a supplement to the Drainage Area Management Program and the Report of Waste Discharge. The purpose of preparing the Guidelines was to identify pollutant prevention and treatment measures that could be incorporated into development projects. The Guidelines recommend which Best Management Practices (BMPs) should be required as standard practice. The Guidelines provide information on stormwater quality management planning, general conditions, special conditions, and construction regulatory requirements.

Currently, the County of San Bernardino does not have its own specific standards but follows state standards for water quality. During construction, projects are required to obtain coverage under the California General Permit for Construction Activities, which is administered by the RWQCB. Projects must identify and implement stormwater management measures that would effectively control erosion and sedimentation and other construction-based pollutants during construction. Projects must also identify and implement other management measures, such as construction of detention basins, that would effectively treat pollutants expected for the post-construction land uses.

All future individual construction projects over 1 acre that are implemented under the County of San Bernardino General Plan will be required to have coverage under the California General Permit for Construction Activities (County of San Bernardino 2007). As required in the General Permit for Construction Activities, during and after construction, BMPs would be implemented to reduce or eliminate adverse water quality impacts resulting from development. Compliance with applicable state and local water quality regulations would ensure that impacts to water quality would be less than significant.

Clark County

Floodplain Management

The Clark County Regional Flood Control District has a comprehensive floodplain management plan in place that includes a regulatory program that establishes standards and requirements for flood hazard management. The county has adopted revised regulations, the Uniform Regulations for the Control of Drainage, that comply with national FEMA standards and provide regulatory control over land development in floodplain areas. These regulations outline when and where a Floodplain Use Permit is required, as well as the process for review of local development permit applications in compliance with these regulations (Clark County Regional Flood Control District 2007).

Stormwater Management

A Stormwater Quality Management Committee has been formed as a partnership entity among the cities of Las Vegas, North Las Vegas, and Henderson; Clark County; and the Clark County Regional Flood Control District. The committee manages stormwater program development and compliance efforts in accordance with the State of Nevada's NPDES program. For inclusion of a project under the state's General Stormwater Permit, project proponents must submit a notice of intent and a SWPPP for all soil-disturbing activities. The criteria for soil-disturbing activities includes those where 1 or more acres will be disturbed, stormwater (free flow or via storm drains) will be discharged to a natural receiving water, and/or detention basins will need to be constructed for onsite stormwater treatment (Clark County Stormwater Quality Management Committee 2009).

Local

The Clark County Department of Air Quality and Environmental Management oversees environmental issues in the county. The Water Quality Planning Team, which is part of this group, is responsible for ensuring compliance by area permittees for projects that could have an impact on county surface water and groundwater. The group's primary responsibility is to develop and ensure compliance with area-wide water quality management plans. The group deals with issues such as municipal wastewater treatment, stormwater pollution prevention, groundwater management, and wellhead protection. The county also has a federal lands program to coordinate with the six federal agencies and monitor National NEPA planning.

To accomplish the goals noted above, the Clark County Area Wide Water Quality Management Plan (WQMP) was established in 1975. This bill enabled certain counties (including Clark County) to complete their own WQMP. The plan was established in 1978 and approved by EPA in 1979, and has been revised and amended, most recently in

2009. The WQMP establishes eight planning areas. The site is contained in Planning Area 6: Ivanpah-Pahrump Valleys. Planning Area 6 covers approximately 1,690 square miles. The major watershed in the area is the Ivanpah-Pahrump Watershed (DAQEM 2009).

Basin management for the Ivanpah Valley (the California portion of the proposed project) is administered by the Mojave Water Agency in San Bernardino County. A Regional Water Management Plan was developed in 1994 and is still in place (DWR 2004). As discussed above, a primary mandate of the agency is to ensure long-term public water supply. The applicant would confer with the Mojave Water Agency during implementation of the proposed project to ensure protection of groundwater resources and compliance with any established groundwater management plans and, if necessary, to secure permits needed for encroachment on water district easements.

3.8.3 Impact Analysis

This section defines the methodology used to evaluate impacts for hydrology and water quality resources, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.8.4, "Mitigation Measures."

3.8.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to hydrology and water quality resources would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

Under NEPA, effects to water resources would occur if the proposed project would:

a. Degrade the quality of surface waters by increasing erosion or sedimentation or by introducing contaminated waters
b. Result in short- or long-term violations of federal or state water quality standards
c. Alter the flow or degrade the quality of groundwater to natural systems or wells for private or municipal purposes

3.8.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would do any of the following:

a. Violate any water quality standards or waste discharge requirements
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge
c. Substantially alter the existing drainage pattern of the site or area in a manner that would result in substantial erosion or siltation onsite or offsite
d. Substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or otherwise substantially degrade water quality

f. Place within a 100-year flood hazard area structures that would impede or redirect flood flows

g. Expose people or structures to a significant risk of loss, injury, or death related to flooding, including flooding as a result of the failure of a levee or dam

h. Cause inundation by mudflow

3.8.3.3 Methodology

This analysis describes the impacts of the proposed project related to water resources for each criterion, and determines whether implementation of the proposed project would result in significant impacts by evaluating effects of construction and operation of the proposed project in the context of the affected environment described in Section 3.8.1.

The purpose of this evaluation was to determine the potential impact to water resources resulting from the proposed project. The impact of random flood events on the proposed project was also assessed, as well as the corresponding impact to public health and the environment. To complete the analysis, published resources including books, journals, maps, and information available via the internet on government websites were reviewed. The PEA was used extensively as a resource document for much of the analysis. In addition, information provided in the Final Staff Assessment/Draft Environmental Impact Statement (FSA/EIS) prepared for the proposed ISEGS located near the proposed Ivanpah Substation was evaluated. Published surface and groundwater maps and reports provided the information for the environmental setting section.

While Section 3.8.1, "Environmental Setting," identifies resources within the general vicinity of the proposed project, the impact analysis focuses on water resources that are directly crossed by the power lines or telecommunication lines, or are within the area impacted by the Ivanpah Substation, or are within 150 feet of the project centerline in the case of wells, seeps, and springs. When significant impacts occur, mitigation measures are outlined to reduce the impacts to less than significant levels. Applicant proposed measures (APMs) and agency recommended mitigation measures (MMs) are listed in this section as part of each potential impact analysis.

Readily available public documentation was used to compile this impact analysis. EISs from other projects in the California/Nevada vicinity were reviewed for impact criteria and commonly applied MMs. County plans and BLM Resource Management Plans were assessed for impact thresholds, MMs, and BMPs.

3.8.3.4 Applicant Proposed Measures

The applicant has included the following APMs related to hydrology and water quality:

APM W-1: Avoid Stream Channels. Construction equipment would be kept out of flowing stream channels.

APM W-2: Erosion Control and Hazardous Material Plans. Erosion control and hazardous material plans would be incorporated into the construction bidding specifications to ensure compliance.

APM W-3: Project Design Features. Appropriate design of tower footing foundations, such as raised foundations and/or enclosing flood control dikes, would be used to prevent scour and/or inundation by a 100-year flood. Where floodplain encroachment is required by the CPUC and/or the BLM, and potential impacts require non-standard designs, hydrology/channel flow analysis would be performed.

APM W-4: Avoid Active Drainage Channels. Towers would be located to avoid active drainage channels, especially downstream of steep hillslope areas, to minimize the potential for damage by flash flooding and mud and debris flows.

APM W-5: Diversion Dikes. Diversion dikes would be required to divert runoff around a tower structure or a substation site if (a) the location in an active channel (or channels) could not be avoided; and (b) where there is a very significant flood scour/deposition threat, unless such diversion is specifically exempted by the CPUC and/or the BLM Authorized Officer.

APM W-6: Collect and Divert Runoff. Runoff from roadways would be collected and diverted from steep, disturbed, or otherwise unstable slopes.

APM W-7: Ditch and Drainage Design. Ditches and drainage devices would be designed to handle the concentrated runoff and located to avoid disturbed areas. They would have energy dissipations at discharge points that might include rip-rap, concrete aprons, and stepped spillways. Where diversion dikes are required to protect towers or other project structures from flooding or erosion, these dikes would be designed to avoid increasing the risk of erosion or flooding onto adjacent property.

APM W-8: Minimize Cut and Fill Slopes. Cut and fill slopes would be minimized by a combination of benching and following natural topography where possible.

APM W-9: Prepare and Implement an Approved SWPPP. As a part of the SWPPP, soil disturbance at tower construction sites and access roads would be the minimum necessary for construction and designed to prevent long-term erosion through the following activities: restoration of disturbed soil, re-vegetation, and/or construction of permanent erosion control structures. BMPs in the project SWPPP would be implemented during construction to minimize the risk of an accidental release.

APM W-10: Emergency Release Response Procedures. The Emergency Release Response Procedures developed pursuant to APM HAZ-1 would be maintained onsite (or in vehicles) during construction of the proposed project.

APM W-11: Conduct a Worker Environmental Awareness Program (see BIO-6, CR-2b, PALEO-3). A Worker Environmental Awareness Program (WEAP) would be conducted to communicate environmental concerns and appropriate work practices, including spill prevention, emergency response measures, and proper BMP implementation, to all field personnel prior to the start of construction. This training program would emphasize site-specific physical conditions to improve hazard prevention. It would include a review of all site-specific plans, including but not limited to the project's SWPPP and Hazardous Substances Control and Emergency Response Plan. The applicant would document compliance and maintain a list of names of all construction personnel who had completed the training program.

APM W-12: Properly Dispose of Hazardous Materials. All construction and demolition waste, including trash and litter, garbage, and other solid waste, would be removed and transported to an appropriately permitted disposal facility. Petroleum products and other potentially hazardous materials would be removed and transported to a hazardous waste facility permitted or otherwise authorized to treat, store, or dispose of such materials.

APM W-13: Identify Location of Underground Utilities Prior to Excavation. Prior to excavation, the applicant or its contractors would locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, or other underground structures that may reasonably be expected to be encountered during excavation work.

APM W-14: Prepare or Update Spill Prevention, Control, and Countermeasure (SPCC) Plans. The applicant would prepare or update SPCC plans for substations to minimize, avoid, and/or clean up unforeseen spill of hazardous materials during facility operations.

3.8.3.5 Proposed Project / Proposed Action

Construction

The linear components of the proposed project (the Eldorado–Ivanpah transmission line and the telecommunications line) would have very similar construction impacts and are therefore discussed jointly. The transmission line would replace an existing line in approximately the same location.

The potential for increased erosion or siltation on site or off site due to alteration of surface drainage patterns during construction of the proposed project would be minor, localized, and short term. In general, construction activities causing ground disturbance, such as grading, may change natural runoff patterns, thereby affecting natural erosion and siltation processes. Water used for dust suppression during construction could suspend and transport more sediment than is typically moved in the arid climate. In the Ivanpah Valley, sediment load transport to the surface of Ivanpah Dry Lake is part of natural processes. Assessing erosion and siltation impacts includes considering measures for reducing sediment contribution downstream. The applicant has stated that construction equipment would be kept out of flowing stream channels except when absolutely necessary for crossings (APM W-1). Also, transmission towers would be located to avoid active drainage channels (APM W-4). As part of the proposed project construction, the applicant would collect and divert runoff (APM W-6), design ditches and drainages (APM W-7), and minimize cut and fill slopes (APM W-8). All of these measures would help minimize changes to surface drainage patterns and reduce stormwater velocity where changes would occur, therefore preventing excessive erosion and siltation. Proper implementation of MM W-1 (Erosion Control Plan) would require adherence to all BMPs and county plan erosion practices.

The potential for the introduction of hazardous contamination into surface water resources during construction of the proposed project would be minor, localized, and short term. The greatest possibility for hazardous releases would occur at staging areas and refueling stations. As part of construction, the applicant would implement a hazardous materials and waste handling management program (APM HAZ-2) that had emergency release response procedures to address any potential release of hazardous materials (APM W-10), and would properly dispose of hazardous materials (APM W-12). To prevent any potential disturbance to existing utilities and pipelines, the applicant would use a service to identify underground utility lines (APM W-13) before construction began. The applicant would also implement a SWPPP (APM W-9). Other measures the applicant would implement to decrease the potential of contaminating water resources would be to avoid stream channels (APM W-1) and conduct a worker environmental awareness program (APM W-11). For operations at the substations, the applicant would be required by law to implement SPCC plans (APM W-14), which are designed to prevent or minimize spills. The above-described measures would reduce the potential for spills of hazardous materials and outline cleanup measures to be implemented if a spill occurred. Since groundwater in this region is more than 500 feet below the surface, it is highly unlikely that groundwater could become contaminated given the current project design and APMs; therefore, there would be no impacts to groundwater resources. Despite the applicant's measures, however, surface water contamination due to an unanticipated spill of vehicle oil or mud slurry could occur. Due to the minimal amount of surface water and low levels of precipitation in the area, a spill would likely be contained prior to contamination of water resources; therefore, the impact would be minor, short-term, and localized.

The potential for interference with aquifer recharge by the proposed project would be negligible, localized, and short term. In general, increasing the area of impervious surfaces in an area can result in local wells or aquifers receiving fewer groundwater inputs. However, because transmission line construction would replace existing structures, it would not change the existing impervious area. The construction and operation of the new Ivanpah Substation would result in an increase in impervious area. However, this area is small when compared with the amount of non-impervious area in the recharge basins. As part of the construction of the proposed project, the applicant would avoid stream channels (APM W-1), collect and divert runoff (APM W-6), and develop ditch and drainage design (APM W-7). These measures would allow for infiltration of surface water and subsequent groundwater recharge at rates consistent with preconstruction conditions.

Until the source of water to be used has been determined, the potential for lowering the local water table during construction would be minor to moderate, localized, and short term. The applicant stated that water would be used for dust suppression during construction. Depending on the quantity used, this could decrease local groundwater supply and recharge. As part of MM W-2 (Water Use Plan), the applicant would be required to identify quantities and sources of water to be used during each phase of the proposed project in order to identify areas where local groundwater supply and recharge could be adversely affected. To avoid such effects, MM W-2 also sets maximum water use limits for the construction and operation phases of the proposed project.

The potential for increased flooding due to modification of surface drainage patterns during construction of the proposed project would be localized and short term. Ground disturbance associated with project construction could alter natural drainage patterns, causing a change in the hydrologic inputs to a stream, thus affecting the flow volume and route. As part of the proposed construction process, the applicant would keep equipment out of stream channels (APM W-1), assess contractor erosion control plans during the bidding process (APM W-2), and avoid placement of transmission poles within active drainage channels (APM W-4). These measures would reduce temporary impacts to flowing steams and permanent impacts to existing drainage channels.

However, these measures do not address construction impacts to existing drainage channels. MM W-3 (On-Site Flow Model) requires the applicant to predict any alteration in flow paths as a result of construction of the proposed project and establish a channel system to mitigate any impacts associated with altered flow paths. Since the project would be located on an active alluvial fan where channels and dry washes are integral to site drainage, preservation of these features is an important mitigation measure. Construction across the Ivanpah Dry Lake would result in disturbance to the playa surface and normal flooding processes. MM W-4 (Restoration of Dry Lake) would restore the lake surface to preconstruction conditions.

Flooding or inundation on alluvial fans due to random storm events during construction of the Eldorado–Ivanpah Transmission Line—or flooding or inundation by mudflow due to modified runoff patterns during construction of the Ivanpah Substation or telecommunications line—would be unlikely, but due to its potential severity, could be significant if it did occur. Because alluvial material is loose, the sediments of alluvial fans can move and shift, particularly during heavy precipitation events such as flash floods. Within an alluvial fan, there are usually established drainage patterns for normal precipitation events. However, if a flash flood event occurred at the proposed project site and the natural drainages were overtopped, there would be sheet flow over some or most of the proposed site. As part of construction, the applicant would keep equipment out of flowing streams (APM W-1), avoid tower placement in active drainage channels (APM W-4), create a system of diversion dikes around any sites where active channels could not be avoided (APM W-5), collect and divert runoff from roadways (APM W-6), develop ditches and drainage devices to reduce stormwater speed (APM W-7), and, as required by law, implement a SWPPP (APM W-9). Even with these measures, construction activities could change natural runoff patterns, thereby affecting waterbody volume and flow, possibly affecting flooding patterns of local waterways.

The proposed project area is in a region known for active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. Small, unmapped drainages in the active portions of alluvial fans are essential to effective drainage. As a part of MM W-5 (Hydrological Model of Alluvial Fan), the applicant will analyze all alluvial fans in the project area to determine the most active sections. Following this analysis, project components would be sited on the least active areas of the fans to reduce the possibility of floods or debris flows.

Transmission line tower footings would be constructed within a 100-year flood hazard area through the Ivanpah Dry Lake, as shown in Figure 3.8.2. Additionally, the telecommunications line would cross through a 100-year flood hazard zone near Nipton Road. The Ivanpah Substation would not be located in a 100-year flood hazard zone. Due to the relatively flat topography of the flood hazard areas, project facilities are unlikely to impede any flood waters, and the risk associated with this hazard would be localized and short term. If flood waters were to pool during extreme precipitation events, they would likely accumulate slowly, allowing ample time for the construction staff to vacate the area. During construction, the applicant would design all tower footings to withstand scour and withstand inundation from a 100-year flood (APM W-3) so that flooding at tower footings would not pose a risk to the public.

The potential for increased risk of loss, injury, or death due to flooding or dam failure during construction of the proposed project would be limited. Flooding could cover an extensive area and would be short term. There are no dams in the area, so there is no impact associated with flooding due to dam failure. As discussed above, the proposed project area is known for active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. Alluvial fan debris flows can carry sediments, cobbles, and even large objects such as trees, cars, and small buildings, thus presenting a threat to surrounding people and property. If project facilities were in the path of flood flows, there would be a slight possibility the facilities could be picked up and carried with the debris flow, presenting a threat to the construction crews, surrounding environment, and local communities.

However, it is unlikely that construction equipment would actually impede or redirect a flood flow. As part of construction of the proposed project, the applicant would keep construction equipment out of flowing streams (APM W-1), avoid tower placement in active drainage channels (APM W-4), create a system of diversion dikes around any sites where active channels could not be avoided (APM W-5), and develop ditches and drainage devices to reduce stormwater speed (APM W-7). These measures would ensure that active drainage channels were not hindered by construction activity. As mentioned above, small, unmapped drainages in active portions of alluvial fans are essential to effective drainage during extreme precipitation events and flash floods. As a part of MM W-5 (Hydrological Model of Alluvial Fan), the applicant would analyze the fans in the project area to determine the most active sections. Following this analysis, the project facilities would be sited on the least active lobes of the alluvial fans to mitigate against floods or debris flows and their inherent threat to life and property.

Operation and Maintenance

Eldorado–Ivanpah Transmission Line

The operation and maintenance impacts for the proposed project would be similar to the construction impacts. Surface water contamination due to an unanticipated spill of vehicle oil during routine inspection, repair, and washing of the line would be possible. Due to the minimal amount of surface water, low levels of precipitation in the area, and implementation of the applicant's operation policies, spills would likely be contained prior to contamination of water resources. Routine washing of the line would require use of local groundwater resources. These surface changes could shift subsurface hydrology in such a way that local wells or aquifers might not receive groundwater inputs at the same rate as they did before construction, resulting in an overall change in local groundwater supply and recharge. Flooding or inundation by mudflow due to modified runoff patterns would be possible. However, the proposed project's impacts would likely be similar to those of the existing transmission line that currently operates and undergoes routine maintenance. Therefore, operation and maintenance activities associated with the transmission line would not result in any additional impacts to water resources.

Ivanpah Substation

The Ivanpah Substation would be constructed within the limits of the proposed ISEGS project. Therefore, the applicant would integrate the Ivanpah Substation surface water management into the BrightSource LLC Surface Water Management Plan, approved by the California Energy Commission (CEC) in the FSA/DEIS for the ISEGS project. The applicant for the ISEGS project, (BrightSource LLC) conducted an onsite investigation of the hydrology of the ISEGS site (including the Ivanpah Substation site) and computer modeling of storm flows and sedimentation rates. The ISEGS project would adopt a low impact development design for grading related to stormwater flow. The low impact development design would maintain natural drainage patterns to the extent practicable. All stormwater flow would be consistent with the guidance developed by San Bernardino County.

As a new structure, the Ivanpah Substation would result in additional impacts to water resources during operation and maintenance relative to preconstruction conditions. As described above, the Ivanpah Substation would be fenced and co-located in the construction logistics area for the ISGES project. The ISEGS project would use low-impact development design and maintain existing drainage to the extent practicable. However, there would be impacts associated with alteration of surface drainage patterns at the Ivanpah Substation and hazards associated with flooding. These impacts are described below. The CEC is the lead agency for the ISEGS project. To ensure protection of water quality during construction and operation of the ISEGS project, the CEC is requiring ISEGS to prepare and submit a Drainage, Erosion, and Sedimentation Control Plan (DESCP) and to prepare a SWPPP. As part of MM W-6, EITP will be required to submit copies of the approved DESCP and SWPPP to CPUC three months prior to the start of construction.

As discussed above in the construction section, alteration of the course of a stream due to modification of surface drainage patterns during construction of the Ivanpah Substation could result in localized erosion and downstream flooding. If these impacts were to occur during construction and were not appropriately addressed, they would be minor, localized, and long term throughout the operation and maintenance of the Ivanpah Substation.

NEPA Summary

With respect to hydrology, construction of the proposed project would result in impacts ranging from minor to moderate. Impacts would generally be local in extent. The applicant would take precautions to prevent erosion and sedimentation during construction and operation, including avoiding active stream and drainage channels (APMs W-1, W-4), providing erosion plans as part of the contractor bidding process (APM W-2), designing tower footings to prevent scour (APM W-3), requiring design measures to collect and divert runoff to prevent excessive erosion (APMs W-5, W-6, W-7, W-8), and, as required by law, developing and implementing a SWPPP. However, special consideration needs to be taken because the proposed project would be sited on active alluvial fans. Implementation of MM W-1 would ensure that all local and regional erosion control plans and water quality permits would be adhered to. MM W-3 would require the applicant to model any changes in flow paths that would occur as a result of construction of the proposed project and mitigate any effects with a channel system. MM W-6 would ensure that appropriate erosion control measures are implemented at the Ivanpah Substation. Implementation of these MMs would reduce any impacts due to erosion and sedimentation to minor, localized levels.

The potential for the introduction of hazardous contamination into surface water resources during construction of the proposed project would be minor, localized, and short term. During construction, the applicant would implement a hazardous materials and waste handling management program (APM HAZ-2) that would have emergency release response procedures to address any potential release of hazardous materials (APM W-10), and would properly dispose of hazardous materials (APM W-12). To prevent any potential disturbance to existing utilities and pipelines, the applicant would use a service to identify underground utility lines (APM W-13) before construction began. The applicant would also implement a SWPPP (APM W-9). To further decrease the potential to contaminate water resources, they would avoid stream channels (APM W-1) and conduct a worker environmental awareness program (APM W-11). For operations at the substations, they would implement SPCC plans (APM W-14), which are designed to prevent or minimize spills. With the successful execution of the APMs listed above, construction of the proposed project would not result in short- or long-term violations of federal or state water quality standards.

Construction projects have the potential to alter the flow or degrade the quality of groundwater to natural systems or wells for private or municipal use. Because the depth to groundwater at the proposed project site is more than 500 feet, there would be no impacts to groundwater quality due to construction and operation of the proposed project. The proposed project would use water for dust suppression during construction. During the operation phase, water would be used at the substation for sanitary purposes and fire control during emergencies. The applicant has stated that no wells would be drilled for the proposed project's water supply. As part of MM W-2 (Water Use Plan), the applicant would be required to identify the quantity and sources for all water to be used during construction and operation. MM W-2 also sets maximum water use limits for the construction and operation phases of the proposed project. Despite implementation of these measures, impacts to groundwater would be minor to moderate and localized, until the water source is known.

Impacts during operation and maintenance would be similar to those of current operations of the existing transmission line.

CEQA Significance Determinations

IMPACT HYDRO-1: Introduction of Hazardous Contamination into Surface and Groundwater
Less than significant with mitigation

Although the proposed project could pose a potential adverse impact on surface and groundwater resources due to hazardous contamination during construction and operation and maintenance of the lines and substation, the applicant would undertake multiple measures to minimize this potential. As discussed above, the applicant would implement a hazardous materials and waste handling management program (APM HAZ-2) that would outline proper handling, storage, and disposal of hazardous materials as well as detail how to address any potential release. The applicant would also undertake measures to avoid operating in stream channels (APM W-1) and implement a SWPPP (APM W-9). For operations, they would implement an SPCC plan at their substations. These measures would reduce the potential for spills of hazardous materials and outline cleanup measures to be implemented should a spill occur.

In addition, the hydrology of the area would prevent any spill that occurred from migrating quickly or far. Because precipitation levels are low and groundwater in this region is located more than 500 feet below the surface, it is highly unlikely that any release would migrate to groundwater. In addition, there are few permanent surface waters, so there are few that could be adversely affected. However, an unanticipated spill of vehicle oil or mud slurry could occur. With proper implementation of MM W-1 (Erosion Control Plan and Compliance with Water Quality Permits) and MM W-6 (DESCP and SWPPP for Ivanpah Substation), the potential impact on surface water quality from erosion would be reduced to less than significant levels.

IMPACT HYDRO-2: Lowering of Water Table or Interference with Aquifer Recharge
Potentially significant

The proposed project could have impacts on the local water table and on aquifer recharge processes by altering surface water drainages and exceeding current groundwater withdrawal conditions. Construction activities could shift subsurface hydrology in such a way that local wells or aquifers might not receive groundwater inputs at the same rate as prior to construction. Increased impermeable surfaces could limit surface water absorption processes. The altered runoff patterns could decrease local groundwater supply and recharge and deplete water available for surface waterbodies. Since transmission line construction would replace existing structures, construction would not change the existing impervious area. The construction and operation of the new Ivanpah Substation would result in an increase in impervious area, but this area would be relatively small relative to the surrounding pervious area, which could receive the surface water runoff.

During construction, the applicant would avoid stream channels (APM W-1), collect and divert runoff (APM W-6), and develop ditch and drainage design (APM W-7). These measures would allow for infiltration of surface water and subsequent groundwater recharge at rates consistent with preconstruction conditions.

The applicant stated that water would be used for dust suppression during construction. Depending on the quantity and sources to be used, this could decrease local groundwater supply and recharge. As part of MM W-2 (Water Use Plan), the applicant would identify quantities and sources of water to be used during each phase of the proposed project. MM W-2 also sets maximum water use limits for the construction and operation phases. However, because the source of the water to be used during construction is currently unknown, at this point the possibility that the impact on groundwater supplies could be significant must be considered.

IMPACT HYDRO-3: Increased Erosion or Siltation due to Alteration of Surface Drainage Patterns
Less than significant with mitigation

There would be potential for increased erosion or siltation on site or off site due to project construction and operation and maintenance activities. Construction activities causing ground disturbance, such as grading, may change natural runoff patterns, thereby affecting natural erosion and siltation processes. Water used for dust suppression during construction could suspend and transport more sediment than is typically moved in the arid climate. In the Ivanpah Valley, sediment load transport to the surface of Ivanpah Dry Lake is part of natural processes. Assessment of impacts due to erosion and siltation includes analysis for reducing sediment contribution downstream. The applicant has stated that construction equipment would be kept out of flowing stream channels except when absolutely necessary for crossings (APM W-1). Also, transmission towers would be located to avoid active drainage channels (APM W-4). As part of the proposed project construction, the applicant would collect and divert runoff (APM W-6), develop ditch and drainage design (APM W-7), and minimize cut and fill slopes (APM W-8). All these measures would help minimize changes to surface drainage patterns and reduce stormwater velocity where changes would occur, therefore preventing excessive erosion and siltation. Because MM W-1 (Erosion Control Plan) and MM W-6 (DESCP and SWPPP for Ivanpah Substation) would ensure that all BMPs and county plan erosion practices are adhered to, erosion and siltation levels would be kept consistent with preconstruction conditions, thereby reducing this impact to less than significant levels.

IMPACT HYDRO-4: Altered Course of Stream or River due to Modification of Surface Drainage Patterns
Less than significant with mitigation

The proposed project could cause alteration of the course of a stream due to modification of surface drainage patterns. Construction activities causing ground disturbance and alteration of natural drainage patterns could cause a change in the hydrologic inputs to a stream, thus affecting the flow volume or route. Changes to surface contours could be permanent and could affect the stream flow over the long term. As part of the proposed construction process, the applicant would keep equipment out of stream channels (APM W-1), consider erosion control plans during the bidding process (APM W-2), and avoid placement of transmission poles within active drainage channels (APM W-4). These measures would reduce temporary impacts to flowing steams and permanent impacts to existing drainage channels.

However, these measures do not address construction impacts to existing drainage channels. MM W-3 (On-Site Flow Model) requires the applicant to predict any alteration in flow paths as a result of construction of the proposed project and establish a channel system to mitigate any impacts associated with altered flow paths. Since the project would be located on an active alluvial fan where channels and dry washes are integral to site drainage, preservation of these features is an important mitigation measure. Construction across the Ivanpah Dry Lake would result in disturbance to the playa surface and normal flooding processes. MM W-4 (Restoration of Dry Lake) requires the applicant to restore the lake surface to preconstruction conditions, therefore reducing this impact to less than significant levels.

IMPACT HYDRO-5: Modified Runoff Characteristics, Possibly Leading to Flooding or Inundation by Mudflow
Less than significant with mitigation

The proposed project would be unlikely to cause flooding or inundation by mudflow, but due to the severity of potential impact from these events, the impact from flooding or inundation is potentially significant. Construction activities causing ground disturbance could change natural runoff patterns, thereby affecting volume and flow of surface and subsurface waters and possibly affecting flooding patterns of local waterways. The proposed project area is in a region known for active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. Because alluvial material is loose, the sediments of alluvial fans can move and shift, particularly during heavy precipitation events such as flash floods. Within an alluvial fan, there are usually established drainage patterns for normal precipitation events. However, if a flash flood event occurred at the proposed project site and the natural drainages were overtopped, there would be sheet flow over some or most of the proposed site.

As part of construction of the proposed project, the applicant would keep construction equipment out of flowing streams (APM W-1), avoid tower placement in active drainage channels (APM W-4), create a system of diversion dikes around any sites where active channels could not be avoided (APM W-5), collect and divert runoff from roadways (APM W-6), develop ditches and drainage devices to reduce stormwater speed (APM W-7), and, as required by law, implement a SWPPP (APM W-9). Even with these measures, construction activities could change natural runoff patterns, thereby affecting waterbody volume and flow, possibly affecting flooding patterns of local waterways. As mentioned, active alluvial fans are vulnerable to flooding and debris flows in times of heavy rain. Small, unmapped drainages in the active portions of alluvial fans are essential to effective drainage. As a part of MM W-5 (Hydrological Model of Alluvial Fan), the applicant would analyze all alluvial fans in the project area to determine the most active sections. Following this analysis, proposed project components would be sited on the least active areas of the fans to reduce the possibility of floods or debris flows, therefore reducing this impact to less than significant levels.

IMPACT HYDRO-6: Substantially Degrade Water Quality
Less than significant with mitigation

The proposed project could degrade water quality by increasing erosion or sedimentation in surface waters or through the introduction of hazardous materials into surface waters. Potential impacts from the introduction of hazardous materials would be less than significant without mitigation. Implementation of MMs W-1, W-3, and W-6 would reduce potential impacts due to erosion and sedimentation to less than significant levels.

IMPACT HYDRO-7: Placement of Structures within a 100-year Flood Hazard Area
Less than significant without mitigation

Transmission line tower footings would be constructed within a 100-year flood hazard area through the Ivanpah Dry Lake, as shown in Figure 3.8.2. Additionally, the telecommunications line would cross through a 100-year flood hazard zone near Nipton Road. Although the Ivanpah Substation would be located within a FEMA Zone D, which is classified as areas with possible flood hazards, this facility would not be located in a 100-year flood hazard zone... Due to the relatively flat topography of the flood hazard areas, the risk associated with this hazard would be minor. If flood waters were to pool during extreme precipitation events, they would likely accumulate slowly, allowing ample time for the construction staff to vacate the area. The applicant would design tower footings to withstand scour and inundation from a 100-year flood (APM W-3). This measure would ensure that flooding at tower footings would not pose a safety risk. This impact would be less than significant without mitigation.

IMPACT HYDRO-8: Exposure to a Significant Risk of Flooding
Less than significant with mitigation

The proposed project has limited potential to expose people or structures to a significant risk of loss, injury, or death due to flooding. There are no dams in the area, so there is no impact associated with dam failure. However, the project area is in a region with active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. Alluvial fan debris flows can carry sediments, cobbles, and even large objects such as trees, cars, and small buildings, thus presenting a threat to surrounding people and property. If project facilities were in the path of flood flows, there would be a slight possibility the facilities could be picked up and carried with the debris flow, presenting a threat to the construction crews, surrounding environment, and local communities. However, it is unlikely that project facilities or construction equipment would actually impede or redirect a flood flow.

As part of construction of the proposed project, the applicant would keep construction equipment out of flowing streams (APM W-1), avoid tower placement in active drainage channels (APM W-4), create a system of diversion dikes around any sites where active channels could not be avoided (APM W-5), and develop ditches and drainage devices to reduce stormwater speed (APM W-7). These measures would ensure that active drainage channels were not hindered by construction activity. As mentioned above, small, unmapped drainages in active portions of alluvial fans are essential to effective drainage during extreme precipitation events and flash floods. As a part of MM W-5 (Hydrological Model of Alluvial Fan), the applicant would analyze the fans in the project area to determine the most active sections. Following this analysis, the project facilities would be sited on the least active lobes of the alluvial fans to mitigate against floods or debris flows and their inherent threat to life and property. With proper implementation of MM W-5, there would be a less than significant risk of loss, injury, or death due to flooding.

IMPACT HYDRO-9: Modify Runoff Characteristics, Possibly Leading to Flooding or Inundation by Mudflow
Less than significant with mitigation

Mudflow risks are very similar to the flooding risks described in IMPACT HYDRO-7. It is possible that construction activities or final structures would be placed such that they would impede or redirect mudflows. The proposed project area is located in a region known for active alluvial fans, which are vulnerable to flooding and debris flows in times of heavy rain. However, it is unlikely that project facilities or construction equipment would actually impede or redirect a flood flow. The applicant would keep construction equipment out of flowing streams (APM W-1), avoid tower placement in active drainage channels (APM W-4), create a system of diversion dikes around any sites where active channels could not be avoided (APM W-5), and develop ditches and drainage devices to reduce stormwater speed (APM W-7). These measures would ensure that active drainage channels were not hindered by construction activity. As mentioned above, small, unmapped drainages in active portions of alluvial fans are essential to effective drainage during extreme precipitation events and flash floods. As part of MM W-5 (Hydrological Model of Alluvial Fan), the applicant would analyze the fans in the project area to determine the most active sections. Following this analysis, the project facilities would be sited on the least active lobes of the alluvial fans to mitigate against floods or debris flows and their inherent threat to life and property. With proper implementation of MM W-5, there would be a less than significant risk of loss, injury, or death due to mudflow.

3.8.3.6 No Project / No Action Alternative

Under the No Project Alternative, the proposed action would not be implemented. Therefore, the No Project Alternative would have no impact on existing water resources in the proposed project area.

3.8.3.7 Transmission Alternative Route A

Transmission Line Alternative A is similar to the proposed project in that it is located in areas of similar water resources and topography. All impacts would be direct and adverse. Minor, localized, short-term impacts related to this alternate route would include those associated with surface and groundwater contamination. Minor to moderate extensive, long-term impacts related to this alternate route would include those associated with lowering of the local water table due to water use during construction and routine washing of the lines and redirection or modification of flood flows by construction equipment or tower footings. With the implementation of APMs W-1 through W-14 and MMs W-1 through W-5, less than significant impacts related to this alternate route would include those associated with the alteration of surface drainage patterns, and increased erosion and siltation due to the alteration of drainage patterns, water quality, and flooding.

3.8.3.8 Transmission Alternative Route B

Transmission Line Alternative B is similar to the proposed project in that it is located in areas of similar water resources and topography. All impacts would be direct and adverse. Minor, localized, short-term impacts related to this alternate route would include those associated with surface and groundwater contamination. Minor to moderate extensive, long-term impacts related to this alternate route would include those associated with lowering of the local water table due to water use during construction and routine washing of the lines and redirection or modification of flood flows by construction equipment or tower footings. With the implementation of APMs W-1 through W-14 and MMs W-1 through W-5, less than significant impacts related to this alternate route would include those associated with the alteration of surface drainage patterns, and increased erosion and siltation due to the alteration of drainage patterns, water quality, and flooding.

3.8.3.9 Transmission Alternative Route C

Transmission Line Alternative C is similar to the proposed project in that it is located in areas of similar water resources and topography. All impacts would be direct and adverse. Minor, localized, short-term impacts related to this alternate route would include those associated with surface and groundwater contamination. Minor to moderate extensive, long-term impacts related to this alternate route would include those associated with lowering of the local water table due to water use during construction and routine washing of the lines and redirection or modification of flood flows by construction equipment or tower footings. With the implementation of APMs W-1 through W-14 and MMs W-1 through W-5, less than significant impacts related to this alternate route would include those associated with the alteration of surface drainage patterns, and increased erosion and siltation due to the alteration of drainage patterns, water quality, and flooding.

3.8.3.10 Transmission Alternative Route D and Subalternative E

Transmission Line Alternative D and Subalternative E are similar to the proposed project in that they are located in areas of similar water resources and topography. All impacts would be direct and adverse. Minor, localized, short-term impacts related to this alternate route would include those associated with surface and groundwater contamination. Minor to moderate extensive, long-term impacts related to this alternate route would include those associated with lowering of the local water table due to water use during construction and routine washing of the lines and redirection or modification of flood flows by construction equipment or tower footings. With the implementation of APMs W-1 through W-14 and MMs W-1 through W-5, less than significant impacts related to this alternate route would include those associated with the alteration of surface drainage patterns, and increased erosion and siltation due to the alteration of drainage patterns, water quality, and flooding.

These alternatives are co-located with an existing transmission line through Ivanpah Dry Lake and, therefore, would not additionally contribute to the disturbance of surface drainage patterns on the dry lake bed.

3.8.3.11 Telecommunication Alternative (Golf Course)

The Golf Course Telecommunication Alternative is similar to the proposed project in that it is located in areas with similar water resources and topography. All impacts would be direct and adverse. Minor, localized, short-term impacts related to this alternate route would include those associated with surface and groundwater contamination. Minor to moderate extensive, long-term impacts related to this alternate route would include those associated with lowering of the local water table due to water use during construction and routine washing of the lines and redirection or modification of flood flows by construction equipment or tower footings. With the implementation of APMs W-1 through W-14 and MMs W-1 through W-5, less than significant impacts related to this alternate route would include those associated with the alteration of surface drainage patterns, and increased erosion and siltation due to the alteration of drainage patterns, water quality, and flooding. The Golf Course Telecommunication Alternative avoids Ivanpah Dry Lake; therefore, surface drainage patterns on the dry lake bed would not be disturbed.

3.8.3.12 Telecommunication Alternative (Mountain Pass)

The Mountain Pass Telecommunication Alternative is similar to the proposed project in that they are located in the same vicinity and would have similar impact on water resources. This alternative extends into the foothills of the Clark Mountain Range, while the proposed project route crosses the Ivanpah Valley. All impacts of the Mountain

Pass Telecommunication Alternative would be direct and adverse. Minor, localized, short-term impacts related to this alternate route would include those associated with surface and groundwater contamination. Minor to moderate extensive, long-term impacts related to this alternate route would include those associated with lowering of the local water table due to water use during construction and routine washing of the lines and redirection or modification of flood flows by construction equipment or tower footings. With the implementation of APMs W-1 through W-14 and MMs W-1 through W-5, less than significant impacts related to this alternate route would include those associated with the alteration of surface drainage patterns and increased erosion and siltation due to alteration of drainage patterns, water quality, and flooding.

3.8.4 Mitigation Measures

MM W-1: Erosion Control Plan and Compliance with Water Quality Permits. The applicant will employ a professional engineer to develop and implement an Erosion Control Plan and monitor construction activities to ensure compliance with federal and state water quality permits. The Erosion Control Plan will comply with or exceed BMPs commonly used on projects in the California/Nevada area and those outlined in county plans. Copies of the Erosion Control Plan will be submitted to CPUC. The intent of this MM is to minimize the impact of construction on surface water quality in the basins surrounding the proposed project. This MM will apply to all construction sites for the duration of construction and restoration activities.

MM W-2: Water Use Plan. The applicant will develop a Water Use Plan that specifies the quantities and sources for all water to be used during construction, operation, and maintenance of the proposed project. The applicant has indicated that water will be used for dust suppression during construction and for toilet flushes and drinking water at the substation. In the applicant's response to Data Request 10.05, they stated that the daily volume of water needed for dust suppression during construction is unknown because there are numerous variables involved. They estimate that between 30.6 and 38.3 acre feet per annum would be needed for the construction phase of the transmission line. The Water Use Plan will identify the approximate quantity of water to be used for each activity, broken down by phase of the project. The applicant has indicated that water would be supplied by a local vendor or agency. The plan will indicate the water sources to be used for each project phase. For each source, the plan will address the potential impact on the local aquifer. Furthermore, as part of MM W-2, the applicant would limit construction phase water use to a maximum of 45 acre feet per annum and operation phase water use to a maximum of 2.5 acre feet per annum. Emergency water uses, including fire suppression, are excluded from these maxima. To the extent feasible, the applicant will use reclaimed water for dust suppression. The Water Use Plan will be submitted to CPUC for review at least three months prior to the start of construction.

MM W-3: Onsite Flow Model and Channel System. The applicant will employ a hydrologist to develop an Onsite Flow Model to predict any alteration in flow path that would result from construction and operation and maintenance of the proposed project. The applicant will also develop a channel system to prevent erosion and to mitigate altered flow paths. The Onsite Flow Model and channel system design will be submitted to the CPUC for review at least three months prior to the start of construction. The intent of this MM is to ensure that stormwater runoff will not cause flooding. The applicant will monitor the channel system throughout construction to assess effectiveness and ensure compliance with the designed system. Additionally, the applicant will coordinate with BLM and CPUC on model parameters and assumptions used in modeling.

MM W-4: Dry Lake Restoration Plan. The applicant will employ a hydrologist and a restoration specialist to develop a Restoration Plan for disturbance of dry lake beds. The proposed project would cross through Ivanpah Lake. Construction would disturb the flat dry lake bed surface that is used for recreation. The intent of this MM is to ensure that the dry lake bed is restored to preconstruction conditions. The BLM will review the plan prior to the start of construction. The BLM would also assess the success of the restoration and determine whether the Ivanpah Lake surface had been restored to preconstruction conditions. The applicant will provide the CPUC with a copy of the Restoration Plan.

MM W-5: Historical Hydrological Model of Alluvial Fan. In the PEA, the applicant completed a historical hydrological model on site area alluvial fan(s) based on similar work on alluvial fans performed near Laughlin, Nevada (House 2005). The applicant extrapolated the data by applying the methodology from the Laughlin area model to the California portion of the project area. This study will be used to determine the active and inactive portions of the alluvial fans in the site area relative to surface water, sediment transport, and flash flooding. Where feasible, the applicant will locate towers, substations, and other permanent site features on inactive portions of the alluvial fan to minimize risk associated with flash flooding and alluvial fan failure.

MM W-6: DESCP, SWPPP, and Grading and Storm Water Management Plan for Ivanpah Substation. The CEC is the lead agency for the ISEGS project. In order to ensure protection of water quality during construction and operation of the ISEGS project, the CEC is requiring ISEGS to prepare and submit a Drainage, Erosion, and Sedimentation Control Plan (DESCP) and to prepare a SWPPP. As part of MM W-6, the applicant will be required to submit copies of the approved DESCP and SWPPP to CPUC three months prior to the start of construction, and implement those plans as part of the EITP.

3.8.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to hydrology and water quality in the ISEGS FSA/DEIS prepared by the CEC and the BLM. This section focuses on differences in the ISEGS setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

3.8.5.1 ISEGS Setting

Surface Water Resources and Flooding

The ISEGS project would be developed on an alluvial fan at the base of the Clark Mountain Range. Conditions in the Clark Mountain Range are similar to those described in Section 3.8.1.1, "Surface Water Resources and Flooding." During field surveys conducted by Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners IV, LLC; and Solar Partners VIII, LLC (Solar Partners, or the applicant), 1,973 ephemeral washes were mapped within the ISEGS project area. The amount and size of washes increases moving topographically up the alluvial fan from the southeast to the northwest. This indicates that the greatest amount of stormwater travels at the fastest speeds in the Ivanpah 3 area. Based on wetland and stream delineations conducted by the applicant in 2008, the USACE determined that ephemeral washes on the alluvial fan are not under USACE's jurisdiction under Section 404 of the Clean Water Act.

Groundwater Resources

The ISEGS project would be constructed within the Ivanpah Valley Groundwater Basin, described in Section 3.8.1.2, "Groundwater Resources." Seeps and springs are located upgradient in the Clark Mountains. These features are ephemeral (fed only by precipitation).

The Molycorp Mine, a lanthanide mining and milling operation, discharged contaminated wastewater through a pipeline to evaporation ponds on the Ivanpah Dry Lake between 1980 and 1998. An agreement with the RWQCB requires cleanup and abatement of a groundwater plume that developed below the new evaporation pond, which was in operation between 1988 and 1998.

Applicable Laws, Regulations, and Standards

Due to the variation in project components and location between EITP and ISEGS, different laws, regulations, and standards would apply to ISEGS than those listed for the EITP in Section 3.8.2, "Applicable Laws, Regulations, and Standards." Regulations affecting ISEGS are summarized in Table 3.8-2. Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with the EITP would not apply. However, the ISEGS project components and operational features trigger laws, regulations, and standards beyond those required for EITP; these additional components are:

- A power plant that requires process cooling water
- Use of recycled power plant process water for mirror washing
- Groundwater wells that may be used for drinking water
- A septic tank / leach field system for sanitary wastewater
- Hydrostatic testing of the natural gas pipeline and discharge of that water
- Grading of large areas of land

Table 3.8-2 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
Federal		
RCRA, 40 CFR Part 260 et seq.	A comprehensive body of regulations that give U.S. EPA the authority to control hazardous waste "cradle-to-grave." RCRA covers the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for management of non-hazardous solid wastes.	Natural gas pipeline
State		
California Constitution, Article X, Section 2	Requires that the water resources of the state be put to beneficial use to the fullest extent possible and states that the waste, unreasonable use, or unreasonable method of use of water is prohibited.	Power plant process water, mirror washing, groundwater wells
California Water Code Section 13050	Defines "waters of the state."	Power plant process water, mirror washing, ground water wells
California Water Code Sections 13240, 13241, 13242, & 13243, & Water Quality Control Plan for the Lahontan Region (Basin Plan)	The Basin Plan establishes water quality objectives that protect the beneficial uses of surface water and groundwater in the region. The Basin Plan describes implementation plans and other control measures designed to ensure compliance with statewide plans and policies and provide comprehensive water quality planning.	Power plant process water, mirror washing, ground water wells
SWRCB 2003-003-DWQ	This general permit applies to the discharge of water to land that has a low threat to water quality.	Hydrostatic test water, recycled process plant water for mirror washing
California Code of Regulations, Title 22, Division 4, Chapter 15	This chapter specifies Primary and Secondary Drinking Water Standards that set MCLs in terms of TDS, heavy metals, and chemical compounds.	Potable water from new wells
California Code of Regulations, Title 23, Division 3, Chapter 15	This chapter applies to waste discharges to land and requires the Regional Board to issue Waste Discharge Requirements specifying conditions for protection of water quality as applicable.	Hydrostatic test water, recycled process plant water for mirror washing
CEC IEPR; (Public Resources Code, Div. 15, Section 25300 et seq.)	In the 2003 IEPR, the CEC adopted a policy stating it will approve the use of fresh water for cooling purposes by power plants only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound."	Power plant process water
SWRCB Res. No. 68-16	The "Antidegradation Policy" requires that (1) existing high quality waters of	Power plant

Table 3.8-2 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
	the state be maintained until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial uses, and will not result in wastewater quality that is lower than that required by other adopted policies and (2) any activity that produces or may produce a waste or increased volume or concentration of waste, and that discharges or proposes to discharge to existing high quality waters, must meet WDRs that will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.	process water, mirror washing, wells
SWRCB Res. 75-58	The Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Power Plant Cooling states that fresh inland waters should only be used for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound.	Power plant process water
SWRCB Res. No. 88-63	States that all groundwater and surface water of the state are considered suitable for municipal or domestic water supply with the exception of those waters that meet specified conditions.	Power plant process water, mirror washing, wells
SWRCB Res. 2005-0006	Adopts the concept of sustainability as a core value for SWRCB programs and directs its incorporation in all future policies, guidelines, and regulatory actions.	Power plant process water, mirror washing, wells
SWRCB Res. 2008-0030	Requires sustainable water resources management such as low impact development and climate change considerations in all future policies, guidelines, and regulatory actions. Directs RWQCBs to "aggressively promote measures such as recycled water, conservation, and low impact development Best Management Practices where appropriate and work with Dischargers to ensure proposed compliance documents include appropriate, sustainable water management strategies."	Power plant process water, mirror washing
The California Safe Drinking Water and Toxic Enforcement Act	The California Health & Safety Code Section 25249.5 et seq. prohibits actions contaminating drinking water with chemicals known to cause cancer or possessing reproductive toxicity. The RWQCB administers the requirements of the act.	Hydrostatic test water, recycled process plant water for mirror washing
Local		
California Safe Drinking Water Act and San Bernardino County Code Title 3, Division 3, Chapter 6, Public Water Supply Systems	Require public water systems to obtain a Domestic Water Supply Permit. Public water systems are defined as systems providing water for human consumption through pipes or other constructed conveyances that have 15 or more service connections or regularly serve at least 25 individuals daily at least 60 days per year. CDPH administers the Domestic Water Supply Permit program and has delegated issuance of Domestic Water Supply Permits for smaller public water systems in San Bernardino County to the county. Under the San Bernardino County Code, the County Department of Environmental Services monitors and enforces all applicable laws and orders for public water systems with less than 200 service connections. The proposed project would likely be considered a non-transient, non-community water system.	Potable water from new wells
San Bernardino County Title 3, Division 3, Chapter 6, Article 5, Desert Groundwater Management	This article helps the county protect water resources in unregulated portions of the desert, while not precluding use of water resources. This article requires a permit to locate, construct, operate, or maintain a new groundwater well within the unincorporated, unadjudicated desert region of	New wells

Table 3.8-2 Laws, Regulations, and Standards Applicable to the ISEGS Project

Law, Regulation, or Standard	Description	Project Component
	San Bernardino County. CEQA compliance must be completed prior to issuance of a permit, and groundwater management, mitigation, and monitoring may be required as a condition of the permit. The ordinance states that it does not apply to “groundwater wells located on Federal lands unless otherwise specified by interagency agreement.” The BLM and county entered into an MOU that provides that the BLM will require conformance with this code for all projects proposing to use groundwater from beneath public lands.	
San Bernardino County Ordinance Code, Title 3, Division 3, Chapter 8, Waste Management, Article 5, Liquid Waste Disposal	Requires the following compliance for all liquid waste disposal systems: (1) compliance with applicable portions of the Uniform Plumbing Code and the San Bernardino County DEHS standards; (2) approval by the DEHS and building authority with jurisdiction over the system; or (3) for alternative systems, approval by the DEHS, the appropriate building official of this jurisdiction, and the appropriate California RWQCB.	Power plant process water, new septic tank and leach field
San Bernardino County Ordinance Code, Title 6, Division 3, Chapter 3, Uniform Plumbing Code	Describes the installation and inspection requirements for locating disposal/leach fields and seepage pits.	New septic tank and leach field

Key:

BLM = Bureau of Land Management
CDPH = California Department of Public Health
CEC = California Energy Commission
CEQA = California Environmental Quality Act
CFR = Code of Federal Regulations
DEHS = Department of Environmental Health
EPA = Environmental Protection Agency
IEPR = Integrated Energy Policy Report
MCLs = Maximum Contaminant Levels
MOU = memorandum of understanding
RCRA = Resource Conservation and Recovery Act
RWQCB = Regional Water Quality Control Board
SWRCB = State Water Resources Control Board
TDS = total dissolved solids
WDRs = Waste Discharge Requirements

3.8.5.2 ISEGS Methodology

In the ISEGS FSA/DEIS, BLM and CEC staff (Staff) reported on existing conditions and assessed impacts to soil and water resources in the same section. Staff evaluated the potential of the project’s proposed water use to cause a substantial depletion or degradation of groundwater resources, including beneficial uses. Staff considered compliance with the laws, ordinances, regulations, and standards associated with the project components and location. Staff also considered whether there would be a significant impact under CEQA using the following impact criteria:

- Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding or substantial erosion or siltation on or off site?
- Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?

- Would the project violate any water quality standards or waste discharge requirements?
- Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?
- Would the project contribute to any lowering of groundwater levels in the groundwater wells of other public or private water users?
- Would the project contribute to any lowering of the groundwater levels such that protected species or habitats would be affected?
- Would the project cause substantial degradation to surface water or groundwater quality?

3.8.5.3 ISEGS Impacts

The Staff determined that construction, operation, and decommissioning of the ISEGS project could impact water resources. The CEC and the BLM have published the impacts listed below related to hydrology and water quality for the ISEGS project. Where impacts were identified, Staff proposed mitigation measures to reduce impacts to less than significant levels.

Construction Impacts

Water Use and Discharge

Two groundwater wells, one primary supply and one backup supply, would be drilled on the northwest corner of Ivanpah 1 for all water required for the construction and operation of ISEGS. A groundwater monitoring well would be installed approximately 2,300 feet northeast of the two supply wells to determine any changes in local groundwater levels. All construction and operational water would be extracted from these two wells with the exception of potable water. Estimated water volumes required for construction and operation of ISEGS are provided below in Table 3.8-3.

Table 3.8-3 Estimated Water Volumes Required for Construction and Operation of ISEGS

Construction Phase Water Use	Acre Feet
Potable	9.3
Construction (dust suppression, vehicle washing)	617.4
Hydrostatic testing	0.1
TOTAL CONSTRUCTION PHASE WATER USE	**626.8**
Operation (annual consumption)	
Potable	3.0
Heliostat Operation and Washing	73.5
Mirror Washing*	42.7
TOTAL ANNUAL OPERATIONAL WATER USE	**119.2**

*Mirror washing water would be recycled from heliostat process water

During the construction phase, potable water would be purchased and delivered from a source outside of the project area. During the operation phase, potable water would either be purchased and delivered from a source outside of the project area or pumped from one of the two new wells and purified.

Hydrostatic testing of the pipeline component would require up to 47,000 gallons of water. Discharge of wastewater used for equipment washing and hydrostatic testing would be required. Following the testing process, the water quality would be tested. If the hydrostatic test water were found to be contaminated, it would be transported to an offsite wastewater treatment plant for processing and disposal. If the hydrostatic test water passed an analytical water quality test, it would be allowed to percolate/evaporate on the ISEGS site, in compliance with the SWRCB permits requirements. With the use of BMPs and compliance with all laws, ordinances, regulations, and standards, the ISEGS FSA/DEIS concludes that there would be no significant impact from construction-generated wastewater.

Sanitary wastewater would be disposed of in an onsite septic and leach field system near the administration building in accordance with local and regional regulations. Residual sludge would be removed by a disposal service. Portable toilets at each power block area would be serviced by a local waste management company. No wastewater would be discharged off site.

Groundwater supply could be impacted by water use associated with ISEGS. During construction, groundwater would be used for dust suppression and hydrostatic testing of the pipeline component. To minimize impacts to groundwater resources, the Staff would require ISEGS to comply with SOIL&WATER-3, -4, and -6, described in Section 3.8.5.4, "ISEGS Conditions of Certification / Mitigation Measures." The project would use air-coolers and recycle the maximum amount of process water in an effort to minimize freshwater extraction from local groundwater resources.

Due to the distance, upgradient aspect, and ephemeral nature of the seeps and springs, the ISEGS FSA/DEIS concludes that groundwater extraction associated with construction of the proposed project would not result in significant impact to seeps or springs.

Extraction of groundwater can cause an existing source of contamination, such as the Molycorp Mine evaporation pond plume on the Ivanpah Dry Lake, to change behavior. If the extraction of groundwater were to change the topography of the subsurface water table, it could result in the plume flowing in a different direction. The applicant conducted groundwater modeling to determine whether groundwater extraction related to construction and operation of the ISEGS project would result in changes to the gradient and velocity of the evaporation pond plumes. The study concluded that changes would be negligible; therefore, the ISEGS FSA/DEIS concludes that the project would not result in significant impacts to water quality or remediation efforts.

Operational Impacts

The operational impacts to groundwater resources are consistent with the construction impacts described above or the ISEGS project. Operational process water would be treated in an oil/water separator and then stored for later treatment and use in the steam boiler. Process water would be reused to the extent practical. During operation, groundwater would be used for the power plant process and routine washing of solar panels. To minimize impacts to groundwater resources, the Staff would require ISEGS to comply with SOIL&WATER-3, -4, and -6, described in Section 3.8.5.4, "ISEGS Conditions of Certification / Mitigation Measures."

Operation of ISEGS could result in degradation of water quality due to discharge of eroded sediments, release of hazardous materials, and use of recycled process plant water for mirror washing. In addition, recycled mirror washing water would introduce certain mineral compounds. The applicant calculated that only minor mineral buildup would develop on site and no wastewater would flow off site. Degradation of water quality could occur if the ISEGS project were to cause an increase in suspended sediment load in stormwater. Likewise, if erosion control measures were too limiting, they could reduce the amount of sediment transported to the Ivanpah Playa relative to preconstruction conditions. The ISEGS applicant concluded that the project would not result in any net change in sediment transport to downstream features. The Staff performed their own sediment transport model and reached the same conclusion. They concluded that there would be no net change in sediment transfer because there would not be a significant increase in stormwater velocity, and that stormwater flowing into the site is typically carrying a full sediment load and therefore is unable to suspend more material.

Operation of ISEGS could result in increased stormwater runoff due to modifications of natural precipitation patterns. In addition, recycled mirror washing water would introduce more water than is normally present on the site. This could result in more downstream flooding. Natural precipitation patterns would be modified by the proposed project.

The ISEGS applicant would implement low impact development principles in their stormwater design plan. The proposed stormwater plan would maintain natural drainage features and patterns to the maximum extent practicable. Stormwater and sediment control plans would be consistent with San Bernardino County, FEMA, and Clark County guidelines. Around power blocks, the ISEGS applicant would construct embankments, fill, and drainage channels to divert flow around the blocks, preventing scour. The roughness and infiltration potential of the ground affects the volume and speed of stormwater flow. Earthmoving, compaction, and use of dust suppression during the construction, operation, and decommissioning of ISEGS could modify the potential of the ground to slow and accept stormwater.

The applicant proposes to use vehicles with low impact tires or tracks to prevent excessive compaction from vehicle travel. However, the ISEGS FSA/DEIS states that, even with these measures, compaction due to vehicle travel would likely increase erosion. The ISEGS applicant conducted modeling of stormwater runoff during a 100-year storm event and concluded that peak flow would increase by 4.48 percent and overall discharge would increase by 1.68 percent as a result of the construction and operation of the ISEGS project. The ISEGS FSA/DEIS concludes that this would be a less than significant impact to local hydrology when compared with the volume and velocity of stormwater that flows onto the proposed project site.

Storm events could cause breakage of project components and transport of these materials downstream, resulting in impacts to water resources. Because the ISEGS project would be constructed using low impact development, there would be no mechanisms to divert stormwater away from heliostat fields. Heliostat units would be mounted on poles in relatively soft alluvium sediments that would be subject to scour and collapse during weather events. The heliostat structure, mirror, and wiring could be transported downstream. A perimeter fence would capture large pieces but small mirror fragments could be transported beyond the project site. The Staff conducted an analysis to determine the potential damage related to stormwater scour during 10- and 100-year storm events and concluded that these storms could result in the failure of 4,000 and 32,000 heliostats, respectively. Staff concluded that 6 to 9 feet of scour could occur at the project site during storm events. Staff requires the applicant to comply with Condition of Certification SOIL&WATER-5 (reinforcing heliostats to withstand up to 6 feet of scour) to minimize impacts from broken heliostat. By applying this Condition of Certification, the number of broken heliostats during 10- and 100-year events would be reduced to 10 and 50 heliostats, respectively.

With proper installation of poles to prevent failure, Staff concluded that effects of erosion and stormwater flow to water resources on and off the site can be mitigated through the implementation of Conditions of Certification SOIL&WATER-1, -2, and -5.

Discharge of wastewater can result in adverse effects to water resources. With the implementation of Conditions of Certification SOIL&WATER-7 and -8, the Staff concluded that no significant impacts to water resources would occur due to operation of the ISEGS project.

Decommissioning Impacts

The ISEGS project would be decommissioned at the end of its 50-year life by removing all facilities to 3 feet below grade, restoring original contours, and revegetating the site. The ISEGS FSA/DEIS states that this removal could cause “substantial disturbance” to water resources. However, with the adoption of the resource protection plans included in construction, the ISEGS FSA/DEIS concludes that impacts to water resources would be less than significant.

3.8.5.4 ISEGS Conditions of Certification / Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to hydrology and water quality if the project is approved. Since the ISEGS document presented water and soil resources in one section, the MMs listed below apply to both resource areas.

SOIL&WATER-1 requires the project applicant to develop a Drainage, Erosion, and Sedimentation Control Plan (DESCP) to ensure protection of water quality and soil resources.

SOIL&WATER-2 requires the applicant to develop an industrial SWPPP that meets the requirements specified in Appendices B, C, and D.

SOIL&WATER-3 requires the applicant to ensure compliance with state and local laws, ordinances, regulations, and standards during construction of the onsite groundwater wells.

SOIL&WATER-4 requires the applicant to limit construction water use to 100 AFY.

SOIL&WATER-5 requires the applicant to design the project such that the heliostats are reinforced to withstand 6 feet of scour. The applicant would develop a Stormwater Damage Monitoring and Response Plan, which would include a strategy to clean up and mitigate broken or transported heliostats. Also under this MM, the applicant would be required to establish a baseline and monitor for changes to the surface of Ivanpah Dry Lake. This MM also requires the applicant to develop standards and procedures for reassessing the proposed stormwater management plan if it does not perform as planned.

SOIL&WATER-6 requires the applicant to comply with San Bernardino County's Desert Groundwater Management Ordinance. This includes developing a groundwater-level monitoring and reporting plan and integrating with the Primm Valley Golf Course's existing groundwater monitoring and reporting program.

SOIL&WATER-7 requires the applicant to ensure that the collection and recycling of process wastewater would be managed in compliance with applicable laws, ordinances, regulations, standards, and BMPs.

SOIL&WATER-8 provides requirements for the installation of the proposed septic tank and leach field.

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3.9 Land Use

This section describes the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to land use, grazing allotments, mining claims, and designated areas. Impacts to agricultural lands are not discussed as there is no agricultural land in the project area.

3.9.1 Environmental Setting

3.9.1.1 Land Use

The proposed project would traverse the eastern Mojave Desert in southeastern California and southwestern Nevada from just outside Primm, Nevada, to outside of Boulder City, Nevada, primarily within existing utility right-of-ways (ROWs) on BLM-administered lands and land in unincorporated Clark County, Nevada, and San Bernardino County, California. Table 3.9-1 lists all land use types crossed by the proposed project and alternatives as shown in Figure 3.9-1. Land uses within the area range from open space and conservation/preserve areas to commercial, public, private, and recreation; utility/energy uses; industrial and mining uses; transportation; and limited residential uses. Lands in the area with special designations include the Mojave National Preserve, wilderness areas (Wee Thump, Joshua Tree, and South McCullough), and Areas of Critical Environmental Concern (ACECs). A discussion of designated areas including Recreation Areas and Special Recreation Management Areas follows in Section 3.9.1.3.

Table 3.9-1 Proposed Project and Alternatives by Land Use Type and Jurisdiction

Line Segment	MP (Approx)	Total Miles	Land Use Types	Special Designation or Overlay District (if any)	Land Ownership/ Jurisdiction
Proposed Route	0.0-1.2	1.2	Utility Corridor	BCCE	BLM Las Vegas FO
Proposed Route	1.2-2.0	0.8	Conservation Easement	BCCE	Private - Clark Co. and Boulder City
Proposed Route	2.0-7.0	5.0	Utility Corridor	BCCE	BLM Las Vegas FO
Proposed Route	7.0-24.5	17.5	Recreation / Open Public Lands	Jean/Roach Dry Lake SRMA	BLM Las Vegas FO
Proposed Route	24.5-28.5	4	Commercial and Vacant	Ivanpah Airport Environs Overlay	CCDOA
Proposed Route	27.0-28.5	1.5	Commercial and Vacant	Ivanpah Cooperative Management Area	Private - Clark Co. - Unincorporated Area of Primm
Proposed Route	28.5-31.0	2.5	Recreation	Ivanpah Dry Lake Recreation Area	BLM Needles FO
Proposed Route	31.0-35.0	4.0	Open Public Lands	None	BLM Needles FO
Alternative A	0.0-5.0	5.0	Utility Corridor	BCCE	BLM Las Vegas FO
Alternative B	0.0-6.0	6.0	Utility Corridor	BCCE	BLM Las Vegas FO
Alternative C	0.0-1.0 and 1.5-2.0	1.5	Open Public Lands	None	BLM Las Vegas FO
Alternative C	Between 1.0 and 2.0	0.1	Transportation Corridor	None	Nevada Department of Transportation
Alternative C	Between 1.0 and 2.0	0.1	Commercial	Ivanpah Cooperative Management Area	Private - Clark Co. - Unincorporated Area of Primm
Alternative C	2.0-5.0	3.0	Open Public Lands	None	BLM Needles FO
Alternative D	Between 0.0 and 1.0	0.1	Open Public Lands	None	BLM Las Vegas FO

Table 3.9-1 Proposed Project and Alternatives by Land Use Type and Jurisdiction

Line Segment	MP (Approx)	Total Miles	Land Use Types	Special Designation or Overlay District (if any)	Land Ownership/ Jurisdiction
Alternative D	Between 0.0 and 1.0	0.1	Vacant	Ivanpah Cooperative Management Area	Private - Clark County - Unincorporated Area of Primm
Alternative D	1.0-2.0	1.0	Open Public Lands	None	BLM Las Vegas FO
Alternative D	2.0-2.5	0.5	Open Public Lands	None	BLM Needles FO
Alternative D	2.5-3.0	0.5	Recreation	Ivanpah Dry Lake Recreation Area	BLM Needles FO
Alternative E	0.0-1.0	1.0	Vacant	Ivanpah Cooperative Management Area	Private - Clark County - Unincorporated Area of Primm
Redundant Telecommunication Route	0.0-5.5	5.5	Utility Corridor	BCCE	BLM Las Vegas FO
Redundant Telecommunication Route	5.5-26.5	21.0	Preservation/ Recreation	Eldorado-Piute ACEC	BLM Las Vegas FO
Redundant Telecommunication Route	26.5-28.5	2.0	Preservation/ Recreation	Ivanpah DWMA ACEC	BLM Needles FO
Redundant Telecommunication Route	28.5-29	0.5	Commercial	None	Private - San Bernardino Co. - Unincorporated Area of Nipton
Redundant Telecommunication Route	29-35.5	6.5	Preservation/ Recreation	Ivanpah DWMA ACEC	BLM Needles FO
Redundant Telecommunication Route	35.5-36.5	1.0	Vacant	None	Private Lands
Redundant Telecommunication Route	36.5-39	2.5	Preservation/ Recreation	Ivanpah DWMA ACEC	BLM Needles FO
Golf Course Alternative	39-48	9.0	Open Public Lands	None	BLM Needles FO
Mountain Pass Alternative	39-44	5.0	Open Public Lands	None	BLM Needles FO
Mountain Pass Alternative	44-46	2.0	Vacant and Industrial	None	Private - San Bernardino Co. - Unincorporated Area of Mountain Pass
Mountain Pass Alternative	46-53	7.0	Open Public Lands	None	BLM Needles FO

Key:
ACEC – Area of Critical Environmental Concern
BCCE – Boulder City Conservation Easement
BLM – Bureau of Land Management
CCDOA – Clark County Department of Aviation
DWMA – Desert Wildlife Management Area
FO – Field Office
SRMA – Special Recreation Management Area

The proposed project would replace an existing 115-kV single-circuit subtransmission line with a 230-kV double-circuit transmission line. Because the original ROW was issued prior to 1976, the applicant is required to apply for a new ROW grant as described in Section 3.9.2. The proposed transmission line would be constructed primarily within the existing 100-foot ROW, with the exception of six locations where the ROW would need to be widened for utility crossings or technically difficult turns in the route. Table 3.9-2 lists the locations where the project would deviate from the existing ROW. The locations of these deviations in relation to the existing 115-kV route are discussed in Chapter 2, “Description of Proposed Project and Alternatives.”

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Figure 3.9-1
Eldorado-Ivanpah Transmission Project
Designated Areas Around the EITP Area

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Table 3.9-2 Proposed Route Deviations from the Existing ROW

Location (Milepost)	Distance from ROW (miles)	Land Use Type
7	> 1	Open Public Lands
11	> 1	Open Public Lands
12	> 1	Open Public Lands
25	> 1	Open Public Lands
25–26	> 1	Open Public Lands
34–35	> 1	Open Public Lands

3.9.1.2 Grazing Allotments and Animal Unit Months

The BLM administers and manages the grazing allotments on public lands in the vicinity of the project area. The primary laws that govern grazing on public land are the Taylor Grazing Act of 1934, the Federal Land Policy Management Act of 1976, and the Public Rangelands Improvement Act of 1978. The federal government authorizes grazing use through grazing permits or leases. Animal Unit Months (AUMs)—the amount of forage needed to feed one cow, one horse, or five sheep for one month—are used to calculate the fee charged to an allotee to graze animals in designated grazing allotments on federal lands (BLM 2009c). Figure 3.9-2 shows the grazing allotments within the vicinity of the project.

California Allotments

The proposed transmission line and Transmission Alternative C would cross the Clark Mountain grazing allotment, and Transmission Alternative D would cross both the Valley View and Clark Mountain grazing allotments. The Golf Course Telecommunication Alternative would cross the Clark Mountain grazing allotment, and the Mountain Pass Alternative would cross both the Clark Mountain and the Valley Wells grazing allotments. The Clark Mountain Allotment is open, but not currently in use (Bartz 2009). The Valley Wells allotment is officially closed to grazing; and the Valley View allotment is currently awaiting the formal closure process (Bartz 2009). A table of allotments crossed by milepost (MP) is provided below in Table 3.9-3.

Table 3.9-3 California Allotments Crossed by the Project

Allotment Name	MP Crossed	Status
Transmission Line		
Clark Mountain	28.5 – MP 34	Open. Inactive.
Alternative C		
Clark Mountain	MP 2.5 – MP 5	Open. Inactive.
Alternative D		
Valley View	MP 2 – MP 3	Awaiting Formal Closing Process.
Clark Mountain	MP 3 – MP 3.3	Open. Inactive.
Telecom Line		
Golf Course Alternative		
Clark Mountain	MP 15 and MP 18	Open. Inactive.
Mountain Pass Alternative		
Clark Mountain	MP 15 – MP 20	Open. Inactive.
Valley Wells	MP 11.5 – MP 15	Closed.

Nevada Allotments

The proposed project would cross the Hidden Valley, Roach Lake, Jean Lake, and McCoullough Mountain grazing allotments. The Roach Lake, Jean Lake, and McCoullough Mountain allotments are currently closed (Johnson 2009). The Hidden Valley allotment is currently open and in use (Johnson 2009). A table of Nevada Allotments crossed by the project is provided in Table 3.9-4.

Table 3.9-4 Nevada Allotments Crossed by the Project

Allotment Name	MP Crossed	Status
Transmission Line		
Roach Lake	MP 26 – MP 29	Closed.
Jean Lake	MP 11.5 – MP 26	Closed.
McCullough Mountain	MP 0 – MP 10.5	Closed.
Hidden Valley	MP 10.5 – MP 11.5	Open. Active.
Alternative A		
McCullough Mountain	MP 0 – MP 4	Closed.
Alternative B		
McCullough Mountain	MP 0 – MP 5	Closed.
Alternative C		
Roach Lake	MP 1 – MP 1.3	Closed.
Alternative D and Subalternative E		
Roach Lake	MP 0 - MP 2	Closed.
Telecommunication Line		
McCullough Mountain	MP 0 – MP 21	Closed.
Jean Lake	MP 21 – MP 25	Closed.

3.9.1.3 Designated Areas

The proposed project would be primarily routed through open public land within existing ROW designated for utility and energy uses. However, the proposed route crosses or runs adjacent to a variety of areas with special land use designations, including ACECs, Wilderness Areas, a conservation easement, and Recreation Areas/Special Recreation Management Areas, as depicted in Table 3.9-5.

Table 3.9-5 Designated Areas Adjacent to the Project

Line Segment	MP (Approx)	Miles Parallel	Land Use	Special Designation	Land Ownership/ Jurisdiction
Proposed Route	22.0 – 25.0 and 27.0	3.0	Recreation / Open Public Lands	Jean/Roach Dry Lake SRMA	BLM Las Vegas FO
Proposed Route	26.0	> 0.5	Vacant	Proposed SNSA Boundary	CCDOA
Redundant Telecommunication Route	17 – 20.5	4.5	Preservation/ Recreation	Wee Thump Joshua Tree Wilderness Area	BLM Las Vegas FO
Redundant Telecommunication Route	24.0 – 24.5	0.5	Preservation/ Recreation	Crescent Townsite ACEC	BLM Las Vegas FO
Redundant Telecommunication Route	26.5 – 39.0	3.0	Preservation/ Recreation	Mojave National Preserve	National Park Service
Mountain Pass Alternative	39.0 – 41.0	2.0	Preservation/ Recreation	Mojave National Preserve	National Park Service
Mountain Pass Alternative	46.5 – 47.5	1.0	Preservation/ Recreation	Clark Mountain ACEC	BLM Needles FO

Key:
ACEC – Area of Critical Environmental Concern
CCDOA – Clark County Department of Aviation
FO – Field Office
SNSA – Southern Nevada Supplemental Airport

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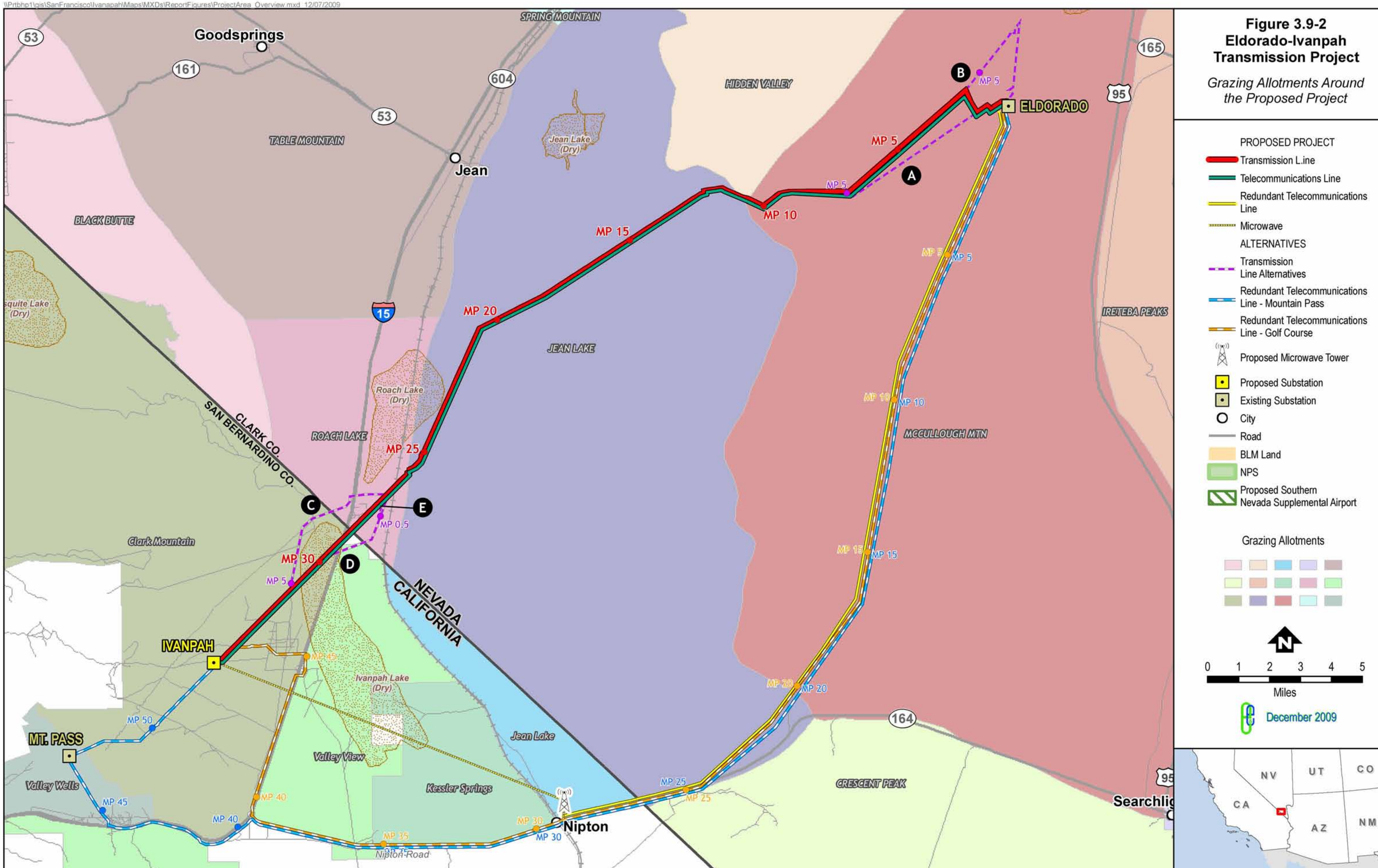
Figure 3.9-2
Eldorado-Ivanpah Transmission Project

Grazing Allotments Around the Proposed Project



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Recreation Areas / Special Recreation Management Areas

A Special Recreation Management Area (SRMA) is typically an area of land of 1,000 acres or more under BLM management, which has been identified as having the potential for high public use and/or cultural/natural resources management (BLM n.d.). The proposed project would cross both the Jean/Roach Dry Lake SRMA and the Ivanpah Dry Lake Recreation Area.

The Jean Dry Lake and Roach Dry Lake are located in Nevada, east of Jean and north of Primm, respectively. The Jean/Roach Dry Lake SRMA is a large area of land managed by the BLM Las Vegas Field Office (BLM 1998) for mountain biking, small game hunting, horseback riding, and off-highway vehicle (OHV) use as shown in Figure 3.9-1. The project would cross the Jean/Roach Dry Lake SRMA, predominantly within the boundary of an existing transmission line ROW between MP 7 and MP 28.5.

The Ivanpah Dry Lake Recreation Area is located in the Mojave Desert in San Bernardino County on Interstate 15 (I-15) at the California Nevada border. The area is managed by the BLM Needles Field Office and used by recreationists for non-motorized recreational activities, including archery, kite buggying, and land sailing (BLM 2009b). The project would cross the Ivanpah Dry Lake Recreation Area within a BLM-designated utility corridor on an existing ROW between MP 29 and MP 31. Transmission Alternative D would cross the Ivanpah Dry Lake Recreation Area within a BLM designated utility corridor between MP 2.5 and MP 3 where it would reconnect with the proposed action near MP 29.5.

Areas of Critical Environmental Concern

The Federal Land Policy and Management Act defines an ACEC as an area “within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.”

The BLM identifies, evaluates, and designates ACECs through its resource management planning process. Allowable management practices and uses, mitigation, and use limitations, if any, are described in the planning document and the concurrent or subsequent ACEC Management Plan (BLM n.d.). The project would cross the Piute-Eldorado Valley ACEC and would pass within one mile of the Ivanpah Desert Wildlife Management Area (DWMA) ACEC, and the Crescent Townsite ACEC. The Mountain Pass Telecommunication Alternative would pass within one mile of the Clark Mountain ACEC.

The Piute-Eldorado Valley ACEC is located in unincorporated Clark County, Nevada, on BLM-managed lands to the west of the Colorado River, north and east of the California state line, and south of Boulder City, Nevada. The ACEC includes several parallel mountain ranges divided by valleys, dry lakes, and bajadas (USFWS 1994). The area is managed by the BLM to protect desert tortoise and related tortoise habitat as part of the Desert Tortoise Recovery Plan. The telecommunication line would cross the Piute/Eldorado ACEC between telecommunication line MP 5.5 and MP 26.5.

The Crescent Townsite ACEC is a 437-acre area located in Clark County, Nevada, 1.5 miles east of the state line and south of State Route (SR) 164/Nipton Road. The ACEC is a protected cultural resources area due to its historic railroad construction and mining. The proposed project would pass within .5 miles of the Crescent Townsite ACEC near transmission line MP 25.

The Ivanpah DWMA ACEC is managed by BLM to protect desert tortoise and preserve desert tortoise habitat. The Ivanpah DWMA is composed of the Ivanpah, Kelso, and Shadow valleys and interconnecting corridors. Elevations range from 2,500 to 4,764 feet and the topography includes bajadas, rolling hills, lava flows, one playa lake, and a few major drainages (USFWS 1994, Clark County 2008). The EITP redundant telecommunications route (both the Mountain Pass and Golf Course alternatives) runs adjacent to the Ivanpah DWMA ACEC for approximately 12.5 miles from MP 26.5 to MP 39.

The Clark Mountain ACEC is a BLM-designated ACEC in the CDCA Plan area with significant endemic plant species, plant communities, diverse wildlife elements, and cultural resources values. The Clark Mountain ACEC is just west and north of the Mountain Pass Substation. The Mountain Pass Telecommunication Alternative would cross within one mile of the Clark Mountain ACEC around MP 47 near the Mountain Pass Substation (BLM 1980).

Boulder City Conservation Easement

The Boulder City Conservation Easement (BCCE) land transfer was completed in 1995 pursuant to Public Law 85-339 via the "Interlocal Agreement for Sale and Grant of a Conservation Easement" between Boulder City and Clark County in 1994 and the "Contract Between the State of Nevada and the City of Boulder City for the Sale of Land in the Eldorado Valley" in 1995. Both contracts include provisions which reserve "[c]ertain right-of-way corridors for transportation and public utilities" and outline the approximate land sale acreage and BLM-designated utility corridors within the easement. In the Supplement to the Stateline Resource Management Plan (RMP)/EIS published in May 1994 (published prior to the 1994 and 1995 agreements), the BLM utility corridors are described as 2,000- and 3,000-foot-wide corridors reserved to the BLM by U.S. Patent No. 27-95-0022.

The BCCE is located immediately south of Boulder City proper. The land is preserved and protected for the desert tortoise and other species as outlined in the Clark County Multiple Species Habitat Conservation Plan (MSHCP). Only passive use (hiking, driving slowly on designated routes, and sightseeing) is allowed in the BCCE (Clark County 2000) with the exception of approved activities in designated corridors. According to representatives of the Desert Conservation Program, Clark County manages the BCCE through policies outlined in its MSHCP, and the City of Boulder City maintains the right to approve land uses within the area. Currently, there are no mechanisms within the land transfer agreements for approving new ROWs within the BCCE; however, existing ROWs are honored. To date, a project of the magnitude of the EITP has not been attempted within the BCCE (Wainscott 2010).

As shown in Figure 3.9-3, the proposed transmission route follows a 2,000-foot-wide utility corridor along its southern most edge from the western side of the BCCE until it deviates outside of the BLM corridor in a southerly direction for less than one mile at MP 2 along an existing 70-foot ROW. The line then re-enters an adjacent 3,000-foot-wide corridor, continues to the northeast, and terminates at the Eldorado Substation. Transmission Alternative Route A would begin at the same point-of-entry into the BCCE as the proposed route but follow the adjacent 3,000-foot-wide corridor to the Eldorado Substation. Transmission Route Alternative B would continue north in the 2,000-foot-wide corridor instead of turning south at MP 2. Alternative B would then make a sharp right turn at the intersection between the 2,000- and 3,000-foot-wide corridors and continue south to the Eldorado Substation. Neither Transmission Route Alternatives A or B would deviate outside of BLM-designated corridors.

National Preserves

National Preserves are defined as protected areas having characteristics associated with national parks but where Congress has permitted continued public hunting, trapping, and oil/gas exploration and extraction (NPS 2000). The Mojave National Preserve was established by the California Desert Protection Act of 1994. The Preserve is managed by the National Park Service and is the third largest unit of the National Park System in the contiguous United States. The Preserve is home to a variety of desert species, including desert tortoise, bighorn sheep, mountain lion, bobcat, roadrunner, golden eagle, Gila monster, and jack rabbit (NPS 2009). Other features of the Preserve include volcanic formations, the Kelso Dunes, Mitchell Caverns, Marl Mountains, and the Cima Dome. The redundant telecommunication route (both the Mountain Pass and Golf Course alternatives) would abut the Mojave National Preserve between MP 26.5 and MP 39.

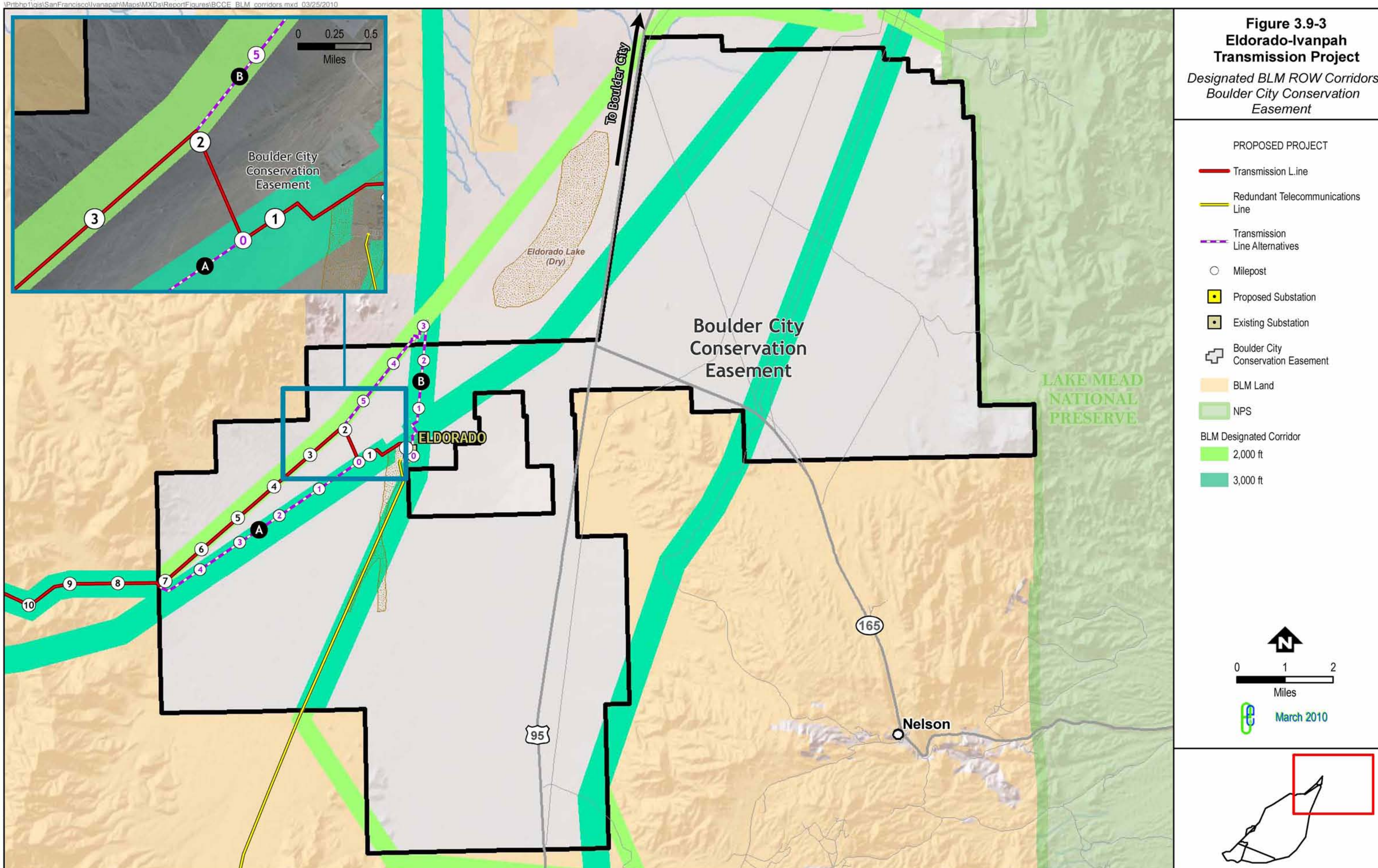
Figure 3.9-3
Eldorado-Ivanpah
Transmission Project
Designated BLM ROW Corridors
Boulder City Conservation
Easement
PROPOSED PROJECT
Transmission Line
Redundant Telecommunications Line
Transmission Line Alternatives
Milepost
Proposed Substation
Existing Substation
Boulder City Conservation Easement
BLM Land
NPS
BLM Designated Corridor
2,000 ft
3,000 ft
0 1 2
Miles
March 2010
0 0.25 0.5
Miles
Boulder City Conservation Easement
To Boulder City
Eldorado Lake (Dry)
Boulder City Conservation Easement
ELDORADO
LAKE MEAD NATIONAL PRESERVE
165
95
Nelson

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Wilderness Areas

The Wilderness Act of 1964 gives Congress the sole power to designate Wilderness Areas. The Act defines wilderness as an area of land that "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." Except in emergencies or necessary administration of an area, vehicular travel is prohibited in Wilderness Areas. The BLM is responsible for managing 191 Wilderness Areas in the Western United States (BLM 2009a).

The Wee Thump Joshua Tree Wilderness Area is located 45 miles south of Las Vegas off Highway 164 between Nipton, California and Searchlight, Nevada. The area is a gently sloping desert plateau with elevations ranging from 1,275 – 1,500 feet, comprising dense pristine Joshua tree woodland with a bunch grass understory. The redundant telecommunication line (both the Mountain Pass and Golf Course alternatives) would abut the Wee Thump Joshua Tree Wilderness Area between MP 17 and MP 20.5.

Airports

Currently, the Jean Sport Aviation Center is the only operating airport in the proposed project area. It is located 5 miles from the EITP. However, the Clark County Department of Aviation (CCDOA) is proposing to build several new facilities in the area, including an additional airport, the Southern Nevada Supplemental Airport (SNSA), and a heliport, the Southern Nevada Regional Heliport. Both facilities are intended to support additional commercial service in the area.

The SNSA would be located south of Jean, Nevada, northwest of the EITP. If approved, the proposed SNSA boundary would be located within 0.5 miles (2,640 feet) north of the MP 26 of the EITP 230-kV transmission line. Additionally, the EITP would cross the Ivanpah Airport Environs Overlay (Figure 3.9-1). Transmission Alternative Route C would be located closer to the SNSA boundary than the proposed project, and Transmission Alternative Route D and Subalternative E would be located further away. The proposed SNSA is expected to be operational in year 2020, after the scheduled completion of the EITP, which is projected to be operational in 2013. The exact locations of SNSA components, such as runways and navigational equipment, are unknown pending project approval, although several alternatives have been proposed (CCDOA 2006).

Mining Claims

Mineral mining in southern Clark County occurs on BLM land. Currently, 14 mining claims would be crossed by the project and the proposed alternatives. The mining claims crossed by the proposed project and proposed alternatives are as follows:

Proposed Project

- Township 25 South, Range 60 East, Section 33
- Township 25 South, Range 60 East, Section 34
- Township 25 South, Range 61 East, Section 20
- Township 25 South, Range 61 East, Section 21
- Township 25 South, Range 61 East, Section 22
- Township 26 South, Range 59 East, Section 13
- Township 26 South, Range 60 East, Section 4
- Township 26 South, Range 60 East, Section 5

Transmission Alternative C

- Township 27 South, range 59 East, Section 7

Golf Course Telecommunication Alternative

- Township 16 North, Range 14 East, Section 23

Mountain Pass Telecommunication Alternative

- Township 16 North, Range 13 East, Section 2
- Township 16 North, Range 13 East, Section 11
- Township 16 North, Range 14 East, Section 31
- Township 16 North, Range 14 East, Section 32

3.9.2 Applicable Laws, Regulations, and Standards

The following section provides a summary of federal, state, and local laws, regulations, and standards that govern land use, grazing allotments, and wild horses and burros in the project area.

3.9.2.1 Federal

Federal Land Policy and Management Act of 1976, as amended

The Federal Land Policy and Management Act (FLPMA) provides the BLM with an overarching mandate to manage the public lands and resources under its stewardship under the principles of multiple use and sustained yield. "Multiple use" is a concept that directs management of public lands and their resource values in a way that best meets the present and future needs of Americans and is defined as: a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources (FLPMA §103(c)).

43 CFR § 2807.20

According to 43 CFR § 2807.20, grant holders seeking to amend ROW grants and proposing to deviate substantially in the location, use, or terms and conditions of the original grant must apply for a new ROW grant for any grant issued prior to October 21, 1976. Therefore, because the applicant is upgrading their existing transmission line from 115-kV to 230-kV, a new ROW is being issued by the BLM.

California Desert Conservation Area Plan

In 1980, the BLM prepared a comprehensive management plan for the California Desert Conservation Area (CDCA). The CDCA contains over 12 million acres of public lands that are administered by the BLM. The goal of the CDCA Plan is to provide for the use of the CDCA area, including economic, educational, scientific, and recreational uses, in a manner that enhances wherever possible—and which does not diminish, on balance—the environmental, cultural, and aesthetic values of the desert and its productivity (BLM 1980).

As part of the Energy Production and Utility Corridor Element, the CDCA Plan designated a regional network of 16 utility planning corridors (later increased to 19 by plan amendments). Corridors are from two to five miles wide and are several to hundreds of miles in length. Their purpose is to guide detailed planning and siting of utility projects requiring a ROW from the BLM, such as "new electrical transmission towers and cables of 161-kV or above," among other utility types.

BLM Las Vegas Resource Management Plan/ Final EIS

The Las Vegas Proposed RMP/Final EIS identifies future management in the form of objectives and management directions for 3.3 million acres of public land in Clark and Nye Counties, located in southern Nevada (BLM 1998). One guideline stated in the Las Vegas RMP/ Final EIS is that "minimizing the proliferation of randomly placed, single-use utility lines would better protect the scenic values and integrity of the surrounding areas." Although utility ROWs are not be limited to designated corridors, all efforts are focused on utility corridors whenever possible and to their maximum capacity (BLM 1998).

Stateline Supplemental Resource Management Plan/Final EIS

The Supplement to the Stateline RMP/Final EIS designates utility ROWs within the Eldorado Land Sale Area (i.e., the BCCE). Specifically, one goal of the Supplement to the Stateline RMP/Final EIS is to:

> a) Reserve in the patent [U.S. Patent No. 27-95-0022] and with the concurrence of the sale proponent, 2,000 and 3,000 foot wide northeast/southwest corridors, and a 1,000 foot wide corridor north/south along the western edge of the sale area, and a 2,000 foot wide corridor through the Eldorado Mountains. These corridors provide adequate room on either side of the current lines for two or more lines… (BLM 1994)

The Supplement to the Stateline RMP/Final EIS was published in May 1994, prior to the "Interlocal Agreement for Sale and Grant of a Conservation Easement" between Boulder City and Clark County in July 1994 and the "Contract Between the State of Nevada and the City of Boulder City for the Sale of Land in the Eldorado Valley" in July 1995.

Public Laws 106–362 and 107–282 (Ivanpah Airport)

Per Section (2)(b)(1) of the Ivanpah Valley Airport Public Lands Act of 2000 (Public Law 106–362), the land grant for the SNSA, among other requirements, is conditional upon "conduct[ing] an airspace assessment, using the airspace management plan required by section 4(a), to identify any potential adverse effects on access to the Las Vegas Basin under visual flight rules that would result from the construction and operation of a commercial or primary airport, or both, on the land to be conveyed." In addition, the Clark County Conservation of Public Land and Natural Resources Act of 2002 (Public Law 107–282) states that the conditions of the Ivanpah Valley Airport Public Lands Act of 2000 must be met and the project approved before the land identified as the "Ivanpah Airport Noise Compatibility Area" (i.e., the Ivanpah Airport Environs Overlay) is officially transferred (Title V, Section 501[c][1] and 501[d]). As a result, the SNSA is currently undergoing environmental review and an EIS is being prepared jointly by the BLM and the FAA. The EIS is projected to be complete by the fourth quarter of 2012 (BLM and FAA n.d.). The project cannot be officially approved until after the completion of the EIS; however, the South County Land Use Plan of 2008 specifies land use policies for the SNSA (see Section 3.9.2.3 for more detail).

Federal Aviation Administration Regulations

FAA regulations address potential aircraft obstruction for structures taller than 200 feet or within 20,000 feet of an airport. Specifically, Federal Regulation Title 14, Part 77, established standards and notification requirements for objects that have the potential to affect navigable airspace. In 1993, Part 77.13(a)(5)(ii) was revised to include only those airports under construction and excluded proposed airports (FAA 1993). Nonetheless, the Part 77 standards are intended to (1) evaluate the effect of the construction or alteration of structures on airport operating procedures; (2) determine if there is a potential hazard to air navigation; and (3) identify measures to enhance safety. Specifically, the FAA requires notification through the filing of FAA Form 7460, Notice of Proposed Construction or Alteration, if a structure is over 200 feet in height or closer than 20,000 feet to an existing airport or airport under construction (Title 14, Part 77.13).

3.9.2.2 State

California

California Public Utilities Commission

CPUC's review of transmission line applications takes place under two concurrent and parallel processes:

1. Environmental review pursuant to CEQA
2. Review of project needs and costs pursuant to Public Utilities Code Sections 1001 et seq. and General Order 131-D

CPUC General Order 131-D, "Rules relating to the planning and construction of electric generation, transmission/power/distribution line facilities and substations located in California," states that no electric public utilities will begin construction in the state of California of any new electric generating plant, or of the modification, alteration, or addition to an existing electric generating plant, or of electric transmission/power/distribution line facilities, or of new, upgraded or modified substations without first complying with the provisions of this General Order. For purposes of the General Order, a transmission line is a line designated to operate at or above 200-kV. A power line is a line designated to operate between 50- and 200-kV. A distribution line is a line designated to operate under 50-kV.

Nevada

Public Utilities Commission of Nevada

The construction of a utility facility, defined as a transmission line that is 200-kV or more, requires a permit by the Public Utilities Commission of Nevada under the Utility Environmental Permit Act according to the Nevada Revised Statutes (NRS) 704.820 through 704.900. However, the replacement of an existing facility with a like facility, as determined by the Commission, does not constitute construction of a utility facility (NRS 704.865).

3.9.2.3 Local Plans and Policies

Clark County Comprehensive Plan

The Clark County Comprehensive Plan policy applicable to the project is as follows:

- Energy transmission facilities should be located adjacent to existing energy transmission facilities. New pipelines and power lines should be limited to existing corridors and their placement within the corridors should be as close together as possible.

South County Land Use Plan

Clark County has included in their South County Land Use Plan of 2008 the following goals and policies for the Ivanpah Airport Environs Overlay (for the SNSA):

- *Goal SC13: Provide for compatibility between Ivanpah Airport Environs and existing or proposed land uses.*
- *Policy SC13.1: New development projects located in the Ivanpah Airport Noise Compatibility Area (ANCA) shall comply with additional ANCA land use regulations.*
- *Policy SC13.2: Encourage building and structures to comply with any regulations established for the Ivanpah Airport Noise Compatibility Area (ANCA) unless deviations are deemed appropriate by the Airport Hazard Areas Board of Adjustment.*

- *Policy SC13.3: Encourage development patterns and standards compatible with the future operations of the Ivanpah Airport since most of Jean and Primm will be within the Airport Noise Compatibility Area (ANCA).*

These restrictions would only apply to the Ivanpah Airport Environs Overlay (see Figure 3.9-1), which is crossed by the project between approximately MP 24.5 and MP 28.5. As described above, to date, the SNSA has not been approved and the EIS for the SNSA is not scheduled to be published until late 2012 or 2013.

Title 30 Clark County Unified Development Code: Uses 30.44

SLUCM Code 4800

Public Utility Structures, including 34.5-kV or greater transmission lines (not including communication towers and antennas)

For utility poles only, Conditional Use in all districts is subject to:

1. Additional height to existing poles:
   a. 20 additional feet may be added to the height of original poles, or poles may be replaced on a one-for-one basis as long as the height of the new pole does not exceed the height of the original pole by more than 20 feet.
   b. If more than 20 feet is added, the pole must be set back 300 percent of the height of the pole from residential development.
2. Additional poles may be added to existing utility corridors if an administrative minor deviation is approved with letters of consent from adjacent and affected property owner. Letters are not required from publicly owned property.
3. Compliance with fugitive dust regulations, if applicable, per Clark County Air Quality Regulations.

Clark County Multiple Species Habitat Conservation Plan and EIS

The Clark County MSHCP has several concerns and recommendations concerning utility construction, which are as follows:

Threat 1201:	Mortality through collisions and electrocution with power lines.
Conservation Action(s):	site new power lines in consolidated utility corridors adjacent to existing facilities; retrofit existing lines where appropriate.
Threat 1202:	habitat degradation associated with utility facility construction and maintenance.
Conservation Action (s):	minimize new road construction associated with new utility facilities; where possible, close and rehabilitate unneeded existing roads or new roads after construction.
Threat 1203:	increased availability of perch sites for ravens (tortoise predators) and raptors.
Conservation Action (s):	incorporate design feature into new towers to inhibit raptor or raven perching and nesting: as appropriate, retrofit existing towers with devices to discourage raptor and raven perching.

Boulder City Master Plan

A review of the Boulder City Master Plan determined that no land use plans or policies apply to the project.

Boulder City Conservation Easement

According to the "Interlocal Agreement for Sale and Grant of a Conservation Easement" between Boulder City and Clark County in 1994, the purpose of the BCCE is "to assure that the Property will be retained in a natural condition and to prevent any use of the Property that will impair or interfere with its National Resource Value." The terms of the easement are enforced by Clark County (the Grantee), which instituted "measures to preserve, protect, manage and study the Natural Resource Values of the Property, and in particular the habitat of the desert tortoise" (Boulder City and Clark County 1994) through the Clark County MSHCP. The agreement also reserves to Clark County limited rights to construct utilities as described in Exhibit B to the agreement and to maintain certain corridors and ROWS, such as the BLM-designated utility corridors discussed above under the Stateline Supplemental RMP/Final EIS. Prior to undertaking any act that would have "adverse impacts upon the Natural Resources Values," Clark County must inform the USFWS and incorporate USFWS recommended mitigation measures to reduce adverse impacts "to the greatest extent practicable" (Boulder City and Clark County 1994). The City of Boulder City must also be consulted for approval of new land uses in the area.

San Bernardino County General Plan

A review of the San Bernardino County General plan determined that no applicable land use plans or policies apply to the proposed project because the part of the project that passes through San Bernardino County falls along an existing BLM ROW.

3.9.3 Impact Analysis

This section defines the methodology used to evaluate impacts on land use, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.9.4.

3.9.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to land use would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

3.9.3.2 CEQA Impact Significance Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. physically divide an established community;

b. conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; or

c. conflict with any applicable habitat conservation plan or natural community conservation plan.

3.9.3.3 Methodology

To determine whether or not impacts would occur as a result of the proposed project, the various land use designations that exist within the project area were reviewed to determine whether or not the project construction and operations would be consistent with the designated and allowable uses. In addition, specific plans relative to the use and management of specially designated lands were evaluated to determine if the proposed project construction and operations would conflict with these plans. In addition, specific legal ROW agreements and ownership contracts were reviewed as available.

3.9.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measure (APM) related to land use:

> **APM LU-1: Aeronautical Considerations.** The applicant would submit notice to FAA electronically, in accordance with FAA procedures, and as far in advance of construction as possible.

3.9.3.5 Proposed Project / Proposed Action

<u>Construction</u>

Eldorado–Ivanpah Transmission Line

Land Use Jurisdictions

As listed in Table 3.9-1, the transmission line would cross lands within the jurisdiction of BLM Needles, Clark County, BLM Las Vegas, and the BCCE.

Land under the jurisdiction of the BLM Needles Office is designated public land open to a variety of multiple uses including recreation, grazing, mineral extraction, and the issuance of land use authorizations. Land under the jurisdiction of the BLM Las Vegas Office is designated as open public lands and recreation. Transmission line construction is an allowable use on land with these designations so long as BLM determines that a ROW grant would be in the public interest. Because the purpose of the project is to upgrade an existing transmission line and the majority of the line would be within the boundaries of an existing BLM-designated utility corridor, following existing ROWs, the proposed project would therefore be consistent with BLM land management plans and policies.

The route would also cross Clark County land designated as commercial. Transmission lines 34.5-kV or greater are an allowable use in all districts (zones/land use designations) in Clark County if the applicant follows conditions set forth by the Clark County Unified Development Code (the Code). The Code is outlined above in Section 3.9.2.3, “Local Plans and Policies.” The proposed project would comply with the conditions outlined by the Code and therefore is consistent with Clark County plans and policies.

The portion of the proposed project that crosses the BCCE would be constructed mostly within the boundary of BLM-managed utility corridors; however, less than one mile would cross outside of the corridor at MP 2 along an existing 70-foot ROW before reconnecting with an adjacent designated corridor to the south and continuing east to the Eldorado Substation. Construction of the proposed project within the BLM-designated utility corridor is an allowable use; however, construction on the portion outside of the utility corridors would require approval from Clark County and Boulder City per MM LU-1. Construction of the EITP along the existing ROW, even though it falls outside of the BLM-designated utility corridor, would be compatible with the Clark County MSHCP because the primary purpose of the plan is to minimize adverse impacts on natural resources within the BCCE. Currently, the EITP, as proposed, would disturb less habitat than the two identified alternatives (Transmission Alternative Routes A and B) even though they would fall entirely within the corridors as discussed in further detail in Section 3.4, “Biological Resources.”

Grazing Allotments

The transmission line would cross one active grazing allotment, Hidden Valley, between MP 10.5 and MP 12, and one open but inactive grazing allotment, Clark Mountain, MP 29 and MP 34. Construction of the transmission line could have a temporary effect on grazing in the Hidden Valley allotment within the construction area during project construction.

Recreation Areas and Special Recreation Management Areas

The transmission line would cross the Ivanpah Dry Lake Recreation Area between MP 29 and MP 31 and the Jean/Roach Dry Lake SRMA between MP 7 and MP 28.5. Temporary adverse effects to recreation may occur as a result of transmission line construction. For further discussion of impacts on recreation and mitigation measures, refer to Section 3.12, "Recreation."

Mining Claims

The transmission line would cross seven active mining claims. Project construction would temporarily restrict access of mining claim holders to their mining claims.

Airports

The transmission line passes within 0.5 miles of the proposed SNSA at MP 26 and within the Ivanpah Airport Environs Overlay between MP 24.5 and 28.5. While the SNSA has not yet been approved, the South County Land Use Plan contains policies related to compatibility with land use planning efforts for the future SNSA. In order to comply with these policies and reduce future land use conflicts with the SNSA, MM HAZ-2 requires that the applicant consult with the FAA prior to final project design.

Ivanpah Substation

The Ivanpah Substation would be constructed within the Clark Mountain Grazing allotment. Construction of the Ivanpah Substation would permanently remove approximately 38.5 acres of grazing land from the Clark Mountain grazing allotment which would account for 0.04 percent of the total acreage of the Clark Mountain allotment. Removal of 38.5 acres of the allotment would result in the loss of 0.66 AUMs.

Telecommunications Line

Construction of the redundant telecommunications line would not result in any additional impacts on any land use plans, grazing allotments, AUMs, Special Management Areas, or mining claims other than those discussed above for the transmission line. Construction of the redundant telecommunications line would occur within an existing ROW on BLM lands designated as Preservation/ Recreation. The line crosses seven mining claims and the Piute-Eldorado ACEC between MP 5.5 and MP 26.5. As telecommunications line construction activities would occur within existing ROWs, neither the Piute-Eldorado ACEC nor mining (see Section 3.6, "Geology, Soils, and Minerals," for further discussion of mining) would be adversely affected as a result of construction of the telecommunications line.

<u>Operation & Maintenance</u>

Eldorado–Ivanpah Transmission Line

Operation and maintenance activities of the transmission line would take place within an existing ROW and maintenance vehicles would use existing roads when servicing the transmission lines from the ground; therefore, land uses or policies would not be adversely affected.

Ivanpah Substation

Operation and maintenance of the Ivanpah Substation would involve visits to the Substation by maintenance personnel throughout the life of the project. Maintenance personnel would travel to the site as needed on roads within the ROW; therefore, the grazing allotment would not be adversely affected.

Telecommunications Line

Operation and maintenance activities of the telecommunications line would take place within an existing ROW and maintenance vehicles would use existing roads when servicing the telecommunications line from the ground; therefore, land uses would not be adversely affected.

NEPA Summary

Short-term, localized, negligible adverse impacts on the Ivanpah Dry Lake Recreation Area, the Jean/Roach Dry Lake SRMA and the Hidden Valley grazing allotment could occur as a result of project construction. Long-term, localized, negligible adverse effects on the Clark Mountain grazing allotment would occur as a result of operation as it would remove 38.5 acres of land from the 97,560 acre grazing allotment Construction of the substation would result in a long-term adverse negligible impact on the Clark Mountain Allotment. Construction of the proposed project could also have adverse impacts on land uses within the BCCE and the Ivanpah Airport Environs Overlay area; however, impacts would be reduced with the implementation of MM LU-1 and MM HAZ-2, respectively.

CEQA Significance Determinations

IMPACT LU-1 Conflict with Applicable Plans and Policies
Less than significant with mitigation

The proposed project would be constructed mostly within an existing BLM-managed utility corridor; however, the proposed project would cross various land uses in both California and Nevada. For example, the project would be routed through the BCCE, which is managed by Clark County and the City of Boulder City with specific utility corridors reserved to the BLM. A portion of the proposed line around MP 2 would deviate outside of the BLM-designated utility corridors granted in U.S. Patent No. 27-95-0022 for less than one mile; however, the segment would follow the existing 115-kV ROW. Regardless, because the route deviates outside of the corridor and requires widening the existing 70-foot ROW, MM LU-1 is required. MM LU-1 requires that the applicant consult with Clark County and the City of Boulder City and acquire approval for activities outside of the BLM-designated corridor within the BCCE.

The route also crosses through land designated as the Ivanpah Airport Environs Overlay for the SNSA. In order to ensure that there are no impacts related to land use planning efforts for the future SNSA, the applicant would adhere to the policies of the South County Land Use Plan. Additionally, MM HAZ-2 requires that the applicant consult with the FAA prior to final project design to acquire a Hazard/No Hazard Determination and ensure consistency with FAA regulations. The SNSA is discussed in further detail in Section 3.7, “Hazards, Health, and Safety,” and Chapter 5, “Cumulative Scenarios and Impacts.”

The proposed project would cross a small area of private land in unincorporated Clark County. The land is zoned as commercial; however, transmission lines 34.5-kV or greater are an allowable use in all districts (zones/land use designations) in Clark County if they follow the conditions set forth by the Clark County Unified Development Code (the Code). The Code is outlined above in Section 3.9.2.3, “Local Plans and Policies.” The proposed project would comply with these conditions; therefore, no impact would occur.

With the implementation of MM LU-1 and MM HAZ-2, the proposed project would not conflict with any plans or policies, and impacts under this criterion would be reduced to less than significant.

NO IMPACT. Divides an Established Community. The proposed project would be constructed primarily in non-urbanized areas of the Mojave Desert. The project would abut a casino employee housing area in Primm in the place of the current 115-kV line but would not physically divide it; therefore, there would be no impact.

NO IMPACT. Conflicts with Clark County MSHCP. See Section 3.4, “Biological Resources,” for a discussion of biological impacts resulting from the proposed project in the BCCE and potential conflicts with the Clark County MSHCP.

3.9.3.6 No Project / No Action Alternative

Adoption of the No Project Alternative would have no adverse effect on any applicable land use plans or policies. There would be no short or long-term effects on any land use plans or policies, livestock grazing management, AUMs allocated to livestock, or Special Management Areas. No impacts would occur.

3.9.3.7 Transmission Alternative Route A

Transmission Alternative Route A would bypass the segment of the proposed transmission line alignment between MP 1 and MP 7 and would be constructed entirely within a BLM-designated utility corridor, thus avoiding potential conflicts with the BCCE. With respect to land use, impacts resulting from Transmission Alternative Route A would therefore be less than the proposed project.

3.9.3.8 Transmission Alternative Route B

Similar to Transmission Alternative Route A, Transmission Alternative Route B would bypass the segment of the proposed transmission line that runs north and south near MP 2, outside of the BLM-designated utility corridor. Alternative B would be constructed entirely on lands within BLM-designated corridors, thus avoiding potential conflicts with the BCCE. With respect to land use, impacts resulting from Transmission Alternative Route B would therefore be less than the proposed project.

3.9.3.9 Transmission Alternative Route C

Transmission Alternative Route C would route the proposed transmission line off the existing SCE transmission ROW at MP 27, locating it around Ivanpah Dry Lake before reconnecting to the EITP route near MP 31. Alternative C would be constructed on BLM Las Vegas and BLM Needles lands designated as Open Public Lands, a Nevada Department of Transportation Corridor, and private lands in unincorporated Clark County land designated as commercial land. Transmission line construction is an allowable use on BLM land designated as Open Public Lands, as long as BLM determines that it is an appropriate use of the land. It is also an allowable use in Nevada Department of Transportation (NDOT) transportation corridors.

Adoption of Transmission Alternative C would temporarily restrict access to one mining claim during construction. See Section 3.6, "Geology, Soils, Minerals, and Paleontology," for impacts on mining.

3.9.3.10 Transmission Alternative Route D and Subalternative E

Alternative D would deviate from the proposed project at the northeastern edge of the Ivanpah Dry Lake at MP 27 traveling around Ivanpah Dry Lake and rejoining the proposed route at MP 30. Alternative D and Subalternative E would be constructed on lands designated as Open Public Lands and Recreation and on private unincorporated Clark County lands designated as vacant. Transmission line construction is an allowable use on the BLM land designated as recreation because the land is located within in an existing BLM-designated utility corridor, and on BLM lands designated as Open Public Lands so long as BLM determines that it is an appropriate use of the land.

Transmission Alternative Routes D and Subalternative E would have no impact on land use.

3.9.3.11 Telecommunication Alternative (Golf Course)

The Golf Course Telecommunication Alternative is a 20-mile alternative that is broken into two segments for discussion purposes. The first segment is a 10-mile segment that would proceed from the town of Nipton to I-15 (MP 1 to MP10) along the north side of Nipton Road, parallel to the northern boundary of the Mojave National Preserve. Approximately 1 mile would be constructed above ground on the existing Nipton 33-kV Line and 9 miles would be constructed underground alongside Nipton Road approximately 3 feet from the pavement within the ROW of Nipton Road. This segment of the Golf Course Alternative would cross BLM lands designated as Preservation/Recreation and unincorporated San Bernardino County lands designated as commercial.

The second segment is a 10-mile segment that would stretch from the intersection of Nipton Road and I-15 to the Primm Golf Course to the Ivanpah Substation on the existing Nipton 33-kV Line and the to-be-constructed EITP 230-kV transmission line entirely on BLM-managed lands. The BLM-managed lands crossed by this segment are designated as Open Public Lands. Additionally, this alternative would cross the Valley View Grazing Allotment and the Clark Mountain Grazing Allotment. These allotments are not currently under grazing and no impacts on grazing would occur as a result of the adoption of the Golf Course Telecommunication Alternative.

Telecommunication Alternative (Golf Course Alternative) would cross one mining claim. Adoption of the Golf Course Alternative would temporarily restrict access of mining claim holders to their mining claims during construction, a short term, negligible, localized impact.

Adoption of the Golf Course Alternative would temporarily restrict access of mining claim holders to their mining claims during construction; therefore, the Golf Course Alternative would have a short-term, negligible impact on mining in the area.

3.9.3.12 Telecommunication Alternative (Mountain Pass)

The Mountain Pass Telecommunication Alternative is a 25-mile alternative that is broken into two segments for discussion purposes. The first segment is a 10-mile segment that would proceed from the town of Nipton to I-15 (MP 1 to MP 10) along the north side of Nipton Road, parallel to the northern boundary of the Mojave National Preserve. Approximately 1.0 mile would be constructed above ground on the existing Nipton 33-kV Line and 9.0 miles would be constructed underground alongside Nipton Road approximately 3 feet from the pavement within the ROW of Nipton Road. This segment of the Mountain Pass Alternative would cross BLM lands designated as Preservation/Recreation.

The second segment is a 15-mile segment that would begin at I-15 and continue to the town of Mountain Pass and then to the Ivanpah Substation on the existing Nipton 33-kV Line. Approximately 500 feet of underground conduit would be installed from the Ivanpah Substation to the last Nipton 33-kV distribution line pole.

Telecommunication Alternative (Mountain Pass) would cross four mining claims. Adoption of the Mountain Pass Alternative would temporarily restrict access of mining claim holders to their mining claims during construction; therefore, the Mountain Pass Alternative would have a short-term, negligible adverse impact on mining in the area.

The BLM and NPS lands crossed by the Mountain Pass Alternative are designated as Open Public Lands, and the San Bernardino County Land is designated as Vacant and Industrial. As the Mountain Pass Alternative would be constructed on the existing Nipton 33-kV distribution line within an existing ROW, and within the boundary of the existing ROW for Nipton Road; and as the Clark Mountain Allotment is not currently being grazed, other than those discussed above, no additional impacts would occur as a result of the adoption of the Mountain Pass Telecommunication Alternative.

3.9.4 Mitigation Measures

MM LU-1: Obtain Approval from Clark County and the City of Boulder City for Activities Outside of BLM-Designated Utility Corridors in the BCCE. Prior to construction, the applicant must consult with and obtain permission from Clark County and the City of Boulder City regarding construction outside of BLM-designated utility corridors in the BCCE. The applicant will submit a record of this consultation to the BLM and the CPUC prior to construction.

3.9.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to land use in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

The Final Staff Assessment (FSA)/ Draft Environmental Impact Statement (DEIS) was structured differently from this document (EITP DEIS/DEIR). Grazing Allotments and AUMs allocated for livestock were disused in a stand alone chapter in the Ivanpah Solar Electric Generating System (ISEGS) document called Livestock Grazing; therefore, ISEGS impacts on resource areas relative to this chapter of the EITP DEIS/DEIR will be discussed in two parts, which will be Land Use and Agriculture and Livestock Grazing.

ISEGS Designated Areas impacts and mitigation measures are discussed in the Biological Resources section of this document (3.4.5 Biological Resources) Designated Areas impacts and mitigation measures were discussed in the Biological Resources section of the ISEGS FSA/DEIS.

3.9.5.1 Setting

Land Use and Agriculture

The proposed ISEGS project would be located in the Mojave Desert, in San Bernardino County, 4.5 miles southwest of Primm, Nevada, and 1.6 miles west of Ivanpah Dry Lake, entirely on public lands managed by the BLM. The proposed ISEGS project would be constructed on land governed by the CDCA Plan, and would require an amendment to the CDCA Plan for siting of the facility.

Livestock Grazing

The ISEGS site is located within the existing BLM Clark Mountain Allotment Grazing Lease, which is a perennial/ephemeral allotment. The allotment contains 97,560 acres of public lands. The approximate 4,073-acre ISEGS site boundary is approximately 4 percent of the area of the allotment.

Applicable Laws, Regulations, and Standards

Due to the variation in project components and location between EITP and ISEGS, different laws, regulations, and standards would apply to ISEGS than those listed above in Section 3.9.2. Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with EITP would not apply. Laws, regulations, or standards that apply to the ISEGS project with respect to Land Use and Agriculture and Livestock Grazing are listed below.

Land Use and Agriculture

Law, regulation, or standard	Description
Federal	
Bureau of Land Management	California Desert Conservation Area (CDCA) Plan; Northern and Eastern Mojave Desert Management Plan Code of Federal Regulations Title 40; Chp. V. Code of Federal Regulations Title 43; 1610.5-3, Part 2800 Federal Land Policy and Management Act (1976)
State	There are no state land use laws, ordinances, regulations, or standards for this project
Local	San Bernardino County General Plan San Bernardino County 2007 Development Code

Livestock Grazing

Law, regulation, or standard	Description
Federal	
Taylor Grazing Act of June 28, 1934	Congress passed the Taylor Grazing Act in 1934 to direct occupancy and use of public rangelands, to preserve natural resources from destruction or unnecessary injury, and to provide for the orderly use, improvement, and development of rangelands.
Federal Land Policy and Management Act (FLMPA, 1976)	Section 202 of FLPMA requires BLM to develop and maintain land use plans for public lands, which in turn identify lands that are available for the issuance of permits or leases for grazing. Subchapter IV provides for Range Management.
Public Rangelands Improvement Act	Defines rangeland, establishes a national policy to improve the condition of rangelands, requires a national inventory of rangelands, and authorizes funding for range improvement projects.
43 Code of Federal Regulations Part 4100	Regulations under which BLM administers its grazing program.
California Desert Conservation Area (CDCA) Plan	Defines Multiple-Use Classes for BLM-managed lands in the CDCA, which includes the land area encompassing the proposed project location.
Northern and Eastern Mojave Desert Management Area (NEM0)	An amendment to the CDCA Management Plan, the NEMO Plan establishes standards and guidelines for grazing activities in the NEMO.
Local	San Bernardino County General Plan San Bernardino County 2007 Development Code

3.9.5.2 Methodology

The ISEGS FSA/DEIS evaluated potential environmental impacts of ISEGS on land use, agriculture, grazing allotments, and AUMs allocated to grazing in compliance with both CEQA and NEPA. The Land Use section of the EITP DEIS/DEIR does not include a discussion of impacts on Agriculture, as it was determined early in the environmental review process that no agricultural land would be impacted by EITP. CEQA criteria used to determine ISEGS impacts on land use did not differ from the criteria used to determine EITP impacts, as listed in Section 3.9.3.5. CEQA criteria used to determine ISGES impacts on agriculture are as follows:

- Converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency and the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, to non-agricultural uses;
- Conflicts with existing zoning for agricultural use, or a Williamson Act Contract; and
- Involves other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to nonagricultural use.

Because the project would be located on federal land, California state regulations which protect and manage farmlands, including livestock grazing, are not applicable to the proposed project area. The impact of the proposed project and alternatives on livestock grazing would be considered significant under CEQA if the result of the ISEGS' displacement of grazing cattle were to cause a significant impact on the environment or to livestock under the jurisdiction of California.

Under NEPA, the impact of the proposed project and alternatives on the Clark Mountain Allotment would be considered significant if they would involve changes in the existing environment which, due to their nature or location, could result in a significant reduction in foraging opportunities to plan communities on the ISEGS site or to the safety of livestock.

3.9.5.3 Impacts

Land Use and Agriculture

The California Energy Commission (CEC) has identified the following impacts related to land use and agriculture for the ISGES project:

- Staff considers the 100 percent loss of Utility Corridor BB as attributable to ISEGS to be an adverse direct impact; however, the impact is less than significant since there would be some remaining opportunity to route future utility lines through the construction logistics area in Corridor BB and through remaining portions of Corridor D.

Livestock Grazing

Under NEPA, the impact would be modification of the allotment boundaries, resulting in a minor 4 percent reduction in allotment acreage, which is not considered a significant adverse impact on foraging opportunities or to the safety of livestock. With respect to CEQA, there would not be a significant adverse impact because discontinuing livestock grazing at the ISEGS site would not result in damage to the desert environment or affect the safety of livestock.

3.9.5.4 Conditions of Certification / Mitigation Measures

Land Use and Agriculture

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to noise if the project is approved:

LAND-1. The project owner will obtain a ROW grant from the BLM. Among the conditions for obtaining the ROW grant, the applicant will provide the following:

A. Prior to issuance of any ROW grant, the project owner will submit a final Plan(s) of development that describes in detail the construction, operation, maintenance, and termination of the ROW and its associated improvements and/or facilities. The project owner will construct, operate, and maintain the facilities, improvements, and structures within this ROW in strict conformity with the final approved Plan of Development. The degree and scope of these plans will vary depending upon (1) the complexity of the ROW or its associated improvements and/or facilities, (2) the anticipated conflicts that require mitigation, and (3) additional technical information required by BLM's Authorized Officer and the Compliance Project Manager (CPM). The plans will be reviewed, and if appropriate, modified by the project owner until acceptable, and approved by BLM's Authorized Officer and the CPM. An approved Plan of Development will be made a part of the ROW grant. Any relocation, additional construction, or use that is not in accord with the approved Plan(s) of Development, will not be initiated without the prior written approval of BLM's Authorized Officer and the CPM.

B. A bond, acceptable to BLM's Authorized Officer, will be furnished by the project owner prior to the issuance of a Notice to Proceed with construction or at such earlier date as may be specified by BLM's Authorized Officer. The amount of this bond will be determined by BLM's Authorized Officer. This bond must be maintained in effect until removal of improvements and restoration of the ROW have been accepted by BLM's Authorized Officer and the CPM.

Verification: At least 30 days prior to the start of construction and prior to any Notice to Proceed with construction issued by BLM's Authorized Officer and the CPM, documentation of the following:

A. BLM's ROW Grant and final approved Plan of Development;

B. The bond satisfactory to BLM's Authorized Officer;

C. Certification that the project owner acknowledges that the ISEGS development and all related construction, operation, maintenance and closure activities are to be conducted in conformance with the approved Plan of Development and within the approved ROW boundaries for the life of the project.

LAND-2. The applicant's project description and associated construction plans will be revised to allow a minimum 20-foot buffer between the security and tortoise exclusion fence, and the proposed ROW boundary. Once the fencing is constructed, all inspection, monitoring, and maintenance activities required outside of the fencing will occur on lands included within this buffer area and ROW boundaries. Should project activities requiring the use of an area larger than the buffer be required (such as installation of new drainage structures one acre or more in size), the project owner will make application to the BLM for a Temporary Use Permit or additional ROW Grant may require additional environmental evaluation pursuant to the National Environmental Policy Act and the California Environmental Quality Act.

Verification: At least 60 days prior to the start of construction, the project owner will provide BLM's Authorized Officer and the CPM with a revised project description and construction plans specifying the inclusion of the buffer zone within the ROW boundaries. The project owner will also provide BLM's Authorized Officer and the CPM with certification acknowledging that the ISEGS development and all related construction, operation, maintenance and closure activities are to be conducted within the ROW boundaries for the life of the project.

Livestock Grazing

The ISEGS project would pose no significant risk to grazing livestock if recommended mitigation measures were implemented. Speed limits of 10 miles per hour on unpaved roads and 25 mph on stabilized roads imposed for fugitive dust control, as would be required under **Air Quality Conductions of Certification AC-SC3 and AQ-SC7,** are expected to be effective in also protecting grazing livestock from vehicle strike.

Fencing of project construction areas and of permanent facilities used during operations would be required as a component of the Construction and Operation Site Security Plans as specified under **Hazardous Materials Conditions of Certification HAZ-4 and HAZ-5**. These Conditions of Certification would provide adequate mitigation measures for protection of livestock roaming areas near the project.

3.10 Noise

This section describes the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to noise.

3.10.1 Environmental Setting

To describe environmental noise at the regional and local levels, and to assess impacts on areas sensitive to community noise, an understanding of noise fundamentals is necessary. Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. There are several ways to measure noise, depending on the source, the receiver, and the reason for the noise measurement. The most common metric is the overall A-weighted sound level measurement that has been adopted by regulatory bodies worldwide. The A-weighted network measures sound similarly to how a person perceives sound, thus achieving good correlation with acceptable and unacceptable sound levels. A-weighted sound levels are reported in units of A-weighted decibels and denoted as dBA.

A-weighted sound levels are typically measured or presented as the equivalent sound pressure level (L_{eq}), which is the logarithmic average noise energy level due to all sources (for example, the ambient noise level in addition to construction and traffic noise) in a given area for a defined period of time (for example, 1 hour or 24 hours). The L_{eq} is commonly used to measure steady-state sound or noise that is usually dominant. Statistical methods are used to capture the dynamics of a changing acoustical environment. Statistical measurements are typically denoted by L_{xx}, where $_{xx}$ represents the percentage of time the sound level is exceeded. For example, L_{90} represents the noise level exceeded during 90 percent of the measurement period. Similarly, L_{10} represents the noise level exceeded for 10 percent of the measurement period. The relative A-weighted noise levels of common sounds measured in the environment and industry for various qualitative sound levels are provided in Table 3.10-1.

Table 3.10-1 Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance (feet)	A-Weighted Sound Level in Decibels (dBA)	Qualitative Description
Carrier deck jet3 operation Jet takeoff (200 feet)	140 130 120	Pain threshold
Auto horn (3 feet) Jet takeoff (1,000 feet) Shout (0.5 feet)	110 100	Maximum vocal effort
N.Y. subway station (50 feet) Heavy truck (50 feet)	90	Very annoying; hearing damage (8-hr, continuous exposure)
Pneumatic drill (50 feet) Freight train (50 feet) Freeway traffic (50 feet)	80 70 to 80 70	Annoying Intrusive (telephone use difficult)
Air conditioning unit (20 feet) Light auto traffic (50 feet) Living room/Bedroom	60 50 40	Quiet
Library/Soft whisper (5 feet) Broadcasting/Recording studio	30 20 10	Very quiet Just audible

Source: NYSDEC 2003 (Adapted from Table E.)

Another metric used to determine the impact of environmental noise considers the differences in human responses to daytime and nighttime noise levels. During the evening and at night, exterior background noises are generally lower than during the day. However, most household noise also decreases at night and exterior noise becomes more noticeable. Furthermore, most people sleep at night and are therefore more sensitive to intrusive noises. To account for human sensitivity to evening and nighttime noise levels, the Daytime-Nighttime Noise Level (DNL, also abbreviated as L_{dn}) and Community Noise Equivalent Level (CNEL) metrics were developed. The DNL accounts for the greater annoyance of noise during the night (10 p.m. to 7 a.m.). The CNEL accounts for the greater annoyance of noise during the evening (7 p.m. to 10 p.m.) and nighttime hours.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, learning
- Physiological effects such as startling and hearing loss

In most cases, environmental noise may produce effects in the first two categories only. No completely satisfactory way exists to measure the subjective effects of noise or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Thus, an important way of determining a person's subjective reaction to a new noise is to compare it to the existing or "ambient" environment to which that person has adapted. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

The general human response to changes in noise levels that are similar in frequency content (for example, comparing increases in continuous [L_{eq}] traffic noise levels) is summarized as follows:

- A 3-decibel (dBA) change in sound level is a barely noticeable difference.
- A 5-dBA change in sound level is typically noticeable.
- A 10-dBA change is perceived by the listener as a doubling in loudness.

In addition to noise, construction and traffic can generate low levels of vibration which is also reported in decibels and denoted as VdB.

In the following noise analysis, data were used extensively from the Proponent's Environmental Assessment for the Eldorado–Ivanpah 230-kV Transmission Project, dated May 2009.

3.10.1.1 Regional Setting

The proposed project would be located in a primarily rural area, although the proposed transmission line route would pass through or be adjacent to the community of Primm, Nevada. A detailed description of the land uses and land use designations for the proposed project are discussed in Section 3.9, "Land Use."

3.10.1.2 Local Setting

Ambient Noise Surveys

Ambient noise surveys were conducted on November 20 and 21, 2008, at three representative monitoring locations (sites 1, 2, and 3), in order to assess the existing ambient noise levels of the representative locations (SCE 2009). Surveys were conducted using continuous unattended long-term monitoring stations. Two of the sites were monitored for 24 hours each; one of the sites was monitored for 18 hours (see Figure 3.10-1).

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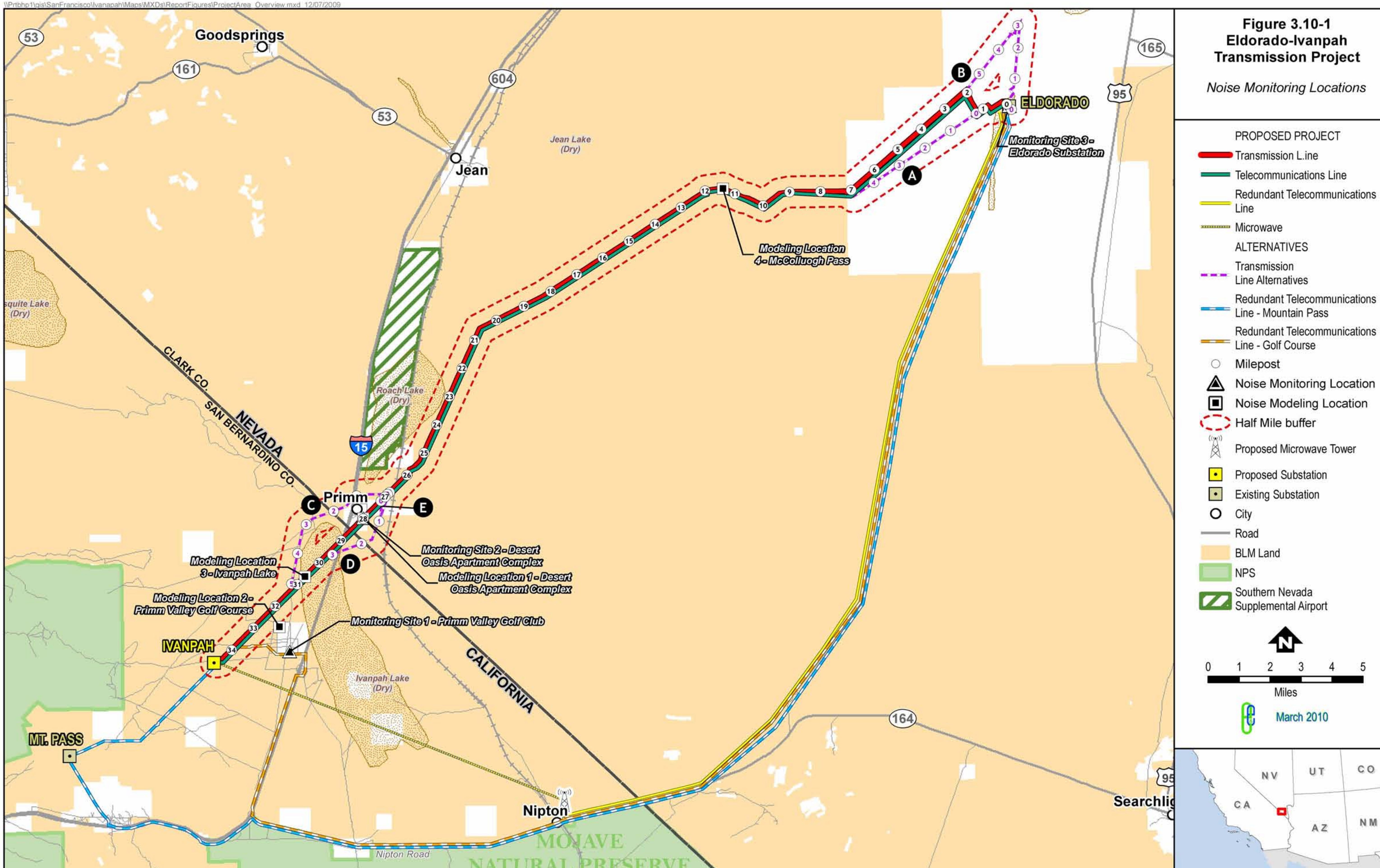

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Weather conditions during the survey, as measured in Henderson, Nevada, consisted of clear skies, wind speeds between 4 and 10 miles per hour, temperatures between 45 and 72 degrees Fahrenheit, and relative humidity between 15 and 37 percent.

Larson Davis 820 Type 1 (precision) sound level meters were used. The meters were factory calibrated within the previous 12 months and were field calibrated prior to and after each measurement series with a Larson Davis CAL200 field calibrator. Microphones were attached to tripods at a height of approximately 5 feet. Shrouds and windscreens were used to protect the microphones from moisture and wind. A shroud and windscreen were not available for the Eldorado Substation site; however, weather conditions were such that the absence of protective equipment should not have impacted the results (i.e., calm winds and no rain).

A description of each site, the date each survey was conducted, and a summary of the collected data are presented in Table 3.10-2.

Table 3.10-2 November 20 and 21, 2008, Noise Survey Results Summary (dBA)

Noise Monitoring Location	Description	Primary Noise Source	Monitoring Period	L_{dn}	L_{eq} (24 hr)	Max Hourly L_{eq}	Min Hourly L_{eq}
1 Primm Valley Golf Club	Rural	I-15, golf course activities	24 hours	62	55	58	45
2 Desert Oasis Apartment Complex	Residential	I-15, truck stop	24 hours	58	51	55	48
3 Eldorado Substation	Rural	Substation	18 hours	56	49[a]	51	47

Note:
[a]Monitoring at the Eldorado Substation was limited to 18 hours; therefore, the L_{dn} and the 24-hour L_{eq} were calculated using noise levels from representative periods for the missing hours. Given the relatively steady noise level (indicated by close agreement between the Max and Min L_{eq}), this assumption is reasonable.

Key:
dBA = Decibels A-scale
L_{dn} = Daytime-Nighttime Noise Level
L_{eq} = equivalent sound pressure level

Transmission Line

Proposed Transmission Line

The proposed transmission line would be constructed from the existing Eldorado Substation to the location of the future Ivanpah Substation. The only residences within the project area are located in Primm, Nevada, at the Desert Oasis Apartment Complex, which contains mobile homes as well as apartments. The complex is approximately 50 feet from the proposed transmission line route. As noted in Section 3.11, "Public Services and Utilities," there are no other sensitive receptors such as hospitals, libraries, schools, places of worship, or other facilities in the project area. With the exception of the location of the transmission line through Primm, the route setting is rural and undeveloped.

The noise levels measured during the noise survey at the Eldorado Substation are representative of the noise levels at the northern end of the transmission line. The minimum hourly L_{eq} and L_{90} noise levels measured at the substation during the noise survey were 47 dBA and 46 dBA, respectively. The noise levels measured during the noise survey at the Desert Oasis Apartment Complex are representative of the noise levels through the center portion of the transmission line. The minimum hourly L_{eq} and L_{90} noise levels measured at the Desert Oasis Apartment Complex were 48 dBA and 46 dBA, respectively. The noise levels measured during the noise survey at the Primm Valley Golf Club are representative of the noise levels at the southern end of the transmission line. The minimum hourly L_{eq} and L_{90} noise levels measured at the Primm Valley Golf Club during the noise survey were 45 dBA and 41 dBA, respectively.

Transmission Line Alternatives

The transmission line and telecommunication alternatives would be constructed and operated in noise conditions similar to those associated with the proposed project; therefore, the measured noise levels throughout the project vicinity as reported for the proposed transmission line would also apply to the transmission line and telecommunication alternatives.

Substations

Eldorado Substation

The Eldorado Substation is an existing substation. No residences are located within 5 miles. The nearest receptors would be recreational users on the Eldorado Dry Lake, north of the substation, 3.5 miles distant at its closest point. There are no hospitals, libraries, schools, places of worship, or other facilities in the study area. The setting is rural and undeveloped. The minimum hourly L_{eq} and L_{90} noise levels measured at the Eldorado Substation during the noise survey were 47 dBA and 46 dBA, respectively.

Ivanpah Substation

The new Ivanpah Substation would be located at the south end of the proposed transmission line. The closest residences to the Ivanpah Substation are those at the Desert Oasis Apartment Complex, roughly 6.7 miles to the northeast. The nearest receptors are at the Primm Valley Golf Club, a distance of 2.4 miles. No hospitals, libraries, schools, places of worship, or other facilities are located in the project area. The setting is rural and undeveloped.

The noise levels measured during the noise survey at the Primm Valley Golf Club are representative of the noise levels in the project area nearest the proposed Ivanpah Substation. The minimum hourly L_{eq} and L_{90} noise levels measured at the substation during the noise survey were 45 dBA and 41 dBA, respectively.

3.10.2 Applicable Laws, Regulations, and Standards

Federal

No federal regulations limit overall environmental noise levels, but several federal guidance documents address environmental noise and regulations for specific sources (for example, aircraft or federally funded highways).

The only energy-facility-specific requirements are those of the Federal Energy Regulatory Commission (FERC) for interstate electrical transmission lines, natural gas pipelines, and petroleum pipelines. The FERC limits specifically address compressor facilities associated with pipelines under FERC jurisdiction. Under these regulations, the noise attributable to any new natural gas compressor station; added compression to an existing station; or any modification, upgrade, or update of an existing station must not exceed an L_{dn} of 55 dBA at any pre-existing noise sensitive area (FERC 2002).

Federal highway and aircraft guidelines and regulations have been established by Federal Highway Administration (FHWA; United States Code of Federal Regulations [CFR] Title 23 Part 772) and Federal Aviation Administration (FAA) regulations (CFR Title 18 Part 150). Federal guidelines and regulations are summarized in Table 3.10-3.

Table 3.10-3 Federal Guidelines and Regulations for Exterior Noise (dBA)

Agency	$L_{eq\ (1)}$	L_{dn}
Federal Energy Regulatory Commission	[49]	55
Federal Highway Administration	67	[67]
Federal Aviation Administration	[59]	65
U.S. Department of Transportation – Federal Rail and Transit Authorities[a,b]	Sliding scale; refer to Figure 3.10-2	Sliding scale; refer to Figure 3.10-2

Table 3.10-3 Federal Guidelines and Regulations for Exterior Noise (dBA)

Agency	$L_{eq\,(1)}$	L_{dn}
U.S. Environmental Protection Agency[c]	[49]	55
U.S. Department of Housing and Urban Development[d]	[59]	65

Sources:
[a]FRA 2005 [Updated to latest revision 2005]
[b]FTA 2006
[c]U.S. EPA 1974
[d]CFR Title 24 Part 51B (U.S. Department of Housing and Urban Development 1991)

Note: Brackets around numbers (e.g. [59]) indicate calculated equivalent standard. Because FHWA regulates peak noise level, the DNL is assumed equivalent to the peak noise hour.

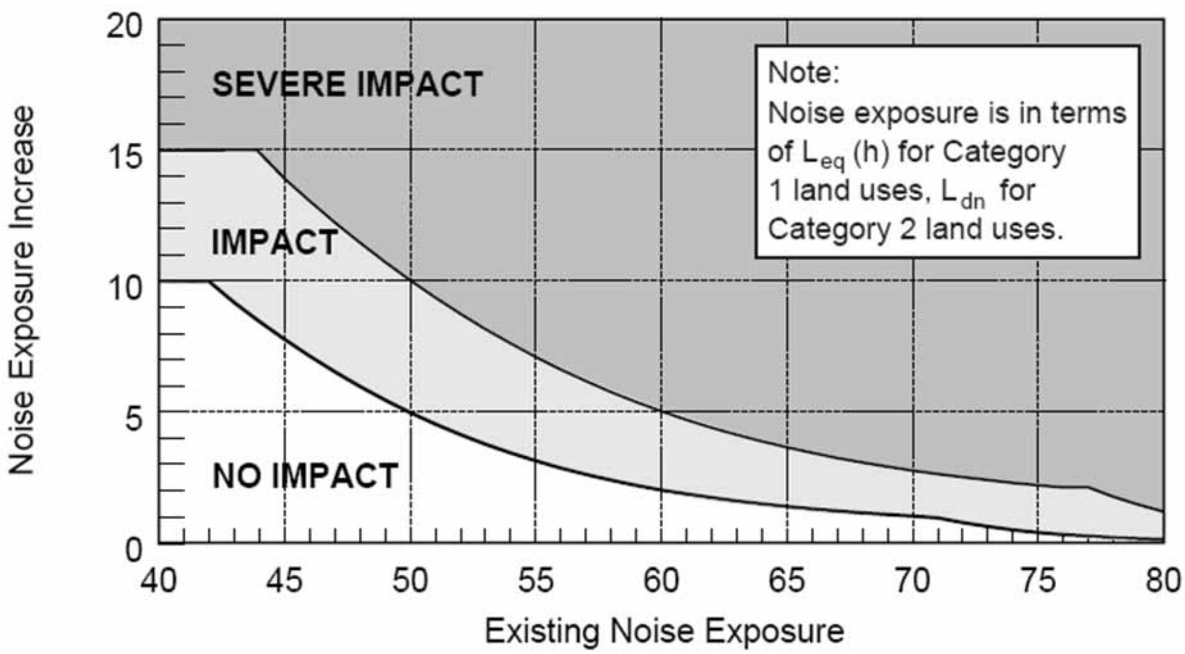

Figure 3.10-2 FRA and FTA Allowable Increase in Cumulative Noise Level
(Note: Residential uses are included in Category 2)

Table 3.10-3 refers to Figure 3.10-2 U.S. Department of Transportation, Federal Railroad Administration (FRA) and U.S. Department of Transportation, Federal Transit Administration (FTA) Allowable Increase in Cumulative Noise Level (Cumulative dBA). The noise impact criteria in Figure 3.10-2 are based on comparison of the existing outdoor noise levels and the future outdoor noise levels from the proposed project. The Y axis is the increase in noise level in Cumulative dBA over the existing noise level on the X axis. Category 1 land uses include tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Category 2 land uses include residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance (FTA 2006).

Department of Interior, Bureau of Land Management

The National Environmental Policy Act (NEPA) of 1969 requires an analysis of local ambient noise levels and effects associated with elevated noise levels in a proposed project area; however, NEPA does not specify a threshold for "significant adverse effect" for noise.

State

California Public Utilities Commission

The CPUC will evaluate the proposed project's noise impacts according to the requirements of CEQA in both California and Nevada. CEQA does not specify a threshold for "substantial increase" for noise. The CPUC General Order (GO) No. 131-D, Section XIV B, clarifies that "local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the Commission's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters." Due to this GO, the public utilities are directed to consider local regulations and consult with local agencies; however, the counties and cities do not have discretionary jurisdiction over the proposed project

Public Utilities Commission of Nevada

The proposed project would also require approval from the Public Utilities Commission of Nevada (PUCN). The construction of a utility facility, defined as a transmission line that is 200-kV or more, requires a permit by the PUCN under the Utility Environmental Protection Act (UEPA) according to the Nevada Revised Statutes (NRS) 704.820 through 704.900. However, replacement of an existing facility with a like facility, as determined by the Commission, does not constitute construction of a utility facility (NRS 704.865).

Regional and Local

Although the proposed project is exempt from local land use and zoning regulations and discretionary permitting under GO No. 131-D, the applicant intends to develop facility designs that are compatible with local plans and zoning to the extent practicable. Therefore, local plans, laws, ordinances, regulations, and standards related to noise adopted by each of the jurisdictions through which the proposed transmission project would pass were reviewed. Results of the review are presented in Tables 3.10-4 and 3.10-5.

Table 3.10-4 Local Plans, Laws, Ordinances, Regulations, and Standards During Construction by Jurisdiction

Jurisdiction	Source	Standard Construction Hours	Permissible Noise Levels		
			Land Use	Hours	Exterior Noise Level Limits (dBA)
San Bernardino County	Sec 87.0905 (e) Exempt noises. (1) (C) Temporary construction, repair, or demolition activities between 7 a.m. and 7 p.m., except Sundays and federal holidays.	Mon-Sat 7am-7pm	Any	Mon–Sat 7 a.m.– 7 p.m.	Exempt
Clark County	Sec 30.68.020 (h): Requirements of this section do not apply to construction and/or demolition activities when conducted during daytime hours.	Daytime	Any	Daytime	Do not apply
Primm	No construction noise guidelines specified.	NS	NS	NS	NS
Boulder City	No construction noise guidelines specified.	NS	NS	NS	NS

Key:
NS = Not specified

Table 3.10-5 Local Plans, Laws, Ordinances, Regulations, and Standards During Operation by Jurisdiction

		Permissible Noise Levels		
Jurisdiction	**Source**	**Land Use**	**Hours**	**Exterior Noise Level Limits (dBA)**
San Bernardino County	Sec 87.0905 (b) (1): Areas within San Bernardino County shall be designated as "noise-impacted" if exposed to existing or projected future exterior noise levels from ... stationary sources exceeding the standards listed. (2) No person shall operate or cause to be operated any source of sound at any location or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level, when measured on any other property, either incorporated or unincorporated, to exceed: (A) The noise standard for that receiving land use for a cumulative period of more than 30 minutes in any hour, or (B) The noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour, or (C) The noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour, or (D) The noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour, or (E) The noise standard plus 20 dBA for any period of time.	Other Commercia Industrial	Anytime Anytime	60 L_{eq} 70 L_{eq}
Clark County	Sec 30.68.020 (b): The maximum permissible sound pressure level of any continuous, regular, or frequency source of sound produced by any activity shall be established by time period and type of zoning district per Table 30.68-1 [in the Clark County regulations]. Sec 30.68.020 (e): Impulsive type noises shall be subject to the maximum permitted sound level standards described in Table 30.68-2, provided they are capable of being accurately measured with the equipment described above.	Residential, Business and Industrial Residential Business and Industrial	Depends on octave band frequency. Daytime Nighttime Daytime Nighttime	Depends on octave band frequency. 56 46 65 61
Primm	No operation noise guidelines specified.	NS	NS	NS
Boulder City	No operation noise guidelines specified.	NS	NS	NS

Key:
NS – Not Specified
Octave Band - A segment of the frequency spectrum separated by an octave.

3.10.3 Impact Analysis

This section defines the methodology used to evaluate impacts for noise, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.10.4.

3.10.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to noise would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

3.10.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. cause the exposure of persons to or generation of noise levels in excess of standards established in local general plans or noise ordinances;

b. cause the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (vibration of 75 vibration velocity level in decibels [VdB]) is generally considered intrusive for residential uses) Vibration velocity levels are commonly reported in decibels relative to a level of 1x10-6 inches per second and denoted as VdB;

c. cause a substantial permanent increase in ambient noise in the project vicinity;

d. cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity; or

e. for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport, expose people residing or working in the project area to excessive noise levels.

3.10.3.3 Methodology

Construction Noise

To evaluate potential noise impacts due to construction of the transmission line and substation, reference noise levels were obtained from the Roadway Construction Noise Model User's Guide (FHWA 2006), which provides a comprehensive assessment of noise levels from construction equipment. Based on the reference values in the guide and the list of construction equipment to be used on the project, the loudest equipment would generally emit noise in the range of 80 to 90 dBA at 50 feet, with usage factors of 40 percent to 50 percent that account for the fraction of time that the equipment is in use over the specified time period. Noise at any specific receptor is typically dominated by the closest and loudest equipment. For the EITP, the type of construction equipment and the number of equipment pieces near any specific receptor location would vary over time. To provide a reasonable and conservative estimate of construction noise, the following scenario was modeled:

- One piece of equipment generating a reference noise level of 85 dBA (at 50 feet distance with a 40 percent usage factor) located on the transmission line route or the substation property line.

- Two pieces of equipment generating reference 85 dBA noise levels located 50 feet farther away on the transmission line route or the substation property line.
- Two additional pieces of equipment generating reference 85 dBA noise levels located 100 feet farther away on the transmission line route or the substation property line.

Construction equipment noise levels at various distances, based on this scenario, are presented in Table 3.10-6.

Table 3.10-6 Construction Equipment Noise Levels versus Distance

Distance from Route or Substation Property Line (feet)	L_{eq} Noise Level (dBA)
50	83
100	79
200	74
400	69
800	63
1,600	58
3,200	52
6,400	46

Source: SCE 2009

In addition to the equipment discussed above, project construction noise would also be generated from the operation of a concrete batch plant and helicopters used for tower construction. The existing concrete batch plant located off the I-15 freeway at the Yates Well Road interchange near the Primm Valley Golf Course would be used during construction. The facility is located approximately 0.5 miles from the Primm Valley Golf Club and 5 miles from the Desert Oasis Apartment Complex. The existing concrete batch plant was operating during the noise monitoring that was conducted at the golf club on November 20 and 21, 2008. Noise from the facility was not noticeable over the traffic noise from I-15.

If helicopters are used for transmission line tower construction, noise from the helicopters operated on a regular basis would be audible at staging areas, at tower construction sites, and along flight paths. Helicopters would pick up the towers from staging areas and place them at each location. Using helicopters would allow tower placement to be performed in a relatively short time, with an average flying time of 4 to 6 minutes between two sites. For example, 24 towers for 230-kV transmission lines could be constructed over a 6-mile span in a 2- to 3-day period.

In general, heavy-duty helicopters would be used during construction in remote locations. These locations would be less likely to be near populated areas as compared to locations accessible by truck. Available data indicate that the sound exposure level (SEL) from the overflight of one heavy-duty helicopter flying at an elevation of 1,000 feet would likely be in the range of 85 to 93 dBA. This corresponds to an hourly L_{eq} of 49 to 57 dBA.

Light-duty helicopters may also be used during construction. Light-duty helicopters would be smaller and generate an SEL of 80 to 85 dBA for an overflight at 1,000 feet elevation. This corresponds to an hourly L_{eq} of 44 to 49 dBA for the light-duty helicopters.

Transmission Line Corona Noise

To evaluate the noise impact due to corona, transmission line corona noise levels were calculated based on the Electric Power Research Institute Electromagnetic Workstation ENVIRO (version 3.52) modeling program. Corona is the noise generated from the strong electric field at the surface of a high voltage power line conductor ionizing the nearby air, resulting in an audible continuous low level noise or ‘buzz.’ The proposed transmission line was evaluated for corona noise at four representative locations. Location 1, Desert Oasis Apartment Complex, is within 0.5 miles of the transmission line. Location 2, Primm Valley Golf Club, is outside of the 0.5-mile buffer. Location 3, Ivanpah Lake, is adjacent to recreational users of the area. Location 4, McCullough Pass, was selected for its highest elevation and greatest transmission line activity along the proposed transmission line.

For the modeling input parameters, a 230-kV double-circuit tower structure, 28-foot minimum ground clearance, and location-specific elevations were used to demonstrate the most conservative corona noise results for the proposed transmission line. The modeling results for each location are shown below in Table 3.10-7.

Table 3.10-7 Corona Noise Modeling Results Summary (dBA)

Corona Noise Modeling Location	Weather Conditions	Directly Under Tower	50 Feet from Center of Tower	100 Feet from Center of Tower	200 Feet from Center of Tower
1 Desert Oasis Apartment Complex	Fair	2	0	0	0
	Foul	27	24	21	18
2 Primm Valley Golf Club	Fair	2	0	0	0
	Foul	27	24	21	18
3 Ivanpah Lake	Fair	2	0	0	0
	Foul	27	24	21	18
4 McCullough Pass	Fair	4	2	0	0
	Foul	29	27	24	21

Source: SCE 2009
Note:
Results are calculated based on the Electric Power Research Institute Electromagnetic Workstation ENVIRO (version 3.52) modeling program. ENVIRO program results report as 0.0 dBA when corona noise calculations equal less than 0.1 dBA.
dBA = A-weighted decibel

Maintenance activities associated with the transmission line, substations, and the telecommunication system would typically result in noise levels below those associated with construction-related activities, and are anticipated to involve fewer pieces of heavy equipment, occur less frequently, and be of shorter duration than construction activities. Maintenance activities are primarily inspection-related (for example, annual inspection of the transmission line from vehicles). Other maintenance activities, including washing of insulators to ensure proper function, would be conducted on an as-needed basis but are anticipated to occur less than once per year.

Noise associated with maintenance activities is anticipated to be less than construction noise levels. Because the noise level estimates presented for construction are greater than the range of noise levels likely to be associated with maintenance activities, the construction noise assessments provided in this section adequately address the noise levels and potential impacts that would be associated with maintenance activities. As with construction noise, the applicant would use noise reduction measures to be compatible with local plans and zoning to the extent practicable.

3.10.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) related to noise:

APM NOI-1: Compliance with Local Noise Ordinances. The proposed construction would comply with local noise ordinances. There may be a need to work outside the aforementioned local ordinances to take advantage of low electrical draw periods during the nighttime hours. The applicant would comply with variance procedures requested by local authorities if required.

APM NOI-2: Construction Equipment Working Order. Construction equipment would be in good working order.

APM NOI-3: Construction Equipment Maintenance. Construction equipment would be maintained per manufacturer's recommendations.

APM NOI-4: Construction Equipment Muffled. Construction equipment would be adequately muffled.

APM NOI-5: Construction Equipment Idling Minimized. Idling of construction equipment and vehicles would be minimized during the construction.

APM NOI-6: Hearing Protection for Workers. Workers would be provided appropriate hearing protection, if necessary, as described in the Health and Safety Plan.

3.10.3.5 Proposed Project / Proposed Action

Construction

Eldorado–Ivanpah Transmission Line

Construction of the transmission line would produce noise that would affect residences located at the Desert Oasis Apartment Complex due to the operation of construction equipment. The Federal Transit Administration (FTA) provides guidelines for reasonable criteria for assessment of construction noise (FTA 2006), which indicate that construction noise that exceeds a 1-hour L_{eq} of 90 dBA or an 8-hour L_{eq} of 80 dBA during the day would provoke adverse community reaction. The apartments are located between 50 and 100 feet from the transmission line, which would result in noise levels between 83 and 79 dBA, respectively, during construction. The apartment complex is separated from potential construction activities by an 8-foot solid concrete block wall. Typically, such a wall provides a minimum 5 to 10 dBA noise level reduction, provided it blocks the line of sight between the noise source and receiver. This would result in estimated construction noise levels between 69 and 78 dBA.

Construction activities would be limited to daytime hours, and Clark County regulations provide an exemption for noise from daytime construction activities. The applicant has also committed to complying with local noise ordinances (APM NOI-1); maintaining construction equipment in working order (APM NOI-2) and adhering to the manufacturer's maintenance recommendations (APM NOI -3); muffling construction equipment (APM NOI-4); and minimizing the amount of time that equipment is idled (APM NOI-5). In addition, the application would have to implement MM NOI-1 (Conduct Construction Activities during Daytime Hours) to minimize the potential impacts to residents of the Desert Oasis Apartment Complex. Impacts would be localized at receptors along the transmission line route and would be short-term.

Ivanpah Substation

The Ivanpah Substation would be located in San Bernardino County, where temporary construction noise is exempt from exterior noise level limits. Because there are no residences near the Ivanpah Substation that would be affected by construction noise, there would be no adverse impact due to noise during its construction. The nearest residences are approximately 6.7 miles from the Ivanpah Substation. The nearest noise receptors are at the Primm Valley Golf Club, more than 2.4 miles from the Ivanpah Substation, resulting in a potential noise level during construction of less than 46 dBA.

Eldorado Substation

Because there are no residences within 5 miles of this substation, there would be no adverse impact due to noise during its construction. The nearest receptors would be recreational users on Eldorado Dry Lake, located 3.5 miles north of the substation at the closest point. The resulting noise level at this location would be less than the ambient noise level. No hospitals, libraries, schools, places of worship, or other facilities are within the project area. The setting is rural and undeveloped.

Telecommunications Line

Stringing the overhead fiber optic cable and installing the fiber optic cable in existing and new underground conduit for the telecommunications line would not result in adverse noise impacts. Fiber optic cable installation equipment typically generates less noise than equipment used to install transmission lines, and the telecommunications path would not be located in the proximity of noise receptors.

Operation & Maintenance

Eldorado–Ivanpah Transmission Line

Operation of the transmission line would not result in any adverse noise impacts. The modeled corona noise levels, including those levels modeled at the Desert Oasis Apartment Complex, are all less than 30 dBA under worst-case foul weather conditions. This noise level is just audible.

Maintenance activities associated with the transmission line might result in direct minor adverse noise impacts to the residences located at the Desert Oasis Apartment Complex during the operation of equipment. Maintenance activities would typically result in noise levels below those associated with construction-related activities and are anticipated to involve fewer pieces of heavy equipment, occur less frequently, and be of shorter duration than construction activities. Although Primm does not have any regulations governing noise, the maintenance activities would be conducted during daylight hours when residents are less likely to be disturbed. The impact would be localized at receptors along the transmission line route and would be short-term, taking less time than the original line construction.

Ivanpah Substation

Because there are no residences near the proposed Ivanpah Substation that would be affected by operation noise, there would be no adverse noise impacts associated with the operation of the substation. The nearest residences are approximately 6.7 miles from the Ivanpah Substation. The nearest noise receptors are at the Primm Valley Golf Club, a distance of more than 2.4 miles from the Ivanpah Substation. Maintenance activities associated with the Ivanpah Substation would not result in adverse noise impacts because there are no residences near the Ivanpah Substation that would be affected by substation maintenance activities.

Telecommunications Line

Operation of the telecommunication system is not anticipated to result in audible noise at any location. Maintenance of the overhead fiber optic cable and underground fiber optic cable would not result in an adverse noise impact because line splicing and replacement activities would not result in elevated noise levels.

NEPA Summary

The proposed project would result in temporary minor adverse noise impacts at residences located at the Desert Oasis Apartment Complex due to project construction. The impacts would be localized at residential receptors along the transmission line route and would be short-term, lasting up to 2.5 weeks.

The operation of the transmission line, substation, and telecommunication line would not result in adverse noise impacts. Corona noise would be barely audible and would not change current conditions. Maintenance activities associated with substations and transmission lines would typically result in noise levels below those associated with construction-related activities and are anticipated to involve fewer pieces of heavy equipment, occur less frequently, and be of shorter duration and would result in negligible adverse noise impacts.

CEQA Significance Determinations

IMPACT NOI-1: **Project Construction Noise Exceeding Noise Levels or Standards**
Less than significant with mitigation

Project construction would comply with local noise ordinances and variance procedures requested by local authorities. In addition, as part of the project, the applicant has committed to maintaining construction equipment in working order (APM NOI-2) and adhering to the manufacturer's maintenance recommendations (APM NOI -3); muffling construction equipment (APM NOI-4); and minimizing the amount of time that equipment is idled (APM NOI-5).

Implementation of MM NOI-1 (Conduct Construction Activities during Daytime Hours) would ensure that noise impacts at the Desert Oasis Apartment Complex would be reduced, such that impacts would be less than significant.

IMPACT NOI-2: Transmission Line Operation and Maintenance Noise Exceeding Noise Levels or Standards
Less than significant without mitigation

During the worst-case foul weather conditions, substation noise and corona noise associated with operation of the proposed project is anticipated to be just audible. This level is less than the standards of the noise ordinances of the two applicable counties. Therefore, the impacts from operation noise from the proposed project (including proposed transmission line, alternatives, substations, and telecommunication system) would result in a less than significant impact under this criterion.

Maintenance activities would typically occur over short timeframes up to twice per month and would generate minimal noise. As part of the operation of the project, the applicant would use noise reduction measures to ensure compatibility with local plans and zoning. The impacts from maintenance noise would be short-term and less than significant under this criterion.

IMPACT NOI-3: Generate Groundborne Vibration or Groundborne Noise That Exceeds 75 VdB during Construction
Less than significant without mitigation

Construction activities (e.g., ground-disturbing activities, including grading and foundation excavation, and movement of heavy construction equipment) may generate groundborne vibration and noise. Pile-driving activities typically have the greatest potential to create groundborne vibration and noise, but pile-driving is not anticipated as part of the proposed project. At the nearest residential receptor (the Desert Oasis Apartment Complex, a distance of .01 miles from the line), the vibration level generated by a loaded truck, considered to be the greatest source of construction vibration, is estimated to be 76 VdB (FTA 2006). Although this level exceeds 75 VdB, both groundborne vibration and noise would occur during daytime hours and be short-term and temporary. Therefore, construction of the proposed project would result in a less than significant impact under this criterion.

IMPACT NOI-4: Generate Groundborne Vibration or Groundborne Noise That Exceeds 75 VdB during Operations
Less than significant without mitigation

During worst-case foul weather conditions, substation noise and the corona noise associated with operation of the proposed transmission line and alternatives is anticipated to be considerably less than existing noise levels. The minimum hourly L_{eq} measured at the nearest sensitive receptor, the Desert Oasis Apartment Complex, was 47 dBA (Table 3.10-2). Modeling results indicate that during foul weather conditions (maximum noise conditions) corona noise levels would be 24 dBA. The sum of the two, the existing and future noise levels (47 dBA + 24 dBA), would be 47 dBA given the logarithmic nature of decibel addition. Therefore, no perceptible increase would occur and operation of the proposed project would result in a less than significant impact under this criterion.

IMPACT NOI-5: Cause a Substantial Temporary Increase in Ambient Noise Levels in the Project Vicinity
Less than significant with mitigation

The FTA provides guidelines for reasonable criteria for assessment of construction noise (FTA 2006). Construction noise that exceeds a 1-hour L_{eq} of 90 dBA or an 8-hour L_{eq} of 80 dBA during the day would provoke adverse community reaction. As discussed in Section 3.10.3.3, “Methodology,” construction noise would not be anticipated to exceed 78 dBA at the closest sensitive receptor, the Desert Oasis Construction Complex.

Any increases in ambient noise levels due to construction activities in the project vicinity would be short-term, intermittent, and temporary. Adverse construction noise impacts would not be anticipated (e.g., nighttime construction or pile-driving near residences). As part of the project, construction contractors would comply with local noise ordinances (APM NOI-1); maintain construction equipment in working order (APM NOI-2) and adhere to the manufacturer’s maintenance recommendations (APM NOI -3); muffle construction equipment (APM NOI-4); and minimize the amount of time that equipment is idled (APM NOI-5).

In order to reduce potential noise impacts, the contractor will implement appropriate additional noise minimization measures: Relocate Stationary Construction Equipment (MM NOI-2); Turn off Idling Equipment (MM NOI-3); Notify Adjacent Residences (MM NOI-4); and Install Acoustic Barriers (MM NOI-5) to reduce noise levels. Implementation of MM NOI-1 would require the applicant to only work during daytime hours when construction is near the Desert Oasis Apartment Complex. Therefore, with the implementation of MM NOI-1, and with additional noise minimization procedures (MM NOI-2 through MM NOI-5) implemented as needed, construction of the proposed project would result in a less than significant impact under this criterion.

NO IMPACT: Public Airport Combined Noise Impact. No public airstrips are currently located within two miles of the proposed project. Therefore, this criterion is not applicable to the proposed project during construction. The Jean Sport Aviation Center is approximately five miles away from the proposed route of the transmission line.

NO IMPACT. Private Airstrips. No private airstrips are located within two miles of the proposed project (Clark County 2008). Therefore, construction of the proposed project would result in no impacts under this criterion.

3.10.3.6 No Project / No Action Alternative

Under the No Project / No Action Alternative, there would be no construction of the transmission line, substation, or communication lines; therefore, there would be no construction or operational noise impacts.

3.10.3.7 Transmission Alternative Route A

Transmission Line Alternative A is similar to the EITP proposed route with the exception of bypassing a portion of the proposed route that runs north and south near Milepost 2.0, approximately 0.83 miles in the City of Boulder. Alternative Route A was created to bypass this segment by heading west and then north to join the existing ROW. The remainder of the EITP route would be the same.

Regarding potential construction noise impacts to sensitive receptors, Transmission Line Alternative A is similar to the proposed project because there is no change to the proposed project route near these receptors. Therefore, with implementation of MM NOI-1 through MM NOI-5, this alternative would also cause a direct minor short-term adverse noise impact or a less than significant impact with mitigation to residences located at the Desert Oasis Apartment Complex during construction.

Operational noise would not result in an adverse impact and would be less than significant. Groundborne noise and vibration generated during construction and operation of this alternative would be negligible and less than significant.

3.10.3.8 Transmission Alternative Route B

Transmission Line Alternative B is similar to the proposed route with the exception of bypassing a portion of the proposed route that runs north and south near Milepost 2.0, approximately 0.83 miles in the City of Boulder.

Alternative Route B was created to bypass this segment by heading north and then southwest to join the existing ROW. The remainder of the EITP route would be the same.

Regarding potential construction and operational noise and vibration impacts to sensitive receptors, Transmission Line Alternative B is similar to the proposed project because there is no change to the project route near these receptors. Therefore, potential impacts for Transmission Line Alternative B are similar to those associated with Transmission Alternative Route A.

3.10.3.9 Transmission Alternative Route C

Regarding potential construction and operational noise impacts to sensitive receptors, Transmission Line Alternative C would relocate a portion of the proposed transmission line away from the nearest sensitive receptor (Desert Oasis Apartment Complex). This relocation would likely result in a decrease in potential construction noise impacts on the Desert Oasis Apartment Complex, but such impacts would still be considered adverse and minor. Potential construction impacts associated with Transmission Line Alternative C would be minor and a less than significant impact.

Operational noise impacts would not result in an adverse noise impact and would be negligible and less than significant. Groundborne noise and vibration generated during construction and operation of this alternative would be slightly less than that generated by the proposed project and would be negligible and less than significant.

3.10.3.10 Transmission Alternative Route D and Subalternative E

Where feasible, Alternative Route D would parallel structure-for-structure the existing Los Angeles Department of Water and Power (LADWP) Marketplace–Adelanto 500-kV transmission line through the Ivanpah Dry Lake.

Alternative Route D begins at the Eldorado Substation and follows the proposed route to the point where the line reaches the northeastern edge of the Ivanpah Dry Lake (milepost [MP] 27, Tower 184). The line would be re-routed west and southwest on a new 130-foot ROW around Ivanpah Dry Lake for approximately 3.3 miles before rejoining the existing ROW at MP 30, Tower 203. The line would parallel the LADWP Marketplace–Adelanto 500-kV transmission line as it crosses through the Ivanpah Dry Lake.

Subalternative E replaces the northernmost portion of Alternative Route D. Subalternative E would deviate from the proposed project route at MP 27 and proceed southerly for approximately 1 mile on a new 130-foot ROW before intercepting the route proposed for Transmission Alternative D.

Regarding potential construction and operational noise impacts to sensitive receptors, Transmission Line Alternative D would relocate a portion of the proposed transmission line away from the nearest sensitive receptor (Desert Oasis Apartment Complex). This relocation would likely result in a decrease in potential construction noise impacts on the Desert Oasis Apartment Complex, but such impacts would still be considered adverse, minor, and less than significant.

Operational noise impacts would not result in an adverse noise impact and would be negligible and less than significant. Groundborne noise and vibration generated during construction and operation of this alternative would be slightly less than that generated by the proposed project and would be negligible and less than significant.

3.10.3.11 Telecommunication Alternative (Golf Course)

From the I-15 junction point, this route parallels I-15 in a northerly direction on existing Nipton 33-kV distribution line poles, crosses over I-15 near the Primm Golf Course, and crosses the golf course in an underground duct. After leaving the golf course, the route continues on existing Nipton 33-kV distribution line poles to a point approximately

1 mile from the Ivanpah Substation, where it would be installed in an underground duct for approximately 1 mile to enter the north side of the Ivanpah Substation. This route, from the I-15 junction point to the Ivanpah Substation, is approximately 10 miles. This alternative is located several miles from the Desert Oasis Apartment Complex and would not have any adverse noise impacts on this receptor or result in any other construction noise impacts.

Operational noise impacts would not result in any adverse noise impacts. There would be no groundborne noise or vibration impacts during construction and operation of this alternative.

3.10.3.12 Telecommunication Alternative (Mountain Pass)

This alternative extends from Nipton to the I-15 junction point and consists of a combination of All Dielectric Self-Supporting fiber cable on existing Nipton 33-kV wood pole lines and underground fiber cable. Approximately 1 mile of All Dielectric Self-Supporting fiber cable would be installed on the existing Nipton 33-kV distribution line immediately west of Nipton, on the north side of Nipton Road. An unknown number of poles may need to be replaced to meet the new loading requirement of the All Dielectric Self-Supporting fiber cable. This alternative is located several miles from the Desert Oasis Apartment Complex and would not have any adverse impacts on this receptor or result in construction noise impacts to any other noise receptors.

Operational noise impacts would not result in any adverse noise impacts. There would be no groundborne noise or vibration impacts during construction or operation of this alternative.

3.10.4 Mitigation Measures

MM NOI-1: Conduct Construction Activities during Daytime Hours. The applicant will conduct construction activities only during daytime hours (7 a.m. to 7 p.m.) while in the vicinity of the Desert Oasis Apartment Complex.

MM NOI-2: Relocate Stationary Construction Equipment. The applicant will locate stationary construction equipment at a site location that is as far away from the Desert Oasis Apartment Complex as is feasible.

MM NOI-3: Turn off Idling Equipment. The applicant will turn off idling equipment when not in use.

MM NOI-4: Notify Adjacent Residences. The applicant will notify residents within 200 feet of the transmission line in advance of construction work.

MM NOI-5: Install Acoustic Barriers. The applicant will install acoustic barriers around stationary construction noise sources near sensitive receptors.

3.10.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to noise in the ISEGS Final Staff Assessment/ Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared to the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

3.10.5.1 ISEGS Setting

__Environmental Setting__

ISEGS would be constructed on 4,073 acres of federally owned land administered by the BLM in San Bernardino County. The site lies approximately 4.5 miles southwest of Primm, Nevada, and 3.1 miles west of the Nevada border, in an area designated compatible with solar energy development in the California Desert Conservation Area Plan. The Primm Valley Golf Club lies approximately 0.5 miles northeast of the eastern boundary of ISEGS. Unlike the EITP, the proposed project would be located entirely within a rural area.

Applicable Laws, Regulations, and Standards

Because ISEGS is located wholly within San Bernardino County—whereas the EITP spans San Bernardino and Clark County—laws, regulations, and standards in Tables 3.10-4, 3.10-4, and 3.10-5 that apply to the EITP would also apply to ISEGS with the exception of the Clark County regulations, which would apply to the EITP only.

Ambient Noise Monitoring

Ambient noise monitoring was not conducted for ISEGS, as it was for the EITP, because CEC regulations require such monitoring only when facilities located where quiet is an important attribute of the environment would be impacted by the project. The community of Primm, Nevada, 4.5 miles from ISEGS, is too far to be significantly impacted by project noise. The Primm Valley Golf Club golf course is considered a less noise-sensitive land use.

3.10.5.2 ISEGS Methodology

Noise analyses for ISGES were conducted for the power plant construction and operation, construction of natural gas and water pipeline, and electrical transmission lines, pile driving, and steam blows. As for the EITP, noise levels generated by these sources were modeled at the nearest noise receptors and then compared with applicable regulatory noise limits.

3.10.5.3 ISEGS Impacts

The CEC and the BLM have published the following impacts related to noise for the ISGES project:

Construction Impacts

Construction of ISEGS would cause a short-term increase in ambient noise levels in the vicinity of the facility. Construction of an industrial facility such as a power plant is typically noisier than permissible under usual noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours of the day is commonly exempt from enforcement by local ordinances. The San Bernardino County Development Code exempts all construction noise from numerical noise limits between 7 a.m. and 7 p.m. Monday through Saturday. If members of the public complain about construction noise, mitigation measures NOISE-1 and NOISE-2 would be implemented. This would establish a notification process to make people aware of ISEGS and a noise complaint process that would require the applicant to resolve any problems caused by noise from the ISEGS project. Mitigation measures NOISE-6 and NOISE-7 would also be implemented to limit the hours of construction to daytime hours.

Operational Impacts

The primary noise sources of the ISEGS project would be the steam turbine generators, boiler feed pumps, transformers, auxiliary boilers, and air-cooled condenser fans. Depending on the equipment noise emissions, distance to nearest receptors, shielding, and other noise control measures, the operation of the ISEGS power plant could result in a noise impact. Mitigation measures NOISE-4 and NOISE-5 would ensure that operation of the plant would not cause noise complaints from residents of Primm, Nevada, or from the operator of the Primm Valley Golf Course or expose plant employees to occupational noise in excess of California and federal regulations.

Decommissioning Impacts

In the future, upon closure of the ISEGS project, all operational noise from the project would cease, and no further adverse noise impacts from operation of ISEGS would be possible. A potential temporary noise source would result from dismantling the structures and equipment and any site restoration work that might be performed. This noise would be similar to that caused by the original construction. Mitigation measures listed for construction noise would also be applied to project decommissioning activities.

3.10.5.4 ISEGS Conditions of Certification / Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to noise if the project is approved:

NOISE-1 requires that at least 15 days prior to the start of ground disturbance, the project owner will notify the operator of the Primm Valley Golf Course, by mail or other effective means, of the commencement of project construction. At the same time, the project owner will establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner will include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. The telephone number will be posted at the project site during construction in a manner visible to passersby. The telephone number will be maintained until the project has been operational for at least one year.

NOISE-2 requires that throughout the construction and operation of ISEGS, the project owner will document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent will:

- Use a noise complaint resolution form or a functionally equivalent procedure acceptable to BLM's Authorized Officer and the Compliance Project Manager (CPM), to document and respond to each noise complaint
- Attempt to contact the person(s) making the noise complaint within 24 hours
- Conduct an investigation to determine the source of noise related to the complaint
- Take all feasible measures to reduce the noise at its source if the noise is project related
- Submit a report documenting the complaint and the actions taken; the report will include a complaint summary, including final results of noise reduction efforts, and, if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction

NOISE-3 requires the project owner to submit to BLM's Authorized Officer and the CPM for review and approval a noise control program and a statement, signed by the project owner's project manager, verifying that the noise control program will be implemented throughout construction of the project. The noise control program will be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.

NOISE-4 requires that the project design and implementation include appropriate noise mitigation measures adequate to ensure that operation of the project will not cause noise complaints from residents of Primm, Nevada, or from the operator of the Primm Valley Golf Course. If project-related noise complaints are received from residents of Primm, the project owner will perform a noise survey to demonstrate that noise levels due to plant operation do not exceed an average of 45 dBA L_{eq} measured at the nearest residence of the community of Primm, Nevada. If project-related noise complaints are received from the operator of the Primm Valley Golf Course, the project owner will perform a noise survey to demonstrate that noise levels due to plant operation do not exceed an average of 55 dBA L_{eq} measured at the nearest boundary of the golf course. No new pure-tone components may be caused by the project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

NOISE-5 requires that following each phase (Ivanpah 1, Ivanpah 2, and Ivanpah 3) of the project's first achieving a sustained output of 80% or greater of rated capacity, the project owner will conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey results will be used to determine the magnitude of employee noise exposure. The project owner will prepare reports of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

NOISE-6 requires that heavy equipment operation and noisy construction work relating to any project features be restricted to weekdays and Saturdays, 7 a.m. to 7 p.m.

No noisy construction work will be performed on Sundays or federal holidays. Haul trucks and other engine-powered equipment will be equipped with mufflers that meet all applicable regulations. Haul trucks will be operated in accordance with posted speed limits. Truck engine exhaust brake use will be limited to emergencies.

NOISE-7 requires that if a high-pressure steam blow is employed, the project owner will equip steam blow piping with a temporary silencer or take other effective measures that quiet the noise of steam blows to no greater than 60 dBA measured at the Primm Valley Golf Club and no greater than 55 dBA measured at any affected residential locations in Primm, Nevada. The project owner will conduct high-pressure steam blows only during the hours of 7 a.m. to 7 p.m. If a low-pressure continuous steam blow is employed, the project owner will limit the noise of steam blows to no greater than 45 dBA measured at any affected residential location in Primm, Nevada.

3.11 Public Services and Utilities

This section describes the environmental setting, regulatory setting, and potential impacts associated with the construction, operation, and maintenance of the proposed project and alternatives with respect to public services and utilities.

3.11.1 Environmental Setting

Emergency response units and facilities, schools, solid waste, wastewater, water supply facilities, and existing powerlines and pipelines in the proposed project area are described in the following sections.

3.11.1.1 Emergency Response Units and Facilities

Fire Departments

In California, the San Bernardino Fire Department, North Desert Division, services the proposed project area. Station 53 in Baker is the closest fire department to the proposed Ivanpah Substation site; the fire station is approximately 50 miles southwest of the substation (San Bernardino County 2009b). In Nevada, fire protection is provided by the Clark County Fire Department. A fire station (Station 75) is located in Searchlight, approximately 40 miles east of the proposed Ivanpah Substation site and 40 miles south of the existing Eldorado Substation. A small station (Station 87) is also located in Jean, approximately 20 miles northeast of the proposed Ivanpah Substation site (Clark County 2009b).

Police Departments

In California, the proposed project area is within the jurisdiction of the San Bernardino County Sheriff's Department. The sheriff's office nearest to the proposed Ivanpah Substation site is in Baker, approximately 50 miles southwest of the substation. The Baker sheriff's office is a small satellite office of the larger Barstow office, which is approximately 100 miles southwest of the Ivanpah Substation (San Bernardino County 2009d). The Baker sheriff's satellite office is known as a "resident post" and supports the California Highway Patrol along Interstate 15 in the Baker area (I-15; San Bernardino County 2009d; 2009e). The California Highway Patrol is the primary law enforcement agency for California highways. Its services include traffic control, accident investigation, and management of hazardous materials incidents (California Highway Patrol 2009).

In Clark County, Nevada, the Las Vegas Metropolitan Police Department services the proposed project area. The department provides law enforcement services to all of Clark County, excluding the cities of Henderson, North Las Vegas, Boulder City, and Mesquite. The Boulder City Police Department services the Boulder City Annexation, where the existing Eldorado Substation is located (Boulder City 2009). The Nevada Highway Patrol is the primary law enforcement agency for Nevada's highways (Nevada Highway Patrol 2009).

Medical Facilities

In California, the closest hospital to the proposed Ivanpah Substation site is in Barstow, more than 100 miles southwest. The Boulder City Hospital is the closest hospital to the existing Eldorado Substation in Nevada, approximately 20 miles northeast. It is the closest hospital to the proposed project area in both Nevada and California.

3.11.1.2 Schools

The proposed project area is located within the Baker Valley Unified School District (BVUSD) in California and within the Clark County School District (CCSD) in Nevada. BVUSD includes elementary, junior high, and high schools. BVUSD schools are approximately 50 miles southwest of the proposed Ivanpah Substation site (BVUSD 2009).

CCSD is a much larger district, with schools in Goodsprings, Searchlight, Henderson, and Boulder City. A correction-center high school is located in Jean (CCSD 2009).

3.11.1.3 Solid Waste and Wastewater Facilities

Solid Waste

In San Bernardino County, the closest nonhazardous solid waste landfill large enough to serve the proposed project is in Barstow, approximately 110 miles southwest of the Ivanpah Substation site. At present, the Barstow Sanitary Landfill is permitted to accept up to 750 tons of wastes per day (600 tons of solid waste and 150 tons of liquid waste; California Integrated Waste Management Board [CIWMB] 2009a). Although the current facility is nearing capacity, the recently approved Barstow Sanitary Landfill Expansion Project would expand the landfill by 284 acres (San Bernardino County 2009a, 2009c). According to the CEQA Findings and Final EIR for that project, the landfill will be increased in size according to the actual inflow rate during expansion (San Bernardino County 2009a); however, if the landfill is not expanded in time to accept wastes generated by the proposed project, the Victorville Sanitary Landfill is the next closest landfill in California. It is approximately 140 miles southwest of the proposed Ivanpah Substation. The Victorville Sanitary Landfill accepted approximately 980 tons of wastes per day in 2006 and 890 tons of wastes per day in 2007. It is permitted to accept up to 3,000 tons of wastes per day and is not nearing capacity (CIWMB 2009b).

In Clark County, the closest landfill with the capacity to serve the proposed project is Apex Regional Landfill, approximately 65 miles northeast of the existing Eldorado Substation. The landfill has no maximum daily capacity and is a Class I landfill, i.e., it is allowed to accept all types of solid non-hazardous wastes from households, businesses, and industry. The estimated closure date is more than 50 years in the future (Clark County 2006).

Wastewater

In both California and Nevada, most facilities in the proposed project area use septic systems instead of municipal wastewater systems. A wastewater treatment plant in Primm, Nevada, approximately 6 miles northeast of the proposed Ivanpah Substation site processes wastewater from the casinos, restaurants, and other properties in Primm (NDEP 2008). Wastewater disposal is regulated by the Lahontan Regional Water Quality Control Board, Region 6, in California, and by Clark County Ivanpah Pahrump Valley, Planning Area 6, in Nevada (California Environmental Protection Agency 2009, Clark County 2009a).

3.11.1.4 Water Supply

The proposed project would be located in the northeastern Mojave Desert region of San Bernardino County on federal land administered by the BLM. The Ivanpah Valley Groundwater Basin is the primary natural water supply for the area. The proposed project area would also extend across several other basins (Figure 3.8-3). Water resources in this area are extremely limited. The proposed Ivanpah Substation would be near the Primm Valley Golf Club, a 22-acre facility that requires irrigation.

The Ivanpah Valley Groundwater Basin extends from California into Nevada and is part of a larger hydrologic system that includes Jean Lake Valley and much of the proposed project area in Nevada. According to the BLM (2009), most water basins in southwest Clark County and the northeastern Mojave Desert region of San Bernardino County are over-appropriated and new water entitlements can be difficult to obtain (see also Section 3.8, “Hydrology and Water Quality”). There are no municipal water services in the proposed project area (BLM 2009).

3.11.1.5 Existing Powerlines and Pipelines

As discussed in Section 3.7, “Hazards, Health, and Safety,” the proposed transmission line would be near or immediately adjacent to the Los Angeles Department of Water and Power (LADWP) powerlines for most of its length and NV Energy powerlines for a portion of its length. Additionally, the line would cross below existing powerlines at multiple locations and be near or immediately adjacent to various pipelines that transmit gasoline, diesel, jet fuel, and natural gas (Clark County 2006). There are also at least three major gas pipelines buried underground in both California and Nevada that may be located near the transmission right-of-way (ROW). For more details on existing powerlines and pipelines in the area, see Section 3.7, "Hazards, Health, and Safety."

3.11.2 Applicable Laws, Regulations, and Standards

The following section provides a summary of laws, regulations, and standards that govern public services and utilities in the proposed project area.

3.11.2.1 Federal

Solid Waste Disposal and Resource Conservation and Recovery Act

The Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act [RCRA] of 1976) establishes requirements for the management of solid waste. RCRA establishes provisions for the design and operation of solid waste landfills. It authorizes states to carry out many functions of the act through their own waste programs and laws. Title 40, Code of Federal Regulations (CFR), Chapter I, Subchapter I, Solid Wastes, was established to implement the provisions of these acts.

Clean Water and Water Quality Acts

The Water Pollution Control Act of 1948, amended by the Clean Water Act (CWA) and Water Quality Act, requires states to set standards to protect water quality, which includes the regulation of storm water and wastewater discharge during construction and operation of a facility.

Occupational Safety and Health Act

The Occupational Safety and Health Act (OSHA) of 1970 (29 United States Code [USC] Section 651 et seq.) mandates safety requirements in the workplace. Procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector, are established in 29 CFR 1910. Federal approval of California's and Nevada's plans for enforcement of state safety and health requirements is given in 29 CFR 1952 Subparts K and W (respectively).

3.11.2.2 State

California Public Utilities Commission General Order 131-D

Under this General Order, the construction of powerlines designed to operate at or above 200 kilovolts (kV) and substations designed to operate at or above 50 kV must be authorized by the CPUC.

California Integrated Waste Management Act

The Integrated Waste Management Act of 1989 (Public Resource Code 40050), administered by the CIWMB, requires all local and county governments to adopt a Source Reduction and Recycling Element to identify ways to reduce the amount of solid waste sent to landfills. This law set reduction targets of 25 percent by 1995 and 50 percent by the year 2000.

Protection of Underground Infrastructure (California)

Under California Government Code Section 4216–4216.9, anyone planning to excavate must contact the appropriate regional notification center at least two working days before beginning excavation. Subsequent to this notification, underground infrastructure operators are notified and required to locate and field-mark the approximate location and number of subsurface installations that may be affected. The excavator is then required to determine the exact location of subsurface installations that may be affected by excavating with hand tools within the area of the approximate location of subsurface installations, as determined by field-marking.

California Water Law and Permitting

California's water law (California Code of Regulations [CCR] Title 23) is based on four doctrines: riparian, prior appropriation, groundwater, and pueblo rights. Riparian rights result from the ownership of land bordering a surface water source. Appropriative rights are acquired by putting surface water to beneficial use. The pueblo doctrine recognizes Spanish or Mexican water rights.

Subterranean streams and underflow of surface waters are subject to the laws of surface waters and regulated by the State Water Resources Control Board and its regional boards. The regional boards issue permits and licenses for appropriation from surface and underground streams. In evaluating applications, relative benefits derived from the beneficial uses, possible water pollution, and water quality are considered.

California Building Standards Code and California Fire Code

CCR Title 24 comprises 11 parts containing building design and construction requirements as they relate to fire, life, and structural safety. Title 24 incorporates current editions of the International Building Code, including the electrical, mechanical, energy, and fire codes applicable to the proposed project.

Public Utilities Commission of Nevada Permitting

The Nevada Utility Environmental Protection Act of 1971 (Nevada Revised Statutes [NRS] 704.820 through 704.900) establishes that the construction of a utility facility designed to operate at 200 kV or more requires a permit from the Public Utilities Commission of Nevada. Replacement of an existing facility with a like facility, as determined by the Nevada Public Utilities Commission, however, does not constitute construction of a utility facility. Any facility that was required to be permitted must thereafter be constructed, operated, and maintained in conformity with the permit and any terms, conditions, and modifications contained therein.

Nevada Recycling Standards and Solid Waste Management Plan

Under NRS 444A.020, as amended, the State Environmental Commission is required to adopt standards with the goal of recycling at least 25 percent of total solid waste generated within each municipality. Nevada's Solid Waste Management Plan provides a description of the existing framework for solid waste management. It describes governmental roles and responsibilities, statewide trends in solid waste management, assessment of Nevada's municipal solid waste management systems, and solid waste management issues and future considerations.

Excavation or Demolition Near Subsurface Installations (Nevada)

Under NRS Sections 455.080–455.180, a person must not begin an excavation if the excavation is to be conducted in an area that is known or reasonably should be known to contain a subsurface installation unless the appropriate association for operators is notified at least two working days prior to excavation. The excavator must then work with the underground infrastructure operator to mark underground infrastructure in the proposed excavation area.

Nevada Water Law and Permitting

The Nevada Water Law (NRS Chapters 533 and 534) is based on two fundamental concepts: prior appropriation and beneficial use. Prior appropriation grants priority to water permits chronologically, ensuring that new water rights are granted only after protection of existing water rights holders are assured. Beneficial use requires that water be put to a use that benefits the people of Nevada, preventing water from being reserved for speculative purposes. Agriculture, municipal uses, commercial/industrial uses, recreational uses, and mining all qualify as beneficial uses.

Individuals or organizations seeking water rights must file an application with the Nevada Office of the State Engineer for a permit. The application must include a map prepared by a water rights surveyor that shows the points where water would be accessed and used.

3.11.2.3 Regional and Local

San Bernardino County General Plan

The following goals and policies of the San Bernardino County General Plan associated with public services and utilities are applicable to the proposed project:

Goal S 3: The County will protect its residents and visitors from injury and loss of life and protect property from fires.

Policy S 3.1: The following Peakload Water Supply System guidelines shall be met for all new development or be adequately served by water supplies for domestic use and community fire protection in accordance with standards as determined by the County Fire Department: (a) Limit or prohibit development or activities in areas lacking water and fire fighting facilities. (b) …

Policy S 3.2: The County will endeavor to prevent wildfires and continue to provide public safety from wildfire hazards.

Goal CI 11: The County will coordinate and cooperate with governmental agencies at all levels to ensure safe, reliable, and high quality water supply for all residents and ensure prevention of surface and groundwater pollution.

Goal CI 14: The County will ensure a safe, efficient, economical, and integrated solid waste management system that considers all wastes generated within the County, including agricultural, residential, commercial, and industrial wastes, while recognizing the relationship between disposal issues and the conservation of natural resources.

Goal CI 17: The County will provide adequate law enforcement facilities to deliver services to deter crime and to meet the growing demand for services associated with increasing populations and commercial/industrial developments.

Goal D/CI 4: The County will ensure that public services are delivered and maintained at acceptable levels, even in the more rural areas of the desert.

San Bernardino County Code for Desert Groundwater Management

San Bernardino County Code Section 33.06551 requires that a permit be obtained to locate, construct, operate, or maintain a new groundwater well within the unincorporated, unadjudicated desert region of San Bernardino County. The permit is discretionary under CEQA. Groundwater management, mitigation, and monitoring may be required as a condition of the permit.

San Bernardino County Integrated Waste Management Plan

The Integrated Waste Management Plan establishes the county's goals, policies, and programs for reducing dependence on landfill solid wastes and increasing source-reduction, recycling, and reuse of products and waste in compliance with the California Integrated Waste Management Act.

Clark County Comprehensive Plan

The following goals and policies of the Clark County Comprehensive Plan associated with public services and utilities are applicable to the proposed project:

Policy SW 1-2.0: Encourage programs that reduce the amount of landfill and hazardous waste generated.

Policy CV 6-1.0: Water conservation measures should be encouraged.

Policy CV 6-1.1: Development approval should be conditioned upon the availability of water resources.

3.11.3 Impact Analysis

This section defines the methodology used to evaluate impacts for public services and utilities, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.11.4.

3.11.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects on public services and utilities would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

In addition to the CEQA impact criteria listed below, the proposed project would have a significant effect if it would:

- Result in a major reduction or interruption of existing utility systems by crossing or sharing a location with another utility.

3.11.3.2 CEQA Impact Criteria

The proposed project would have a significant impact if it would:

a. cause substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or cause a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of these public services: (1) fire protection, (2) police protection, (3) schools, (4) parks, or (5) other public facilities.

b. exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

c. require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

d. require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

e. not have sufficient water supplies available to serve the project from existing entitlements and resources, or require new or expanded entitlements;

f. result in a determination by the wastewater treatment provider that serves or may serve the project that it has demand in addition to the provider's existing commitments;

g. be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs; or

h. not comply with federal, state, and local statutes and regulations related to solid waste.

3.11.3.3 Methodology

Baseline conditions for the impact analysis were established in Section 3.11.1, "Environmental Setting," and Section 3.11.2, "Applicable Laws, Regulations, and Standards." The baseline conditions were evaluated based on their potential to be affected by construction, operation, or maintenance of the proposed project. No quantitative thresholds apply to the analysis of potential impacts on public services and utilities under CEQA or NEPA. Qualitative impact criteria are used for the analysis presented in this section.

3.11.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) related to public services and utilities:

APM PUSVC-1: Work Around High Pressure Pipelines. No mechanical equipment will be permitted to operate within 3 feet of the high-pressure pipelines, and work within 3 feet must be done by hand or as otherwise directed by the pipeline company.

APM PUSVC-2: Monitoring by Pipeline Companies. A representative of applicable owners and operators of major pipeline companies must observe the excavation around or near their facilities to ensure protection and to record pertinent data necessary for operations.

APM HAZ-2: Hazardous Materials and Waste Handling Management Plan. The applicant would develop programs and policies for management of hazardous materials including a Hazardous Materials and Hazardous Waste Handling Program, Construction Stormwater Pollution Prevention Plan, and procedures for Transport of Hazardous Materials, Fueling and Maintenance of Construction Equipment, Fueling and Maintenance of Helicopters, and Emergency Release Response. This plan would be valid during project construction and operation.

APM HAZ-4: Fire Management Plan. The applicant would implement a Fire Management Plan.

APM HAZ-5: SPCCP and Hazardous Materials Business Plan. The applicant would implement a Spill Prevention, Countermeasure, and Control Plan (SPCCP) for preventing, containing, and controlling potential releases, and provisions for quick and safe cleanup and a Hazardous Materials Business Plan (HMBP) that includes hazardous waste management procedures, and emergency response procedures including emergency spill cleanup supplies and equipment. This plan would be valid during project construction and operation.

APM TRA-2: Traffic Management and Control Plans. Traffic control and other management plans will be prepared where necessary to minimize project impacts on local streets and railroad operations.

APM TRA-3: Minimize Street Use. Construction activities will be designed to minimize work on, or use of, local streets.

APM W-12: Properly Dispose of Hazardous Materials. All construction and demolition waste, including trash and litter, garbage, and other solid waste, would be removed and transported to an appropriately permitted disposal facility. Petroleum products and other potentially hazardous materials would be removed and transported to a hazardous waste facility permitted or otherwise authorized to treat, store, or dispose of such materials.

APM W-13: Identify Location of Underground Utilities Prior to Excavation. Prior to excavation, the applicant or its contractors would locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, or other underground structures that may reasonably be expected to be encountered during excavation work.

3.11.3.5 Proposed Project / Proposed Action

Emergency Response Services

Construction, operation, and maintenance of the new and upgraded powerlines, substations, and telecommunications systems associated with the proposed project could increase demand for emergency services in the proposed project area. The proposed project could create demand for fire, police, or medical response services if any of the following or other emergency incidents occurred:

- Fire due to construction accident, improper disposal of waste, or equipment malfunction;
- Injury caused by construction activities;
- Spill of hazardous materials;
- Damage to an existing powerline or pipeline;
- Theft of materials or equipment; or
- Vandalism of equipment, structures, or property.

To limit potential impacts on emergency response services, the applicant would implement APM HAZ-4 (Fire Management Plan) during construction, which would reduce the risk of fire due to the proposed project. Additionally, the applicant would develop and implement a traffic management plan and minimize local street use during construction (APM TRA-2 and APM TRA-3), which would reduce impacts on emergency response times by limiting the project's contribution to traffic congestion in the area. Additionally, MM TRANS-1 requires the applicant to limit construction activities on Friday from noon to 10 p.m. to avoid requiring lane closures on I-15. To further reduce emergencies related to the proposed project, the applicant would be required by law to contact the appropriate Underground Service Alert organization to identify the location of underground utilities and pipelines. The applicant would also not use mechanical equipment within 3 feet of high-pressure pipelines (APM PUSVC-1) and would have a representative for the pipelines present to observe excavation activities around buried pipelines during construction (APM PUSVC-2). These requirements and APMs would help ensure that emergency response services would not be affected during project construction. To further mitigate impacts to emergency response services, MM HAZ-1 requires that the applicant prepare a Health and Safety Plan and conduct a worker safety and environmental training program. This would include the requirement that first aid kits be stored in each construction vehicle and that a worker trained in first aid be included in each work group. Further discussion of potential impacts on emergency response services and emergency response or evacuation plans is provided in Section 3.14, "Traffic and Transportation," and Section 3.7, "Hazards, Health, and Safety."

While some incidents of theft and vandalism have occurred at the applicant's unstaffed substations, implementation of the security design features proposed by the applicant would minimize potential impacts on police response services during operations. Specifically, security design features—such as 8-foot-tall security fencing, barbed wire, a motion-sensing system, and routine patrol of the substation and transmission and subtransmission lines (Chapter 2, "Description of Proposed Project and Alternatives")—would reduce the need for police services. Although fire hazards would still exist and medical emergencies and theft or vandalism could still occur, the APMs, combined with additional mitigation measures as discussed above, would be adequate to minimize emergency risks associated with the proposed project.

Schools

The proposed project would not increase the demand for housing or induce population growth during construction, operation, or maintenance. Construction workers would be expected to commute to the area or reside in the area temporarily in the Desert Oasis Apartment Complex or one of several hotels in Primm, Nevada. Both the apartment complex and the hotels have adequate capacity for the projected number of workers, which is a maximum of approximately 200 (see Chapter 2, "Description of the Proposed Project and Alternatives," for more details). Workers would not be expected to relocate their families to the area because construction would be for only 18 months. Therefore, the proposed project would not increase demand for school services or facilities.

Solid Waste

Construction of the new and upgraded powerlines, substations, and telecommunications systems associated with the proposed project would generate solid waste and wastewater. Solid wastes would include components being replaced such as powerline towers and poles, conductor cable, and overhead ground wires; substation construction waste; and excess excavation soils and materials that could not be reused or recycled. The applicant would dispose of solid waste at an appropriately permitted disposal facility (APM W-12) and has stated that construction materials and debris would be removed from proposed project sites and recycled or properly disposed of off site (Chapter 2, "Description of Proposed Project and Alternatives"). Although the nearest landfills capable of receiving solid waste from the proposed project are located more than 100 miles from some locations along the proposed project route in California and Nevada, the landfills have the necessary capacity to receive solid waste generated by the project.

The proposed project would need to observe the Nevada Legislature's goal to recycle 25 percent of total solid waste generated within each municipality, and in California, the proposed project would be required to comply with the California Integrated Waste Management Act. During construction, the applicant has estimated that a total of 540 tons of waste would be created, of which approximately 400 tons (74 percent) would be salvaged or recycled and approximately 140 tons (26 percent) would be disposed of in landfills; therefore, the applicant should be on track to meet solid waste management requirements in both California and Nevada, and there should be adequate capacity in the area to accommodate the amount of solid waste generated. Implementation of MM PUSVC-1 (see Section 3.11.4, below) would ensure that solid waste would be recycled to the maximum extent possible.

Wastewater

Sanitary wastewater could be generated if a permanent restroom facility were built at the proposed Ivanpah Substation. Construction of a permanent restroom would entail compliance with County of San Bernardino requirements for the construction and operation of sanitary waste systems. If portable or permanent self-contained restrooms are used, the applicant has stated that holding tank sanitary wastewater would be disposed of by contract service personnel. The physical location and type of facility would be determined during final engineering for the proposed project. There would be no impact associated with an onsite septic system.

Sanitary wastewater would be generated by construction workers staying at hotels in Primm; however, the capacity of the wastewater treatment facility in Primm would not be exceeded, and therefore, there would be no impact. Other types of wastewater are discussed in Section 3.7, "Hazards, Health, and Safety." Wastewater is also discussed in Section 3.8, "Hydrology and Water Quality."

Surface Water and Groundwater

During construction of the proposed project, water would be used for dust suppression, equipment and facilities cleaning, fire prevention and control, portable restrooms, and drinking. No water would be used for powerline cleaning (insulator washing) because polymer insulators that do not require cleaning would be used. The applicant has stated that water for dust control, restrooms, and drinking would be brought to construction sites and supplied by a local vendor or agency during construction and operation of the proposed project, but the source of the water has not been identified. Due to limited water resources in the area, to ensure compliance with California and Nevada plans and permitting processes, and reduce the impact on local water tables, a Water Use Plan is required per MM W-2. MM W-2 requires the applicant to identify quantities and sources of water to be used during each phase of the proposed project in order to identify areas where local groundwater supply and recharge could be adversely affected. MM W-2 also sets maximum water use limits for the construction and operation phases of the proposed project. Refer to Section 3.8, "Hydrology and Water Quality," for further discussion on water use and supply.

Existing Powerlines and Pipelines

The proposed Eldorado–Ivanpah Transmission Line would be near or immediately adjacent to the LADWP powerlines for most of its length and NV Energy powerlines for a portion of its length. The proposed line would cross below existing powerlines at multiple locations. Overhead lines near or immediately adjacent to the proposed Eldorado–Ivanpah Transmission Line would be identified by the applicant (APM W-13), and it is not anticipated that a power outage would occur.

The proposed Eldorado–Ivanpah Transmission Line would also be near or immediately adjacent to various pipelines that transmit gasoline, diesel, jet fuel, and natural gas (Clark County 2006). To minimize potential impacts on pipelines, the applicant would not use mechanical equipment within 3 feet of high-pressure pipelines (APM PUSVC-1). In addition, a representative from the pipelines would be present to observe excavation activities (APM PUSVC-2), and underground utility lines would be located (APM W-13) prior to construction of the proposed project. The applicant is required by law to contact the appropriate Underground Service Alert organization prior to conducting excavation activities in either California or Nevada. Pipelines and the potential for accidental release are further discussed in Section 3.7, "Hazards, Health, and Safety." With the implementation of MM PUSVC-2, there would be no impact related to interruption of existing utility systems.

NEPA Summary

Overall, impacts on emergency response services (such as fire, police, and medical services) during construction would be short term and negligible with the implementation of APM HAZ-4 (Fire Management Plan), APM TRA-2 (Traffic Management and Control Plans), APM TRA-3 (Minimize Street Use), APM PUSVC-1 (Work Around High Pressure Pipelines), APM PUSVC-2 (Monitoring by Pipeline Companies), APM W-12 (Properly Dispose of Hazardous Materials), and APM W-13 (Identify Location of Underground Utilities Prior to Excavation). Implementation of MM HAZ-1, which would require the applicant to prepare a Health and Safety Plan, would further ensure that impacts to emergency response services due to the proposed project during construction are minimized. Additionally, with the implementation of MM PUSVC-2, there would be no service interruptions for existing utilities (e.g., powerlines and pipelines).

With the implementation of MM PUSVC-1, which requires the applicant to prepare a Construction Waste Disposal Plan, impacts on solid waste management in the project area would be reduced to negligible; however, even with the implementation of MM W-2 (Water Use Plan), while the potential for adverse impacts on the water supply would be minimized, given the limited water supply in the project area, impacts on the local water table may be adverse.

During operations, emergency response needs are expected to be similar to existing needs in the project area, and the applicant has included a number of security design features to ensure negligible impacts on police services due to the new Ivanpah Substation.

CEQA Significance Determinations

IMPACT PUSVC-1: **Emergency services needed in response to an accident or other emergency incident associated with the proposed project.**
Less than significant without mitigation

Although demand for emergency services may increase temporarily during construction, existing emergency service providers and facilities would be sufficient to handle any incidents that may occur. Additionally, the applicant has proposed a variety of security features as discussed above and would implement APMs such as APM HAZ-4 (Fire Management Plan), APM TRA-2 (Traffic Management and Control Plans), APM TRA-3 (Minimize Street Use), APM PUSVC-1 (Work Around High Pressure Pipelines), and APM PUSVC-2 (Monitoring by Pipeline Companies), which would help ensure that emergency response services would not be affected. To further mitigate impacts to emergency response services, MM HAZ-1 requires that the applicant prepare a Health and Safety Plan and conduct a worker safety and environmental training program. Therefore, potential impacts on fire, police, and medical emergency service ratios would be less than significant, and no mitigation is required. Emergency response plans are discussed further in Section 3.7, “Hazards, Health, and Safety.”

IMPACT PUSVC-2: Project construction temporarily increases water use, and project operation contributes to increased long-term water consumption.
Potentially significant

As discussed in Section 3.8, “Hydrology and Water Quality,” the applicant has estimated that between 30.6 and 38.3 acre feet per annum would be needed for the construction phase of the transmission line. Because there is a limited water supply in the proposed project area, the applicant would implement MM W-2, which requires preparation of a project-specific Water Use Plan, specifying the quantities and sources for all water to be used during construction, operation, and maintenance of the proposed project. The Water Use Plan would also identify the source and approximate quantity of water to be used for each activity, broken down by phase of the project, and for each source, the plan would address the potential impact on the local aquifer. In addition, MM W-2 also sets maximum water use limits for the construction and operation phases. However, because the source of the water to be used during construction is currently unknown, at this point the possibility that the impact on groundwater supplies could be significant must be considered. For more information on water use and consumption, specifically as it relates to the potential for lowering the water table in the project area, see Impact HYDRO-2 in Section 3.8, “Hydrology and Water Quality.”

IMPACT PUSVC-3: Solid waste generated during construction of the project exceeds landfill requirements.
Less than significant with mitigation

During construction, the applicant has estimated that a total of 540 tons of waste would be created, of which approximately 400 tons (74 percent) would be salvaged or recycled and approximately 140 tons (26 percent) would be disposed of in landfills; therefore, the applicant would be on track to meet solid waste management requirements in both California and Nevada (SCE 2010b). Existing solid waste facilities have adequate capacity to accommodate project-related solid wastes. With the implementation of MM PUSVC-1, potential impacts on landfills would be less than significant.

IMPACT PUSVC-4: Solid waste generated during construction of the project results in noncompliance with federal, state, or local statutes, regulations, or policies.
Less than significant with mitigation

With the implementation of MM PUSVC-1, which would ensure compliance with local policies regarding solid waste management, impacts under this criterion would be less than significant.

NO IMPACT. Require new or physically altered public facilities. There would be no impact on schools, parks, or other public facilities in the proposed project area because the increase in local population from the additional workforce required for the proposed project would be temporary and relatively small (see Section 3.13, “Socioeconomics, Population and Housing, and Environmental Justice”). Potential impacts on parks are further discussed in Section 3.12, “Recreation.”

NO IMPACT. Wastewater exceeds requirements of the Regional Water Quality Control Board. The discharge of sanitary wastewater would not exceed the requirements of the Regional Water Quality Control Board, and there would be no impact. Potential impacts associated with other types of wastewater are discussed in Section 3.8, “Hydrology and Water Quality,” and Section 3.7, “Hazards, Health, and Safety.”

NO IMPACT. Wastewater exceeds requirements of existing treatment facilities. There would be no impact associated with an onsite septic system, and the capacity of the wastewater treatment facility in Primm would not be exceeded during construction because sufficient capacity exists for wastewater generated by the construction workforce; therefore, there would be no impact under this criterion.

NO IMPACT. Require or result in the construction of new storm water drainage facilities. The substations associated with the proposed project would not require or result in the construction of new publicly owned storm water drainage facilities and therefore would have no impact. Potential impacts associated with stormwater are also discussed in Section 3.8, "Hydrology and Water Quality."

3.11.3.6 No Project / No Action Alternative

If the proposed project is not constructed, there would be no impact on emergency response units and facilities, schools, solid waste and wastewater facilities, water use, or existing utility systems.

3.11.3.7 Transmission Alternative Route A

Transmission Alternative Route A would reduce the length of the proposed Eldorado–Ivanpah Transmission Line by approximately 1 mile and require approximately 5 miles of new ROWs. As a result, impacts on public services and utilities may differ slightly but would not be substantively different from the proposed project.

3.11.3.8 Transmission Alternative Route B

Potential impacts under this alternative would be similar to those associated with the proposed project. Transmission Alternative Route B would extend the length of the proposed Eldorado–Ivanpah Transmission Line by approximately 3.5 miles and require approximately 5 miles of new ROW. As a result, impacts on public services and utilities might differ slightly but would not be substantively different from the proposed project.

3.11.3.9 Transmission Alternative Route C

Potential impacts under this alternative would be similar to those associated with the proposed project. Transmission Alternative Route C would extend the length of the proposed Eldorado–Ivanpah Transmission Line by approximately 1.5 miles and require approximately 5 miles of new ROW. As a result, impacts on public services and utilities may differ slightly but would not be substantively different from the proposed project.

3.11.3.10 Transmission Alternative Route D and Subalternative E

Potential impacts under these alternatives would be the same as those associated with the proposed project. Transmission Alternative Route D and Subalternative E would extend the length of the proposed Eldorado–Ivanpah Transmission Line by approximately 0.5 miles and require approximately 3 miles of new ROW. There would be a negligible increase in the amount of solid waste generated from excavation activities and the amount of water required for dust suppression and cleaning. Impacts on public services and utilities would not be substantively different from the proposed project.

3.11.3.11 Telecommunication Alternative (Golf Course)

Potential impacts under this alternative would be similar to those associated with the proposed project. There would be a moderate increase in the amount of water required for dust suppression, cleaning, and other activities. The amount of solid waste from excavation activities and pole replacement would also increase. Regardless, impacts on public services and utilities would not be substantively different from the proposed project.

3.11.3.12 Telecommunication Alternative (Mountain Pass)

Potential impacts under this alternative would be similar to those associated with the proposed project. There would be a moderate increase in the amount of water required for dust suppression, cleaning, and other activities. The amount of solid waste from excavation activities and pole replacement would also increase. The amount of water required and solid waste generated would be slightly greater than under the Golf Course Telecommunication Alternative. Regardless, impacts on public services and utilities would not be substantively different from the proposed project.

3.11.4 Mitigation Measures

MM PUSVC-1: Construction Waste Disposal Plan. The applicant will prepare a Construction Waste Disposal Plan for all nonhazardous wastes generated during construction of the proposed project and submit the plan to the BLM and the CPUC for review and approval no less than 30 days prior to start of construction. The plan will contain the following, at a minimum:

- Description of all nonhazardous solid and liquid construction wastes, including:
  - Estimated amounts to be disposed of in a landfill by weight or volume and
  - Estimated amounts that can be recycled or salvage by weight or volume;
- Recycling, salvage, and waste minimization/source reduction plans;
- Management methods to be used for each type of waste, including temporary on-site storage, housekeeping and best management practices to be employed, and methods of transportation and packaging; and
- Description and list of all contracts and plans made with waste contractors, landfills, and wastewater treatment facilities.

The applicant may refer to internal salvage and waste manuals in the Construction Waste Management Plan where applicable. The plan is necessary to ensure that solid waste is recycled or salvaged to the maximum extent possible. In addition, the applicant would need to observe the Nevada Legislature's goal to recycle 25 percent of total solid waste generated within each municipality of Nevada.

MM PUSVC-2: Notification of Utility Service Interruption. If a utility service interruption is known to be unavoidable, the applicant will notify by postal mail members of the public, the jurisdiction, and the service providers who would be affected. The applicant will also publish notices in newspapers circulated in each jurisdiction that would be affected. The postal mail and newspaper notices will specify the estimated duration of each service interruption and be mailed or published no later than seven days prior to the first interruption. Copies of the notices will be provided to the BLM and CPUC no later than 30 days following notification.

3.11.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to public services and utilities in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

The ISEGS FSA/DEIS was reviewed for impacts that are directly relevant to the public services or utilities analysis presented in this EIR/EIS. Impacts, which were determined to be relevant if they related closely to the impact criteria presented in Section 3.11.3 of this EIR/EIS, were identified in the following ISEGS FSA/DEIS sections:

- 6.4 Hazardous Materials Management
- 6.8 Socioeconomics and Environmental Justice
- 6.9 Soil and Water Resources
- 6.10 Traffic and Transportation
- 6.11 Transmission Line Safety and Nuisance
- 6.13 Waste Management
- 6.14 Worker Safety and Fire Protection

3.11.5.1 Setting

The ISEGS project would be located less than 1 mile northwest of the proposed Ivanpah Substation in California. Different types and amounts of hazardous materials would be used for the ISEGS project than the proposed EITP. These differences are discussed in Section 3.7, "Hazards, Health, and Safety," of this EIR/EIS. The ISEGS project setting for "Traffic and Transportation" is discussed in Section 3.14, "Traffic and Transportation," of this EIR/EIS. The ISEGS project settings for "Transmission Line Safety and Nuisance" and "Worker Safety and Fire Protection" are discussed in Section 3.7, "Hazards, Health, and Safety.

Public Services

Public services are discussed in Section 6.8, "Socioeconomics and Environmental Justice," of the ISEGS FSA/DEIS. The setting described in the ISEGS FSA/DEIS for public services is similar to that described in this EIR/EIS with the exception of three discrepancies, described below.

First, the ISEGS FSA/DEIS states that the nearest sheriff's office to the proposed ISEGS site is the Barstow Station. The Barstow Station is located approximately 110 miles southwest of the proposed ISEGS project and Ivanpah Substation sites. There is a closer sheriff's office in Baker, California, located approximately 50 miles southwest (see Section 3.11.1.1, "Emergency Response Units and Facilities," above).

Second, the ISEGS FSA/DEIS states that the Las Vegas Police Department provides police protection services in Clark County, Nevada, but it does not mention that the Boulder City Police Department services the Boulder City Annexation, where the existing Eldorado Substation is located.

Third, the ISEGS FSA/DEIS states that the closest hospital with an emergency room to the proposed ISEGS site is the Saint Rose Hospital in Henderson, Nevada. It does not mention that the Boulder City Hospital is closer to the existing Eldorado Substation in Nevada (approximately 20 miles northeast).

Water, Wastewater, and Solid Waste

Water and wastewater are discussed in Section 6.9, "Soil and Water Resources," of the ISEGS FSA/DEIS. The setting described in the ISEGS FSA/DEIS for water, wastewater, and public utilities is similar to that described in this EIR/EIS. The ISEGS FSA/DEIS notes, however, that there is capacity to treat additional wastewater at the Primm Wastewater Treatment Plant. The additional capacity was not considered in this EIR/EIS because it was determined that there would be no impact from wastewater that would be produced with the implementation of the EITP. For the EITP, wastewater would be generated during dust suppression activities, equipment cleaning, and other construction activities. During operations and maintenance, wastewater would be generated from equipment cleaning.

The ISEGS project would generate sanitary and process wastewater. Sanitary wastewater from sinks, showers, and toilets would be processed on site by a septic and leach field system that would be located near the administration building. Process water from plant floor drains, hub drains, sumps, and piping would be sent through an oil-water separator and then stored for later treatment and use in the steam boiler. All process water would be recycled or transported to a sanitary wastewater treatment facility for disposal (BrightSource Energy Partners 2007). Hazardous wastewater is discussed in Section 3.7, "Hazards, Health, and Safety," and Section 3.8, "Hydrology and Water Quality."

Solid waste is discussed in Section 6.13, "Waste Management," of the ISEGS FSA/DEIS. The ISEGS project would generate approximately 280 tons of non-hazardous solid wastes during construction. Non-hazardous wastes would include scrap wood, concrete, steel/metal, paper, glass, scrap metals, and plastic waste (BrightSource Energy Partners 2007). Hazardous wastes are discussed in Section 3.7, "Hazards, Health, and Safety." Non-hazardous solid wastes that would be generated in the EITP would include old powerline poles and towers, old conductor cable, old overhead ground wires, substation construction waste, and excess excavation soils and materials that could not be reused or recycled.

Applicable Laws, Regulations, and Standards

The ISEGS project would be subject to all of the federal and California laws, regulations, and standards described in Section 3.11.2 above but not the state or county laws, regulations, and standards for Nevada. With regard to public services, the ISEGS FSA/DEIS also lists California Education Code section 17620 and California Government Code Sections 65996–65997, but this EIR/EIS concludes that the EITP would have no impact on schools. Therefore, these two additional codes are not expected to be relevant to the EITP.

The ISEGS FSA/DEIS does not list the California Water Law (California Code of Regulations Title 23), but it does list the California Water Code. The code sets out requirements for the regional water quality control boards, including rules for the Lahontan Region. It also establishes requirements for wastewater discharge. These issues are addressed in Section 3.8, "Hydrology and Water Quality," of this EIS/EIR. The California Water Law is important to both the ISEGS project and the EITP because it governs the permitting process for groundwater and surface water access and use.

The Protection of Underground Infrastructure requirement under California Government Code Section 4216–4216.9 is not listed in the ISEGS FSA/DEIS. It is important to note because it requires that anyone planning to excavate must contact the appropriate regional notification center at least two working days prior to beginning excavation. This process helps ensure that existing underground utilities are not damaged during construction of a project.

3.11.5.2 Methodology

Baseline conditions were established in the ISEGS FSA/DEIS with results similar to those in the EITP EIR/EIS. The setting, however, was discussed under different section names. For example, public services were discussed in the "Socioeconomics and Environmental Justice" section of the ISEGS FSA/DEIS. The approach used to confirm information presented in the Application for Certification for the Ivanpah Solar Electric Generating System (BrightSource Energy Partners 2007) was similar to the approach taken to confirm information presented in the Proponent's Environmental Assessment (SCE 2009). In addition, the EITP was incorporated into the analysis presented in the ISEGS FSA/DEIS.

Three areas that differ between the ISEGS FSA/DEIS and the EITP EIR/EIS for public services and utilities are noted below. First, in addition to the construction, operation, and maintenance phases, the ISEGS FSA/DEIS considers decommissioning. The Public Services and Utilities section of this EIR/EIS does not consider decommissioning.

Second, the ISEGS FSA/DEIS and EITP EIR/EIS differ on the use of mitigation to ensure compliance with applicable laws. The ISEGS FSA/DEIS states, "Absent any unusual circumstances, staff considers project compliance with LORS [laws, ordinances, regulations, and standards] to be sufficient to ensure that no significant impacts would occur as a result of project waste management" (CEC and BLM 2009, p. 6.13-7). For this EITP EIR/EIS, laws are considered to be required and, therefore, compliance with applicable laws is not included as mitigation.

3.11.5.3 Impacts

BLM and CEC staff determined that construction and operation of the ISEGS project could impact public services and utilities. Where impacts were identified, the BLM and CEC incorporated mitigation measures to reduce potential impacts on public services and utilities to less than significant levels.

Hazardous Materials

The ISEGS FSA/DEIS concludes that, with mitigation, hazardous materials associated with the ISEGS project would not present a significant CEQA or NEPA impact on the public or environment. With implementation of a Hazardous Materials Business Plan (HAZ-2), Safety Management Plan (HAZ-3), Construction Site Security Plan (HAZ-4), and Operation Security Plan (HAZ-5), potential impacts associated with hazardous materials on public services in the ISEGS project area would be reduced to less than significant levels. Hazardous materials are further discussed in Section 3.7, "Hazards, Health, and Safety," of this EIR/EIS.

Public Services

The ISEGS FSA/DEIS concludes that no significant adverse impacts on public services would occur as a result of construction or operation of the ISEGS project. No mitigation measures associated with public services or socioeconomic issues were included in the ISEGS FSA/DEIS. Socioeconomic issues related to public services are further discussed in Section 3.13, "Socioeconomics, Population and Housing, and Environmental Justice," of this EIR/EIS.

Water Resources

The ISEGS FSA/DEIS concludes that, with mitigation, water resources would not be significantly impacted under CEQA or NEPA. Ensuring that regulations related to groundwater wells (SOIL&WATER-3), the San Bernardino County's Desert Groundwater Management Ordinance (SOIL&WATER-6), regulations on collection and recycling of process wastewater (SOIL&WATER-7), and regulations on septic systems (SOIL&WATER-8) are followed and limiting construction water use to 100 acre feet per year (SOIL&WATER-4) would reduce potential impacts on water resources to less than significant levels. Soil resources are discussed in Section 3.6, "Geology, Soils, Minerals, and Paleontology," of this EIR/EIS. Water resources are further discussed in Section 3.8, "Hydrology and Water Quality."

Traffic and Transportation

The ISEGS FSA/DEIS concludes that, with mitigation, traffic and transportation resources would not be significantly impacted under CEQA or NEPA. A number of mitigation measures were incorporated into the ISEGS FSA/DEIS to reduce the ISEGS project's contribution to congestion on I-15 near recreation resources, ensure damaged roadways are repaired, and ensure glare does not impair the vision of motorists or pilots. The analysis of potential traffic and transportation impacts in the ISEGS FSA/DEIS is further discussed in Section 3.14, "Traffic and Transportation," of this EIR/EIS.

Transmission Line Safety

The ISEGS FSA/DEIS concludes that, with mitigation, issues related to transmission line safety would not result in significant impacts under CEQA or NEPA. The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with standard industry practices and with implementation of the mitigation measures documented in the ISEGS FSA/DEIS. These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise. The analysis of transmission line safety presented in the ISEGS FSA/DEIS is further discussed in Section 3.7, "Hazards, Health, and Safety," of this EIR/EIS.

Waste Management

The ISEGS FSA/DEIS concludes that, with mitigation, issues related to waste management would not result in significant impacts under CEQA or NEPA. A number of mitigation measures were incorporated into the ISEGS FSA/DEIS to ensure that the ISEGS project would comply with applicable waste management laws, ordinances, regulations, and standards. The analysis of waste management presented in the ISEGS FSA/DEIS is further discussed in Section 3.7, "Hazards, Health, and Safety," and Section 3.8, "Hydrology and Water Quality," of this EIR/EIS.

Worker Safety and Fire Protection

The ISEGS FSA/DEIS concludes that, with mitigation, issues related to worker safety and fire protection would not result in significant impacts under CEQA or NEPA. Mitigation measures were incorporated into the ISEGS FSA/DEIS to ensure adequate levels of industrial safety and compliance with applicable laws, ordinances, regulations, and standards. With implementation of the mitigation measures, a Construction Safety and Health Program and Operations and Maintenance Safety and Health Program would be developed and implemented (WORKER SAFETY-1 and WORKER SAFETY-2), a Construction Safety Supervisor would be provided (WORKER SAFETY-3), and a portable automatic external defibrillator would be kept on site during construction of the ISEGS project (WORKER SAFETY-5). Worker safety and fire protection is further discussed in Section 3.7, "Hazards, Health, and Safety," of this EIR/EIS.

3.11.5.4 Conditions of Certification / Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to public services and utilities if the project is approved:

HAZ-2 requires the applicant to develop and implement a Hazardous Materials Business Plan to notify local emergency response services of the amounts and locations of hazardous materials associated with the ISEGS project.

HAZ-3 requires the applicant to develop and implement a Safety Management Plan for the delivery of liquid hazardous materials.

HAZ-4 requires the applicant to develop and implement a site-specific Construction Site Security Plan applicable to all construction phases.

HAZ-5 requires the applicant to develop and implement a site-specific Operation Security Plan.

SOIL&WATER-3 requires the applicant to ensure compliance with state and local laws, ordinances, regulations, and standards during construction of the onsite groundwater wells.

SOIL&WATER-4 requires the applicant to limit construction water use to 100 acre feet per year.

SOIL&WATER-6 requires the applicant to comply with the San Bernardino County Desert Groundwater Management Ordinance. This includes developing a groundwater level monitoring and reporting plan and integrating with the Primm Valley Gold Course's existing groundwater monitoring and reporting program.

SOIL&WATER-7 requires the applicant to ensure that the collection and recycling of process wastewater would be managed in compliance with applicable laws, ordinances, regulations, and standards.

SOIL&WATER-8 requires the applicant to comply with County of San Bernardino requirements for the construction and operation of sanitary waste septic systems.

TLSN-3 requires that ROW of the proposed transmission line be kept free of combustible material as required under the provisions of Section 4292 of the Public Resources Code and Section 1250 of Title 14 of the California Code of Regulations.

TLSN-4 requires that all permanent metallic objects within the ROW of lines related to the ISEGS project be grounded according to industry standards regardless of ownership.

TRANS-1 requires the applicant to develop and implement a Traffic Control Plan for construction and operation traffic.

TRANS-2 requires the applicant to restore all public roads, easements, and ROW damage during construction of the ISEGS project.

WASTE-3 requires the applicant to develop and implement a Construction Waste Management Plan for all construction wastes.

WASTE-6 requires the applicant to develop and implement an Operation Waste Management Plan for all wastes generated during operation of the ISEGS project.

WORKER SAFETY-1 requires the applicant to develop and implement a Project Construction Safety and Health Program.

WORKER SAFETY-2 requires the applicant to develop and implement a Project Operations and Maintenance Safety and Health Program.

WORKER SAFETY-3 requires the applicant to provide a site Construction Safety Supervisor.

WORKER SAFETY-5 requires the applicant to keep a portable automatic external defibrillator on site during construction of the ISEGS project.

3.12 Recreation

This section describes the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to recreation.

3.12.1 Environmental Setting

The environmental setting section describes the existing baseline wilderness and recreational conditions in the project area. The project area contains a number of natural resources conducive to wilderness status and recreational opportunities or experiences. Recreational opportunities can be defined as "favorable circumstances enabling visitors' engagement in a leisure activity to realize immediate psychological experiences and attain more lasting, value-added beneficial outcomes" (BLM 2005). Recreational experiences can be defined as "psychological outcomes realized either by recreation-tourism participants as a direct result of their on-site leisure engagements and recreation-tourism activity participation or by non-participating community residents as a result of their interaction with visitors and guests within their community and/or interaction with public and private recreation-tourism providers and their actions" (BLM 2005). Visual resources are frequently a key element of recreational experiences. The existing visual setting and potential impacts on visual resources in wilderness areas or on recreational opportunities in the proposed project area are discussed in detail in Chapter 3.2, "Aesthetics and Visual Resources."

The EITP is located within the Eldorado and Ivanpah valleys in southern Clark County, Nevada, and the Ivanpah Valley in southeastern California. The proposed project would traverse areas within both California and Nevada and cross public and privately owned lands. All of the lands that would be crossed by the proposed transmission line route in California are administered by the BLM. Small segments of the Nipton 33-kilovolt (kV) line cross private parcels at Nipton, California, near the Ivanpah Road crossing, and in the vicinity of the Mountain Pass Substation. In Nevada, the line is predominantly situated on BLM lands, but private lands would be crossed near the Eldorado Substation and, depending on the alternative selected, possibly at Primm, Nevada.

Land uses within the area range from open space and conservation/preserve areas to commercial, public, and private recreation; utility/energy uses; industrial and mining uses; transportation; and limited residential uses. Lands in the project area with special designations that include recreational use are the Mojave National Preserve, wilderness areas, and Areas of Critical Environmental Concern (ACECs). Other areas used for recreation including Eldorado, Ivanpah, Roach, and Jean dry lake beds are present in the valleys. The Clark Mountains are on the far western edge of the proposed project location, and the foot of the Spring Mountains is to the north of the existing transmission line just above Primm, Nevada. At the east edge of the Ivanpah Valley in Nevada, the transmission line passes between Sheep Mountain to the north and the north end of the Lucy Gray Mountains and then passes through the northern McCullough Mountains. The telecommunication line alternatives pass to the west of the Highland Ranges and, farther south, pass between the McCullough and New York mountains.

Private developed land is located along the California/Nevada border in and near Primm, Nevada, and includes casinos and hotels, restaurants, a nine-hole golf course, and other tourist attractions. Recreational uses include casual and organized noncompetitive and competitive land-sailing on both the west and east sides of the Ivanpah Dry Lake bed and casual and organized non-competitive vehicle use on designated routes surrounding the dry lake bed.

3.12.1.1 Regional Setting

The EITP is in an area offering a diverse range of recreational opportunities, including widely dispersed public recreational areas that allow visitors to pursue activities in non-specific settings. The opportunities include caving, photography, painting, automobile touring, backpacking, bird watching, hunting, primitive camping, hiking, rock climbing, and off-highway vehicle (OHV) use. Table 3.12-1 lists recreation opportunity areas within 0.5 miles of the EITP.

Table 3.12-1 Recreation Opportunity Within 0.5 miles of the EITP

Recreation Opportunity Area	Alternative/Route	Distance from Project (miles)	Nearest MP
BLM Lands	Alternative A	Less than or equal to 0.5	4.5–5.0
	Alternative C	Less than or equal to 0.5	0.0–5.0
	Alternative D	Less than or equal to 0.5	0.0–3.0
	Proposed Project	Less than or equal to 0.5	6.5–35.0
	Subalternative E	Less than or equal to 0.5	0.0–1.0
Boulder City Annexation	Alternative A	Less than or equal to 0.5	0.0–5.0
	Alternative B	Less than or equal to 0.5	0.0–6.0
	Proposed Project	Less than or equal to 0.5	0.0–7.5
Ivanpah Dry Lake	Alternative C	Less than or equal to 0.5	1.5–5.0
	Alternative D	Less than or equal to 0.5	2.0–3.0
	Proposed Project	Equal to 0.5	28.0–31.5
Primm Valley Golf Club	Proposed Project	0.5	27.0–28.0
Roach Dry Lake	Alternative C	Less than or equal to 0.5	0.0–1.0
	Alternative E	0.5	0.0
	Proposed Project	Less than or equal to 0.5	21.5–27.5

Key: See Figure 1-1.
MP = milepost

Public Lands – Bureau of Land Management

Most of the land crossed by the project is managed by BLM field offices in Needles, California, and Las Vegas, Nevada. Lands under the jurisdiction of the Needles Field Office are managed according to the goals, policies, and designations contained in BLM's 1980 California Desert Conservation Area (CDCA) Plan, as amended. Lands under the jurisdiction of the Las Vegas Field Office are managed according to the goals, policies, and designations contained in BLM's 1998 Las Vegas Resource Management Plan (RMP).

Virtually all recreational activities on BLM lands depend on availability of access to recreational areas. Most visitors travel on previously used or designated motorized vehicle routes. BLM management of recreational activities, facilities, and visitor participation focuses on organized OHV events, permitted commercial and organized activities (bighorn sheep hunts, trail rides, vision quests), visiting specific local wildlife conservation sites (BLM 2002), and land-sailing and other wind-powered sports. Other recreational uses in the area include hunting, recreational shooting, and rock hounding. Occasionally, organized, permitted, motorized or non-motorized touring activities are authorized in the area (BLM 2002).

The CDCA Plan includes a Recreation Element that outlines approved recreational uses and designates specific recreational areas. Recreational activities identified in this element include dispersed recreation, nature study, hiking, and OHV use (within designated routes). The Las Vegas RMP also lists approved dispersed recreational activities, including caving, photography, automobile touring along public roads, backpacking, bird watching, hunting, primitive camping, hiking, rock climbing, OHV uses, and some water-based recreation. In addition, the Las Vegas RMP lists organized recreational activities, including model airplane fly-ins, rocketry events, dog field trials, horseback riding, bicycle events, and organized OHV events (BLM 1998). Both the CDCA Plan and the Las Vegas RMP designate specific areas as developed recreation areas, such as non-motorized trails, natural areas, and OHV routes. The proposed project traverses BLM-managed land included in the Northern and Eastern Mojave (NEMO) Management Plan, an amendment to the 1980 CDCA Plan. Recreational activities managed under the NEMO plan include OHV organized events, open areas, permitted commercial and organized activities such as bighorn sheep hunts and trail rides (BLM 2002), and land-sailing events on Ivanpah Dry Lake.

Wilderness Areas

The BLM manages congressionally designated wilderness and wilderness study areas within the NEMO planning area consistent with the California Desert Protection Act of 1994, the administrative instruments (regulations, policies, and so forth) from that statute, and other applicable federal statutes. These statutes identify management direction for these lands with respect to specific uses that may occur within a wilderness area (BLM 2002). The NEMO planning area encompasses all or portions of 24 areas of designated wilderness totaling 1,225,000 acres, eight wilderness study areas totaling 200,000 acres, and approximately 475,000 acres of "released lands." Wilderness areas traversed by the proposed project are discussed in detail in Section 3.4, "Biological Resources." Recreational uses allowed within wilderness areas include sightseeing, bird/wildlife viewing, photography, and hiking (BLM 2002).

Lake Beds

Dry lake beds provide the open space and smooth surfaces needed for such activities as land-sailing, model rocket and airplane flying, and hang gliding (BLM 2002). In addition to recreational activities occurring on lake beds, applications for filming and research are processed annually, particularly at Ivanpah and Silurian dry lakes (BLM 2002).

Ivanpah Dry Lake Recreation Area

Ivanpah Dry Lake is just off of Interstate 15 (I-15) at the California/Nevada border, close to hotels, restaurants, and casinos. Ivanpah Dry Lake is a popular recreation destination for several kinds of recreational activities, including long-distance archery, kite buggying, and kite demonstrations. BLM issues approximately 250 casual use permits per year for recreational activities on Ivanpah Dry Lake (BLM 2009). Ivanpah Dry Lake has been specifically designated for non-motorized open-space recreational activities in the BLM's CDCA Plan. The lake bed is closed to motorized vehicles, except by permit, to prevent damage from other activities that could interfere with international wind-dependent events. The project would cross the Ivanpah Dry Lake Recreation Area within a BLM-designated utility corridor on an existing ROW between MPs 28 and 31.5. Transmission Alternative Route D would cross the Ivanpah Dry Lake Recreation Area within a BLM-designated utility corridor between Alternative D MPs 2 and 3.25, where it would reconnect with the proposed route's corresponding MP 30.

The Ivanpah Desert Wildlife Management Area (DWMA), a critical biological habitat area established by the BLM, encompasses Ivanpah Dry Lake and is south of the proposed project and alternatives and east of I-15. Staging areas that allow camping have been identified in this southern region overlay; however, land-sailing is not permitted. Land-sailing is permitted both within and outside the DWMA; however, staging activities associated with land-sailing events are prohibited inside the DWMA. South of the dry lake bed, the area is primarily used for very low-level, widely dispersed motorized recreational activities (BLM 2002).

Jean/Roach Dry Lake Recreation Area

Jean/Roach Dry Lake Recreation Area provides opportunities for casual use and other types of recreation, including motorcycling, all-terrain vehicle and 4 x 4 driving, horseback riding, mountain biking, small-game hunting, and organized racing events (BLM 2007). The EITP crosses BLM lands designated for this purpose within the CDCA.

Recreational Activities and Vehicle Access

The BLM has identified specific roads and trails where some type of motorized vehicle use is appropriate and allowed either seasonally or year-round. Primary uses include low-level, widely dispersed (i.e., recreation that occurs outside of developed sites) motorized recreational activities. The area is primarily a touring through-area rather than a destination for the general public because it provides a gateway from the east to the Mojave National Preserve. Other recreational uses in the area include hunting, recreational shooting, and rock hounding (BLM 2002).

Casual-use vehicle touring is one of the most popular forms of recreation in the NEMO planning area. Small informal group events occur on a regular basis throughout the planning area and are generally related to rock and mineral collection, bird watching, equestrian use, OHV touring, wind-driven vehicle use, camping, and hiking (BLM 2002).

There are about 100 permitted organized competitive vehicle events, involving about 25,000 participants, held each year in the CDCA. In the past only about 5 percent of the total number of yearly participants took part in the long distance point-to-point events (BLM 2002).

Boulder City Annexation

The Boulder City Annexation, in Clark County, is crossed by Transmission Alternative Routes A and B and contains areas of desert land as well as utilities and energy facilities. The Boulder City Master Plan designates this area as Energy, Utility, and Preserve, which allows recreation on designated recreation trails.

Private Recreational Areas

Private recreational areas are commercial operations on private property. The Primm Valley Golf Club is an example of a private recreation site within the project area. Commercial resort facilities in Primm include casinos, swimming pools, and a roller coaster.

3.12.2 Applicable Laws, Regulations, and Standards

The following section provides a summary of federal, state, and local laws, regulations, and standards that govern recreational resources in the project area.

3.12.2.1 Federal

California Desert Conservation Area Plan of 1980, as amended

The EITP crosses BLM lands designated as within the CDCA. The Recreation Element of the CDCA plan includes guidelines and requirements for recreational activities such as maintaining opportunities for recreational activities, minimizing land-use conflicts, accommodating visitors, and increasing public awareness of sensitive desert resources in the CDCA Planning Area (BLM 1980).

The 2002 NEMO Management Plan (BLM 2002a), an amendment to the 1980 CDCA Plan, sets guidelines and requirements for protection and preservation of CDCA lands, specifically in the northern and eastern Mojave Desert in southeastern California, which is crossed by the EITP. Provisions of the CDCA and NEMO plans are administered by the BLM.

Las Vegas Resource Management Plan, as Amended

The EITP crosses BLM lands managed under the Las Vegas RMP (BLM 1998). The RMP provides a comprehensive framework for managing resources within the planning area managed by the BLM Las Vegas Field Office, including maintaining opportunities for recreation as well as managing open spaces, trails, and parks and maintaining areas for OHV events on BLM lands. Provisions of the Las Vegas RMP are administered and enforceable by the BLM.

3.12.2.2 State of California

The EITP would be exempt from local land use and zoning laws, ordinances, regulations, and standards in California; however, in compliance with CPUC regulations requiring the utility to consult with local agencies on land use matters, SCE considered local land use plans. SCE reviewed the San Bernardino County land use plan described below.

County of San Bernardino 2007 General Plan

The EITP would cross lands in San Bernardino County that are managed under the 2007 General Plan. The plan covers standards and policies for unincorporated areas within San Bernardino County.

3.12.2.3 State of Nevada

In Nevada, the EITP would cross Clark County and several unincorporated, populated areas.

The 2003 Nevada Statewide Comprehensive Outdoor Recreation Plan

The EITP would cross lands in the State of Nevada subject to the management goals provided in the Nevada Statewide Comprehensive Outdoor Recreation Plan (SCORP), developed by the Nevada Division of State Parks to increase and improve the quality of outdoor recreation opportunities in Nevada. Although the SCORP does not issue requirements for compliance with its management goals, it describes recreational needs and issues for the state and provides strategies for improving the quality of recreational outlets based on the needs of the population (Nevada Division of State Parks 2003).

Nevada Revised Statutes

The EITP would cross lands in the State of Nevada subject to Nevada Revised Statute (NRS) 501, supplemented by the Nevada Administrative Code, a Nevada state law that covers administration and enforcement of wildlife resources within the state. NRS 501 states that "the preservation, protection, management and restoration of wildlife within the State contribute immeasurably to the aesthetic, recreational and economic aspects of these natural resources" (NRS 501.100). NRS 455B.490 addresses the effect of provisions governing recreational areas on local ordinances and laws and regulations of the State of Nevada and does not prohibit "a county, city or unincorporated town from adopting ordinances that regulate a recreation area which are consistent with the provisions of NRS 455B.400 to 455B.490, inclusive." Provisions of the NRS are administered and enforceable by the State of Nevada.

3.12.2.4 Regional and Local

San Bernardino County

The EITP would cross lands in San Bernardino County that are managed under the San Bernardino County General Plan. Recreational facilities in San Bernardino County are managed by the Regional Parks Department; recreation goals and policies are outlined in the San Bernardino County General Plan's Land Use and Open Space Elements (San Bernardino County 2007).

Clark County

The EITP would cross lands in Clark County that are managed under the Clark County Comprehensive Plan. The Plan's Recreation Element outlines standards and policies for county-managed parks, trails, and open spaces. Recreational areas and facilities designated under these plans are managed by the Clark County Parks and Community Services Department.

Boulder City Conservation Easement

The EITP would cross lands within the Boulder City Conservation Easement (BCCE), a high-priority conservation area in which development is severely limited. Established by the City of Boulder City (City of Boulder City 1994), the BCCE allows for passive use of land, including hiking and sightseeing. Regulations of the BCCE are enforceable under Boulder City Ordinance #972, Title 7, Chapter 5 (7.5-8), which lists prohibited activities, including traveling on a closed road and camping, within the easement.

3.12.3 Impact Analysis

This section defines the methodology used to evaluate impacts on wilderness areas and other resources providing recreational opportunities, including CEQA impact criteria. Definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. A NEPA impact summary statement and CEQA impact determinations are provided at the conclusion of the discussion. For mitigation measures, refer to Section 3.12.4.

3.12.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects on wilderness and recreation resources would result from the project, and explains the significance of those effects in the project area (40 Code of Federal Regulations [CFR] 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

Under NEPA, the proposed project would have an adverse impact if it would disrupt access to existing recreation opportunities and/or reduce the number of Special Recreation Permits.

3.12.3.2 CEQA Impact Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated,

b. include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment; or

c. disrupt access to existing recreation opportunities.

3.12.3.3 Methodology

To determine impacts that would result from construction, operation, and maintenance of the EITP on recreational opportunities in wilderness areas, the existing environment for recreation and wilderness resources within 0.5 miles of the proposed project area were evaluated against the NEPA and CEQA impact criteria noted above in Sections 3.12.3.1 and 3.12.3.2, respectively. Locations of recreational opportunities and wilderness areas were identified through several sources, including SCE (2009), U.S. Geological Survey topographic maps, BLM management plans, and consultation with wilderness and recreation specialists from the BLM Needles and Las Vegas field offices.

3.12.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measure (APM) related to recreation:

APM REC-1: Recreation Area Closures. When temporary short-term closures to recreational areas are necessary for construction activities, the applicant would coordinate those closures with recreational facility owners. To the extent practicable, the applicant would schedule construction activities to avoid heavy recreational use periods (e.g., holidays or tournaments). The applicant would post notice of the closure on site 14 calendar days prior to the closure.

3.12.3.5 Proposed Project / Proposed Action

Construction

During construction, the project could impact experience of recreational activities within the project area due to restricted access and/or disruption of recreational uses in certain areas. For example, there are four annual races that use trails in the Jean/Roach Dry Lake SRMA that could be affected by construction of the proposed project. These races are the Battle at Primm, the SNORE 250, the SCORE Terrible's Primm 300, and the Henderson Fabtech Desert Classic. The Battle at Primm race occurs annually in February, typically has around 270 participants, and attracts over 6,000 people. The 36-mile SNORE 250 race typically takes place annually in October, has between 90 and 120 racers, and attracts around 4,000 people (Cox 2009). The 69-mile SCORE Terrible's Primm 300 race occurs annually in September, the first weekend after Labor Day, typically has about 150 racers, and attracts over 10,000 people. Finally, the Henderson Fabtech Desert Classic race typically takes place annually in December, typically has approximately 120 racers, and attracts over 2,000 people (Best in the Desert 2010).

An approximately 5-mile-long segment of the proposed project route would be constructed within 0.5 miles of Roach Dry Lake and would cross the Ivanpah Dry Lake Recreation Area between MPs 28 and 31.5. Access to the northeastern area of the Ivanpah Dry Lake Recreation Area would therefore be temporarily restricted during transmission line construction. During the construction period, recreational users would not be allowed access to the construction right-of-way (ROW). To reduce impacts, the applicant would coordinate closures with recreational facility owners and schedule construction activities to avoid heavy recreational use periods to the extent practicable (APM REC-1). Also, the applicant has stated that they would post notices of closures on site 14 days prior to the closure. Implementation of MM REC-1 would further reduce impacts by limiting construction workspace, such as contractor yards, in wildlife and recreational areas.

For a discussion of visual impacts on recreational users within the project area, see Section 3.2, "Aesthetics and Visual Resources."

Operation and Maintenance

Because the proposed project is replacing an existing transmission line in a designated ROW, impacts during operation and maintenance would be similar to current operations. Therefore, operation and maintenance activities would not affect recreation.

Dry Lake Reclamation

Disturbance to dry lakes resulting from EITP construction, operation, and maintenance activities could include water flow modification that could alter dry lake surfaces, changes in the visual character of a dry lake, debris and waste introduced to dry lake surfaces, and modification of existing wind characteristics that could affect the experience of wind recreationists (e.g., wind sailing activities). The applicant has incorporated the following APMs to reduce impacts and adverse effects to the existing natural setting, including dry lake surfaces: AES-4, BIO-2, GEO-3, W-2, W-4, W-6 through W-9, and W-14. In addition, the following MMs, developed specifically to address site reclamation, would reverse disturbance to dry lakes resulting from the EITP to the greatest extent possible: MM BIO-2 (Vegetation and Soils Restoration), MM BIO-3 (Restoration Plan), and MM W-4 (Dry Lake Restoration Plan), if implemented.

NEPA Summary

The proposed project would cross the Jean/Roach Dry Lake Recreation Area between MPs 10 and 27.5. Construction of the transmission line would temporarily restrict access to several trail segments in the Jean/Roach Dry Lake Recreation Area; however, as part of the project (APM REC-1), the applicant would coordinate closures of recreational facilities with the facility owners and would schedule construction to avoid heavy use periods. Additionally, MM REC-1 would further reduce the impact to recreational users by requiring the applicant to locate extra workspace areas outside of Recreation Areas. Therefore, construction activities would be limited to the construction ROW and would be minor, short term, localized, and negligible. No additional impacts to recreation or wilderness areas would occur as a result of project construction or as a result of operation and maintenance of the substation or telecommunications line.

CEQA Significance Determinations

IMPACT REC-1: Disruption of Access to Existing Recreation Opportunities
Less than significant with mitigation

Construction of the transmission line would temporarily restrict access to several trail segments in the Jean/Roach Dry Lake Recreation Area; however, construction activities would be temporary and limited to the construction ROW. With implementation of APM REC-1, recreational facility closures would be coordinated with facility owners and construction would be scheduled to avoid heavy recreational use periods. Additionally, implementation of MM REC-1 would require the applicant to locate extra workspace areas outside of Recreation Areas, limiting construction activities to the construction ROW. Therefore, with implementation of APM REC-1 and MM REC-1, impacts to recreational opportunity access resulting from construction of the EITP would be less than significant.

NO IMPACT. Increased Use of Recreational Facilities. A maximum of 100 workers would be involved in construction at any one location at any one time. Construction workers would be working at several locations (spreads) along the proposed project route and could use nearby recreational facilities. Recreational facilities in the vicinity of the project may see an increase in use, but due to the small number of construction workers, this increase would not result in substantial physical deterioration of any recreational facilities in the region or the acceleration of the physical deterioration of those facilities; therefore, there would be no impact under this criterion.

NO IMPACT. New Recreational Facilities*.* The proposed project would not include the construction or expansion of recreational facilities; therefore, there would be no impact to recreation for this criterion.

3.12.3.6 No Project / No Action Alternative

Under the No Project Alternative, the proposed project would not be constructed. Therefore, there would be no adverse impact on wilderness or recreational areas.

3.12.3.7 Transmission Alternative Route A

Transmission Alternative Route A would bypass a segment of line that runs north and south near MP 2.0, approximately 0.83 miles in the Boulder City Conservation Easement, outside of the BLM-designated corridor as discussed in Section 3.9, “Land Use.” The potential construction and operation impacts on wilderness areas and recreational opportunities of this alternative would be similar to those associated with the proposed project.

3.12.3.8 Transmission Alternative Route B

Transmission Alternative Route B would bypass a segment of line that runs north and south near MP 2.0, approximately 0.83 miles in the in the Boulder City Conservation Easement, outside of the BLM-designated corridor as discussed in Section 3.9, “Land Use.” The potential construction impacts on wilderness areas and recreational opportunities of Transmission Alternative Route B are similar to those associated with the proposed project.

3.12.3.9 Transmission Alternative Route C

Transmission Alternative Route C would begin at the Eldorado Substation and follow the proposed route to the point where the line would reach the northeastern edge of Ivanpah Dry Lake (MP 28.5). This alternative, approximately 5.2 miles in length, would cross BLM land. Alternative C would be within 0.5 miles of and adjacent to Ivanpah and Roach dry lakes and would also be within 0.5 miles of Primm. This alternative would have construction impacts on wilderness areas and recreational opportunities similar to those associated with the proposed project, but this alternative would avoid construction impacts on Ivanpah Dry Lake. Construction impacts would be negligible and less than significant. There would not be any operational impacts associated with this alternative.

3.12.3.10 Transmission Alternative Route D and Subalternative E

Transmission Alternative Route D would begin at the Eldorado Substation and follow the proposed route to the point where the line would reach the northeastern edge of Ivanpah Dry Lake (MP 28). The line would be re-routed west and southwest on a new 130-foot ROW through the Ivanpah Dry Lake for approximately 3.3 miles before rejoining the existing ROW at MP 30. The line would parallel the Los Angeles Department of Water and Power (LADWP) Marketplace–Adelanto 500-kV transmission line as it crosses through Ivanpah Dry Lake. This alternative would cross BLM land for 3.2 miles and a northern portion of Ivanpah Dry Lake for approximately 1.0 mile, and would be within 0.5 miles of Roach Dry Lake and Primm. Subalternative E would cross private land for 0.7 miles, within 0.5 miles of BLM lands.

Both Alternative D and Subalternative E would reduce the overall transmission footprint, since the EITP towers would follow to the extent feasible the existing LADWP 500-kV ROW. Reducing the transmission footprint across the Ivanpah Dry Lake would leave more open space for recreation which would lessen the EITP's impact on recreation.

Construction of Alternative D would temporarily restrict access to the northwestern area of the Ivanpah Dry Lake Recreation Area, resulting in a short-term, moderate impact to the Ivanpah Dry Lake Recreation Area. Implementation of MM REC-1 would prevent construction activities from occurring during peak recreational use of the Recreation Area. This would reduce impacts, which would be adverse and unavoidable, to the Ivanpah Dry Lake Recreation Area to short term and minor. With this mitigation, the impact would be less than significant. Operational impacts associated with Alternative D and Subalternative E would be negligible.

3.12.3.11 Telecommunication Alternative (Golf Course)

The potential construction impacts on wilderness areas and recreational opportunities of the Golf Course Telecommunication Alternative would be similar to those associated with the proposed project. This alternative would require construction underneath the golf course surface during installation of telecommunication wires in an underground duct. Construction activities would not prohibit or restrict access to the Primm Valley Golf Club but could result in temporary and minor impacts from noise and dust. Impacts would be minimized through coordination of construction activities with golf course management personnel. The impacts would be negligible and less than significant. There would not be any operational impacts associated with this alternative.

3.12.3.12 Telecommunication Alternative (Mountain Pass)

The potential construction and operation impacts on wilderness areas and recreational opportunities of the Mountain Pass Telecommunication Alternative would be similar to those associated with the proposed project.

3.12.4 Mitigation Measure

MM REC-1: Limit Construction Workspace in Wildlife and Recreational Areas. The applicant will not site extra workspace areas such as contractor yards in Recreation Areas to minimize impacts on recreational users during construction. MM REC-1 will not require any monitoring, reporting, or other similar action.

3.12.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to recreation in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM.

This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

3.12.5.1 ISEGS Setting

The ISEGS project would be located in the Ivanpah Valley on a site currently accessible to the public and used to access hiking, hunting, and/or viewing areas in the Clark Mountains; the Stateline and Mesquite Wilderness; the Primm Valley Golf Course; the Primm Casinos; or the Ivanpah Valley and playa (see Section 3.12.1.2). Roads within and adjacent to the ISEGS site are used annually for the Los Angeles, Barstow to Las Vegas Dual Sport Motorcycle Tour. The ISEGS Project would be located less than 2 miles west of the Ivanpah Dry Lake and about 4.5 miles southeast of Primm and would be within 0.5 miles of the Primm Valley Golf Course.

Applicable Laws, Regulations, and Standards

The ISEGS project lists the Federal Land Policy and Management Act, the CDCA Plan, and the NEMO Management Plan as applicable to the proposed project (see Section 3.12.2). Because the ISEGS would be under the authority of the CEC, unlike the EITP, the FSA/DEIS lists the Warren-Alquist Act. Section 25529 of this act gives statutory authority to the CEC to require, as a condition of certification, that an area be established for public use when a facility is proposed to be located in the coastal zone or any other area with recreational, scenic, or historic value.

3.12.5.2 ISEGS Methodology

The ISEGS FSA/DEIS evaluated whether the proposed project and alternatives would generate a potentially significant impact on recreational resources under CEQA against checklist questions posed in the 2006 CEQA Guidelines, Appendix G (see Section 3.12.3.2). Under NEPA, the ISEGS FSA/DEIS assessed the significance of the proposed project's impact on recreational resources against NEPA-implementing regulations at 40 CFR 1508.27 (see Section 3.12.3.1).

3.12.5.3 ISEGS Impacts

The CEC and BLM staff determined that construction, operation, and decommissioning of the ISEGS project could impact recreational resources, particularly on Ivanpah Dry Lake. Where impacts were identified, the CEC and BLM staff proposed mitigation measures to reduce impacts to less than significant levels.

The CEC and BLM have published the impacts discussed below related to recreation for the ISEGS project.

Construction Impacts

Construction of the ISEGS project could have a direct impact on recreational use of Ivanpah Dry Lake for land-sailing events if the facility resulted in any of the following effects: modification of water flow and sedimentation rates on the dry lake surface; or introduction of foreign materials (garbage, debris, or hazardous materials) to the lake surface; modification of wind characteristics. A direct impact could also result if the visual character of the facility were to present a distraction that could cause either a nuisance or a safety hazard for wind-sailors.

The ISEGS FSA/DEIS concludes that the ISEGS project is not expected to have significant impacts on recreational resources within the proposed project boundaries and would be unlikely to notably impact the characteristics of wind or the Ivanpah Dry Lake surface, which affects its use for land-sailing, with the implementation of suggested mitigation measures. However, there would be adverse impacts on recreational resources outside of the project boundaries because the quality of the outdoor setting would be diminished. Although the FSA/DEIS concludes that such impacts would be adverse, they are not expected to result in a decrease in recreational use of the area because users are generally focused on a specific recreational activity (e.g., land-sailing on Ivanpah Dry Lake, rock climbing on Clark Mountain, or hiking and camping in BLM wilderness), which would continue to be available without interruption.

Operational Impacts

Impacts on recreation from the operation of the ISEGS would be similar to those discussed under Construction Impacts, above.

Decommissioning Impacts

Once the ISEGS generation plant operations end and all generation facilities and equipment were removed from the site, the site would be re-contoured and reclaimed to mirror the natural setting. Roads not needed for public access through the area would be reclaimed during this time; roads that would be used by the public would remain open to vehicular use. Decommissioning of ISEGS would restore the ISEGS site to its former "natural" setting and the land would revert to pre-construction status, allowing the same types of pre-construction dispersed recreational uses.

3.12.5.4 ISEGS Conditions of Certification/Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to recreational resources if the project is approved:

REC-1: Prior to the start of construction and in conformance with § 25529 of the Warren-Alquist Act, the project owner shall prepare plans for a Solar/Ecological Interpretive Center to be developed in the ISEGS Construction Logistics Area and submit the plans to BLM's Authorized Officer and the CPM for review and approval. The plans shall propose a location that, if possible, provides a vantage point to observe as many features as possible of the ISEGS project without compromising ISEGS security requirements.

Additionally, ISEGS proposes the following mitigation measures to reduce impacts on Ivanpah Dry Lake: HAZ-1 through HAZ-6, WASTE-1 through WASTE-7, and SOIL&WATER-5.

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3.13 Socioeconomics, Population and Housing, and Environmental Justice

This section describes the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the EITP and alternatives with respect to socioeconomics, population and housing, and environmental justice.

3.13.1 Environmental Setting

The EITP area comprises areas of Clark County, Nevada, and San Bernardino County, California. This area includes the community of Boulder City, Nevada, and the townships of Primm, Nevada and Nipton, California. The proposed transmission line route begins southwest of Boulder City, Nevada at the existing Eldorado Substation. The route would cross through Primm, Nevada and the Ivanpah Dry Lake and end at the proposed Ivanpah Substation in San Bernardino County (Figure 1-1) northwest of Nipton. Socioeconomic baseline data characterizing these communities is provided below.

3.13.1.1 Regional Setting

The EITP would be located in the Mojave Desert of southern California and Nevada. The construction, operation, and maintenance of new and upgraded transmission facilities would span approximately 28 miles in southern Clark County and 7 miles in northeastern San Bernardino County. For the purpose of this analysis, the discussion focuses on two distinct regional areas that comprise the EITP area: (1) the Clark County Region and (2) the San Bernardino County Region. The boundaries for each of these regions are described below. In San Bernardino County, California, elements of the EITP would be constructed in the immediate vicinity of unincorporated Mountain Pass, Nipton, and Wheaton Springs. In Clark County, Nevada, elements would be constructed in Primm and southwest of Boulder City. Additional unincorporated areas that are in the EITP area include Goodsprings, Jean, Ripley (Sandy Valley), and Searchlight in Clark County, Nevada. In addition to incorporated and unincorporated county and city land, the right-of-way (ROW) for the EITP also traverses private land in both California and Nevada and land managed by the BLM.

Table 3.13-1 provides regional population and density data. Table 3.13-2 shows the demographic make-up of the two regional areas under evaluation. San Bernardino County has 24 incorporated cities and Clark County has five. To characterize population, housing, median household income, current and projected population growth, housing stock, and industry data are summarized for each regional area. The percentage of individuals below the poverty level is provided to give an indication of the socioeconomic variables needed to analyze environmental justice for the proposed project.

Table 3.13-1 Regional Population and Density

	Clark County, Nevada	San Bernardino County, California
Population, 2000	1,375,765	1,709,434
Population Estimate, 2008	1,865,746	2,015,355
Change in Population April 1, 2000 to July 1, 2008	35.6%	17.9%
Average Annual Growth Rate (2000–2008)	4.5%	2.24%
Housing Units, 2008	810,602	687,352
Land Area (square miles), 2000	7,910.34	20,052.50
Persons per Square Mile, 2000	173.9	85.2

Source: U.S. Census Bureau 2009

Table 3.13-2 Regional Population Demographics 2006–2008

Total Population	Clark County, Nevada	San Bernardino County, California
Gender		
Male	50.9%	50.2%
Female	49.1%	49.8%
Race		
White	71.8.5%	60.4%
Black	9.6%	8.8%
American Indian and Alaska Native	0.7%	1.0%
Asian	7.1%	5.9%
Native Hawaiian and Other Pacific Islander	0.6%	0.3%
Persons reporting two or more races	3.3%	4.1%
Hispanic or Latino	27.7%	46.7%
White persons not Hispanic	53.2%	37.2%
Disability		
Persons with a disability, age 5+	264,470	302,693
Socioeconomics		
Median household income	$59,954	$56,575
Per capita income	$28,138	$22,243
Poverty		
Percentage of individuals below poverty level	10.5%	13.4%

Source: U.S Census Bureau 2009
Note: The columns do not total 100% because the total varies depending on the categories selected.

In late 2007 and early 2008 as the effects of the global financial crisis began to affect the world's economies, an economic downturn became evident in the United States. This has affected economic growth, resulting in a reduction in employment and housing development in many areas. Both Clark County and San Bernardino County have been affected by increasing unemployment and decreasing housing development and population growth.

3.13.1.2 Clark County

The EITP transmission line route and its alternatives would follow a BLM-designated utility corridor through the Boulder City Conservation Easement (from Milepost [MP] 0 to 7) and would continue southwest toward Primm, Nevada, and unincorporated areas in Clark County. The County encompasses 7,910.34 square miles of land area and had a population density of 173.9 persons per square mile in 2008 (U.S. Census Bureau 2009)—an increase of 26.2 percent between 2000 and 2008, from 1.4 million to 1.86 million people (U.S. Census Bureau 2009). Prior to the economic downturn, the Clark County Comprehensive Plan (CCCP) projected that the population would grow rapidly, increasing to almost 3,000,000 by the year 2020—an increase of almost 69 percent (Clark County 2006b). This projected growth implies an annual average growth rate of 3.3 percent. It is reasonable to expect that after the economic downturn the population will grow, but it is difficult to determine if growth will correspond with CCCP projections.

Population and Housing Characteristics: Clark County, Nevada

The following section describes additional population and housing characteristics in the Clark County region. Table 3.13-3 compares population and housing trends in the Clark County region from 2000 to 2030. The information presents current population estimates and projections for Clark County and for cities (both incorporated and unincorporated) within the proposed project area. The following data were extracted from the CCCP and the Clark County 2030 Population Forecast developed by the University of Nevada, Las Vegas, Center for Business and Economic Research. The estimated population increase for Clark County is expected to be approximately 58 percent between 2000 and 2010, an approximate average annual growth rate of 5.8 percent. Projections for growth were not available for the smaller jurisdictions of Boulder City, Jean, and Primm.

Table 3.13-3 Projected Population Trends, Clark County Region 2000–2030

	2000 Census	**2010 Projection**	***Projected Growth*, 2000–2010 Change** (Number of People, %)		**2020 Projection**	***Projected Growth*, 2010–2020 Change** (Number of People, %)		**2030 Projection**	***Projected Growth*, 2020–2030 Change** (Number of People, %)	
Clark County, NV	1,375,765	2,253,000	877,235	64%	2,978,000	725,000	32%	3,454,000	476,000	16%
Boulder City, NV	15,551	18,000	2,449	16%	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Jean, NV	600	915	315	53%	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*
Primm, NV	261	1,060	799	306%	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*

Sources: University of Nevada, Las Vegas (Center for Business and Economic Research); Clark County 2006b; Nevada Small Business Center, Nevada State Demographer 2009.

As discussed above in Section. 3.13.1.1, both home sales and values have been trending downwards in the region in the last two years. Table 3.13-4a presents existing housing market information for the EITP area for 2000. More recent values (2006–2009) were obtained from the Nevada Association of Realtors for the greater Las Vegas metropolitan area; these trends are shown in Table 3.13-4b.

Table 3.13-4a Clark County Housing, 2000

Location	**Total Housing Units, 2000**	**Median Value of Owner-Occupied Homes, 2000**	**Vacancy Rates [1], 2000**	**Housing Units, 2008 (Clark County) Total Units**
Clark County	559,799	$139,000	6.15	784,688
Boulder City	6,385	$172,500	5.8	6,787
Jean, NV	0	N/A	N/A	0
Primm, NV	684	N/A	N/A	684

Source: U.S. Census 2000, Clark County 2006c
Note:
[1] Census data average of homeowner and rental vacancy rates for Clark County (2.6% to 9.7%, average 6.15%) and Boulder City (2.1% to 9.5%, average 5.8%).

Table 3.13-4b Recent Trends in Median Single Family Home Prices in the Greater Las Vegas Metropolitan Area

Year	Median Home Price
2006	$317,400
2007	$297,700
2008	$220,500
2009 (1st & 2nd quarter)	$141,800
2009 (Boulder City, NV)	$153,282
Percent Change in Median Home Sales Prices	
Jan 2008–May 2009	-39.7%
Jan 2008–May 2009 (Boulder City)	-12.37%

Source: Nevada Association of Realtors

Local Economy and Workforce Characteristics: Clark County, Nevada

Table 3.13-5 provides Bureau of Labor Statistics' employment data for Clark County. In September 2009, the region as a whole had more than 1,011,538 workers. Construction, leisure and hospitality, retail trade, and services are the largest employment sectors for the region. The region has been severely affected by the recent economic recession and the Clark County unemployment rate increased from 6.6 percent in 2008 to 12.1 percent in November 2009.

Table 3.13-5 Clark County Employment Characteristics in 2008

Industry	Employment
Agriculture (private)	124
Construction (private)	92,364
Manufacturing (private)	25,363
Wholesale trade (private)	23,893
Retail trade (federal, private)	100,118
Transportation and warehousing (federal, private)	37,477
Information (local, private)	11,827
Finance, insurance (federal, private)	26,630
Professional and business services (federal, private)	111,680
Educational and health services (federal, state, private)	77,818
Leisure and hospitality (federal, state, private)	269,806
Other services (except public administration)	20,738
Public administration (federal, state, local)	39,451
Total employed, all industries	905,267
Unemployment (November)	118,986 (12.1%)

Source: Bureau of Labor Statistics 2008

3.13.1.3 San Bernardino County

San Bernardino County extends from the Nevada border on its eastern boundary to Los Angeles County on the western boundary. This area includes the EITP segments that would traverse parts of the unincorporated areas of Mountain Pass and the town of Nipton. San Bernardino County encompasses 20,052.50 square miles of land and has a population density of 85.2 persons per square mile (U.S. Census Bureau 2009). The western part of San Bernardino County is more densely populated than the eastern part, which includes the EITP area; the EITP area of the county is more rural.

Population and Housing Characteristics: San Bernardino County, California

The population of San Bernardino County was projected to increase by 35.6 percent between 2000 and 2010, from 1.7 million in 2000 to 2.1 million in 2010, according to the U.S. Census Bureau. The San Bernardino County General Plan (San Bernardino County 2007) also projects population growth, to over 2,830,000 by the year 2020, an increase of almost 60 percent. Although this projected growth rate has clearly been affected by the economic downturn of the last two years, it is anticipated that population growth will resume as the economy recovers and will eventually match current projections. Tables 3.13-6 and 3.13-7 provide population and housing demographic data for San Bernardino County.

Table 3.13-6 San Bernardino County Projected Population Trends, 2000–2030

2000 Census	2010 Projection	Projected Growth, 2000–2010 Change (Number of People, %)		2020 Projection	Projected Growth, 2010–2020 Change (Number of People, %)		2030 Projection	Projected Growth, 2020–2030 Change (Number of People, %)	
Regional Population and Growth Projections									
1,709,434	2,133,377	423,943	25%	2,456,089	322,712	15	2,762,307	296,218	12
Household Projections									
1,664,402	2,008,900	344,498	21%	Not Available	Not Available		Not Available	Not Available	

Source: CDF 2007, U.S. Census 2009

Table 3.13-7 San Bernardino County Housing, 2000 and 2008

U.S. Census (2000) Total Housing Units	Median Value of Owner-Occupied Homes	Vacancy Rates	CDF (2008) Total Units
667,836	$150,000*	11.5%	778,245

Source: U.S. Census 2009 (based on data from 2000), CDF 2009

Notes:

CDF = California Department of Finance

* Value is from the California Association of Realtors Median Price of Existing Single-Family Homes October 2009 data set. The value is 26.2% lower than in October 2008 ($203,211).

For the purposes of the analysis, the population growth projections of Mountain Pass and Nipton are considered as unincorporated areas of San Bernardino County and included in the San Bernardino County population. The Southern California Association of Governments (SCAG) projects a total increase in population from 2010 to 2030 equal to 775,704 or a 35.5 percent increase.

Current housing conditions within the San Bernardino County Region are shown in Table 3.13-7. There were 667,836 total housing units with 76,801 of these units vacant, creating a vacancy rate of 11.5 percent.

Local Economy and Workforce Characteristics: San Bernardino County, California

As discussed in Section 3.13.1.1, employment and population growth have been trending downwards within the region in the last two years. The San Bernardino County unemployment rate increased from 8 percent in 2008 to 13.8 percent in September 2009.The labor force characteristics of the EITP regional area for San Bernardino County are part of the Riverside-San Bernardino-Ontario Metropolitan Statistical Area as defined by the U.S. Census Bureau. Table 3.13-8 provides employment data for San Bernardino County based on the Bureau of Labor Statistics Quarterly Census of Employment and Wages. In September 2009, the region as a whole had 867,057 workers in its labor force.

Table 3.13-8 San Bernardino Employment Characteristics in 2008

Industry	Employment
Agriculture (private)	2,816
Construction (private)	35,973
Manufacturing (private)	58,144
Wholesale trade (private)	34,607
Retail trade (federal, private)	85,884
Transportation and warehousing (federal, private)	44,863
Information (local, private)	7,543
Finance, insurance (private)	15,662
Professional and business services (federal, local, private)	79,093
Public administration (federal, state, local)	36,190
Total employed, all industries	649,531
Unemployment (November)	120,453 (13.8 %)

Source: Bureau of Labor Statistics 2008

3.13.1.4 Environmental Justice: Racial Composition and Minority Populations

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," mandates that each federal agency ensure that achieving environmental justice is part of its mission by identifying and addressing as appropriate "disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations" (Council on Environmental Quality [CEQ] 1997). In accordance with guidance from the CEQ, the demographic assessment for the EITP identifies minority or low-income populations or both within a 5-mile radius of the proposed route. CEQ states that "minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent, or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis" (CEQ 1997). Although not required under CEQA, environmental justice is assessed for purposes of BLM's analysis of the EITP under NEPA.

The racial composition of each county, municipality, and census tract near the EITP was assessed to determine whether these communities were composed of significantly higher proportions of minority and low-income populations compared with surrounding areas. According to Environmental Justice: Guidance under the NEPA, minority individuals are defined as members of the following ethnic groups: American Indian or Alaskan Native, Asian or Pacific Islander, African American, not of Hispanic Origin, or Hispanic.

The purpose of this analysis of environmental justice is to determine whether there is disproportionate representation of minority or low-income populations within a potentially affected the EITP area. The EITP would cause environmental justice impacts if it were to cause disproportionately high and adverse impacts on an existing minority or low-income population. This analysis was conducted in accordance with the document, "Final Guidance for Incorporating Environmental Justice Concerns," in "U.S. EPA's National Environmental Policy Act Compliance Analysis" (Unites States Environmental Protection Agency April 1998). For this analysis, populations were defined as "minority" if:

- The minority population of the affected area is greater than 50 percent of the affected area's general population; or
- The percentage of minorities in the area's population is meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis.

The steps recommended by the above-mentioned guidance documents to assure compliance with the Executive Order are: (1) outreach and involvement; (2) screening-level analysis to determine the existence of a minority or low-income population; and (3) if warranted, a detailed examination of the distribution of impacts on segments of the population. Implementation of this environmental justice analysis demonstrates a concerted effort to comply with the Executive Order.

Demographic data were gathered for census tracts that would be crossed by the transmission line and also those within a 2-mile radius of the Ivanpah Substation. The census tract was determined to be an appropriate geographic unit because the presence of distinct minority communities would not be concealed or diluted by this level of aggregation. To assess the composition of the communities in immediate proximity to the transmission line, census tract, minority population proportions, and poverty indicators were reviewed. For the EITP, the total populations evaluated within the regional study areas were extrapolated from large U.S. Census blocks, which are approximately 65 miles wide and have captured populations extending throughout Clark County to include Boulder City and the southern Las Vegas. The only population along the proposed route is located at the Desert Oasis Apartment Complex in Primm, Nevada. The income and racial characteristics of this complex have not been identified; however, it does house casino and other service employees. Table 3.13-9 provides regional population demographics.

Environmental justice guidance defines “low-income population” using statistical poverty thresholds as defined by the U.S. Census Bureau. Poverty levels indicate the percentage of the population that has income below that necessary for basic necessities, such as adequate housing, food, transportation, energy, and health care. Table 3.13-9 shows the poverty level of the populations of San Bernardino and Clark counties for both counties and also by census tract. To determine whether the proposed project would affect low-income populations, the percentage of individuals in the areas affected by the proposed project is compared with county and state averages.

Table 3.13-9 shows the minority community proportion of the total population increasing toward the northeast within census tracts along the proposed transmission line route. The plot shows that some communities where the transmission line would be located have minority population aggregations that are in fact lower than county averages. The table also shows the county averages compared with the constituent census tracts.

In the State of California, approximately 14.2 percent of the population is below the U.S. Census Bureau’s defined poverty level. In Clark County, approximately 10.5 percent of the population is below the U.S. Census Bureau’s defined poverty level. In San Bernardino County, approximately 13.4percent of the population is below the U.S. Census Bureau’s defined poverty level. Within three of the census tracts in Clark County that could be affected by the proposed project, more than 20 percent of the population is below the defined poverty level, double the Clark County average of 10.5 percent.

3.13.1.5 Tourism

Las Vegas is a premier tourist destination, and McCarran International Airport has become a major aviation transportation hub in the southwestern U.S., necessitating future expansion in the form of the proposed Southern Nevada Supplemental Airport, which would be located between Jean and Primm. The communities of Primm and Nipton also derive income from tourism in the region as border cities between the states of Nevada and California. Primm attracts visitors to its casinos and shopping attractions and also benefits from tourism revenue generated by visitors to the Ivanpah Dry Lake. Nipton, also an unincorporated community, is considered a historic Mojave Desert town and is highly frequented by visitors to the Mojave National Preserve.

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Table 3.13-9 Racial Composition of Census Tracts Along the Proposed Project Route (2000)

From Milepost	To Milepost	Census Tract	Minority [a] (%)	White (%)	Black or African American Only (%)	American Indian and Alaska Native Only (%)	Asian Only (%)	Native Hawaiian and Other Pacific Islander Only (%)	Some Other Race Only (%)	Hispanic or Latino (%)	Two or More Races (%)	Below Poverty Level [b] (%)
San Bernardino County			53.5	44.0	8.8	0.6	4.6	0.3	0.2	39.2	2.5	13.4
82.88	87.08	012100	22.9	74.3	5.2	1.1	1.7	0.1	0.2	14.7	2.8	11.1
87.08	88.65	011900	30.8	66.9	2.3	1.3	1.3	0.3	0.3	25.3	2.3	13.3
89.45	96.69	011600	19.3	77.9	2.2	0.6	1.6	0.1	0.1	14.8	2.8	4.6
96.69	195.05	010300	37.8	57.7	12.8	1.2	2.3	0.8	0.3	20.5	4.5	3.6
Clark County			37.1	60.2	8.8	0.6	5.2	0.4	0.1	22.0	2.7	10.5
195.05	212.04	005703	33.6	64.4	13.4	0.6	5.0	0.2	0.0	14.4	2.0	17.6
212.04	223.63	005710	10.5	88.2	1.5	0.4	3.2	0.1	0.0	5.2	1.3	19.6
223.63	226.40	002815	15.8	82.6	1.8	0.6	5.7	0.4	0.4	6.8	1.6	17.9
226.40	229.76	005816	10.6	87.8	1.2	0.4	1.0	0.2	0.1	7.7	1.6	21.3
229.76	231.57	002963	10.7	87.0	1.7	0.8	1.8	0.0	0.1	6.2	2.3	20.4
231.57	233.46	002962	16.7	81.2	5.3	0.7	2.5	0.4	0.1	7.9	2.0	26.5

Source: U.S. Census Bureau 2000a
Notes:
[a] Minority aggregation includes the sum of Black, Asian, American Indian and Alaskan Native, Hawaiian and other Pacific Islander, and some other races.
[b] Taken from the 2006–2008 U.S Census Bureau 3-year estimates.

2
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The local economy in the vicinity of the transmission route depends primarily on the arts, entertainment, and recreation industries as sources of employment and tax revenues to support public services. The most recent data show that the region employed 28.8 percent of the labor force in hotel and gaming related activities (LVCVA 2008). Combined employment for resorts/casinos totaled 51,250, or 5.5 percent of the county total of 933,200 in 2008 (Clark County 2006a). About 39 million visitors came to the area in 2007. Tourists accounted for 33 million of this total (84 percent) while the remaining 6.2 million were convention delegates (16 percent). Visitors provide a substantial economic stimulus to the region through secondary effects from spending on goods and services. Visitors to Las Vegas contributed nearly $41.6 billion to the area economy in 2007. Gaming revenues alone were $11 billion in 2007 (LVCVA 2008).

3.13.2 Applicable Laws, Regulations, and Standards

The following section summarizes federal, state, and local laws, regulations, and standards that are applicable to socioeconomics, population and housing, and environmental justice in the proposed project area.

3.13.2.1 Federal

A general description of NEPA requirements is provided in Section 3.1. Details of NEPA impact assessment criteria for socioeconomics, population, and housing are provided in Section 3.13.3.1.

Executive Order 12898 (Environmental Justice)

Executive Order 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations (59 FR 7629) and the CEQ regulations (CEQ 1997) apply to projects that may have potential adverse impacts on low-income and minority populations. The Executive Order requires that impacts on minority or low-income populations be analyzed for the geographical area in which the project would be located to determine if there would be a disproportionately high and adverse impact on minority and/or low-income populations. If the demographic analysis reveals that disproportionately high and adverse impacts would occur, mitigation steps must be proposed to address the effects, pursuant to federal regulation. Standard approved methods for evaluation of environmental justice impacts are included within the CEQ document, "Environmental Justice Guidance under the National Environmental Policy Act" (1997). These methods were used for the evaluation of the proposed project that is described in this section.

BLM H-16010-1 Land Use Planning Handbook – Appendix D, Section IV Environmental Justice Requirements

This document provides guidance for assessing potential impacts on population, housing, and employment as they relate to environmental justice. It also describes variables such as lifestyles, beliefs and attitudes, and social organizations with respect to environmental justice. These variables were not evaluated in this analysis, as they are cannot be readily quantified for the purposes of impact assessment and do not provide any additional analytical value in terms of evaluating potential environmental justice impacts.

3.13.2.2 State

There are no specific state regulations pertaining to socioeconomics, population, and housing other than CEQA. A description of CEQA requirements is provided in Section 3.1. CEQA impact assessment criteria pertaining to socioeconomics, population, and housing are provided in Section 3.13.3.2.

3.13.2.3 Regional and Local

San Bernardino County

The 2007 General Plan for San Bernardino County, California, outlines standards and policy for unincorporated territory within the county (San Bernardino County 2007). The plan defines three county planning regions (Valley, Mountain, and Desert). The proposed project is within the Desert Planning Region, which includes all of the unincorporated area of San Bernardino County lying north and east of the Mountain Planning Region. The Desert Planning Region, the largest of the three, includes a significant portion of the Mojave Desert and contains approximately 93 percent (18,735 square miles) of the land but less than 25 percent of the current population in San Bernardino County.

The proposed project area falls within the planning jurisdictions covered by the SCAG, and also the San Bernardino Associated Governments region (San Bernardino Associated Governments 2010, SCAG 2008). For SCAG planning purposes, the growth management chapter of the Regional Comprehensive Plan and Guide contains policies related to improving the regional standard of living (SCAG 2008). Policies that are relevant to assessing how the proposed project would influence the region's standard of living, regional quality of life, and goals to provide social, political, and cultural equity are reproduced in their entirety below (SCAG 2008).

> ***Regional Standard of Living***
>
> *3.05 Encourage patterns of urban development and land use which reduce costs on infrastructure construction and make better use of existing facilities.*
>
> *3.09 Support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.*
>
> *3.10 Support local jurisdictions' efforts to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.*
>
> ***Regional Quality of Life***
>
> *3.11 Support provisions and incentives created by local jurisdictions to attract housing growth in job-rich sub-regions and job growth in housing-rich sub-regions.*
> *3.13 Encourage local jurisdictions' plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.*
> *3.14 Support local plans to increase density of future development located at strategic points along the regional commuter rail, transit systems, and activity centers.*
>
> ***Social, Political, and Cultural Equity***
>
> *3.27 Support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as: public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection.*

Clark County

The Clark County Comprehensive Plan outlines standards and policies for unincorporated territory within Clark County, Nevada (Clark County 2006a). This plan covers the Las Vegas Valley Community District Area and four Rural Planning Areas (Northeast, Northwest, South, and Laughlin). Most of the proposed project would be within the South County Rural Planning Area (Goodsprings, Jean, Primm, Ripley [Sandy Valley], and Searchlight). This planning area's population is approximately 3,950 (Clark County 2006a). The EITP would also lie within the Boulder City Annexation area, which is within the Las Vegas Valley Community District Area. The population of Boulder City itself is 15,367 (Clark County 2006a), but this does not represent the population within the Boulder City Annexation area.

Boulder City

The Boulder City Master Plan includes goals, policies, and programs used in making land use decisions for the future of Boulder City, Nevada (Boulder City 2003).

3.13.3 Impact Analysis

This section defines the methodology used to evaluate impacts on socioeconomic conditions, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.13.4.

3.13.3.1 NEPA Impact Criteria

The following NEPA analysis determines whether direct or indirect effects on socioeconomic conditions would result from the proposed project and explains the significance of those effects in the proposed project area (40 CFR 1502.16). Although NEPA does not provide specific thresholds of significance for socioeconomic impact assessment, *significance*, as defined by Council on Environmental Quality regulations, requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). In addition, 40 CFR 1508.8(b) states that indirect effects may include those that are growth-inducing and those that are related to induced changes in the pattern of land use, population density, or growth rate. In the following analysis, impacts are describes in proportion to their significance (40 CFR 1502.2[b]). To facilitate the comparison of alternatives, the significance of environmental changes is also described in terms of temporal scale, spatial extent, and intensity.

Under NEPA, the proposed project would affect socioeconomic conditions if it would:

a. Affect regional economies by causing changes in expenditures for goods and services and infrastructure spending or aggregate short-term or long-term impacts on incomes within the project area;

b. Cause aggregate short-term or long-term impacts on employment by increasing or decreasing the employment level within the project area;

c. Result in disproportionately high and adverse impacts on minority or low-income populations; or

d. Result in both short- and long-term impacts to levels of tourism within the study area.

3.13.3.2 CEQA Impact Criteria

CEQA Guidelines Section 15131(a) states that “economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from the proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.” In addition, CEQA Guidelines Section 15131 states, “Economic or social information may be included in an EIR, or may be presented in whatever form the agency desires,” and Section 15131 (b) states, “Where an EIR uses economic or social effects to determine that a physical change is significant, the EIR shall explain the reason for determining that the effect is significant.”

Under CEQA, the EITP would have a significant impact if it would:

a. Substantially change the current and projected population level of the study area or induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);

b. Increase demand for permanent and temporary housing resources that could not be absorbed by the existing housing stock (i.e., increase the demand for new housing); or

c. Displace a substantial number of existing residences within the community, necessitating the construction of replacement housing elsewhere.

3.13.3.3 Methodology

The following analysis uses baseline conditions established in Section 3.13.1 and evaluates the potential for impacts associated with the EITP and alternatives. Construction and operation activities associated with the EITP and alternatives were identified based on the PEA provided by the applicant. Impacts were analyzed to determine whether the proposed project would significantly affect socioeconomic resources through an evaluation of the context and intensity of potential changes that would be introduced by the proposed project.

3.13.3.4 Applicant Proposed Measures

The applicant has not included any applicant proposed measures (APMs) related to socioeconomics, population and housing, or environmental justice for the EITP.

3.13.3.5 Proposed Project / Proposed Action

The EITP would require approximately 190 workers (SCE 2009), about 34 of which would be local. The proposed project would take about 18 months to complete. No new employment would be created by operation of the proposed project because it primarily would involve the replacement of an existing transmission line. Construction of the EITP and alternatives is not anticipated to induce substantial population growth (Section 6.3, "Growth-Inducing Effects") or result in impacts on population and housing. As shown in Tables 3.13-4 and 3.13-7, a considerable construction workforce is available within the proposed project region. The applicant states that work crews would commute daily from Boulder City, the Las Vegas area, or San Bernardino County and temporarily need accommodations, which are widely available in the area. Most EITP construction workers are expected to originate from the regional labor pool and would not generate a permanent increase in population level or result in a decrease in permanent housing availability.

<u>Regional Economy</u>

Construction

The construction phase is anticipated to have a short-term beneficial impact on the region's economy. EITP construction spending would be beneficial to the regional economy, as it would contribute to increased expenditures on goods and services in an area that has been significantly affected by the recent economic decline (Section 3.13.1.1). As a large-scale transmission and telecommunication line infrastructure project, the EITP would also provide jobs and tax revenue to local communities. EITP materials and equipment would be sourced locally or regionally wherever possible, which would also provide benefit to the local economy.

Operation & Maintenance

During EITP operation, direct spending associated with the permanent workforce and the transmission line's annual operational and maintenance expenditures are expected to have a negligible impact on the local economy.

Operational and maintenance expenditures, payroll, and wages are expected to be similar to those associated with operation of the existing lines currently operating between Eldorado and Ivanpah.

Regional Employment Levels

Construction

The EITP is expected to have a short-term beneficial impact on the region's economy, labor force, and employment opportunities. The number of construction workers required is small relative to the available work force and unemployment is high (Tables 3.13-4 and 3.13-7), so most workers would come from the local area or surrounding region. Few if any workers would relocate to the area. Construction activities would also benefit associated regional industries, such as manufacturers of construction materials and equipment.

By applying a local hiring estimate of 18 percent (as described in the applicant's response to data gaps), it can be approximated that 34 direct local jobs could be generated within the local economy during construction of the EITP. The workforce that would temporarily migrate to the area would stimulate spending in the region through per diem spending on food, lodging, gas, and entertainment that would temporarily benefit communities near the proposed project. In addition, direct spending by construction workers on consumables, supplies, and equipment would also have a positive short-term impact on the regional and local economies.

Operation and Maintenance

The permanent operational staff would have a negligible impact on the regional labor force as it is expected that the total number of permanent jobs created would be similar to the jobs required to operate the current transmission lines in operation between Eldorado and Ivanpah substations. No permanent staff would be required to relocate to the area for proposed project operation.

Environmental Justice Considerations

Based on the EITP design and the location of the majority of the transmission and telecommunication lines parallel to an existing ROW, it is unlikely that the construction and operation of the EITP would have a disproportionately high, adverse impact on minority populations in the vicinity. Three census tracts in the vicinity of the EITP corridor comprise low-income populations more than double the county average (see Table 3.13-9); however, the only potential impacts that would affect these populations include the short-term, minor increases in noise and traffic associated with construction; therefore, no disproportionately high, adverse impact would occur. Most of the proposed project is in an existing ROW in a rural area. The Desert Oasis Apartment Complex, which contains mobile homes as well as apartments, is within 0.01 miles of the proposed transmission line.

Construction

Construction activities associated with the proposed project would be limited to an 18-month period. As the transmission line would be constructed in a linear fashion, only sections of the transmission line corridor would be under construction at any one time, reducing the duration of potential construction impacts in any one area. The noise levels at the Desert Oasis Apartment Complex would increase for the 2.5 weeks that construction would occur in this area. Noise impacts would be temporary and less than significant. Changes to visual resources resulting from the installation of taller, more visible transmission towers in this area would be minor, localized, and long term because the visual landscape already includes several other transmission lines.

Operation and Maintenance

Operation of the EITP would comprise servicing and maintaining transmission line components on an annual and as-needed basis. Similar to current procedures, these activities would be short term and conducted in the immediate vicinity of the transmission line; therefore, minority and low-income populations would not experience disproportionately high, adverse impacts.

Tourism

Construction

Local tourist destinations in the construction area include the Primm Valley Golf Course and Ivanpah Dry Lake as well as numerous casinos in and around the town of Primm. Noise modeling confirmed that there would not be any significant construction noise impacts at either of these locations. This is discussed further in Section 3.10, “Noise.” Nuisance dust and noise from construction would have a negligible, localized, and short term impact that would be limited to daytime hours. Additional discussion of impacts on recreational resources is provided in Section 3.12, “Recreation.” Construction crews would lodge in local accommodations, which would have a nominal beneficial impact on tourism in the area.

Operation and Maintenance

Operation and maintenance of the EITP would not adversely impact local tourism but would provide benefits by indirectly supporting regional tourism through facilitating transmission of renewable energy to meet current and future energy demands in California and increasing the use of renewable energy in California (Chapter 1, “Purpose and Need”).

NEPA Summary

There would be a negligible, short-term, beneficial impact on the region’s economy during construction and a negligible impact on area incomes during operation of the EITP. In addition, the proposed project would have a localized, negligible, short-term, beneficial impact on the region’s labor force and employment during construction and a negligible impact on labor during operations. Impacts on minority and low-income populations would be negligible, as would impacts on the tourism industry.

CEQA Significance Determinations

NO IMPACT. Induced population growth. The proposed project would have growth-inducing potential if it fostered growth or a concentration of population above what is assumed in local and regional land use plans or in projections of regional planning authorities. Construction of the EITP would temporarily require approximately 156 non-local construction workers for 12 to 18 months (SCE 2009), a negligible increase compared with the size of the regional population, and no impact would result. Permanent employees required for operation and maintenance activities would be similar to current levels of staffing for the existing line; therefore, no impact would result under this criterion.

NO IMPACT. Increased demand for permanent and temporary housing. Construction, operation, and maintenance of the EITP would not require the construction of additional housing. Some workers would be hired from the existing labor force in the proposed project area, and adequate accommodations exist in the proposed project area to house the migratory workers needing temporary housing during construction. For example, Primm alone currently has 2,579 hotel rooms, with many more available in Las Vegas; this capacity would be sufficient to accommodate all construction workers, if needed. The EITP construction would not substantially increase the demand for housing or directly or indirectly induce population growth in the area. The small permanent workforce for operation and maintenance activities would be similar to the workforce needed for current operation and maintenance procedures and no new housing would be required; therefore, there would be no impacts under this criterion.

NO IMPACT. Displace existing residences. The EITP construction activities would occur at various locations along the transmission line routes over an approximately 18-month period. Construction of the EITP would not displace existing housing or people, or necessitate relocation or the construction of replacement housing elsewhere. Similarly, operation and maintenance activities would not displace existing residences. Therefore, there would be no impact under this criterion.

3.13.3.6 No Project / No Action Alternative

The No Project Alternative assumes that the existing transmission line system would continue to be operational at its maximum feasible capacity and that additional energy production would be provided to the market from other sources. Under the No Project Alternative, the proposed project would not be constructed and there would be no changes to socioeconomic conditions in the proposed project area. Therefore, implementation of the No Project Alternative would result in no impact.

In addition, based on current growth projections for the region, electricity demands may eventually exceed the applicant's ability to meet that demand if another means of increasing the electrical capacity in the area is not instituted. If electricity demands in the region cannot be met in the future, this could result in constraints to projected regional growth and development.

3.13.3.7 Transmission Alternative Route A

Transmission Alternative Route A would bypass a segment of the proposed project route that runs north and south near MP 2 along a line parallel to the Los Angeles Department of Water and Power transmission corridor (Figure 1-1). Socioeconomic conditions are similar in this area to those discussed for the proposed project route. This alternative would not directly induce substantial population growth, displace existing residents or housing, result in disproportionately high, or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.

3.13.3.8 Transmission Alternative Route B

Transmission Alternative Route B would require 5.3 miles of new transmission line ROW, of which 0.83 miles would be constructed within the City of Boulder. Socioeconomic conditions are similar in this area to those associated with the proposed project, and construction and operation of this alternative within the City of Boulder would not be expected to result in any additional adverse socioeconomic impacts or result in project-induced growth. This alternative would not induce substantial population growth, displace existing residents or housing, result in disproportionately high, or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.

3.13.3.9 Transmission Alternative Route C

Transmission Alternative Route C would require 5.3 miles of new 130-foot ROW north of the Ivanpah Dry Lake and Primm, Nevada. Socioeconomic conditions and impacts resulting from this alternative would be similar to those associated with the proposed project. Transmission Alternative Route C would circle northwest around Primm. The existing setting for Transmission Line Alternative C is the same as described for the proposed transmission route except for the distance from the Desert Oasis Apartment Complex, which is 0.67 miles from Transmission Alternative Route C, and impacts on this complex would be less than impacts from the proposed project. This alternative would not directly induce substantial population growth, displace existing residents or housing, result in disproportionately high, or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.

3.13.3.10 Transmission Alternative Route D and Subalternative E

Transmission Alternative Route D and Subalternative E would match the footprint of an existing transmission 500-kV ROW to the extent possible across the Ivanpah Dry Lake. Ivanpah Dry Lake is a popular recreation destination for several kinds of recreational activities, including long-distance archery, kite buggying, and kite demonstrations. Use of Ivanpah Dry Lake for these activities contributes to the local economy. Reducing the transmission line footprint across the Ivanpah Dry Lake would lessen EITP's impact on recreation, but any impact on the local economy would be negligible. The socioeconomic conditions and impacts resulting from these alternatives would be similar to those for Transmission Alternative Route C. These alternatives would not induce substantial population growth, displace existing residents or housing, necessitate the construction of housing, or result in disproportionately high or adverse impacts on minority or low-income populations, and no impacts would result.

3.13.3.11 Telecommunication Alternative (Golf Course)

The Golf Course Telecommunication Alternative includes underground construction to reduce visual impacts of the telecommunication line. The proposed over-ground and underground wiring from the town of Nipton to the proposed Ivanpah Substation would parallel the northern boundary of the Mojave National Preserve. This alternative would incur increased costs associated with underground construction, which requires a longer construction period. The applicant would coordinate with the owners of the Primm Golf Course to minimize disruption to golf operations. This alternative would not directly induce substantial population growth, displace existing residents or housing, result in disproportionately high, or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.

3.13.3.12 Telecommunication Alternative (Mountain Pass)

The Mountain Pass Telecommunication Alternative would locate portions of the telecommunication line underground and out of line-of-sight from Nipton to Mountain Pass and the proposed Ivanpah Substation. In general, socioeconomic impacts would be similar to those of the proposed project. This alternative would not induce substantial population growth, displace existing residents or housing, result in disproportionately high or adverse impacts on minority and low-income populations, or necessitate the construction of housing, and no impacts would result.

3.13.4 Mitigation Measures

No mitigation measures are required to reduce impacts on socioeconomic conditions.

3.13.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to socioeconomics in the ISEGS Final Staff Assessment / Draft Environmental Impact Statement (FSA/DEIS) prepared by the California Energy Commission (CEC) and the BLM. This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

3.13.5.1 ISEGS Setting

The ISEGS project would be constructed in the Ivanpah Basin of San Bernardino County, California, 4.5 miles southwest of Primm, Nevada, adjacent to the Ivanpah Dry Lake. The ISEGS project is approximately 3,672 acres in three sectional portions on a contiguous property in an area with socioeconomic conditions similar to those described above in Section 3.13.1.1 for the EITP. The ISEGS project, however, would be located only in California. It would not extend into Nevada.

Employment Characteristics and Fiscal Revenue

The metropolitan statistical areas for Riverside-San Bernardino-Ontario and Las Vegas-Paradise were analyzed for the ISEGS project. The analysis concluded that the largest employment sectors of the ISEGS study area were construction and services. For the FSA/DEIS, ISEGS provided available fiscal data for San Bernardino County and the City of Las Vegas to describe revenues and expenditures for fiscal year 2006. An analysis of the impact on public services was also provided including police protection, schools, and hospitals. The ISEGS analysis for these services is addressed in Section 3.11, "Public Services and Utilities."

Applicable Laws, Regulations, and Standards

The same laws, regulations, and standards apply to both the EITP and ISEGS except ISEGS would be developed solely within California and on BLM land. Only federal and California regulations would apply.

3.13.5.2 ISEGS Methodology

In the ISEGS FSA/DEIS, BLM and CEC staff reported on existing conditions and assessed potential impacts to socioeconomic resources. Using CEQA Guidelines, Appendix G, this analysis sought to determine whether the project would have a significant effect. The following impact criteria were used:

- Induce substantial population growth in an area, either directly or indirectly;
- Displace substantial numbers of people and/or existing housing, necessitating the construction of replacement housing elsewhere;
- Cause a substantial change in revenue for local business or government agencies; or
- Adversely impact acceptable levels of service for law enforcement, schools, and hospitals.

Note: The EITP impact criteria (Section 3.13.3.5) did not address changes in local revenue structures that could result from construction, operation, and maintenance of the EITP.

3.13.5.3 ISEGS Impacts

The BLM and CEC determined that construction, operation, and decommissioning activities of the ISEGS project could have a beneficial impact to tax revenues. The two agencies published the impacts described below related to socioeconomics for the ISEGS project.

Construction Impacts

The two-year ISEGS project anticipates a daily construction workforce of approximately 474 workers with peaks of 959 workers, contingent on the type of work and time period. Workers would commute from their respective communities, limiting the need for immigration as a result of project-related construction activities.

Operation Impacts

Maintenance workers would commute approximately 1 hour. Workers identified for the ISEGS project would come from the existing construction population of the local available labor force. No significant impacts were determined to result for the operations of the project.

CEC staff anticipates the generation of approximately $2.2 million per year from assessed property tax values, with allocations of these funds in San Bernardino County, which has an annual operational and maintenance budget of $340,500.

Closure and Decommissioning Impacts

The ISEGS project is scheduled to occur in a phased sequential order across the three segmented units at different locations. The workforce that has been proposed for use in closure and decommissioning activities will be drawn from the local labor pool, with residence in the surrounding areas. Because work from the project would be temporary, a determination was made of no significant impact on the study area population and employment base.

3.13.5.4 ISEGS Conditions of Certificate / Mitigation Measures

The BLM and CEC determined that there would be no significant impact on socioeconomic resources caused by ISEGS. No mitigation measures were imposed by the CEC for the ISEGS project.

3.14 Traffic and Transportation

This section contains a description of the environmental setting, regulatory setting, and potential impacts associated with the construction and operation of the proposed project and alternatives with respect to traffic and transportation.

3.14.1 Environmental Setting

This section discusses existing transportation and traffic near the proposed project and alternatives. The proposed project is located in primarily undeveloped and sparsely populated areas within a limited transportation network primarily serviced by Interstate 15 (I-15), which spans California and Nevada. Construction and maintenance vehicles would use I-15 and the surrounding transportation network. Refer to Figure 1-1 for a depiction of the transportation network described below.

3.14.1.1 Regional Setting

Interstate 15

The proposed project would cross I-15 near milepost (MP) 29 at the California/Nevada border. The proposed project would be serviced by I-15, a major north–south divided freeway through San Bernardino County in California and Clark County in Nevada. This highway is a major thoroughfare between Southern California and Las Vegas, Nevada. In Nevada, I-15 serves as the major transportation route between the California-Nevada border (MP 28) and the Las Vegas metropolitan area. This stretch of I-15 varies in width from four to six lanes and has posted speeds of 65 and 75 miles per hour.

State Route 164

State Route (SR) 164 is a state highway in southern Clark County, Nevada, located approximately 5 miles south of the proposed Ivanpah Substation. The route, which is called Nipton Road in California, connects the small unincorporated area of Nipton, California, to U.S. Route 95 in Nevada and I-15 south of Primm, Nevada. The route was formerly designated SR 68.

State Routes 161 and 604

SR 161 runs east–west along Goodsprings Road. It connects Ripley to I-15 at Jean, 5.5 miles from MP 18. SR 604 (Las Vegas Boulevard) runs south from Las Vegas parallel to I-15.

US 95

US 95 in Nevada is approximately 3 miles east of the proposed project (MP 0) and runs north–south. It is a divided highway between Laughlin Junction and Boulder City.

Union Pacific Railroad

In Nevada, I-15 is roughly paralleled by SR 604 (Las Vegas Boulevard) and the Union Pacific Railroad (UPRR) corridor. The UPRR has an approximately 100-foot right-of-way (ROW) with a single track alignment. It runs south from the urbanized area of Las Vegas, roughly paralleling the I-15 corridor, to the Nevada/California state line, where it turns south and runs through Nipton, California. The proposed project crosses the UPRR between MPs 26 and 27. Currently, this corridor is heavily used for freight hauling (Clark County 2008).

Jean Airport

The Jean Airport is located approximately 5 miles north of the proposed project, nearest MP 20. Also known as Jean Sport Aviation Center, it is a public airport mainly used for sports aviation such as gliders and sky diving (AirNav 2009). Jean Airport is owned and operated by the Clark County Department of Aviation.

Southern Nevada Supplemental Airport

The Federal Aviation Administration (FAA) and the BLM are currently preparing an EIS for a proposed Southern Nevada Supplemental Airport (SNSA) to be constructed on approximately 6,000 acres just south of Jean, Nevada (CCDOA 2009). This site is within the 17,000 acre Ivanpah Airport Environs Overlay District, conditionally established per Section (2)(b)(1) of the Ivanpah Valley Airport Public Lands Act of 2000 (Public Law 106–362) and the Clark County Conservation of Public Land and Natural Resources Act of 2002 (Public Law 107–282), pending completion of the EIR, which is intended to ensure compatible land use within airport accident hazard and noise exposure areas by providing for a range of appropriate uses and by prohibiting development of inappropriate or incompatible uses. As currently planned, the proposed SNSA would provide sufficient airport capacity to accommodate future aircraft operations and aviation passenger demand in the Las Vegas Metropolitan Area (CCDOA 2009). The proposed project would be located approximately 0.5 miles (MP 26) from the nearest proposed runway; however, the proposed SNSA is not expected to be operational until 2020—after the scheduled completion of the EITP, which is projected to be operational in 2013.

Public Transportation and Bicycle Paths

No public transit exists in the vicinity of the proposed project. Amtrak serves the corridor via bus only, with service between Las Vegas and Los Angeles. Many private bus companies operate on demand for Primm Valley Golf Club customers, but no established regular schedule exists. There are no bicycle lanes in the proposed project area (SCE 2009).

3.14.1.2 Local Setting

Major Transportation Routes

In total, the proposed project crosses two major and three smaller transportation routes between the Eldorado and Ivanpah substations. Table 3.14-1 lists the location of these intersections by MP.

Table 3.14-1 Transportation Intersections Crossing the Proposed Route

Location (MP)	Intersection
26/27	Union Pacific Railroad
28/29	Lotto Store Road
28/29	East Primm Boulevard
28/29	Fashion Outlet Way
29	I-15 at California/Nevada border

Source: Google Earth 2009

Existing Traffic Volumes

Tables 3.14-2a and 3.14-2b list existing traffic volumes for the locations where the proposed project would cross major transportation routes. In California, volumes of traffic are measured in terms of peak hour estimates for actual vehicles and annual average daily traffic (AADT) for both lanes of travel (ahead [north and west] and back [south and east]).

Table 3.14-2a Traffic Volumes for Major Transportation Routes in Nevada in 2008

Description	AADT
I-15 at the Nevada/California state line	38,000
I-15, 1.5 miles north of SR-604 (Apex Interchange)	24,000
SR-161, Goodsprings Road, 1 mile west of the southbound off-ramp of the Jean Interchange exit (Exit 12)	2,000
US 95, 0.7 miles north of SR-164 (Nipton Road)	8,600
SR 164, Nipton Road, 1.1 miles west of US 95	690

Source: NDOT 2008
Key:
AADT = annual average daily traffic

Table 3.14-2b Traffic Volumes for Major Transportation Routes in California in 2008

Traffic Count Location	**Peak Hour** (south of count location)	**AADT** (south of count location)	**Peak Hour** (north of count location)	**AADT** (north of count location)
I-15 at the Cima Road interchange	5,000	36,000	5,000	36,000
I-15 at Nipton Road	5,000	36,000	5,100	36,500
1-15 at the Yates Well Road interchange	5,100	36,500	5,100	37,000

Source: Caltrans 2008
Key:
AADT = annual average daily traffic

Traffic flow can be calculated using Level of Service (LOS) designations for transportation routes. LOS is a qualitative measure used to describe operational conditions within a traffic system. LOS quantifies the congestion level on a particular roadway or intersection in terms of speed, travel time, and delay. The 2000 Highway Capacity Manual defines LOS designations for roadways or intersections (LOS A to LOS F). LOS A designates the best operating conditions and LOS F the worst. A general description of service levels for various types of facilities is shown in Table 3.14-3.

Table 3.14-3 Level of Service Definitions

Facility Type	**Uninterrupted Flow**	**Interrupted Flow**
	Freeways Multi-lane highways Two-lane highways Urban streets	Signalized intersections Unsignalized intersections – Two-way stop control – All-way stop control
	Level of Service	
A	Free-flow	Very low delay
B	Stable flow; presence of other users noticeable	Low delay
C	Stable flow; comfort and convenience starts to decline	Acceptable delay
D	High density stable flow	Tolerable delay
E	Unstable flow	Limit of acceptable delay
F	Forced or breakdown flow	Unacceptable delay

Source: TRB 2000

Table 3.14-4 lists the LOSs for the surrounding transportation network in the proposed project area rated LOS D or below.

Table 3.14-4 LOS D or Below for Proposed Project Transportation Network

Caltrans Post Mile/Project MP	LOS	ADT
SBd-15-186.24 / MP 29	D	38,000

Source: Green 2009

Although I-15 operates at LOS C or better most days of the week (Monday through Thursday), northbound 1-15 experiences increased traffic volumes on Friday afternoons because of commuter and tourist traffic from California to Las Vegas, Nevada. On most days, as shown in Tables 3.14-2a and b, I-15 experiences an average daily traffic volume of approximately 38,000 trips. However, on Fridays from approximately noon to 10 p.m., northbound 1-15 experiences an hourly average that ranges from approximately 1,700 to 2,000 trips and operates at LOS D (Green 2009).

Proposed Project Transportation Setting

Transmission Line

The proposed transmission line would start at the existing Eldorado Substation and end at the future Ivanpah Substation location. Seven temporary construction yards and 16 temporary guard structures for highway/road crossings would be required during the construction phase. These crossing locations are the most likely locations for potential impacts to traffic and transportation associated with construction traffic traveling to and from construction yards and the project route. Tables 3.14-5 and 3.14-6 list the location of the project construction yards and guard structures.

Table 3-14.5 Proposed Construction Yard Locations

No.	Location	MP	Distance to ROW (miles)	Area[a] (acres)
1	Eldorado Substation, NV	0	0	9.8
2	Jean, NV	15	11.5	13.6
3	Generating station yard, NV	27	0.4	16.5
4	Primm Valley Casino vacant lot, NV	28	0.1	28.3
5	Whiskey Pete's Casino vacant lot, NV	28	1.1	2.4
6	BrightSource generating station yard, CA[b]	35	0	10+
7	Nipton, CA[c]	N/A	4.7	2.5

Source: SCE 2009
Notes:
[a] Approximate areas based on current design.
[b] Only Construction Yard #6 is located on public (BLM) land.
[C] Construction Yard #7 is proposed for tower retrofit activities.
Key:
MP = milepost
ROW = right-of-way

Table 3.14-6 Proposed Guard Structure Locations

GS #	Location of Guard Structure	Type of Guard Structure
1	West side distribution line between MPs 32 and 33	H-frame
2	East side distribution line between MPs 32 and 33	H-frame
3	South side of Dirt Road near MP 33	Bucket truck
4	North side of Dirt Road, near MP 33, crossing over distribution line	Bucket truck
5	Southbound I-15, west side of highway, near MP 29, south of state line	H-frame w/net
6	Southbound I-15 in center median, near MP 29, south of state line	H-frame w/net

Table 3.14-6 Proposed Guard Structure Locations

GS #	Location of Guard Structure	Type of Guard Structure
7	Northbound I-15 in center median, near MP 29, south of state line	H-frame w/net
8	Northbound I-15, east side of highway, near MP 29, south of state line	H-frame w/net
9	Southwest side of Lotto Store Road, between MPs 28 and 29, at southern edge of outlet mall	H-frame
10	Northeast side of Lotto Store Road, between MPs 28 and 29, at southern edge of outlet mall	H-frame
11	Southwest side of Fashion Outlet Way, between MPs 28 and 29, at eastern edge of outlet mall	H-frame
12	Northeast side of Fashion Outlet Way, between MPs 28 and 29, at eastern edge of outlet mall	H-frame
13	South side of East Primm Boulevard between MPs 28 and 29	H-frame
14	North side of East Primm Boulevard between MPs 28 and 29	H-frame
15	West side of UPRR between MPs 26 and 27	H-frame
16	East side of UPRR between MPs 26 and 27	H-frame

Source: SCE 2009
Key:
GS = Guard structure
MP = Milepost
UPRR = Union Pacific Railroad

Each yard would be used as a reporting location for workers and for vehicle and equipment parking and material storage. The maximum number of workers reporting to any one yard is not expected to exceed approximately 100 workers at any one time. At peak construction, most of the vehicles could occupy the yards listed. Approximately 80 private commuting vehicles would also be parked at the yard. Crews would load materials onto work trucks and drive to the line position being worked. At the end of the day, they would return to the yard in their work vehicles and depart in their private vehicles.

For highway crossings, the applicant would work closely with the applicable jurisdiction to secure the necessary permits to string conductor across the applicable infrastructure. For major roadway crossings, typically one of the following four methods is employed to protect the public:

- Erection of a highway net guard structure system
- Detour of all traffic off a highway at the crossing position
- Implementation of a controlled continuous traffic break while stringing operations are performed
- Strategic placement of special line trucks with extension booms on the highway deck

This analysis assumes that temporary net guard structures would be implemented as the least disruptive to transportation and traffic.

Substations

Eldorado Substation

The Eldorado Substation is an existing substation. Access is provided by US 95 to the east and by SR 165, which feeds into US 95 from the east. The setting is rural and undeveloped.

Ivanpah Substation

The Ivanpah Substation would be a new substation at the south end of the proposed transmission line. Access is provided by I-15 to the east. The closest residences to the proposed Ivanpah Substation site are those at the Desert Oasis Apartment Complex, roughly 6.7 miles to the northeast. Traffic from the Primm Valley Golf Club could use the same I-15 onramps that construction vehicles would use.

3.14.2 Applicable Laws, Regulations, and Standards

The following section provides a summary of federal, state, and local laws, regulations, and standards that govern traffic and transportation in the project area.

3.14.2.1 Federal

BLM Managed Lands

On federal lands managed by the BLM, motorized routes are designated for public use through the managing agency's land use plan or motorized transportation plan. Most of these routes are unmaintained. A few major arterial roadways are maintained and/or paved by the managing agency. Most routes are lightly used and do not have specific policies or regulations governing their use. Additional motorized routes through federal lands may be designated by BLM for commercial or other authorized use or for administrative agency use. These routes are subject to maintenance and other provisions based on the level of use, public safety considerations, and environmental impacts. Non-motorized transportation routes are also designated on public lands. These include equestrian and/or hiking trails that are a primary access means to specific local destinations and/or that are long-distance non-motorized trekking routes.

3.14.2.2 State

California Department of Transportation

The use of California state highways for other than normal transportation purposes may require written authorization from the Department of Transportation (Caltrans). As the department responsible for protecting the public's investment in the state highway system, Caltrans reviews all requests from utility companies desiring to conduct various activities within the ROW. Requests for the ROW ingress are prepared on a Standard Encroachment Permit, which the applicant would obtain (Caltrans 2009).

Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) is responsible for design, construction, maintenance, and operation of the Nevada State Highway System, as well as the portion of the National and Interstate Highway System within the state's boundaries (NDOT 2009).

3.14.2.3 Regional and Local

The San Bernardino County General Plan, Clark County Comprehensive Plan, and Boulder City, Nevada, Master Plan were reviewed for regional and local applicable laws, regulations, and standards in terms of traffic or transportation policies; however, none of these entities' have policies that would be affected by the project. Additionally, the EITP would be constructed in BLM-designated utility corridors, with the exception of a small segment in the Boulder City Conservation Easement as depicted in Figure 3.9-3; therefore, policies in local general and master plans would not be applicable.

3.14.3 Impact Analysis

This section defines the methodology used to evaluate impacts for transportation and traffic, including CEQA impact criteria. The definitions are followed by an analysis of each alternative, including a joint CEQA/NEPA analysis of impacts. At the conclusion of the discussion is a NEPA impact summary statement and CEQA impact determinations. For mitigation measures, refer to Section 3.14.4.

3.14.3.1 NEPA Impact Criteria

The NEPA analysis determines whether direct or indirect effects to transportation and traffic would result from the project, and explains the significance of those effects in the project area (40 CFR 1502.16). Significance is defined by Council on Environmental Quality regulations and requires consideration of the context and intensity of the change that would be introduced by the project (40 CFR 1508.27). Impacts are to be discussed in proportion to their significance (40 CFR 1502.2[b]). To facilitate comparison of alternatives, the significance of environmental changes is described in terms of the temporal scale, spatial extent, and intensity.

3.14.3.2 CEQA Impact Significance Criteria

Under CEQA, the proposed project would have a significant impact if it would:

a. Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system;
b. Exceed, either individually or cumulatively, an LOS standard established by the local county congestion management agency;
c. Result in inadequate emergency access;
d. Result in inadequate parking capacity;
e. Conflict with adopted policies, plans, or programs supporting alternative transportation;
f. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks; or
g. Result in the closure of a major roadway (arterial or collector classification) to through traffic as a result of construction activities with no suitable or alternative route available.

3.14.3.3 Methodology

Traffic volumes were collected from the Caltrans and NDOT databases for the transportation network affected by the proposed project. The 2000 Highway Capacity Manual and Caltrans Traffic Impact Study Guide were used to determine LOS values. The volume/capacity ratio was calculated and then compared with the LOS levels outlined in the Caltrans Traffic Impact Study Guide. Personal communication with Caltrans for 1-15 LOS was made on December, 8, 2009.

3.14.3.4 Applicant Proposed Measures

The applicant has included the following applicant proposed measures (APMs) related to traffic and transportation:

APM TRA-1: Obtain Permits. If any work requires modifications or activities within local roadway and railroad ROWs, appropriate permits will be obtained prior to the commencement of construction activities, including any necessary local permits and encroachment permits.

APM TRA-2: Traffic Management and Control Plans. Traffic control and other management plans will be prepared where necessary to minimize project impacts on local streets and railroad operations.

APM TRA-3: Minimize Street Use. Construction activities will be designed to minimize work on, or use of, local streets.

3.14.3.5 Proposed Project / Proposed Action

Construction

During construction, traffic conditions in the proposed project area would be adversely impacted in the short term by an increase in traffic due to an influx of construction workers and the delivery of construction equipment, materials, and water to the proposed project area. Construction equipment and materials deliveries would occur throughout the construction period. Construction equipment would include trucks, vans, tractors, trailers, and dozers of various sizes. Up to 190 construction personnel and 204 vehicles would be required for the 18-month construction period. However, only a portion of this total would be used during any single construction phase. Construction equipment would be left overnight on site when feasible or, where overnight onsite storage was infeasible, at the construction yards identified in Table 3.14-5.

To reduce the effects of construction-related deliveries on transportation and traffic along I-15 and SR 164/Nipton Road, APM TRA-2 is proposed, which requires the development of a detailed Traffic Management Plan in consultation with jurisdictional agencies including Caltrans and NDOT. The Traffic Management Plan would include strategies to assure safe and effective passage of through-traffic during construction activities. Because the movement of heavy equipment and materials to various work sites has the potential to cause short-term traffic delays, such activities would occur during off-peak hours to avoid the morning and evening peak vehicular travel times on weekdays, to the extent possible (SCE 2009).

Construction would adversely impact transportation and traffic in the proposed project area where the transmission line would cross a transportation route. Proposed project construction at road crossings identified in Table 3.14-6 would adversely affect vehicle traffic flow at those locations during the construction period. The I-15 crossing at MP 29 would be the most adversely impacted transportation resource, but the H-frame guard structure with net method would be preferred over lane closures. However, in some cases, road crossings could result in detours or periods of one-lane traffic that would cause traffic delays. Detours or road closures could moderately impact traffic flows in localized segments within the transportation network.

To reduce potential congestion associated with construction across transportation routes, the applicant has proposed APM TRA-1, which requires acquisition of encroachment permits and other local permits for work performed within local roadway and railroad ROWs. This APM would require approval from the appropriate jurisdiction (Caltrans or NDOT) and consultation and best management practices (BMPs). Lane closures, if needed, would be identified prior to construction. Detours would be clearly identified and motorists would be adequately notified. APM TRA-3 would also reduce potential adverse effects of construction traffic on local streets, since those streets would be avoided where possible. The Traffic Management Plan (APM TRA-2) would reduce effects of route crossings through implementation of BMPs such as use of flaggers, identification of detours, and communications with stakeholders. Additionally, as outlined in MM TRANS-3, prior to start of construction of the EITP, the applicant will prepare and implement a Traffic Control Plan for the project to address staggering of deliveries on I-15 during peak traffic times.

The applicant would use existing roads and designated routes on federal lands to gain access to the ROW during construction. Refer to Chapter 2 for a general description of anticipated access and maintenance road requirements. Modifications, including grading and/or widening, would be required in order to use some existing roads.

Parking for construction workers would be accommodated on the substation site, within the applicant's ROW, and/or in construction yards. No adverse impact on parking would result from construction of the proposed project.

During the construction phase of the project, helicopters might be used for installation of Tubular Steel Poles (TSPs) and overhead wires. For structures that would be located in terrain that is inaccessible by a crane, helicopters may be used for structure erection. Helicopter use is expected only in the McCullough Pass area and for line stringing. The use of helicopters for the erection of structures would be conducted in accordance with the applicant's specifications and would be similar to methods detailed in the Institute of Electrical and Electronic Engineers publication 951-1996, Guide to the Assembly and Erection of Metal Transmission Structures, Section 9, Helicopter Methods of Construction. The use of helicopters would be limited to helicopter staging areas near construction locations considered safe locations for landing. To further reduce impacts due to helicopter use, MM TRANS-2 would be implemented. MM TRANS-2 requires the applicant to coordinate with the FAA prior to construction and operation for review and approval of any helicopter flight and safety plans. In addition, MM HAZ-2, which involves coordination with the FAA regarding compatibility with the SNSA, will help reduce potential impacts related to air traffic associated with the future airport.

Operation & Maintenance

The entire proposed transmission line corridor would be patrolled every year. The yearly patrol method would alternate each year between helicopter and truck. In one year, the patrol would be by helicopter and would take approximately 1 day (8 hours) to accomplish. The next year, the patrol would be performed by truck and would take 5 days. These maintenance operations are currently ongoing and would be continued for the proposed project. Therefore, there would be no increase in air or vehicle traffic, and thus, no adverse effect to traffic and transportation during the operation and maintenance phase of the project.

However, starting approximately 15 years after the operational date, maintenance on the proposed line would be expected to increase. Depending on the level of air traffic, there could be air traffic conflicts. As a result, the applicant is required to implement MM TRANS-2, which requires coordination with the FAA regarding a Helicopter Flight Plan and Safety Plan. In addition, MM TRANS-2 specifies that in the event that plans for the SNSA are approved, the applicant will review the plan with the FAA at least 30 days prior to the start of SNSA construction. Implementation of MM TRANS-2 would reduce the impact to minor.

NEPA Summary

The proposed project would result in direct minor adverse traffic impacts due to project construction access along I-15 and SR 164/Nipton Road; however, the impacts would be localized at construction yards and crossing points (MP 29) along the transmission line route and would be short term. Implementation of MM TRANS-1 would minimize potential impacts to I-15 by limiting construction activities so that lane closures did not occur during peak usage times on Fridays from noon to 10 P.M. Additionally, as outlined in MM TRANS-3, prior to start of construction of the EITP, the applicant will prepare and implement a Traffic Control Plan for the project to address staggering of deliveries on I-15 during peak traffic times.

The operation of the transmission line, substation, and telecommunication line would not result in adverse ground traffic impacts. Maintenance activities associated with substations and transmission lines would not require additional vehicles beyond those used for current operations and maintenance procedures; therefore, maintenance would not increase traffic beyond existing LOSs. Operation and maintenance activities would not result in an adverse impact on ground transportation.

Operation and maintenance would require helicopter usage; MM TRANS-2 requires the applicant, in coordination with the FAA, to develop a Helicopter Flight Plan and Safety Plan. Additionally, MM TRANS-2 specifies that in the event that plans for the SNSA are approved, the applicant will review the plan with the FAA at least 30 days prior to the start of SNSA construction. MM TRANS-2 would reduce the project's impact on air traffic to minor.

CEQA Significance Determinations

IMPACT TRANS-1: **Traffic Load and Capacity**
Less than significant with mitigation

The proposed project would result in less than significant impacts on existing traffic load and capacity, as a limited number of vehicles over a short period would be used for construction. Implementation of APM TRA-1, APM TRA-2, and MM TRANS-3 would contribute to reduction of impacts associated with construction traffic. Impacts on northbound I-15 during the Friday afternoon commute would be short term and less than significant.

Use of helicopters of during construction and operations could increase the volume of air traffic in the area and potential air traffic conflicts could occur. Potential air traffic conflicts would be reduced to less than significant levels with implementation of a Helicopter Flight Plan and Safety Plan (MM TRANS-2). Because plans for the SNSA have not yet been approved, it is not possible to identify how the EITP would affect the SNSA in terms of air traffic conflicts; however, MM HAZ-2 will be implemented, which would further reduce air traffic conflicts to less than significant by requiring additional consultation with the FAA regarding final project design. For additional discussion about the SNSA, see Chapter 5, "Cumulative Scenario and Impacts."

IMPACT TRANS-2: Level of Service Standard and Lane Closures
Less than significant with mitigation

The proposed project would result in less than significant impacts on existing LOS standards as defined by Caltrans. A limited number of vehicles over a short period would be used for construction. Impacts on northbound I-15 during the Friday afternoon peak hours due to increased number of vehicles on the road would be short term and less than significant. Implementation of APMs TRA-1, TRA-2, and TRA-3 would contribute to reduction of impacts associated with construction traffic.

Though the proposed project does not include plans to close I-15 during construction, one or several lanes of I-15 may be closed to allow for pulling the transmission lines across the highway. Since I-15 experiences operating conditions at LOS D with high density stable flow and the potential for tolerable delay, lane closures during a period of LOS D could result in significant traffic circulation impacts over the short term. The severity of the short-term impact would depend on the number of lanes closed, the duration of the closure, and the LOS conditions at the time of closure. If lane closures were implemented and then sudden, unexpected LOS D conditions were to occur, it is reasonable to assume that drivers could experience significant delay along I-15. Therefore, MM TRANS-1 is required; the applicant will limit construction activities so as not to require lane closures on I-15 from noon to 10 p.m. on Fridays. In addition MM TRANS-3 will address staggering of deliveries on I-15 during peak traffic times.

IMPACT TRANS-3: Emergency Access
Less than significant without mitigation

Emergency response providers near the proposed project area would be notified in advance about the exact location of construction, road or route closure schedules, and location of potential alternate routes, as needed. Implementation of APMs TRA-1, TRA-2, and TRA-3 would contribute to reduction of impacts associated with emergency access. Work would be coordinated with local police and traffic engineers to plan appropriate access alternatives for temporary street closures and traffic disruption, if closures were required.

IMPACT TRANS-4: Result in a Change in Air Traffic Patterns
Less than significant with mitigation

While the proposed project would not impact existing air traffic, use of helicopters of during operation and maintenance procedures could interfere with air traffic associated with the future SNSA. As a result, the applicant is required to implement MM TRANS-2, which requires coordination with the FAA regarding a Helicopter Flight Plan and Safety Plan. In addition, MM TRANS-2 specifies that in the event that plans for the SNSA are approved, the applicant will review the plan with the FAA at least 30 days prior to the start of SNSA construction. With the implementation of MM TRANS-2, potential air traffic conflicts would be reduced to less than significant levels.

NO IMPACT: Result in Inadequate Parking Capacity. The proposed project would have no impact under this criterion because all parking would be contained within existing substations, applicant ROW, and/or construction yards.

NO IMPACT: Conflict with Adopted Policies, Plans, or Programs Supporting Alternative Transportation. The proposed project would have no impact under this criterion because no public transportation exists within the transportation network.

NO IMPACT: Result in the Closure of a Major Roadway to Through Traffic as a Result Of Construction Activities with No Suitable or Alternative Route Available. The proposed project would have no impact under this criterion because the proposed project would not cause the closure of any major roadways.

3.14.3.6 No Project / No Action Alternative

Under the No Project Alternative, there would be no construction of the transmission line, substation, or communication lines, and, therefore, there would be no traffic or transportation impact. Likewise, without the project, there would be no change in the volume of vehicles contributing to traffic during operation of the project. Under the No Project Alternative, there would be no adverse traffic impacts due to project construction or operation along I-15; SRs 161,164, or 604; or US 95. This alternative would result in no impact to traffic or transportation.

3.14.3.7 Transmission Alternative Route A

Transmission Alternative Route A is similar to the proposed route with the exception of an approximately 4-mile segment that would run north and south near MP 2, approximately 0.83 miles from the City of Boulder. Alternative Route A was created to bypass the proposed route segment between MP 1 and MP 7 by heading west and then north to join the existing ROW.

Transmission Alternative Route A would be similar to the proposed project in terms of potential construction traffic impacts at construction yards and guard crossings, traffic load and capacity, LOS standards, and emergency access. Like the proposed project, Transmission Alternative Route A would cause direct minor adverse traffic impacts at construction yards and crossing points (MP 29) along the transmission line route; these impacts would be short term. Impacts associated with construction traffic would be minor and short term and would be reduced by implementation of MM Trans-1. Construction of this alternative would result in a less than significant impact with mitigation on traffic load and capacity and LOS standard, and a less than significant impact without mitigation for emergency access.

Maintenance activities associated with substations and transmission lines would not require additional vehicles and, therefore, would not increase traffic beyond existing LOSs, as current operations and maintenance procedures would be continued. There would be no operational impacts associated with traffic under this alternative.

3.14.3.8 Transmission Alternative Route B

Transmission Alternative Route B is similar to the proposed route except for a segment that runs north and south near MP 2, approximately 0.83 miles from the City of Boulder. Alternative Route B was created to bypass the proposed route segment between MP 1 and MP 2 by heading north and then southwest to join the existing ROW.

In terms of potential construction traffic impacts at construction yards and guard crossings, Transmission Alternative Route B would be similar to the proposed project and Alternative Route A. There would be no operational impacts associated with traffic under this alternative.

3.14.3.9 Transmission Alternative Route C

Transmission Alternative Route C is similar to the proposed project in terms of potential construction traffic impacts at construction yards and guard crossings, traffic load and capacity and LOS standard and emergency access. In terms of potential construction traffic impacts at construction yards and guard crossings, Transmission Alternative Route C would be similar to the proposed project and Alternatives A and B. There would be no operational impacts associated with traffic under this alternative.

3.14.3.10 Transmission Alternative Route D and Subalternative E

In terms of potential construction traffic impacts at construction yards and guard crossings, traffic load and capacity and LOS standard, and emergency access, Transmission Alternative Route D and Subalternative E would be similar to the proposed project and Alternatives A, B, and C. There would be no operational impacts associated with traffic under this alternative.

3.14.3.11 Telecommunication Alternative (Golf Course)

In terms of potential construction traffic impacts at construction yards and guard crossings, traffic load and capacity and LOS standard, and emergency access, the Golf Course Telecommunication Alternative would be similar to the proposed project and Alternatives A, B, C, D, and Subalternative E. There would not be any operational impacts under this alternative.

3.14.3.12 Telecommunication Alternative (Mountain Pass)

In terms of potential construction traffic impacts at construction yards and guard crossings, traffic load and capacity and LOS standard, and emergency access, the Mountain Pass Telecommunication Alternative would be similar to the proposed project and Alternatives A, B, C, D, and Subalternative E and the Golf Course Telecommunication Alternative. There would not be any operational impacts under this alternative.

3.14.4 Mitigation Measures

MM TRANS-1: No Lane Closures on I-15 during Friday Peak Usage. The applicant will limit construction activities on Friday afternoon from noon to 10 p.m. so as not to require lane closures on I-15.

MM TRANS-2: Helicopter Flight Plan and Safety Plan. At least 30 days prior to construction of the project, the applicant will coordinate with the FAA for review and approval of any helicopter flight plans that would take place during construction and operation. The applicant will then provide information to the BLM and the CPUC regarding the intended need and use of helicopters during construction and operation of the project, including the flight and safety plan; the number of days and hours that the helicopter would operate; the type and number of helicopters that would be used; the location, size, and number of staging areas for helicopter take off and landing; and written approval from property owners for use of helicopter staging areas. In the event that plans for the SNSA are approved, the applicant will review the helicopter flight and safety plan with the FAA at least 30 days prior to the start of SNSA construction and resubmit the revised plan to the BLM and the CPUC.

MM TRANS-3: Traffic Control Plan. Prior to start of construction of the EITP, the applicant will prepare and implement a Traffic Control Plan for the project to address staggering of deliveries on I-15 during peak traffic times.

3.14.5 Whole of the Action / Cumulative Action

Below is a brief summary of information related to transportation and traffic in the ISEGS FSA/DEIS (CEC and BLM 2009). This section focuses on differences in the ISEGS setting and methodology compared with the setting and methodology discussed above for the EITP. This section also discloses any additional impacts or mitigation imposed by the CEC for ISEGS.

3.14.5.1 ISEGS Setting

The ISEGS regional and local setting is the same as that described above for the EITP, since the same transportation network would be used for construction and operation traffic. Specifically, I-15 and its ramp terminals (Yates Well Road and Colosseum Road) would be used for ISEGS-related traffic. Table 3.14-7 identifies the existing traffic conditions on these roads and the anticipated traffic conditions if the project were constructed.

Table 3.14-7 ISEGS Intersection LOS Analysis with Project Construction Traffic

Roadway Segment on Main Street	Capacity (vehicles/day)	Existing Volume (vehicles/day)	Existing V/C	Existing LOS	Construction Traffic (vehicles/day)	Volume With Project (vehicles/day)	V/C With Project	LOS With Project
Colosseum Road	3,000	NA	NA	A	243	0.08	NA	A
Yates Well Road	6,000	249	0.04	A	243	492	0.08	A
I-15 NB & SB	72,000	59,690	0.83	C	243	59,933	0.83	C

Sources: CEC and BLM 2009 (Sources of capacity and volume data for Yates Well Road and I-15 are TRB 2000, COSB 2007, and Caltrans 2007a.)
Note:
Volume data for Colosseum Road, a two-lane direct road, is not maintained; however, based on field observation, this road is seldom used and is therefore assumed to operate at LOS A (CEC and BLM 2009).
Key:
LOS= Level of Service
NB = northbound
SB = southbound
V/C = volume-to-capacity ratio

Applicable Laws, Regulations, and Standards

Because EITP and ISEGS would be in different locations, some laws, regulations, and standards listed in Section 3.14.2, "Applicable Laws, Regulations, and Standards," would not apply to ISEGS. Since ISEGS would be developed entirely within California on BLM land, the Nevada regulations associated with the EITP would not apply. However, there are no ISEGS project components or operational features that would trigger laws, regulations, or standards in addition to those required for EITP related to transportation and traffic.

3.14.5.2 ISEGS Methodology

In the ISEGS FSA/DEIS, BLM and CEC staff (Staff) reported on existing conditions and assessed impacts to transportation and traffic. Staff evaluated the potential of the proposed project to increase traffic on the Friday evening commute on I-15. Staff considered compliance with the laws, ordinances, regulations, and standards associated with the project components and location. Staff also considered whether there would be a significant impact under CEQA using the impact criteria listed in 3.14.3.2. In addition, Staff considered two potential additional impacts related to (1) nearby school operations and (2) transportation of hazardous materials. However, since no schools are located within 30 miles of the ISEGS site, the FSA/DEIS did not contain an analysis of impacts to schools. However, the Operation Impacts and Mitigation section of the FSA/DEIS did include an analysis of the impacts of transporting hazardous materials.

3.14.5.3 ISEGS Impacts

The CEC and the BLM have published the impacts discussed below related to transportation and traffic for the ISGES project.

Construction Impacts

All intersections would continue to operate at an acceptable LOS (C or better) in the morning and afternoon peak hours in spite of the addition of construction traffic. Construction traffic would result in a change at the intersection of the I-15 northbound ramps and Yates Well Road from LOS A to LOS B during the afternoon peak hours. However, this change would not be significant because the LOS would still be above level C.

Because northbound I-15 is already highly congested on Friday afternoons (LOS F), and project-related construction traffic would exacerbate congestion in the area of Yates Well Road, project impacts on northbound 1-15 on Fridays would be significant. To limit the proposed project's contribution to existing congestion on northbound I-15 on Friday afternoons, Staff proposed Condition of Certification TRANS-1, which would require development and CEC staff approval of a traffic control plan. The traffic control plan would include methods to substantially reduce the project's impact on I-15 traffic, such as staggering the departure of construction workers from the ISEGS site on Friday afternoons and/or establishing a carpool/vanpool incentive program. Staff believed that with proper implementation of the traffic control plan, project traffic accessing northbound 1-15 from Yates Well Road would be distributed at intervals sufficient to reduce the congestive effect of project traffic along this segment of 1-15 on Friday afternoons during construction to a less-than-significant level (fewer cars would be attempting to merge into congested I-15 traffic from the Yates Well Road on-ramp at any given time).

Operational Impacts

The operational phase of ISEGS would require 90 daily employee commutes, or 180 daily trips. Thirty employees would be required for the day shift. The remaining 60 employees would work on the night shift and would not travel during the peak hours. Thirty operational trips added to 1-15 during peak hours would not create a substantial increase in traffic volume and would not result in a significant impact Monday through Thursday. However, as indicated previously, northbound 1-15 operates at LOS F on Friday afternoons and into the late evening. The same potential impact identified for construction traffic would result during operation, yet be mitigated with Condition of Certification TRANS-1 (Traffic Management Plan).

An operational impact of ISEGS analyzed in the transportation and traffic section relates to glare from heliostats and the power tower receiver, in addition to thermal plumes. A detailed analysis of the potential safety impacts to aviators and motorists concludes that impacts would be less than significant with mitigation measures. This impact analysis is not discussed for the EITP, because it applies to an ISEGS-specific project component not proposed for the EITP.

Decommissioning Impacts

Following the operational life of 50 years, the ISEGS project owner would close and decommission the project. Closure of ISEGS would require a number of worker vehicle trips and haul trips to dismantle and haul project infrastructure from the ISEGS site. While the exact number of vehicle trips is unknown at this point, it is reasonable to assume the number of trips for decommissioning would be similar to that of construction estimates for the project. It is also likely that due to expected growth and development in the project area and in Las Vegas, the LOSs on 1-15 would be lower than they are currently. Therefore, it is reasonable to expect that impacts to the local and regional transportation network would be similar to those related to the construction of ISEGS. However, with implementation of measures similar to those identified in Conditions of Certification TRANS-1 through TRANS-5, impacts would be expected to be less than significant.

3.14.5.4 ISEGS Conditions of Certification / Mitigation Measures

The ISEGS FSA/DEIS recommends that the following Conditions of Certification be required by the CEC and the BLM to lessen impacts to traffic and transportation if the project is approved:

TRANS-1: TRAFFIC CONTROL PLAN. Prior to start of construction of the ISEGS, the project owner will prepare and implement a Traffic Control Plan for ISEGS construction and operation traffic, containing a Traffic Management Plan addressing the movement of workers, vehicles, and materials, including arrival and departure schedules and designated workforce and delivery routes.

TRANS-2: REPAIR OF PUBLIC RIGHT-OF-WAY. The project owner will restore all public roads, easements, and ROWs that have been damaged due to project-related construction activities to original or near-original condition in a timely manner.

TRANS-3: HELIOSTAT POSITIONING PLAN AND MONITORING. The project owner will prepare a Heliostat Positioning Plan identifying potential sensitive receptors and heliostat movements that could result in exposure of these receptors to reflected solar radiation. The project owner will also prepare a Heliostat Operation Plan to avoid human health and safety hazards at locations of sensitive receptors according to defined exposure limits and will prepare a monitoring and reporting plan and update it annually for the first 5 years and then every 2 years for the life of the project.

TRANS-4: VERIFICATION OF POWER TOWER RECEIVER LUMINANCE AND MONITORING. Upon commencement of commercial operation of each of the three ISEGS power plants and at intervals of every 5 years thereafter, the project owner will for each power tower evaluate the intensity of luminance of light reflected from all four sides (north, south, east, and west) of the power tower receivers, as measured from the power plant boundary, nearest road, and distances of 200, 500, 1,000, and 1,500 meters from the power tower receivers.

TRANS-5: POWER TOWER LIGHTING. The project owner will ensure that each power tower is marked and lighted according to the recommendations included in the FAA aeronautical study performed for each tower. Additionally, the project owner will submit FAA Form 7460-2 Part II, Notice of Actual Construction or Alteration, to the FAA within 5 days of completion of construction of the tower to its greatest height.

TRANS-6: FAA NOTIFICATION. Prior to start-up and testing activities of the plant and all related facilities, the project owner will coordinate with the FAA to notify all pilots using the airspace in the vicinity of the ISEGS of potential air hazards from turbulence.

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4. Comparison of Alternatives

4.1 Introduction

This section provides a comparison of the proposed project and alternatives described in Chapter 2 and analyzed in Chapter 3. The comparative analysis presented in this section focuses on the differences in impacts among the various alternatives, with particular emphasis given to the differences in significant adverse effects. This section is intended to provide decision-makers with information about the merits and disadvantages of the alternatives to assist them in their consideration of the proposed project and to assist the public in understanding the differences between the alternatives. Consistent with State CEQA Guidelines (Section 15126.6(e)(2)), the Environmentally Superior Alternative identified by the CEQA Lead Agency, the California Public Utilities Commission (CPUC), is presented in Section 4.3. Among the alternatives analyzed in this EIR/EIS, the NEPA Lead Agency, the Bureau of Land Management (BLM), has identified the Preferred Alternative (Section 4.3), as established in NEPA Regulations (40 CFR 1502.14). Furthermore, pursuant to NEPA Regulations (40 CFR 1505.2(b)), the environmentally preferable alternative will also be identified in the Record of Decision (ROD) for the Project[1].

Section 4.2 provides a summary of the proposed project and the alternatives analyzed in this EIR/EIS. Section 4.3 describes the methodology used for comparing alternatives and presents a comparison matrix of environmental impacts for all the alternatives by environmental issue or resource area. Section 4.4 provides a discussion highlighting the differences and similarities among the alternatives and identifies the environmentally superior alternative as required by CEQA, and the agency preferred alternative as required by NEPA Regulations (40 CFR 1502.14).

4.2 Summary of Alternatives

To facilitate a clear understanding of the alternatives, this section summarizes the detailed descriptions for each alternative presented in Chapter 2. The primary features of the proposed project and each alternative are presented in a series of tables for each alternative, and a summary matrix of the components of the proposed project and all alternatives is provided in Table 4.1 at the end of this section, to allow for ease of comparison. An overall map of the proposed project and alternatives is presented in Figure 2-1 at the beginning of Chapter 2. More detailed route maps are presented in Figures 2-10 through 2-14.

The alternatives described below are organized into (1) transmission line routing alternatives and (2) telecommunication path routing alternatives. These alternatives were identified after a screening process, which is further described in Appendix A, “Alternatives Screening Report” (ASR). The ASR evaluated the ability of 18 potential alternatives and/or combination of alternatives to meet the following CEQA/NEPA requirements for alternatives: consistency with project objectives and purpose and need, feasibility, and potential to eliminate significant environmental effects. After initial screening, seven alternatives were determined to meet the CEQA/NEPA alternatives screening criteria and have been retained for full analysis in the EIR/EIS. These retained alternatives and the No Project / No Action Alternative are described in detail in Section 2.3 and are summarized below.

[1] See Section 4.4 for a comparison of the agency preferred alternative and the environmentally preferable alternative, based on NEPA regulations.

4.2.1 No Project / No Action Alternative

The No Project / No Action Alternative considers the results if the proposed project were not implemented. If the project were not built, none of the activities or potential environmental impacts associated with it would occur. Analysis of the No Project Alternative and the corresponding No Action Alternative is required by CEQA and NEPA, respectively, to allow state (CPUC) and federal (BLM) decision-makers to compare the impacts of the project and its alternatives with the impacts of not approving the project. A BLM No Action decision would be the denial of the right-of-way (ROW) application filed by Southern California Edison (SCE, the applicant).

Under the No Project / No Action Alternative, the objectives of the proposed project would not be accomplished. The new electrical transmission facilities to connect renewable energy sources in the Ivanpah Valley area would not be constructed. The applicant would continue to operate and maintain the existing 115-kilovolt (kV) transmission structures and substations and access and spur roads under a variety of agreements and permits. The applicant would also be required to interconnect and integrate power generation facilities into its electric system. This requirement is established by Sections 210 and 212 of the Federal Power Act (16 United States Code (U.S.C.) § 824 (i) and (k)) and Sections 3.2 and 5.7 of the California Independent System Operator (CAISO) Tariff.

Under the No Project / No Action Alternative, the following events or actions (scenarios) related to electric generation and transmission could be reasonably expected to occur in the foreseeable future:

- As currently conceived, solar projects proposed in the Ivanpah Valley area would be postponed or cancelled. Applicants for certain projects planned in the area have stated their intention to connect to an upgraded 230-kV transmission network, and it can be reasonably assumed that other planned projects in the area have the same intention. To continue, these proposed renewable energy projects would have to find alternate means to connect to the existing transmission system without compromising system reliability.
- The California Renewables Portfolio Standard (RPS), which requires retail sellers of electricity to increase their sales share produced by renewable energy sources to 20 percent by 2010, might not be achieved without access to renewable energy from the Ivanpah Valley. While access to renewable energy from the Ivanpah Valley could be provided via other methods, the location of the existing SCE transmission corridor in relation to the planned renewable generation projects in the Ivanpah Valley area make it a natural candidate for providing access to the CAISO-controlled grid.
- Other renewable energy resources would need to be identified and transmission studies would need to be conducted to connect these newly identified sources to the transmission grid. This could delay SCE's, and other utilities', ability to reach the RPS goal of 20 percent renewable generation sources by 2010.
- If the generation projects currently planned (mentioned above) were approved and constructed, transmission providers such as the applicant, Pacific Gas and Electric (PG&E), or the Los Angeles Department of Water and Power (LADWP) would be required to accommodate the power load by upgrading existing transmission infrastructure or building new transmission facilities along a different alignment, and/or developers of solar and wind generation facilities would need to build their own transmission facilities to connect to the existing grid. These renewable generation facilities could also connect with a transmission system that serves customers outside of California.

- If the proposed transmission system is not constructed, the planned renewable generation facilities would need to find alternative means for transmitting their power to load centers and customers. Therefore, the No Project / No Action Alternative might not meet the objectives outlined by the CPUC and the BLM. Specifically, under the No Project / No Action Alternative, access to the CAISO-controlled grid might not be provided to solar generation projects planned for the Ivanpah Valley area because these projects might not be constructed or could connect to transmission systems that service customers outside of California.

- Under the No Project Alternative, the applicant would need to identify alternate renewable generation sources to meet the state RPS goals. This could result in delaying the applicant's ability to comply with the RPS mandate and, depending on the alternate sources identified, could result in greater environmental impacts than the proposed project, as they might require creation of a new ROW or might require ground disturbance in previously undisturbed areas.

4.2.2 Transmission Line Routing Alternatives

There are five transmission line routing alternatives. All of these are minor route variations to the proposed project transmission line route. Two of these alternatives, Transmission Alternative Routes A and B, were developed to avoid a segment of the proposed project route that would deviate from designated transmission corridors. The other three transmission line route alternatives, Alternatives C and D and Subalternative E, were developed to avoid or reduce potential impacts to Ivanpah Dry Lake.

Route Parallel to LADWP Line Segment Alternative (Transmission Alternative Route A)

Transmission Alternative Route A (Figures 2-1 and 2-11) would begin at the Eldorado Substation. The line would exit the substation to the north and join the existing Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass ROW. The line would proceed generally west on a 130-foot ROW and cross three LADWP transmission lines (McCullough–Victorville No. 1 500-kV transmission line, McCullough–Victorville No. 2 500-kV transmission line, and Mead-Victorville 287-kV transmission line) to the north before heading west.

The route would then cross the LADWP 500-kV transmission line (Marketplace–Adelanto). Transmission Alternative Route A would continue west for approximately 5.0 miles on a new ROW, and then turn north for approximately 1,000 feet before crossing the LADWP Marketplace–Adelanto 500-kV transmission line again and joining the proposed project route at MP 7.

The purpose of this alternative is to bypass a segment of the proposed project route that would deviate from designated transmission corridors and would cross an approximately 0.8-mile segment within the Boulder City Conservation Easement. Although this 0.8-mile ROW currently contains the existing 115-kV line, as stated above, it falls outside of the BLM-designated corridors. Therefore, the applicant would need to obtain Clark County and City of Boulder City approval to widen the ROW to the 100 to 130 feet required for the upgraded 230-kV line (see mitigation measure [MM] LU-1). Transmission Alternative Route A would bypass this segment by heading north from the Eldorado Substation following existing designated transmission corridors.

North of Eldorado Alternative (Transmission Alternative Route B)

Transmission Alternative Route B (Figure 2-11) would begin at the Eldorado Substation. The line would exit the substation to the north and parallel the Eldorado–Mead 230-kV transmission line on existing ROW for approximately 2.5 miles before turning southwest. The route continues southwest for approximately 2.8 miles and re-joins the existing Eldorado–Baker–Coolwater–Dunn Siding–Mountain Pass 115-kV transmission line ROW at milepost [MP] 2 of the proposed route. This alternative would require numerous, difficult transmission line crossings, and several existing overhead utility lines would require modification or relocation to accommodate passage of the Alternative Route B transmission line.

Similar to Transmission Alternative Route A, the purpose of Transmission Alternative Route B is to bypass a segment of approximately 0.8 miles where the proposed project would deviate from existing designated transmission corridor and would cross lands administered by the City of Boulder (Boulder City Conservation Easement). Transmission Alternative Route B was created to bypass these segments by heading southwest from the Eldorado Substation to join the existing ROW.

North Dry Lakes Reroute Alternative (Transmission Alternative C)

Transmission Alternative Route C (Figure 2-12) would begin at the Eldorado Substation and follow the proposed route to the point where the line would reach the northeastern edge of Ivanpah Dry Lake (MP 27, tower 185). Transmission Alternative Route C would then continue west and southwest on new 130-foot ROW around Ivanpah Dry Lake for approximately 5.3 miles before rejoining the proposed project route at MP 32, tower 218. Transmission Alternative Route C was developed to minimize potential impacts to Ivanpah Dry Lake.

South Dry Lakes Reroute Alternative (Transmission Alternative Route D)

Transmission Alternative Route D (Figure 2-12) would parallel the existing LADWP Marketplace–Adelanto 500-kV transmission line as it crosses through Ivanpah Dry Lake. This route would reduce the overall transmission footprint, since the EITP towers would follow to the extent feasible the existing LADWP 500-kV ROW. Transmission Alternative Route D would begin at the Eldorado Substation and follow the proposed route until it would approach the northeastern edge of Ivanpah Dry Lake (MP 27, tower 184). Transmission Alternative Route D would then continue south and then southwest on a new 130-foot ROW around Primm for approximately 3.3 miles before rejoining the proposed project route at MP 30, tower 203.

South Dry Lakes Bypass (Transmission Subalternative Route E)

Transmission Subalternative Route E is a subalternative to Transmission Alternative Route D. Subalternative E would use a shorter length of new 130-foot ROW (approximately 0.25 miles shorter than Alternative D) from MP 27 of the proposed EITP transmission line to the corridor that would parallel the existing LADWP Marketplace–Adelanto 500-kV transmission line. As would Transmission Alternative D, this route would reduce the overall transmission footprint, since the EITP towers would follow to the extent feasible the existing LADWP 500-kV ROW. Transmission Subalternative Route E would proceed south from MP 27 for approximately 1 mile and then follow the route proposed for Transmission Alternative Route D (Figure 2-12).

4.2.3 Telecommunication Alternatives

The two alternatives to the proposed telecommunication system are the Golf Course Telecommunication Alternative and the Mountain Pass Telecommunication Alternative. These alternatives include additional undergrounded segments and installation of telecommunication cable along existing distribution lines. The telecommunication alternatives were designed to minimize potential visual impacts of an aboveground microwave tower. Both alternatives would follow the same path as the proposed telecommunication route, from the Eldorado–Lugo transmission line MP 25 to the town of Nipton, California (Path 2, Sections 1 and 2).

Golf Course Telecommunication Alternative

The Golf Course Telecommunication Alternative route would extend from Nipton to the point on the north side of Nipton Road where it intersects with I-15. This alternative would consist of a combination of all-dielectric self-supporting fiber cable installed on existing Nipton 33-kV wooden distribution lines and underground in new duct banks (Figure 2-13).

Approximately 1 mile of all-dielectric self-supporting fiber cable would be installed overhead on an existing Nipton 33-kV distribution line immediately west of Nipton, on the north side of Nipton Road. Pole replacement for this alternative is not anticipated; however, the detailed project engineering design process might indicate that pole replacement would be necessary. From the westernmost pole on the Nipton line before it would cross Nipton Road to the south, fiber optic cable would be installed in a new underground duct along the north side of Nipton Road in new roadside ROW to the intersection of Nipton Road and I-15. The underground cable length for this segment would be approximately 9 miles.

From the I-15–Nipton Road junction, the Golf Course Telecommunication Alternative route would parallel I-15, running north on an existing Nipton 33-kV distribution line and crossing I-15 near the Primm Valley Golf Course. This alternative route would cross the Primm Valley Golf Course in a new underground duct (Figure 2-13), then continue on an existing Nipton 33-kV distribution line to a point approximately 1 mile north of the Ivanpah Substation. The telecommunication line would then be installed in a new underground duct for approximately 1 mile to the Ivanpah Substation. The entire route from the I-15 junction to the Ivanpah Substation would be approximately 10 miles.

Mountain Pass Telecommunication Alternative

The Mountain Pass Telecommunication Alternative route would extend from Nipton to the point on the north side of Nipton Road where it intersects with I-15. This alternative would consist of all-dielectric self-supporting fiber cable installed on existing Nipton 33-kV wooden distribution lines and underground in new duct banks (Figure 2-14).

Approximately 1 mile of all-dielectric self-supporting fiber cable would be installed overhead on an existing Nipton 33-kV distribution line immediately west of Nipton, on the north side of Nipton Road. Pole replacement for this alternative is not anticipated; however, the detailed project engineering design process might indicate that pole replacement would be necessary. From the westernmost pole on the Nipton line before it crosses Nipton Road to the south, fiber optic cable would be installed in a new underground duct along the north side of Nipton Road in new roadside ROW to the intersection of Nipton Road and I-15. The underground cable length for this segment would be approximately 9 miles.

From the I-15 junction point, the route would parallel I-15 in an underground duct for approximately 1.0 miles and then the cable would exit the underground duct and be strung on an existing Nipton 33-kV distribution line. The alternative route would then continue west to the town of Mountain Pass, then north to the Mountain Pass Substation. From there, the cable route would proceed northeast on an existing Nipton 33-kV distribution line to the Ivanpah Substation. The route would enter the proposed Ivanpah Substation from the south via approximately 500 feet of underground conduit that would be installed from the last Nipton 33-kV distribution line pole to the substation. The Mountain Pass Telecommunication route, from the I-15 junction point to the Ivanpah Substation, would be approximately 15.0 miles.

4.3 Comparison of Environmental Impacts

Potential impacts associated with the construction, operation, and maintenance of the eight alternatives to the proposed EITP (including the No Project Alternative) were identified and discussed for each resource section and environmental issue in more detail in Sections 3.2 to 3.14 of this Draft EIR/EIS. Impacts identified for each resource area and alternative were compared with those identified for the proposed project, in terms of potential changes in impact significance (CEQA) and in the intensity, magnitude, and spatial and temporal extent of potential effects (NEPA). This section summarizes the methodology used for comparison of environmental impacts and presents the results of the comparison in a summary and a comparison matrix (Table 4-1).

Summary of the Comparison of Environmental Impacts

Transmission Routing Alternatives

Construction and operation and maintenance of Transmission Alternative Routes A, B, C, and D and Subalternative E would differ from the proposed project in length of ROW required and the associated land disturbance, as well as in location with respect to certain resources features that could increase or lessen the environmental effects associated with each proposed project component.

All the transmission alternative routes might impose stronger overall visual contrast due to structures that would not parallel the existing transmission facilities. However, these minor adverse effects on visual resources would still be consistent with a VRM Class III designation. Alternatives C and D and Subalternative E would have reduced visual impacts on the Desert Oasis Apartment Complex, while Alternative C would lessen potential impacts on recreational users.

Air quality emissions would be approximately 5 percent above the emissions of the proposed project for Alternatives B and C, due to their additional associated land disturbance during construction activities. Alternatives A and D and Subalternative E would impose impacts on air quality similar to those of the proposed project.

Major differences between potential impacts from the transmission alternative routes have been identified for biological resources. Increases in the total permanent and temporary land disturbance in previously undisturbed desert habitat would result in the direct and indirect loss of habitat for listed or sensitive plant species, native vegetation communities, and sensitive wildlife habitat. Alternatives B and C would have greater associated disturbance and effects on these resources. The increase in the spatial extent of the project footprint would increase the potential for disturbing wildlife and inducing wildlife mortality. In particular, Alternative C would cross higher quality desert tortoise habitat. Alternative D and Subalternative E would also have associated impacts on native vegetation (pink funnel lily) not found along the proposed project route.

Other resource areas would have slightly different impacts than would the proposed project. Alternatives A and B would not impact known cultural resources, and the potential for buried, and therefore previously unidentified, cultural resources or human remains would be the same as for the proposed project. Alternatives C and D and Subalternative E would lessen impacts on noise, since they would be farther away from sensitive receptors than the proposed project would be.

Telecommunication Alternatives

Major differences between potential impacts from the telecommunications alternatives have been identified for biological resources. The Golf Course Telecommunication Alternative would increase potential impacts on desert tortoise habitat due to increased critical habitat acreage impacted. Greater impacts to wildlife have been identified for the Mountain Pass Telecommunication Alternative, due to the proximity of construction activities to bighorn sheep and montane bird habitats.

No Project / No Action Alternative

Under the No Project / No Action Alternative, the proposed project, including the transmission line, the proposed Ivanpah Substation, the telecommunications line, and all other components of the proposed project, would not be constructed. Therefore, none of the changes to the existing environment would occur, and there would be no adverse impact to any of the identified environmental resources.

If the proposed transmission system is not developed but the planned renewable generation facilities are developed, an alternative method for connecting renewable generation facilities in the Ivanpah Valley area would need to be developed. However, because the proposed project would involve only the replacement of an existing transmission line within an existing ROW, it is reasonable to assume that any alternate connection method for renewable generation facilities in the Ivanpah Valley area could result in greater impacts than the proposed project because it might require new ROW or ground disturbance in previously undisturbed areas.

4.4 Identification of the Environmentally Superior Alternative (CEQA) / Agency Preferred Alternative (NEPA)

Ranking of Alternatives (CEQA)

Based on the results of the environmental analysis presented in this Draft EIR/EIS, the comparison of alternatives summarized in Section 4.3 and presented in Table 4-1, and the estimated land disturbance presented in Tables 2-8 and 6-1, the following list presents the alternatives ranked from the most to the least environmentally preferred. Additionally, Transmission Route Alternatives A or B could be combined with Transmission Route Alternatives C, D or Subalternative E, and any of the routing alternatives could be combined with either telecommunication alternative.

- Proposed Project
- Transmission Alternative Routes A and D, with Subalternative E
- Transmission Alternative Route B
- Transmission Alternative Route C
- Golf Course Telecommunication Alternative
- Mountain Pass Telecommunication Alternative

Environmentally Superior Alternative (CEQA)

CEQA Guidelines require identification of the environmentally superior alternative. According to the California Code of Regulations (CCR) Title 14 §15126.6(e)(2), "if the environmentally superior alternative is the 'no project alternative,' the EIR shall also identify an environmentally superior alternative among the other alternatives." Since the No Project / No Action Alternative evaluated in this Draft EIR/EIS would not meet the agency's project objectives, the CPUC has determined that the environmentally superior alternative is the proposed project. In contrast with the other seven routing and telecommunication alternatives evaluated in this Draft EIR/EIS, the proposed project would have less land disturbance and less significant impacts on sensitive biological resources, and it would meet all of the project's objectives. However, under CEQA, this alternative would still result in significant and unavoidable impacts to desert tortoise habitat and significant impacts to air quality, hydrology, and public services.

Agency Preferred Alternative and Environmentally Preferable Alternative (NEPA)

Under Title 40 CFR Section 1502.14(e), lead federal agencies are required to "identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference." In determining which alternative is preferred, lead federal agencies consider both the "environmentally preferable alternative" and the "agency preferred alternative." The "agency preferred alternative" is the alternative that the agency believes would fulfill its statutory mission and responsibilities, considering economic, environmental, technical, and other factors. The "environmentally preferable alternative," in contrast, is the alternative that would promote the national environmental policy, as expressed in NEPA Section 101. Ordinarily, this means the alternative that would cause the least damage to the biological and physical environment; however, it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources (CEQ 1981).

The environmentally preferable alternative will be identified by the BLM in the Record of Decision (ROD) for the project; however, based on the conclusions of the environmental analysis in this Draft EIR/EIS, the BLM has determined that the proposed project / proposed action would fulfill the agency's objectives for the project and is therefore the agency preferred alternative. Although the intensity and extent of potential direct and indirect effects would be similar for all the alternatives carried forward in this Draft EIR/EIS, the proposed project would involve less temporary and permanent land disturbance within critical habitat for plant and wildlife species. Nonetheless, under NEPA, the proposed project would still result in major adverse unavoidable effects to desert tortoise habitat and major adverse impacts to aesthetics, air quality, hydrology, and public services.

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Table 4-1 Comparison of Alternatives

ENVIRONMENTAL RESOURCE	Proposed Project	PROJECT ALTERNATIVES						
		Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
VISUAL RESOURCES	Minor adverse effects to visual resources temporarily due to construction activities and permanently due to the introduction of taller towers and new structures, including the proposed Ivanpah Substation and the microwave tower. Construction: impacts would be greatest in areas with the greatest amount of land disturbance, such as laydown or staging areas and areas where substantial trenching would be required. Operation and maintenance: seven of the eight KOPs evaluated would conform with the established VRM or VRI classes, and one would not conform with VRM Class II. Under NEPA, this impact is considered adverse. Mitigation measures AES-1 and AES-2 would lessen the contrast in color and line that would be introduced by construction of the Ivanpah Substation. Less than significant impacts on scenic vistas and no impact within a state scenic highway. Mitigation would be required to lessen impacts on existing visual character or quality to the greatest extent possible. Less than significant source of lighting at the Ivanpah Substation, without creation of adverse glare source.	Transmission Alternative Route A would be visible only from KOP 7; all other segments of this alternative would be identical to the proposed project. Stronger overall visual contrast due to the structures not paralleling existing transmission facilities. Minor adverse effects from routing changes, but the area would still be consistent with a VRM Class III designation.	Transmission Alternative Route B would be visible only from KOP 7; all other segments of this alternative would be identical to the proposed project. Stronger overall visual contrast due to the structures not paralleling existing transmission facilities. Minor adverse effects from routing changes, but the area would still be consistent with a VRM Class III designation.	Transmission Line Alternative C would only differ from the proposed project analysis at KOPs 4, 5, and 6; all other segments of this alternative would be identical to the proposed project Stronger overall visual contrast due to the structures not paralleling existing transmission facilities. Minor adverse effect from KOPs 4 and 5. Routing changes would still be consistent with a VRM Class III designation. Reduced visual impacts on residents of the Desert Oasis Apartment Complex and recreational users of the Ivanpah Dry Lake. Same visual impacts to motorists along I-15 as the proposed project.	This alternative would only differ from the proposed project analysis at KOPs 4, 5, and 6; all other segments of these alternatives would be identical to the proposed project. Routing changes would be consistent with the VRM Class III designation for the area. No adverse effect from KOP 4, and reduced impacts to residents of the Desert Oasis Apartment Complex. Same visual impact on recreational users of Ivanpah Dry Lake and motorists along I-15 as the proposed project.	Same as Transmission Alternative Route D.	This alternative would only differ from the proposed project analysis at KOP 8; all other segments of this alternative would be identical to the proposed project. Moderate temporary impacts due to an additional segment of trenching along Nipton Road. Minor adverse visual impact to users of the Golf Course during the construction period due to trenching activities, exposure of soils, equipment, and transportation of materials. No visual impacts due to the portion of the telecommunications line along the existing 33-kV distribution lines (perceptible only at an extremely close distance).	This alternative would only differ from the proposed project analysis at KOP 8; all other segments of this alternative would be identical to the proposed project. Moderate temporary impacts due to an additional segment of trenching along Nipton Road. No visual impacts due to the portion of the telecommunications line along the existing 33-kV distribution lines (perceptible only at an extremely close distance). Minor adverse visual effects limited to construction activities.
AIR QUALITY	Minor adverse construction emissions; negligible operational emissions. Less than significant impacts associated with any conflict with an applicable air quality plan, contribution to violation of any air quality standards, or contribution to a considerable net cumulative increase of any criteria pollutant. Less than significant temporary impacts on generation of odors, sensitive receptors, generation of GHGs. No conflict with any identified GHG reduction plans, policies, or regulations.	The level of construction and operational activity is expected to be similar to that of the proposed project route. Impacts virtually identical to those of the proposed project.	The level of construction and operational activity is expected to be similar to the proposed project, as it would only impact an additional 24 acres. Emissions under this scenario could be approximately 5 percent above the emissions for the proposed project.	The level of construction and operational activity is expected to be similar to the proposed project, as it would only impact an additional 5.5 acres. The emissions under this scenario could be approximately 5 percent above the emissions of the proposed project.	The level of construction and operational activity is expected to be similar to that of the proposed project route. Impacts virtually identical to those of the proposed project.	Impacts virtually identical to Transmission Alternative Route D.	Impacts virtually identical to the proposed project.	Impacts virtually identical to those of the proposed project.

Table 4-1 Comparison of Alternatives

ENVIRONMENTAL RESOURCE	Proposed Project	PROJECT ALTERNATIVES						
		Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
BIOLOGICAL RESOURCES	The proposed project would significantly and adversely affect biological resources. Overall, impacts on biological resources (except desert tortoise) from the proposed project would be minor to moderate. Construction, operation, and maintenance activities associated with the proposed project would have impacts on native vegetation, local wildlife, and special-status plants and wildlife. Incorporation of recommended mitigation measures would reduce impacts on these resources through avoidance and minimization. Potentially significant impacts on wildlife species due to direct or indirect loss of habitat for listed or sensitive plant and wildlife species. Impacts on desert tortoise critical habitat would be significant even after mitigation because previously undisturbed designated critical habitat would be permanently removed. If a significant number or length of new access roads and spur roads were necessary for construction of the project, impacts on desert tortoise habitat could be considered major and extensive. Less than significant impacts with mitigation on: • Direct or indirect loss of listed or sensitive plants; • Temporary and permanent losses of native vegetation communities and the introduction of invasive, non-native, or noxious plant species; • Drainages, riparian areas, and wetlands; • Direct or indirect loss of migratory wildlife species, corridors, or nursery sites; and • Conflict with the provisions of local ordinances or policies. No impacts associated with the Clark County MSHCP or the BCCE.	Critical issues for this alternative include impacts to native vegetation communities, habitat for special-status plants and wildlife, and special management areas. Potential increase in total permanent impacts by 8 acres and temporary impacts by 62.2 acres in previously undisturbed desert habitat, resulting in a net increase in the direct and indirect loss of habitat for listed or sensitive plant species. Increase in acreage impacts would also increase the potential for disturbing wildlife or causing wildlife mortality, with primary impact on desert tortoise and desert tortoise habitat. Impacts to desert tortoise critical habitat would be considered significant, adverse, and long term after mitigation since this alternative passes through previously undisturbed designated desert tortoise critical habitat. Less than significant impacts on the Clark County MSHCP and the BCCE with mitigation and compliance discussions. Compared with the proposed project, impacts from Transmission Alternative Route A would be of moderate intensity.	Impacts similar to those of the proposed route, but would result in a net increase in the extent and magnitude of direct and indirect impacts associated with placement of new towers and creation of new ROW and spur roads. Alternative B would result in an additional 3.7 miles of transmission line and 5.6 miles of new ROW, which would increase the acreage of permanent and temporary impacts to the native vegetation community by 10 acres and 129 acres, respectively. This alternative could result in fewer crossings of intermittent streams than the proposed project, which would decrease impacts to desert wash habitat and wildlife using this habitat. Compared with the proposed project, Alternative Route B would increase impacts to desert tortoise. Less than significant impacts on the Clark County MSHCP and the BCCE with mitigation and compliance discussions. No difference from the proposed project in the duration or severity of impacts.	Reduced impacts to the Ivanpah Dry Lake bed and disturbance to wildlife species using the vegetation and/or the lake bed as habitat. Fewer crossings of intermittent streams with this alternative. Increased extent of permanent and temporary impacts by 6.5 acres and 79 acres, respectively, to the native vegetation community and any wildlife or special-status species that use this habitat. Increase in spatial extent would increase the potential for disturbing wildlife and increasing wildlife mortality and the potential for direct or indirect loss of listed or sensitive wildlife and their required habitat. The primary issue for this alternative would be greater impacts to the desert tortoise. Compared with the proposed route, this alternative would cross higher quality desert tortoise habitat. Less than significant impacts on the Clark County MSHCP and the BCCE with mitigation and compliance discussions. No difference in the duration or severity of impacts from that of the proposed project.	Reduced impacts to the Ivanpah Dry Lake bed. Net increase in the extent and magnitude of direct and indirect impacts from removal of habitat for placement of new towers and creation of new ROW and spur roads. Increase of temporary impacts by 60 acres, and increase of permanent impacts by 1.2 acres. Overall impacts to native vegetation would increase, as well as the potential for impacts to special-status species. Impacts on the pink funnel lily, which is absent from the proposed transmission line route. Potential for disturbing wildlife and causing increased wildlife mortality, and direct or indirect loss of listed or sensitive wildlife and their required habitat. Alternative D would cross only a slightly greater amount of desert tortoise habitat and therefore would have a potential of impacting desert tortoise similar to that of the proposed project. No difference in the duration, severity, or extent of impacts from that of the proposed project.	Same as Transmission Alternative Route D.	Net increase in the extent and magnitude of direct and indirect impacts. The additional land disturbances associated with the other underground segments and with pole replacement would result in a total increase in temporary and permanent losses to the native vegetation. There would also be the potential to introduce and further spread invasive and noxious weeds with any new soil disturbances. This alternative could result in beneficial impacts to raptors in the area, compared with the impacts of the proposed project. More perching and nesting posts would be available to raptors with the increase in the number of towers to be installed. The additional communication line located between the Town of Nipton and I-15 would cross approximately 12.9 miles of designated desert tortoise critical habitat. Compared with the proposed project, this alternative would increase potential impacts on desert tortoise due to the significantly increased impacted critical habitat acreage. No difference from the proposed project in the duration, severity, or extent of impacts.	Net increase in the extent and magnitude of direct and indirect impacts. This alternative would cross a more diverse set of vegetation habitat types, potentially impacting a more diverse range of plants and wildlife, and numerous sensitive plant species identified in botanical surveys. An increase in the acreage of previously undisturbed habitat would increase the potential for introduction of invasive, non-native, or noxious plant species. Potential greater impacts on wildlife due to construction noise and human disturbance close to areas that provide habitat for desert bighorn sheep and montane bird species. This alternative would cross an additional 9.7 miles of designated desert tortoise critical habitat. Potential beneficial impacts on raptors in the area from additional new towers. Compared with the proposed project, this alternative's impacts would be of moderate intensity.

Table 4-1 Comparison of Alternatives

		PROJECT ALTERNATIVES						
ENVIRONMENTAL RESOURCE	Proposed Project	Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
CULTURAL RESOURCES	The project would have direct, adverse, and permanent impacts to Cultural Resources 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H)/26CK4957. After mitigation, potential impacts would be minimized or reduced to less than significant. Potential impacts on human remains, if there are unanticipated discoveries during construction, would be reduced to less than significant with implementation of APMs. Disturbance of previously unidentified cultural resources would have a less than significant impact with implementation of APMs and mitigation.	No previously recorded cultural resources are located in this alternative route. No newly discovered cultural resources were found during field surveys. This alternative would have no impacts on known cultural resources. There would be a potential for buried, and therefore previously unidentified, cultural resources or human remains. After mitigation, impacts would be negligible and less than significant.	No previously recorded cultural resources are located in this alternative route. No newly discovered cultural resources were found during field surveys. There would be no impacts to known cultural resources. There would be potential for buried, and therefore previously unidentified, cultural resources or human remains. Less than significant, negligible impacts after mitigation.	This alternative would result in significant direct adverse permanent impacts to 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H)/26CK4957), as would the proposed project. There would be no impacts to cultural sites 36-7689 (CA-SBR-7689H) or 26CK4135, because they are not eligible for the NRHP. Alternative C traverses the same sediments as the proposed project, which have the potential for buried, and therefore previously unidentified, cultural resources. Less than significant, negligible impacts after mitigation.	No impact to Cultural Resource 36-13416 (CA-SBR-12574H) because this site has been recommended not eligible for the NRHP. Transmission Alternative D is associated with the Boulder Transmission Line; it will be included with the Historic American Engineering Record assessment for that line. Potential for buried, and therefore previously unidentified, cultural resources. Less than significant, negligible impacts after mitigation.	Subalternative E contains no previously recorded cultural resources, and no cultural resource was discovered during the field survey for this subalternative; therefore, no impacts to known cultural resources would occur.	Impacts would be similar to those of the proposed project, although no known cultural resources are located in this alternative. No significant impacts after mitigation.	Impacts would be similar to those of the proposed project, although no known cultural resources are located in this alternative. No significant impacts after mitigation.
GEOLOGY AND SOILS	Minor long-term impacts to geology and soil resources could occur. Disturbance of the existing ground surface and natural drainages could cause minor erosion-related impacts. Operations and maintenance activities would result in continued erosion. Expansive soils could result in low to moderate levels of structural failure of the transmission and telecommunication line poles and towers and the Ivanpah Substation. There is also the potential for impacts as a result of changing geologic conditions including seismic events (fault rupture and ground shaking), subsidence, or liquefaction. Numerous non-metallic and metallic mineral deposits occur along or near the transmission line route. Several paleontological resources exist within 1 mile of the proposed project and one paleontological resource location is within 300 feet. All potentially significant geology, soil, mineral, and paleontological impacts would be mitigated to less than significant levels.	Transmission Alternative Route A is similar to the proposed project in terms of geology, soils, and mineralogical materials. It is also similar in topography, and its impacts would be similar to those of the proposed project. Ground-disturbing activities as part of geotechnical investigations along Alternative Route A could impact buried paleontological resources in underlying sedimentary formations of high paleontological sensitivity. Impacts would be less than significant without mitigation.	Transmission Alternative Route B is similar to the proposed project in terms of geology, soils, and mineralogical materials. It is also similar in topography. Direct impacts and mitigation associated with this alternative route are similar to those for Alternative Route A.	Similar to the proposed project in terms of geology, soils, and mineralogical materials. It is also similar in topography. The Mesquite segment of the SFS crosses Alternative Route C along the California-Nevada border at Primm nearly perpendicular to the proposed route. This impact would be negligible and localized, and would be short term relative to construction but long term with respect to operations and maintenance. Direct impacts to buried paleontological resources from ground-disturbing activities.	Impacts and mitigation similar to those in Transmission Alternative Route C and the proposed project.	Impacts and mitigation similar to those in Transmission Alternative Route C and the proposed project.	Similar to the proposed route, except it does not cross the SFS Mesquite segment. Located in similar geology, soils, and mineralogical materials as the proposed project. Tower construction and ground-disturbing activities could impact paleontological resources in areas where underlying formations have high paleontological sensitivity. After mitigation, this alternative would result in less than significant impacts.	Located in similar geology, soils, and mineralogical materials as Transmission Alternative Routes C and D and Subalternative E in the lower elevations. Also includes earlier Precambrian metamorphic bedrock of the Clark Mountains. Topography ranges from relatively flat low-lying valley bottoms and playa to moderately steep hill slopes in the area of Mountain Pass Substation. Minor, localized, long-term impacts of the project could result from both landslides and erosion. With mitigation, these impacts would be reduced to less than significant.

Table 4-1 Comparison of Alternatives

ENVIRONMENTAL RESOURCE	Proposed Project	PROJECT ALTERNATIVES: Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
HAZARDS, HEALTH, AND SAFETY	Minor, localized, short term impacts during construction and operation and maintenance. Less than significant impacts with mitigation associated with: hazards created through routine transport, use, or disposal of hazardous materials; hazards created through accidental release of hazardous materials into the environment; increased safety hazards for people residing or working within 2 miles of a public airport or public use airport. Less than significant impacts without mitigation related to the exposure of the public or environment to contaminated soil or groundwater, interference with an adopted emergency response plan or emergency evacuation plan, and the exposure of people or structures to wildland fires. No impact on an existing or proposed school.	Incrementally less impact associated with the improper management or release of hazardous materials because this alternative is shorter than the proposed project. The potential to encounter contaminated soil would also incrementally decrease. If contaminated soils were encountered, impact would remain short term, minor, and less than significant. Potential impacts on health and safety, emergency response/evacuation routes, airports, and the risk of wildfires would be less than significant.	Similar impacts to the proposed project; no significant impacts after implementation of APMs and mitigation.	Impact on intermittent streams would be reduced due to fewer crossings, and the likelihood of impacting water resources would be reduced. More likely to present obstruction and/or hazards to aviation than the proposed project, due to the proximity to the proposed SNSA. Greater potential for ground-disturbing activities and construction within 5.2 miles of new ROW. The potential to encounter contaminated soil would incrementally increase; the impact, if contaminated soils were encountered, would be short term, minor, and less than significant.	Decreased risk to present obstructions and/or hazards to aviation than the proposed project or Alternative C. Decreased risk of improper management of hazardous materials, spills, and uncovered contaminated soils.	Same as Transmission Alternative Route D.	Increased risk of accidents associated with hazardous materials due to the increased length of the construction period and additional length of telecommunication line. Potential crossings of hazardous materials sites: • Closed land disposal site (Biogen Plant), buried underneath the Primm Valley Golf Course • Possible underground storage tank at the southeast quadrant of the I-15/Yates Well Road interchange in Nipton, California. This alternative could result in moderate, adverse direct impacts due to the potential of exposing potential contamination along this route.	Increased risk of accidents associated with hazardous materials due to the increased length of the construction period and additional length of telecommunication line. Potential crossing through Molycorp Mine, which is listed as a hazardous site (DTSC 2009). However, this portion of the telecommunication line would be an overhead wire. Mitigation would reduce the risks associated such that the impact would be minor, short term, and less than significant with mitigation, although incrementally greater than the proposed project.
HYDROLOGY AND WATER QUALITY	Impacts to hydrology would be localized and would range from minor to moderate intensity. Minor, localized, and short term impacts from the introduction of hazardous contamination into surface water resources during construction. Potential to alter the flow or degrade the quality of groundwater to natural systems or wells for private or municipal use. No impacts to groundwater quality because the depth to groundwater at the proposed project site is more than 500 feet. Under CEQA, all impacts of the proposed project would be less than significant with mitigation measures; these impacts include: • Hazardous contamination into surface and groundwater; • Increased erosion or siltation due to alteration of surface drainage patterns and altered course of stream or river due to	Water resources and topography are similar to those of the proposed project. All impacts would be direct and adverse. Minor, localized, short-term impacts associated with surface and groundwater contamination. Minor to moderate extensive, long-term impacts associated with potentially lowering the local water table due to water use and redirection or modification of flood flows by construction equipment or tower footings.	Water resources and topography similar to those of the proposed project. All impacts would be direct and adverse. Minor, localized, short-term impacts associated with surface and groundwater contamination. Impacts similar to those of Transmission Alternative A.	Water resources and topography similar to those of the proposed project. All impacts would be direct and adverse. Minor, localized, short-term impacts associated with surface and groundwater contamination. Impacts similar to those of the proposed project.	Water resources and topography similar to those of the proposed project. Transmission Alternative D is co-located with an existing transmission line through Ivanpah Dry Lake and, therefore, would not additionally contribute to the disturbance of surface drainage patterns on the dry lake bed. Impacts similar to those of the proposed project.	Same as Transmission Alternative D.	Impacts similar to those of the proposed project although there would be no additional contribution to the disturbance of surface drainage patterns on the dry lake bed. Impacts less than significant with mitigation.	Similar to the proposed project in that they are located in the same vicinity and would have similar impact on water resources. This alternative extends into the foothills of the Clark Mountain Range, while the proposed project route crosses the Ivanpah Valley.

Table 4-1 Comparison of Alternatives

ENVIRONMENTAL RESOURCE	Proposed Project	PROJECT ALTERNATIVES						
		Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
	modification of surface drainage patterns; • Modified runoff characteristics and exposure to a significant risk of flooding and the modification of runoff characteristics, possibly leading of flooding or inundation by mudflow. Less than significant impacts without mitigation associated with lowering of water table or interference with aquifer recharge and placement of structures in a 100-year flood hazard area.							
LAND USE	Short-term, localized, negligible adverse impacts on the Ivanpah Dry Lake Recreation Area, the Jean/Roach Dry Lake SRMA, and the Hidden Valley grazing allotment due to construction. Construction of the substation would result in a long-term, localized, adverse negligible impact on the Clark Mountain Allotment. Construction of the proposed project could have adverse impacts on land uses within the BCCE and the Ivanpah Airport Environs Overlay area; however, impacts would be reduced with mitigation. Under CEQA, these potential conflicts would be less than significant with mitigation. The proposed project would not divide an established community, nor would it conflict with Clark County MSHCP.	Transmission Alternative Route A would be constructed entirely within a BLM-designated utility corridor, thus avoiding potential conflicts with the BCCE. Impacts resulting from Transmission Alternative Route A would therefore be less than those from the proposed project.	Similar to Transmission Alternative Route A.	Alternative C would be constructed within allowable uses on BLM lands designated as Open Public Lands, a Nevada Department of Transportation Corridor, and private lands in unincorporated Clark County land designated as commercial land. Adoption of Transmission Alternative C would temporarily restrict access to one mining claim during construction.	Transmission Alternative Route D would have no impact on land use.	Same as Transmission Alternative Route D.	Adoption of this alternative would temporarily restrict access to one mining claim during construction; therefore, the Golf Course Alternative would have a short-term, negligible impact on mining in the area.	Adoption of this alternative would temporarily restrict access to four mining claims during construction; therefore, the Mountain Pass Alternative would have a short-term, negligible adverse impact on mining in the area.

Table 4-1 Comparison of Alternatives

ENVIRONMENTAL RESOURCE	Proposed Project	PROJECT ALTERNATIVES						
		Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
NOISE	Minor adverse noise impacts due to project construction at residences at the Desert Oasis Apartment Complex. The operation and maintenance of the transmission line, substation, and telecommunication line would not result in adverse noise impacts. Less than significant impacts with mitigation associated with project construction noise. Less than significant impacts without mitigation from transmission line operation and maintenance noise, groundborne vibration, or groundborne noise due to construction activities or operations. No impacts would occur as a result of the project construction and operation and maintenance in the proximity of public airports, or from exposing people residing or working in the vicinity of a private airstrip to excessive noise levels.	Impacts similar to those of the proposed project. There would be no change to the proposed project route near sensitive receptors.	Impacts similar to those of the proposed project. There would be no change to the proposed project route near sensitive receptors.	Reduced potential construction noise impacts on the Desert Oasis Apartment Complex, compared with noise from the proposed project. Potential construction noise impacts associated with Transmission Alternative C would be minor and less than significant. The remaining impacts would be similar to those of the proposed project.	Transmission Alternative D would relocate a portion of the proposed transmission line away from the nearest sensitive receptor (Desert Oasis Apartment Complex). This relocation would likely result in a decrease in potential construction noise impacts on the Desert Oasis Apartment Complex; impacts would still be adverse and minor, but less than significant. The remaining impacts would be similar to those of the proposed project.	Same as Transmission Alternative D.	This alternative is located several miles from the Desert Oasis Apartment Complex and would not have any adverse noise impacts on this receptor or result in any other construction noise impacts. Operational noise impacts would not result in any adverse noise impacts. There would be no groundborne noise or vibration impacts during construction and operation of this alternative.	This alternative is several miles from the Desert Oasis Apartment Complex and would not have any adverse noise impacts on this receptor or result in any other construction noise impacts. Operational noise impacts would not result in any adverse noise impacts. There would be no groundborne noise or vibration impacts during construction or operation of this alternative.
PUBLIC SERVICES AND UTILITIES	Impacts on emergency response services (such as fire, police, and medical services) during construction would be short term and negligible with the implementation of mitigation measures. During operations, emergency response needs are expected to be similar to existing needs in the project area, and the applicant has included a number of security design features to ensure negligible impacts on police services due to the new Ivanpah Substation. Potentially significant impacts associated with the temporary increase of water use would occur during construction and increased long-term water consumption during operation. Less than significant impacts with mitigation associated with solid waste generated during construction to comply with federal, state, or local statutes or regulations. No impact on the requirement of new or physically altered public facilities, compliance with requirements of the Regional Water Quality Control Board, or the need for new storm water drainage facilities.	Transmission Alternative Route A would reduce the length of the proposed project route. As a result, impacts on public services and utilities might differ slightly but would not be substantively different from those of the proposed project.	Transmission Alternative Route B would reduce the length of the proposed project route. As a result, impacts on public services and utilities might differ slightly but would not be substantively different from those of the proposed project.	Transmission Alternative Route C would reduce the length of the proposed project route. As a result, impacts on public services and utilities might differ slightly but would not be substantively different from those of the proposed project.	Negligible increase in the amount of solid waste generated from excavation activities and the amount of water required for dust suppression and cleaning. Impacts on public services and utilities would not be substantively different from those of the proposed project.	Same as Transmission Alternative Route D	Impacts similar to those of the proposed project. There would be a moderate increase in the amount of water required for dust suppression, cleaning, and other activities. The amount of solid waste from excavation activities and pole replacement would increase. Impacts on public services and utilities would not be substantively different from those of the proposed project.	Impacts similar to those of the proposed project. The amount of water required and solid waste generated would be slightly greater than under the Golf Course Telecommunication Alternative. The amount of solid waste from excavation activities and pole replacement would increase. Impacts on public services and utilities would not be substantively different from those of the proposed project.

Table 4-1 Comparison of Alternatives

		PROJECT ALTERNATIVES						
ENVIRONMENTAL RESOURCE	Proposed Project	Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
RECREATION	The proposed project would cross the Jean/Roach Dry Lake Recreation Area between MPs 10 and 27.5. Construction activities would be limited to the construction ROW and would be minor, short term, localized, and negligible. With mitigation, there would be no significant adverse effects on wilderness areas or recreational opportunities. No additional impacts on recreation or wilderness areas would occur as a result of project construction or as a result of operation and maintenance of the substation or telecommunications line. Less than significant impacts with mitigation related to disruption of access to existing recreation opportunities. No impacts associated with increased use of, or construction or expansion of, recreational facilities.	The potential construction and operation impacts on wilderness areas and recreational opportunities of this alternative would be similar to those of the proposed project.	The potential construction impacts on wilderness areas and recreational opportunities of Transmission Alternative Route B are similar to those of the proposed project.	This alternative would have construction impacts on wilderness areas and recreational opportunities similar to those associated with the proposed project, but this alternative would avoid construction impacts on Ivanpah Dry Lake. Construction impacts would be negligible and less than significant. There would not be any operational impacts associated with this alternative.	By reducing the transmission line footprint across Ivanpah Dry Lake, this alternative would leave more space for recreation, which would have a beneficial but negligible effect. Construction of this alternative would temporarily restrict access to the northwestern area of the Ivanpah Dry Lake Recreation Area, resulting in a short-term, moderate impact. With mitigation, this impact would be reduced to less than significant. There would not be any operational impacts associated with this alternative.	Same as Transmission Alternative Route D.	Installation of underground components during construction would not prohibit or restrict access to the Primm Valley Golf Club, but could result in temporary and minor impacts from noise and dust. Impacts would be minimized to negligible and less than significant through coordination with golf course management personnel. There would not be any operational impacts associated with this alternative.	The potential construction and operation impacts on wilderness areas and recreational opportunities of this alternative would be similar to those associated with the proposed project.
SOCIOECONOMICS, POPULATION AND HOUSING	Negligible, short-term, beneficial impact on the region's economy during construction and a negligible impact on area incomes during operation of the EITP. Localized, negligible, short-term, beneficial impact on the region's labor force and employment during construction and a negligible impact on labor during operations. Impacts on minority and low-income populations would be negligible, as would impacts on the tourism industry. No impacts have been identified for induced population growth, demand of permanent or temporary housing, or displacement of existing residences.	Socioeconomic conditions are similar in this area to those discussed for the proposed project route. This alternative would not directly induce substantial population growth, displace existing residents or housing, result in disproportionately high or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.	Socioeconomic conditions are similar in this area to those discussed for the proposed project route. This alternative would not directly induce substantial population growth, displace existing residents or housing, result in disproportionately high or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.	Impacts on the Desert Oasis Apartment Complex would be less than those of the proposed project. This alternative would not directly induce substantial population growth, displace existing residents or housing, result in disproportionately high or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.	Reducing the transmission line footprint across the Ivanpah Dry Lake would leave more open space for recreation, which would have a beneficial but negligible effect on the local economy. The socioeconomic conditions and impacts resulting from these alternatives would be similar to those for Transmission Alternative Route C.	Same as for Transmission Alternative Route D.	This alternative would incur increased costs associated with telecommunication line undergrounding construction, which requires a longer construction period. The applicant would coordinate with the owners of the Primm Golf Course to minimize disruption to the facility's operations. This alternative would not directly induce substantial population growth, displace existing residents or housing, result in disproportionately high or adverse impacts on minority or low-income populations, or necessitate the construction of housing, and no impacts would result.	In general, socioeconomic impacts would be similar to those of the proposed project. This alternative would not induce substantial population growth, displace existing residents or housing, result in disproportionately high or adverse impacts on minority and low-income populations, or necessitate the construction of housing, and no impacts would result.

Table 4-1 Comparison of Alternatives

ENVIRONMENTAL RESOURCE	Proposed Project	PROJECT ALTERNATIVES: Transmission Alternative Route A	Transmission Alternative Route B	Transmission Alternative Route C	Transmission Alternative Route D	Transmission Subalternative Route E	Golf Course Telecommunication Alternative	Mountain Pass Telecommunication Alternative
TRAFFIC AND TRANSPORTATION	Direct minor adverse traffic impacts due to project construction access along I-15 and SR 164/Nipton Road. Impacts would be localized at construction yards and crossing points (MP 29) along the transmission line route and would be short term. Operation would not result in adverse traffic impacts. Maintenance activities associated with substations and transmission lines would not require additional vehicles beyond those used for current operations and maintenance procedures. Less than significant impacts without mitigation associated with traffic load and capacity, level of service standard, and emergency access. No impact related to inadequate parking capacity; conflict with policies, plans, or programs supporting alternative transportation; change of air traffic patterns; or closure of major roads during construction.	Similar impacts to those of the proposed project.	Similar impacts to those of the proposed project.	Similar impacts to those of the proposed project.	Similar impacts to those of the proposed project.	Similar impacts to those of the proposed project.	Similar impacts to those of the proposed project.	Similar impacts to those of the proposed project.

Key:
AES = Aesthetics
APM = Applicant proposed measure
BCCE = Boulder City Conservation Easement
BLM = Bureau of Land Management
CEQA = California Environmental Quality Act
GHG = Greenhouse gas
KOP = Key observation point
kV = Kilovolt
MP = Milepost
MSHCP = Multiple Species Habitat Conservation Plan
NEPA = National Environmental Policy Act
NRHP = National Register of Historic Places
ROW = Right-of-way
SFS = Stateline Fault System
SNSA = Southern Nevada Supplemental Airport
SR = State Route
SRMA = Special Recreation Management Area
VRI = Visual Resource Inventory
VRM = Visual Resource Management
VRM Class II =

5. Cumulative Scenario and Impacts

5.1 Introduction

In accordance with CEQA (CEQA Guidelines Section 15130 et seq.) and NEPA (40 Code of Federal Regulations [CFR] 1508.25(c)), this Environmental Impact Report/Environmental Impact Statement (EIR/EIS) analyzes cumulative impacts of the EITP in conjunction with other developments that affect or could affect the project area. CEQA and NEPA have similar definitions of "cumulative impact." According to CEQA, the term refers to two or more individual effects that are considerable when taken together, or that compound or increase other environmental impacts (CEQA Guidelines Section 15355). CEQA requires the cumulative impacts discussion to reflect the likelihood that the impacts would occur and their severity if they did occur, but allows the discussion to contain less detail than must be provided for individual impacts. According to NEPA, a cumulative impact is the impact on the environment that results from the incremental impact of the project when added to other past, present, and reasonably foreseeable future actions (40 CFR Section 1508.7). To comply with both CEQA and NEPA, a cumulative scenario has been developed that identifies and evaluates projects that are reasonably foreseeable or that are already existing within the cumulative study area or that would be constructed or commence operation during the timeframe of activity associated with the proposed project. According to federal requirements, an adequate cumulative impacts analysis must not only describe related projects but must enumerate the environmental effects of those projects. In addition, the analysis must consider the interactions among these multiple activities. To comply with NEPA, an analysis of the aggregation of impacts of existing and reasonably foreseeable future projects in combination with the proposed action is provided.

5.2 Cumulative Projects

The projects that make up the cumulative scenario are located in close proximity to the EITP within the cumulative study area and are (1) completed, (2) approved and under construction, (3) approved but not yet under construction, or (4) proposed but not approved. A project is included in this cumulative analysis if information on the project was available in the BLM's database or identified during agency scoping or in another published cumulative analysis as of December 31, 2009.[1]

The tables below list existing and reasonably foreseeable future projects within or near the Ivanpah and Eldorado valleys, including project status. These projects include renewable energy, transportation, infrastructure improvement, pipelines, and other projects. Table 5-1 lists projects considered in the cumulative analysis within or near the Ivanpah Valley in California, and Table 5-2 lists those within or near the Ivanpah and Eldorado valleys in Nevada. Figure 5-1 shows the locations of these projects. The letters and numbers in the figure correspond to those preceding the names of the projects as shown in Tables 5-1 and 5-2. Numbered projects are existing projects, and lettered projects are proposed projects. For example, "Project 7 – Colosseum Mine" is an existing project and "Project A – First Solar Photovoltaic Project" is a proposed project. Additional available information on each project is presented in Section 5.2.1, "Past and Present Projects/Existing Cumulative Conditions," and Section 5.2.2, "Reasonably Foreseeable Future Projects."

Table 5-3 summarizes the length of construction for projects that would or could overlap with EITP construction, including the size of the anticipated workforce during construction and operation. As discussed in Chapter 3, "Environmental Analysis," some identified impacts would occur only during construction of the EITP and would only contribute to cumulatively considerable impacts if the EITP was constructed concurrently with that project.

[1] The BLM and the CPUC chose this date as a reasonable cutoff to allow completion of this draft analysis.

Table 5-1 List of Projects Considered Within or Near the Ivanpah Valley in California

Map ID Letter or #, Project Name[3], and Application Number (if applicable)	Location (Distance from EITP and Valley in Which Project is Located)	Owner	Project Description	Project Type	Status
Existing Projects					
3 – Primm Valley Golf Course[1]	3 miles south of the CA/NV state line in California (Approximately 1 mile east of the EITP proposed route centerline at MP 32) Ivanpah Valley	Terrible's Primm Valley Casino Resorts (MGM Mirage)	An approximately 22-parcel (456-acre) golf course located south of the CA/NV border along I-15.	Recreation	Existing. Mitigated Negative Declaration was adopted in 1995. It was constructed in 1996 and 1997[5].
5 – Ivanpah Dry Lake Recreation Area[1]	Ivanpah Dry Lake (EITP crosses the Ivanpah Recreation Area between MP 29 and MP 31) Ivanpah Valley	BLM	The area is managed by the BLM Needles Field Office and used by recreationists for non-motorized recreational activities including, archery, kite buggying, and land sailing[1].	Recreation	Approximately 200 casual use permits are issued for various non-motorized recreational activities. Annually there are approximately 5,000 users for various activities, most of which are nonmotorized[6].
6 – Molycorp[4] Mine[1]	Mountain Pass, Sulphide Queen Property (Approximately 5 miles south/southwest of EITP)	Molycorp Mineral LLC[4]	Open pit rare-earths mining operation.	Mine	Ongoing, expected to continue until mid-2020. Long history of mining. Many releases of radiological contaminants .An EA is being prepared to install additional monitoring wells to determine extent of the groundwater plume[6].
7 – Colosseum Mine[1]	12 miles west of Primm, Nevada (approximately 6 to 7 miles from proposed Ivanpah Substation site)	Lac Minerals	Mining facilities occupy 284 acres on a 3,316 acre private parcel. Located within the East Mojave National Scenic Area and Clark Mountain ACEC. The area was mined for gold in an open pit.	Mine	Mine approved by BLM in 1984. Inactive as of early 1990s and closed in 1994.Remedial action undergone. BLM's Colosseum Mine files were transferred to the Mojave National Preserve in 1994[6].
9 – Molycorp Mine Evaporation Pond (Old and New)[1]	Southeast of the Ivanpah Dry Lake (Approximately 3.25 miles from EITP)	Chevron	Evaporation Pond for wastewater generated at the Molycorp[2,4] rare-earths mining facility.	Evaporation Ponds	Neither pond is in use. Groundwater below the ponds is contaminated and is being monitored[8].
11– SCE Eldorado-Ivanpah 115-kV Transmission Line	Existing route that would be replaced by the proposed project	SCE	115-kV single circuit transmission line	Transmission Line	Existing transmission line in use.
12 – Molycorp[4] Wastewater Pipeline[1]	Runs from Molycorp[2,4] south of I-15, through the Mojave National Desert Preserve to the Evaporation pond (5.5 miles from EITP) Ivanpah Valley	Chevron	13-mile-long wastewater pipeline that runs between the Molycorp[2] mine and the evaporation pond.	Wastewater Pipeline	Entire wastewater pipeline is currently being pulled because it is contaminated internally (contaminating soils). A minimum of 70 releases have occurred from this pipeline. There have been multiple investigations of the pipeline, and there has been a removal of contaminated soils associated with the wastewater discharge. BLM issued the decision record for the Molycorp Waste Discharge Pipeline and Contaminated Soils Removal EA on 3/13/07. National Park Service, Mojave National Preserve issued a Special Use Permit authorizing activity to occur on NPS administered lands as well on 11/5/08[6].

Table 5-1 List of Projects Considered Within or Near the Ivanpah Valley in California

Map ID Letter or #, Project Name[3], and Application Number (if applicable)	Location (Distance from EITP and Valley in Which Project is Located)	Owner	Project Description	Project Type	Status
10 – AT&T Fiber Optic Cable Replacement[1]	Along the west side of the Ivanpah Dry Lake and of I-15 (EITP would cross the buried Fiber-optic cable at MP 32) Ivanpah Valley	AT&T	Existing direct buried fiber-optic cable will be replaced from Nevada border to the Halloran Summit, including a segment adjacent to the ISEGS project to the west of the Ivanpah Dry Lake. to the project uses an existing 10-foot ROW.	Buried Fiber Optic Cable	Completed. This was a replacement in 2009. The EA/MND was completed in 2009[6].
F – Caltrans Temporary Batch plant[1]	Located at Yates Well Road intersection within I-15 ROW (2.1 miles south/southeast of EITP) Ivanpah Valley	Caltrans	Temporary asphalt batch plant.	Asphalt Plant	This plant still exists and is located within freeway ROW[7]. The Temporary Batch Plant area was used for an expansion project and could be used for the Joint of Port Entry project. Contractor and construction workers could use their equipment[7]. There is no environmental documentation for this facility[7].
Foreseeable Projects					
C – DesertXpress	Along the I-15 between Victorville and Las Vegas (EITP would cross the train route at MP 29) Ivanpah Valley	DesertXpress Enterprises	Installation of 180 miles of train tracks for a commercial high-speed electric train that would operate between Victorville, CA and Las Vegas, NV. Construction commencement date TBD.	High Speed Train	Draft EIS was published in March 2009 and the public comment period ended on May 22, 2009. It is not known when the Final EIS or the ROD will be published; therefore, the construction commencement date is unknown[6].
E – Joint Port of Entry (JPOE) (CA-690-EA06-01)[1]	Between Yates Well Road and Nipton Road, San Bernardino County. (2.5 miles south/southeast of the EITP) Ivanpah Valley	Caltrans, California Dept Food and Agriculture	The Joint Port of Entry would include an Agricultural Inspection Facility and a Commercial Vehicle Enforcement Facility located on the north side of I-15 between Nipton Road and Yates Well Road	Inspection Facility	Caltrans submitted a Recreation and Public Purposes Act Lease application to the BLM for the JPOE facility. Temporary Use Permit for Geotechnical Testing and soil sampling is in process. An environmental Negative Declaration is in preparation[7]. Caltrans is reconsidering proposal as a phased project based on funding availability. Re-evaluation of environmental documents (ND and FONSI) are being performed because these approved environmental documents are over 3 years old[7]. Therefore, EA is being processed to re-evaluate the previous environmental documentation; EA has not been completed[7].
Foreseeable Renewable Energy Projects					
A – First Solar Photovoltaic Project (BLM ROW CACA 48669)[2]	Ivanpah, south of CA/NV border T17N/R14E (Intersects the proposed EITP route centerline between MPs 31 and 33) Ivanpah Valley	First Solar Development	300 MW photovoltaic project; 4,160 acres of land requested.	Solar Photovoltaic Plant	A modified application was filed on August 7, 2009. The POD submitted to BLM was inadequate. The length of time that will be required for the environmental review period is not known at this time[6].

Table 5-1 List of Projects Considered Within or Near the Ivanpah Valley in California

Map ID Letter or #, Project Name[3], and Application Number (if applicable)	Location (Distance from EITP and Valley in Which Project is Located)	Owner	Project Description	Project Type	Status
J – Iberdrola Wind Project (BLM ROW CACA 44988)[2]	Between Mineral Mountain and I-15 in California (Approximately 6 miles south of proposed Ivanpah Substation)	Iberdrola Renewables	75 MW wind energy project; 2,330 acres; Military: Red	Wind	ROW issued for 3 MET towers expired December 31, 2009. Cost recovery was finalized for the MET towers on August 12, 2008. The Categorical Exclusion was completed at the Needles Field Office[6].
K – ISEGS Project (BLM ROW 048668, 049502, 049503, 049504, and 049508)[2]	4 miles south of the CA/NV border in CA (Intersects the proposed EITP route centerline between MPs 33 and 34) Ivanpah Valley	Solar Partners I LLC	Ivanpah 2 Project (ISEGS); increased acreage December 14, 2006 (4,073 acres); related files 049502, 049503, 049504	Solar	ROW application pending. The Draft EIS was published. A Supplemental DEIS is was published on April 16,2010[6].

Sources/Notes:

[1] CEC and BLM 2009

[2] BLM 2009

[3] In the absence of a known project name, projects are named according to the owner/developer and the type of facility or structure proposed.

[4] Molycorp is a subsidiary of Chevron-Texaco Corporation.

[5] Williams 2010

[6] Meckfessel 2010

[7] Caltrans 2010

[8] Hunter 2010

Table 5-2 List of Projects Considered Within or Near the Ivanpah and Eldorado Valleys in Nevada

Map ID Letter or #, Project Name[6], and Application Number (if Applicable)	Location (distance from EITP and Valley in which Project is located)[5]	Owner	Project Description	Project Type	Status
Existing Projects					
1 – Bighorn Electric Generating Station[1]	Primm, NV (Approximately 0.5 miles east of the proposed EITP route centerline at MP 27) Ivanpah Valley	Reliant Energy Wholesale Generation, LLC	Operating 570 MW natural gas power plant; uses dry cooling system	Power Plant	Existing. This facility was constructed in 2004[7].
2 – Primm Casinos: Buffalo Bill's, Primm Valley, Whiskey Pete's[1]	31900 Las Vegas Blvd. South, Primm, NV (Approximately 0.5 miles west of the proposed EITP route centerline at MP 28) Ivanpah Valley	Terrible's Primm Valley Casino Resorts (MGM Mirage)	Two existing resort/casinos and one existing hotel/casino	Casino/Resort	Existing. Whiskey Pete's was constructed in 1977[7]. Buffalo Bill's was constructed in 1994[7]. Primm Valley Casino was constructed in 1998[7].
4 – Primm Outlet Mall[1]	32100 Las Vegas Blvd. South, Primm, NV (Approximately 0.5 miles west of the proposed EITP route centerline at MP 28) Ivanpah Valley	Fashion Outlets (MGM Mirage)	Existing shopping outlet with over 100 stores. Connected to the Primm Casinos by monorail, approximately 359,000 square feet of leasable area and 1,600 parking spaces. More than one million vehicles pass the Outlet Mall per month.	Shopping Mall	Existing. The mall was constructed in 1998[7].
8 – Desert Oasis Apartment Complex[2]	Primm, NV (Immediately adjacent to the north side of the proposed EITP route centerline at MP 28) Ivanpah Valley	MGM Mirage	Gated community comprised of 52 buildings to house 650 Primm casino/resort employees. Includes laundry facilities, a 10,000-square-foot market, clubhouse, swimming pool, fitness facilities, and basketball court.	Residential Units	Existing. The complex was constructed in 2004[7].
13 – Jean/Roach Dry Lake SRMA[12]	The proposed project would cross the Jean/Roach Dry Lake Recreation Area between MPs 10 and 27.5 Ivanpah Valley	BLM	Jean/Roach Dry Lake Recreation Area provides opportunities for casual use and other types of recreation, including motorcycling, all-terrain vehicle and 4 x 4 driving, horseback riding, mountain biking, small-game hunting, and organized racing events.	Recreation	Existing.
14 – Southern Nevada Supplemental Airport (SNSA)[1]	30 miles south of the McCarran International Airport (Less than one mile from the EITP at MP 26) Ivanpah Valley	Clark County Department of Aviation	Site reserved for a new International Airport to supplement the McCarran International Airport in Las Vegas; 5,934-acre site; adjacent to desert tortoise relocation site.	Airport	While the SNSA has not been approved or constructed, the South County Land Use Plan contains policies related to the SNSA, and the land is considered reserved for the future airport. Currently, a Draft EIS is in progress and is expected to begin construction in 2014. The Scoping Report and Draft Alternatives Working Paper are available. Construction is expected to begin 2014[9].
15 – El Dorado Combined Cycle Power Plant	Boulder City, NV (Within 1 mile of the EITP route at	Sempra Energy	480-MW natural gas fired power plant located on 138-acres of land 17 miles	Power Plant	Existing. Operational since May 2000.[11]

Table 5-2 List of Projects Considered Within or Near the Ivanpah and Eldorado Valleys in Nevada

Map ID Letter or #, Project Name[6], and Application Number (if Applicable)	Location (distance from EITP and Valley in which Project is located)[5]	Owner	Project Description	Project Type	Status
	MP 0) Eldorado Valley		southwest of downtown Boulder City and 40 miles southeast of Las Vegas.[11]		
16 – Nevada Solar One Project[3]	Boulder City, NV (Approximately 1.7 miles east of the proposed EITP route centerline at MP 0; approximately 1.6 miles east of Alternative B MP 0) Eldorado Valley	Acciona/ Solargenix Energy	64 MW concentrating solar power (CSP) plant on 400 acres.	Solar	Existing. Operating since June 2007. No environmental review was completed for this project because the site is located on City land, and no federal regulations applied. Therefore, NEPA was not triggered[8].
17 – Kentucky Fried Chicken/Taco Bell[1]	Primm, NV; (Approximately 0.5 miles west of the proposed EITP route centerline at MP 28) Ivanpah Valley	Kentucky Fried Chicken/Taco Bell	Fast food restaurant to be built adjacent to the Primm Outlet Mall 32100 Las Vegas Blvd. South)	Restaurant	Existing. The Design Review application was approved March 2008. Construction was completed in 2009[7].
Foreseeable Projects					
B – SNSA Ivanpah Airport Environs Overlay[1]	30 miles south of the McCarran International Airport (Covers much of the land along the proposed EITP route centerline between Primm and Jean, NV [approximately MPs 18 to 28]) Ivanpah Valley	Clark County Department of Aviation	International Airport to supplement the McCarran International Airport in Las Vegas; 17,000-acre sphere of influence; adjacent to desert tortoise relocation site.	Airport	As stated above, the site of the future SNSA is considered reserved for the project. The additional land for the Ivanpah Airport Environs Overlay is conditional on project approval. Draft EIS in progress and expected to be published in 2013. The Scoping Report and Draft Alternatives Working Paper are available. Construction is expected to begin 2014[9].
S – Calnev Pipeline Expansion Project	Parallel to I-15 (Crosses the proposed EITP route centerline near MP 27) Ivanpah Valley	Kinder Morgan	Expansion of the current pipelines owned and operated by Kinder Morgan that run between Colton, CA and Las Vegas, NV.	Petroleum Product Pipeline	The Calnev Project currently comprises an 8-inch and a 14-inch pipeline. This project is in NEPA analysis stage for the addition of a 16-inch pipeline. Only the SF-299 is available. The NOI was published March 13, 2008. A Draft EIR/EIS is in the process of being completed.

Table 5-2 List of Projects Considered Within or Near the Ivanpah and Eldorado Valleys in Nevada

Map ID Letter or #, Project Name[6], and Application Number (if Applicable)	Location (distance from EITP and Valley in which Project is located)[5]	Owner	Project Description	Project Type	Status
Foreseeable Renewable Energy Projects					
Q – NextLight Silver State Solar Project (BLM ROW NVN 085077 and NVN 085801)[4]	Approximately 1 mile east of Primm, NV (NVN 085801 bisects the proposed EITP route centerline near MP 26 and NVN 085077 is approximately 1 mile southeast of the EITP centerline nearest to MP 27) Ivanpah Valley	NextLight Renewable Power LLC	Silver State Solar Project NVN 085077: 500 MW photovoltaic power plant on 4,700 acres. NVN 085801: 200 MW photovoltaic power plant on 2,560 acres with an additional 600 acres producing 50 MW to be added with ROW grant.	Solar	Revised POD combining NVN 085077 and NVN 085801 submitted in November 2009. The ROW grant application is pending. The Draft EIS will be published in Spring 2010.
T – Table Mountain Wind Project (BLM ROW NVN-083041 and BLM ROW NVN-073726)[4]	Approximately 3 miles east of Sandy Valley near Goodsprings, NV (Approximately 8 miles northwest of the proposed EITP route centerline at MP 21) Ivanpah Valley	Table Mountain Wind Co LLC	Installation and operation of 10 MET towers on 11,570 acres to gather data for a potential wind generation site. Total project footprint approximately 30 acres.	Wind	ROW issued for 10 MET towers through December 31, 2010. The EA for the MET towers was completed 1998. The construction of the MET towers was completed in 1998. EIS was completed in 2002 but no ROD was adopted.[9] Supplemental EIS is required before ROD can be adopted.[10]
Z – Oak Creek Energy System Project (BLM ROW NVN-082729)[4]	Approximately 5 – 10 miles west of US Hwy 95 along CA/NV border (Approximately 9 miles southeast of the proposed EITP route centerline at MP 26) Eldorado Valley	Oak Creek Energy Systems	Installation and operation of two MET towers on 34,456 acres to gather data for a potential wind generation site. Project footprint is approximately 6 acres. Project will take place through December 31, 2012 when current ROW expires.	Wind	ROW issued for MET towers, expires 12/31/2012. Currently an EA is being completed for the construction of 2 MET Towers[9].
CC – Searchlight Wind Project (BLM ROW NVN-082648 and 084626)[4]	Within 1 mile of Searchlight, NV (Approximately 19 miles southwest of the proposed EITP route centerline at MP 7) Eldorado Valley	Searchlight Wind Energy Corp	Installation and operation of five MET towers on a 24,382 acre ROW to gather data for a potential wind generation site. Project footprint would be approximately 15 acres. Project would take place through July 1, 2010 when current ROW expires.	Wind	The POD review for the project (Site Type 3 application) and not the MET Towers, was completed in August 14, 2009[9]. ROW issued for 5 MET towers expires July 1, 2010. A Draft EIS in scheduled to be published in May 2010[9].
DD – Bull Frog Green Energy Solar Project (BLM ROW NVN 085117)[4]	East of US Hwy 95, approximately 8.5 miles south of Boulder City, NV (Approximately 7 miles southeast of the proposed EITP route centerline at MP 0) Eldorado Valley	Bull Frog Green Energy LLC	Solar power plant on 3,639 acres.	Solar	ROW grant application is currently pending. No POD has been submitted, so the NEPA process has not been initiated[9].

Table 5-2 List of Projects Considered Within or Near the Ivanpah and Eldorado Valleys in Nevada

Map ID Letter or #, Project Name[6], and Application Number (if Applicable)	Location (distance from EITP and Valley in which Project is located)[5]	Owner	Project Description	Project Type	Status
FF – Cogentrix Solar Project (BLM ROW NVN 085611)[4]	Approximately 3 miles south/southeast of Boulder City, NV (Approximately 5.5 miles east of the proposed EITP route centerline at MP 0) Eldorado Valley	Cogentrix Solar Services LLC	Solar thermal power plant on 640 acres.	Solar Thermal	Overlaps ROW NVN 085117. ROW grant is currently pending. The project is currently on hold, and if the applicant chooses to move forward it will not be until 2011[9].
JJ – Power Partners Solar Project (BLM ROW NVN 086158)[4]	Approximately 12 miles south of Boulder City, NV (Approximately 9 miles southeast of the proposed EITP route centerline at MP 7) Eldorado Valley	Power Partners SW LLC	250 MW solar power plant on 3,885 acres.	Solar	ROW application received September 18, 2008, and is pending. The project is currently on hold, and if the applicant chooses to move forward it will not be until 2011[9].

Sources/Notes:

1 CEC and CEC 2009

2 Las Vegas Review Journal 2004

3 Acciona 2009

4 BLM 2009

5 Distance to the proposed project were calculated using Southern California Edison 2009. Eldorado-Ivanpah Project Road Story Version 3 [In GIS Format]. Data Request: EITP-CPUC-SCE-001 Follow Up. CD-ROM 1 of 4.

6 In the absence of a known project name, projects are named according to the owner/developer and the type of facility or structure proposed.

7 Clark County Comprehensive Planning Department 2010

8 Ann 2010

9 Meckfessel 2010

10 Mojave-Southern Great Basin Resource Advisory Council 2007

11 Sempra Generation n.d.

12 BLM 2007

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Figure 5-1
Eldorado-Ivanpah Transmission Project
Cumulative Projects

LABEL	NAME	STATUS	Acreage*
1	Bighorn Electric Generating Station	Existing	86.9
2	Primm Casinos	Existing	127.8
3	Primm Valley Golf Course	Existing	531.3
4	Primm Outlet Mall	Existing	38.7
5	Ivanpah Dry Lake RA	Existing	12,855.3
6	Molycorp Mine	Existing	862.4
7	Colosseum Mine	Existing	289.9
8	Desert Oasis Apartments	Existing	13.5
9	Molycorp Mine Evaporation Pond	Existing	355.5
10	AT&T FiberOptic Cable	Existing	NA**
11	SCE 115 kV Transmission Line	Existing	NA**
12	Molycorp Wastewater Pipeline	Existing	NA**
13	Jean/Roach Dry Lake SRMA	Existing	224,931.4
14	SNSA	Pending	5,996.6
15	El Dorado Energy Combined Cycle Power Plant	Existing	138.2
16	Nevada Solar One	Existing	400.5
17	KFC/Taco Bell	Existing	3.6
A	First Solar Development	Pending	5,433.4
B	SNSA Ivanpah Airport Environs Overlay	Pending	16,579.6
C	Desert Xpress	Pending	NA**
CC	Searchlight Wind Energy Corp	Pending	19,886.7
DD	BullFrog Green Energy	Pending	3,352.2
E	Joint Port of Entry	Pending	324.7
F	Temporary Batch Plant	Existing	32.4
FF	Cogentrix Solar Services	Pending	640.8
J	Iberdrola Renewables	Pending	1,872.6
JJ	Power Partners SW	Pending	3,874.0
K	Brightsource ISEGS	Pending	4,073.4
Q	Nextlight Renewable Power	Pending	7,837.2
S	CalNev Pipeline Expansion Project	Existing/Pending	NA**
T	Table Mountain Wind	Pending	13,665.4
Z	Oak Creek Energy Systems/Desert Research Inst	Pending	35,530.5

* Cumulative project areas are approximated reflecting the project right-of-way and not necessarily the actual or final project boundary footprint.

** Linear projects not included when calculating overall disturbance acreages.

SOURCE: See source list for Table 5-1 and Table 5-2.

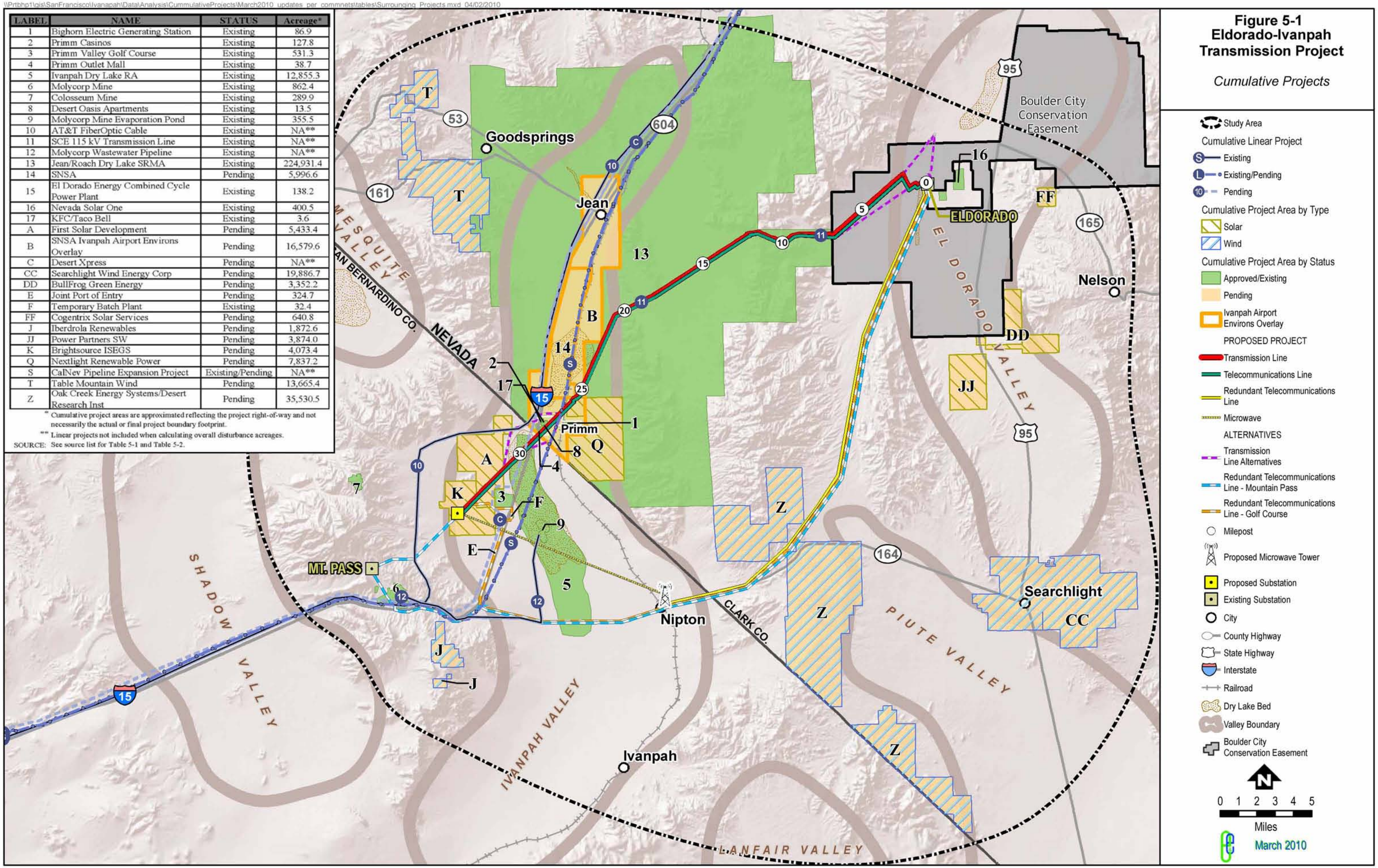

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Table 5-3 Estimated Construction Periods and Workforce for Some Large Foreseeable Projects in the Cumulative Area

Project Name	Estimated Construction Period/Year(s) of Construction	Construction Overlap with EITP	Workforce during Construction	Workforce during Operation
DesertXpress[1]	2 years / 2010–2012	Yes	1,730–3,000 per year	700
Southern Nevada Supplemental Airport (SNSA)[2]	7 years / 2014–2020	Unlikely	12,000–13,000	4,000
ISEGS Solar Energy Project[3]	4 years / 2010–end of 2013	Yes	474–959 peak daily	90
First Solar Project	Unknown/Unknown	Potentially	474–959 peak daily[4]	90[4]
NextLight Renewable Power Project	4 years / 2010–2014	Yes	474–959 peak daily[4]	90[4]
Table Mountain Wind[7]	8 months / Unknown	Unlikely	100 during peak	10–20
5 Other Solar Power Projects Planned in the Ivanpah and Eldorado Valleys	Approximately 4 years per project / variable by project	Potentially	2,370–4,795 total for all projects[4]	450 total for all projects[4]
4 Wind Power Projects Planned in the Ivanpah and Eldorado Valleys	Approximately 6 months per project / variable by project	Potentially	600 total for all projects[5]	12 total for all projects[5]
Calnev Pipeline Expansion Project[6]	12 months / unknown	Potentially	250–300	unknown

Notes:
1 USDOT FRA 2009
2 Ricondo and Associates 2008
3 CEC and BLM 2009
4 Based on workforce needed for ISEGS. Total numbers were quantified by multiplying ISEGS estimates by number of projects.
5 Based on construction workforce of 150 and operations workforce of 3 needed for Walker Ridge Wind Project in northern California. Total numbers were quantified by multiplying Walker Ridge estimates by number of projects.
6 URS 2007
7 Table Mountain Wind Company 2002

The following subsections provide additional information about the past, present, and reasonably foreseeable future projects and their potential impacts. Section 5.3 provides an analysis of the cumulative impacts of these projects and the proposed project.

5.2.1 Past and Present Projects / Existing Cumulative Conditions

5.2.1.1 California

The portion of the EITP that would be built within California is located in the eastern portion of the Mojave Desert in San Bernardino County. The area contains mountainous regions and valleys and is sparsely populated. The Ivanpah Valley floor is desert with prominent features including Interstate 15 (I-15), the Primm Valley Golf Course, and Ivanpah Dry Lake. I-15 bisects Ivanpah Valley and is the main highway between the Los Angeles area and Las Vegas. It passes by Mountain Pass on the western edge of the Molycorp Mine and drops into and crosses the valley floor between Ivanpah and Nipton. I-15 divides natural habitats north and south and is a permanent feature of the Ivanpah Valley. I-15 facilitates commercial, recreational, and tourism travel but contributes to traffic, noise, and air pollution. It has also permanently altered drainage patterns on the valley floor.

The Primm Valley Golf Course (Cumulative Project 3) was built over a former landfill in the late 1990s and opened in 1997 with additions in 1998. It includes an 18-hole desert course, an 18-hole lake course, practice facilities, a full-service restaurant and lounge, and a clubhouse (PrimmNevada.net 2010). As the only permanent green feature, the Primm Valley Golf Course contrasts significantly with the neutral tones of the remainder of the valley. The facility's long-term need for water has altered the hydrology of the valley and permanently altered drainage patterns on the valley floor. While the facility has provided a recreational opportunity in the Ivanpah Valley, it has also eliminated habitats that once existed there.

The Ivanpah Dry Lake Recreation Area (Cumulative Project 5) extends southwest from Primm, Nevada, and covers almost 13 square miles in California. The dry lake bed is managed by the BLM and is popular for land sailing and kite buggying (PrimmNevada.net 2010) but is closed to motorized vehicles. Free permits are required to access the site for recreation, and commercial or organized events require special recreation permits (BLM 2010). The Ivanpah Desert Wildlife Management Area (DWMA), an overlay to Ivanpah Dry Lake, is south of the EITP and east of I-15. Some areas allow camping, but land sailing is not permitted in the southern half of the dry lake, which is primarily used for very low-level, widely dispersed motorized recreational activities (BLM 2002). Although Ivanpah Dry Lake is not developed, and therefore natural habitat is still present, the presence of recreationists has probably altered how wildlife use the area.

Much of the land in the Ivanpah Valley is managed by the BLM through grazing allotments and recreation areas; however, some lands have special designations, including the Mojave National Preserve, three wilderness areas (Wee Thump, Joshua Tree, and South McCullough), and Areas of Critical Environmental Concern (ACECs; see Section 3.9, “Land Use”).

The Molycorp Mine and landfill (Cumulative Project 6) are located in Mountain Pass, California, in the mountains above the Ivanpah Valley. It is an active lanthanide mining and milling operation with a wastewater pipeline—**Molycorp Wastewater Pipeline** (Cumulative Project 12)—that extends from the mine, running east for 10 miles along Nipton Road and then turning north and running 3 more miles into Ivanpah Dry Lake. Between 1980 and 1998, the pipeline discharged wastewater to two evaporation ponds located on Nipton Road and in the Ivanpah Dry Lake (**Molycorp Mine Evaporation Pond** [Cumulative Project 9]). The pipeline is being removed, along with any residual soil contamination, beginning with the part that crosses National Park Service property. An agreement with the Regional Water Quality Control Board (RWQCB) requires cleanup and abatement of contaminated groundwater that developed below the two evaporation ponds (DSTC 2009, Cass 2010, and Hunter 2010). The drum yard at the mine facility was used to store and stage drummed lead containing filter cake waste generated on site. The concrete casting and staging area was used in a pilot test in the early 1990s to stabilize the lead containing filter cake in concrete. Under a 1994 settlement, Molycorp agreed to close the drum yard and casting and staging areas, removing all drummed wastes and closing all lead waste impacted areas. By the end of 2003, the Department of Toxic Substances Control’s (DTSC’s) Geology, Permitting, and Corrective Action Branch accepted the closure certification of these units and released Molycorp from financial responsibility for further closures (DTSC 2010). The facility is still operating and contributes to air emissions in the area (U. S. Environmental Protection Agency [EPA] 2010). It uses, stores, and discharges waters, and thus it has altered the hydrology of the area. It has also altered the terrain on which it sits, and thus the majority of the facility is unsuitable habitat for wildlife. Portions of the facility are visible from I-15 and have therefore altered the natural landscape. The Mountain Pass Telecommunication Alternative would cross the mine and follow the route of the wastewater discharge pipeline along Nipton Road.

The Colosseum Mine (Cumulative Project 7) occupies 284 acres approximately 5 miles north of the Mountain Pass substation but is no longer in operation. Formal mining operations began in 1987 (U.S. EPA 1992) and continued until 1993, producing approximately 7,000 ounces of gold per month. The mine was acquired in 1990 by Lac Minerals of Canada, and the company has paid more than $30 million for site reclamation (Jessey 2010). Like the Molycorp Mine, the Colosseum Mine has permanently altered the landscape and habitat on which it sits; however, it is not operating, so it is not using or discharging water or generating emissions. Also, it is more remote than the Molycorp Mine and cannot be seen easily from the Ivanpah Valley or I-15.

5.2.1.2 Nevada

In Nevada, as in California, the Ivanpah and Eldorado valleys are sparsely populated. The closest community to the proposed project is Primm, Nevada. Primm is an unincorporated community in Clark County along the California border, 40 miles south of Las Vegas on heavily traveled I-15. The town covers approximately 880 acres and has a population of about 1,000 residents. Originally named “Stateline” after a gas station built in the area in the 1920s, the town was renamed “Primm” in 1996.

Primm is a popular stop for visitors from California and is both a destination in its own right and a rest spot between Las Vegas and Los Angeles. In 2004, an apartment building called the **Desert Oasis Apartments** (Cumulative Project 8) was constructed to house employees (PrimmNevada.net 2010) for three **Primm Casinos** (Cumulative Project 2): Buffalo Bill’s Resort Casino, Terrible’s Primm Valley Resort, and Whiskey Pete’s Hotel Casino, which has 2,642 hotel rooms. All three casinos are owned by Primm Valley Resorts. Additionally, a **KFC/Taco Bell** (Cumulative Project 17) recently opened in Primm, and the **Primm Outlet Mall** (Cumulative Project 4) has over 100 retail stores (Primm Nevada.net 2010). The casinos, hotels, and mall have led to increased population, with impacts to the area similar to those of other small towns. For example, traffic on I-15 is heaviest on Fridays, and air quality in the area does not meet certain ambient air quality standards (see Section 5.3.2, “Air Quality and Greenhouse Gases”). Noise is generated by activities in town, and natural habitat has been removed. Most of the facilities require the use of water and therefore draw on the local aquifers. The presence of the town has permanently altered the drainage patterns in the area.

A little more than 1 mile northeast of the center of Primm, **the Bighorn Electric Generating Station** (Cumulative Project 1) consists of two 159-megawatt (MW) natural gas turbines, each equipped with a natural gas duct burner that operates at 650 million British thermal units per hour (MMBtu/hr), a 40-MMBtu/hr natural gas auxiliary boiler, and a 500-horsepower diesel emergency generator. The presence of this facility has facilitated the growth of Primm, contributed to emissions and noise in the area, and removed natural habitat. The facility also likely draws on the local aquifer. The Bighorn Electric Generating Station has a Title V operating permit, and the maximum potential emissions for the facility in tons per year are 114.91 of PM_{10}, 157.91 of NO_X, 194.07 of CO, 10.52 of SO_2, 43.51 of VOC, 10.31 of HAP, and 230.30 of NH_3 (Reliant 2005).

The Jean/Roach Lake Special Recreation Management Area (SRMA; Cumulative Project 13)—a large area spanning much of the EITP route—encompasses the Ivanpah Valley in Nevada; the towns of Jean, Primm, and Goodsprings; and both the Jean and Roach Dry Lakes. The Jean/Roach Dry Lake SRMA is managed by BLM to provide recreational opportunities, including motorcycling, off-highway vehicle (OHV) and 4 x 4 driving, horseback riding, mountain biking, small-game hunting, and organized racing events (BLM 2007).

Pursuant to P.L. 85-339, a large area surrounding the Eldorado Substation in the Eldorado Valley was patented to the Colorado River Commission of the State of Nevada. This land was subsequently transferred to the City of Boulder City and Clark County for the purposes of habitat conservation for desert tortoise. The area is now known as the Boulder City Conservation Easement (BCCE) and is managed under the Clark County Multiple Species Habitat Conservation Plan (MSHCP). The primary purpose of the BCCE is to preserve and protect the property as partial mitigation for the incidental take of desert tortoise and disturbance of tortoise habitat in other portions of Clark County. The MSHCP prohibits any development within the BCCE without written approval from Boulder City and Clark County.

Nevada Solar One (Cumulative Project 16) is a concentrated solar power facility in the Eldorado Valley, approximately 13 miles southwest of Boulder City. The facility sits on 400 acres of land, surrounded by the BCCE, and generates 64 MW of power using parabolic concentrators with more than 180,000 mirrors that concentrate the solar energy onto more than 18,000 receiver tubes. Fluid that heats up to 735 degrees Fahrenheit flows through these tubes and is used to produce steam that drives a conventional turbine, which is connected to a generator that produces electricity (Acciona 2009).

Near the Nevada Solar One project in the BCCE is a facility owned and operated by Sempra Energy. **El Dorado Combined Cycle Power Plant** (Cumulative Project 15) is a 480-MW natural gas fired power plant located on 138-acres of land, 17 miles southwest of downtown Boulder City and 40 miles southeast of Las Vegas. Eldorado Combined Cycle Power Plant has been operational since May 2000 (Sempra Generation n.d.).

5.2.2 Reasonably Foreseeable Future Projects

5.2.2.1 Proposed Renewable Projects

Tables 5-1 and 5-2 list the renewable projects that have been proposed in the cumulative study area in the Ivanpah and Eldorado valleys. It is not anticipated that all of these projects will be approved or constructed; however, given the number of projects proposed and political focus on permitting, approving, and constructing renewable energy generation (as described in Section 1.2, "Purpose, Need, and Objectives"), it is reasonable to assume that some of these renewable projects will be constructed.

There are multiple other ROW applications on file with the BLM for wind monitoring sites where there has been no action on the part of the applicant to prepare a wind development Plan of Development. This category of wind applications are not considered reasonable foreseeable future projects since they are not likely to result in an actual wind development project. There are also multiple ROW applications for solar projects that overlap and were filed on top of other pending solar applications. These "second in line" solar applications are not considered reasonable foreseeable future projects either. These speculative projects are not included in Tables 5-1 and 5-2.

The following section supplements the information provided in Tables 5-1 and 5-2, providing a general discussion of the potential impacts of wind and solar projects in order to give context for the cumulative analysis in this Chapter. Specific projects in the EITP cumulative study area are in various phases of planning and permitting; therefore, as of December 31, 2009, specific information about potential environmental impacts was not available for all of them. Key projects that have filed Plans of Development (PODs) with the BLM and/or have published environmental planning documentation are described in more detail.

Wind Projects

Wind generation facilities typically are comprised of multiple wind turbines that are connected to a substation through a network of underground and overhead lines. In addition to erecting the wind turbines, installing a wind generation system typically requires constructing access roads, substations, and a switchyard as well as connecting the substation to a transmission line. The equipment for all the structures is stored at a staging area prior to construction. Many of the impacts associated with wind generation facilities result from their large footprint. Therefore, installation of these types of facilities could:

- Disturb wetlands or water bodies;
- Remove or alter vegetation and potential wildlife habitat;
- Temporarily displace wildlife; or
- Disturb cultural resources.

Likewise, operation of a wind generation facility typically:

- Alters the visual landscape;
- Causes the death or injury of birds and bats;
- Permanently displaces wildlife; and
- Influences migration patterns.

Other construction-related impacts are typical of construction projects in general, such as generation of noise and dust from construction activities and a temporary increase in traffic from the movement of construction vehicles and equipment on local streets. Construction of a wind generation facility also temporarily increases local employment, including non-local workers requiring housing; however, these facilities typically employ only 30 permanent workers (approximately) and therefore do not have a significant impact on local economies.

For most of the proposed wind projects in the cumulative study area (Figure 5-1), little site-specific information is available because EIRs or EISs are not yet completed. Therefore, the discussion of potential contributions to cumulative impacts from these projects is qualitative rather than quantitative and is based on the impacts of similar projects. As indicated in Tables 5-1 and 5-2, environmental documents are not available for the **Iberdola Renewables Wind Project** (Cumulative Project J) proposed in California or the **Oak Creek Energy System/Desert Research Institute** project (Cumulative Project Z) or the **Searchlight Wind Project** (Cumulative Project CC) n Nevada.

Meteorological Towers

As a first step to determine the viability of a location for a wind power generation project, meteorological (MET) towers are installed to collect relevant meteorological data. MET towers are typically 60 meters tall, and ground is disturbed for a 60-meter radius surrounding the tower. A right-of-way (ROW) grant for MET towers is usually valid for 3 years, so 3 years is the typical duration of operation. Construction impacts of MET towers may include:

- Vegetation trimming or removal;
- Dust from vehicles;
- Impacts to listed species; and
- Impacts to cultural resources.

Impacts that typically occur during operation include alteration of the visual landscape and injury or mortality of migratory birds and bats.

Table Mountain Wind Project (Cumulative Project T)

Table Mountain Wind Company, LLC, is proposing to develop a 150- to 205-MW wind project 20 miles southwest of Las Vegas near Goodsprings, Nevada (Table Mountain Wind Company 2002). Although the Final EIS for the project was completed in 2002, the Record of Decision has not yet been approved. The BLM has requested that a Supplemental EIS be prepared due to conflicts with the proposed SNSA near Jean, Nevada; however, the Supplemental EIS is projected to take 9 to 12 months to complete (Mojave-Southern Great Basin Resource Advisory Council 2007). The process has not yet been initiated as of the publication of the EITP Draft EIR/EIS; therefore, while the Table Mountain Wind Project is a reasonably foreseeable future project, at this time, it is considered unlikely that it would be constructed concurrently with the EITP.

Solar Projects

Photovoltaic (PV) and Concentrating Solar Power (CSP) are the two dominant solar energy technologies on the market. PV technology creates electricity directly from sunlight, using solar cells. Solar cells have traditionally been made of monocrystalline silicon, but other material technologies exist. PV solar cells produce alternating current electricity, which is converted to direct current electricity with an inverter and then integrated directly into the power grid (rooftop applications) or transferred along distribution lines (utility-scale applications).

CSP technology, or “solar thermal” technology, concentrates sunlight to heat a liquid that produces steam that turns a simple turbine to create electricity. Parabolic troughs, solar power towers, and solar dishes are all forms of CSP technology that focus mirrors on a single point to generate steam. Generally, CSP technologies have been developed for utility-scale applications.

Both PV and CSP projects are proposed in the Ivanpah and Eldorado valleys. Some of these projects do not have detailed project descriptions available or have not undergone formal impact assessment. Both PV and CSP technologies have similar impacts, although CSP usually has a significant requirement for water for cleaning and cooling, which increases impacts. Typically, both types of construction projects cause a:

- Temporary increase in air pollutants and dust emissions;
- Temporary increase in noise;
- Temporary or permanent disruption of wildlife patterns from construction activities;
- Possible loss of cultural or historic resources; and
- Temporary disruption of local traffic patterns and road use.

Most of the construction impacts can be mitigated through site-specific best management practices and other mitigation measures. Because solar projects may result in a single use for the land, however, several permanent impacts could occur as a result of operations, including:

- Permanent loss of wildlife habitat;
- Impact to existing recreational activities;
- Increase in impermeable surfaces that could lead to increased magnitude or frequency of flooding events; and
- Permanent alteration of visual or aesthetic characteristics.

Limited site-specific information is available for most of the proposed solar projects in the cumulative study area because their EIRs or EISs are not complete. Therefore, the discussion of these projects' potential contributions to cumulative impacts is qualitative rather than quantitative and is based on the impacts of similar projects. As indicated in Tables 5-1 and 5-2, environmental documents are not available for the **First Solar Development** (Cumulative Project A) proposed in California or for **Bull Frog Green Energy** (Cumulative Project DD), **Cogentrix Solar Services** (Cumulative Project FF), or **Power Partners SW** (Cumulative Project JJ) proposed in Nevada.

Ivanpah Solar Electric Generating System Project (Cumulative Project K)

As discussed in Section 1.1.2, "Additional Projects Considered in this EIR/EIS," certain facts distinguish the Ivanpah Solar Electric Generating System (ISEGS) project from other proposed projects in the cumulative study area. The ISEGS project is closely related to the EITP, has demonstrated commercial viability, and is in the late stages of environmental review. In this cumulative impacts analysis, ISEGS is considered a foreseeable project. Impacts from the ISEGS project are also considered as part of the Whole of the Action / Cumulative Action at the end of each resource section in Chapter 3, "Environmental Analysis." For more detailed information about ISEGS, see Section 2.2.2, "Whole of the Action Description (CEQA)/Cumulative Action (NEPA)."

NextLight Silver State Solar Project (Cumulative Project Q)

The Silver State Solar Project, located near Primm, Nevada, along the California/Nevada border, would intersect the EITP near milepost (MP) 26. The project would generate 400 MW of electricity on approximately 7,925 acres of BLM-administered lands and was originally comprised two separate projects—Silver State North and Silver State South. Silver State North was originally planned as a CSP power plant, and Silver State South was to be a PV plant. In November 2009, the Silver State project POD was changed to include only solar PV technology for the entire Silver

State Solar Project. The Silver State Solar Project would use either crystalline silicon or thin-film PV technology on single-axis trackers or fixed panels. Water usage is not expected to exceed 30 acre-feet per year.

The project has finished the NEPA EIS scoping process and a Draft EIS is anticipated in early 2010. Project construction is expected to begin in December 2010 and continue through November 2014. Potential impacts of the NextLight Silver State Solar Project that may contribute to cumulative impacts include degradation of the visual character of Ivanpah Valley, noise and air quality impacts during construction, and alteration of OHV routes on BLM land (BLM 2009b).

The Silver State Solar Project is addressed in the EITP Draft EIR/EIS as a reasonably foreseeable future action. The project was not included in the "Whole of the Action / Cumulative Action" section of the EITP Draft EIR/EIS because the Silver State project began its NEPA analysis much later than the EITP. Further, at the time this document began development, there was not yet adequate information available to address the direct and indirect impacts of the Silver State Solar Project as part of the Whole of the Action / Cumulative Action. During the late stages of this Draft EIR/EIS's development, the environmental review schedules for the two projects began progressing on similar schedules. However, because the Draft EIS for the Silver State Solar Project had not yet been published while this EITP document was being developed, BLM and CPUC were limited to using the information it had available to analyze the cumulative impacts of the Silver State Solar Project along with other past, present, and reasonably foreseeable future projects.

5.2.2.2 Other Projects

Other large projects that are proposed in the area include the Southern Nevada Supplemental Airport (SNSA), Calnev Pipeline Expansion Project, Molycorp Mine, and DesertXpress High-Speed Rail Project. Additional information about these projects is given below.

Southern Nevada Supplemental Airport (Cumulative Project B)

The Clark County Department of Aviation (CCDOA) proposes to construct the SNSA on 5,934 acres in the Ivanpah Valley in Nevada between Jean and Primm. The new airport would provide additional capacity to serve visitors to the metropolitan Las Vegas area and residents of greater Clark County, Nevada. In the Draft Alternatives Working Paper, a number of project alternatives were considered to determine whether they would meet the purpose and need of the project, including using other modes of transportation and placing the airport at another site nearer to Las Vegas (FAA 2008). The Draft EIS for the SNSA project is expected to be released for public review in late 2012 or early 2013. Project construction is not anticipated to begin until 2014 and is expected to be completed in 2020 (FAA 2009, 2006). The proposed airport site would be less than one mile from the EITP at MP 26.

Surrounding the proposed SNSA would be the Ivanpah Airport Environs Overlay (see Figure 5-1 or Figure 3.9-1 in Section 3.9, "Land Use"). The overlay would be 17,000 acres and would serve as a Noise Compatibility Area for the airport. The EITP intersects the 17,000-acre Ivanpah Airport Environs Overlay between MPs 24.5 and 28.5.

Potential impacts of the SNSA that may contribute to cumulative impacts include noise during construction and operation, air quality impacts to the Ivanpah Valley, and traffic impacts along the I-15 corridor. Since the EIS for the SNSA has not been published, this project's contributions to cumulative impacts can only be evaluated qualitatively, based on similar projects.

Calnev Pipeline Expansion Project (Cumulative Project S)

Calnev Pipe Line, LLC (Calnev), an operating partnership for Kinder Morgan Energy Partners, LP, proposes to replace and expand its refined petroleum products pipeline on the existing Calnev system. The pipeline would run between the existing North Colton Terminal in the City of Colton, San Bernardino County, California, to Bracken Junction, located about 1.5 miles west of McCarran International Airport in the City of Las Vegas, Clark County, Nevada. In addition to the main underground pipelines, the existing Calnev system includes laterals to the Southern

California Logistics Airport (formerly George Air Force Base), Edwards and Nellis Air Force bases, the Burlington Northern and Santa Fe (BNSF) rail yard at Barstow, California, and the McCarran International Airport. Existing above-grade facilities include terminals, pump stations, and junctions at various locations along the alignment.

The project would involve construction, operation, and maintenance of approximately 233 miles of new 16-inch-diameter, subsurface pipeline from Colton to Las Vegas. In addition to pipeline construction, the project would require construction of tie-ins, laterals, a new pump station, a new junction, an electric substation, and upgrades to components of the existing Calnev system. Project construction is anticipated to be carried out within a 100-foot-wide ROW (URS 2007, BLM 2008). Pipeline startup had been previously projected for late 2009 or early 2010, but the project currently remains in the Draft EIR/EIS stage of environmental analysis. The pipeline project would intersect the EITP near MP 27. This pipeline project may contribute to cumulative impacts to air quality, noise, hydrology, soils, and traffic during the construction phase and hazards impacts in the case of rupture and/or explosion during the operation phase. Since the Draft EIS has not been published, this project's contributions to cumulative impacts can only be evaluated qualitatively, based on similar projects.

DesertXpress High-Speed Rail Line (Cumulative Project C)

DesertXpress Enterprises, LLC, proposes to construct and operate a privately financed interstate high-speed passenger train, with a top speed of approximately 150 miles per hour, between Victorville, California, and Las Vegas, Nevada. The approximately 60-foot-wide, 200-mile-long corridor would be a fully grade-separated, dedicated, double-track, passenger-only railroad roughly following I-15 and existing railroad corridors/ROWs. The project would also include construction of a passenger station in Victorville, California; a passenger station in Las Vegas, Nevada; a maintenance and operation facility in Victorville; an overnight maintenance and storage facility in the Las Vegas area; and associated ancillary facilities needed to maintain and operate the proposed rail line. Operation is estimated to start in 2012 (USDOT 2009). The project intersects EITP near MP 34. Possible impacts of the DesertXpress project that may contribute to cumulative impacts include collisions with local animals (including representatives of sensitive species such as the desert tortoise), public safety impacts, surface hydrology impacts, and possible air quality impacts, during both the construction and operation phases.

Joint Port of Entry Project (Cumulative Project E)

The State of California, acting through the California Department of Transportation (Caltrans), filed an application for the Joint Port of Entry (JPOE) project, which would be on 133 acres of public lands. The proposed JPOE inspection facility would be comprised of a commercial vehicle enforcement facility and an agricultural inspection facility between Nipton Road and Yates Well Road on southbound I-15. Upon completion of the project, all traffic entering California on southbound I-15 would be diverted through the JPOE. A Notice of Realty Action for the JPOE project was published on February 10, 2010. This project may contribute to cumulative impacts to aesthetics and visual resources, air quality (short-term), cultural, geology, noise, and transportation and traffic.

5.3 Cumulative Impact Analysis

This section analyzes cumulative impacts that could result from the EITP when considered with the other projects listed in Tables 5-1 and 5-2 and described above. Geographic areas for cumulative impacts vary by resource and are described within each resource subsection (i.e., the resource-specific "cumulative impact area"). The geographic extent and timeframe of the cumulative impact analysis, the past and present projects and their impacts, and the reasonably foreseeable future projects are described for each resource area. To assess the cumulative impact of the EITP, this analysis first assesses whether the cumulative projects would result in a cumulatively considerable impact and then, if a cumulatively considerable impact is determined to result, assesses the EITP's contribution to that impact. However, in instances in which the analysis in Chapter 3, "Environmental Analysis," determined that the EITP would result in no impact, these criteria are not carried forward for analysis in this section. In general, each cumulative impact discussion provides an overview of the potential impacts, followed by specific analysis of the EITP's cumulative impacts under both CEQA and NEPA. These analyses parallel the analyses for the EITP conducted in Chapter 3 in this Draft EIR/EIS.

As discussed in Section 1.1.2, "Additional Projects Considered in this EIR/EIS," many renewable generation projects are being developed, applied for, and analyzed under CEQA and/or NEPA concurrently with the proposed EITP in the Ivanpah Valley area. Their status and the level of publicly available information varies. Based on timing, geographic location, and signed agreements between the applicant and the BrightSource solar developer, the ISEGS project is considered part of the "whole of the action" under CEQA and as a "cumulative action" under NEPA. Other renewable generation projects planned in the Ivanpah Valley area would likely connect to the EITP as well, including those projects listed in Table 5-1 and 5-2. Unlike the ISEGS project, these projects are not considered part of the whole of the action under CEQA or as a cumulative action under NEPA due to the lack of a signed power purchase agreement (PPA) with specific contractual terms addressing interrelatedness and the lack of publicly available information on their environmental effects as of December 31, 2009.

The cumulative analysis provided in this section first provides a cumulative analysis with the ISEGS project as one of many cumulative projects. Then, a summary of the cumulative impact analysis that was developed for the ISEGS project by the California Energy Commission (CEC) and the BLM is also included under the ISEGS header for each resource below. This is followed by a brief analysis of the cumulative impact of the Whole of the Action / Cumulative Action evaluated in this EIR/EIS.

5.3.1 Aesthetic and Visual Resources

5.3.1.1 Geographic Extent and Timeframe

The geographic scope for the analysis of cumulative impacts on visual resources includes all projects within the same viewshed as the EITP. Because the EITP is linear and crosses through the Eldorado and Ivanpah valleys, the cumulative analysis considers all planned renewable energy and infrastructure development in those valley regions that would be visible, along with the EITP, from the viewpoints identified in Section 3.2.1.6, "Key Observation Points." Additional detail about the determination of the geographic extent is provided below. Cumulative impacts to visual resources could occur during the EITP's construction or operation phases. Cumulative impacts could occur if activities associated with the construction of the EITP and any of the cumulative projects were to occur simultaneously. Given the amount of development planned in the cumulative study area, and given that renewable projects already or may eventually intend to connect to the EITP, it is reasonable to assume that some construction activities may take place concurrently with the EITP. Cumulative impacts could also occur for any cumulative projects that would be in operation concurrently with the EITP.

Views from Key Observation Points

An explanation of how Key Observation Points (KOPs) were selected is provided in 3.2.1.6, "Key Observation Points." The assessment of cumulative impacts on aesthetics and visual resources is limited to those projects that would be visible along with components of the EITP from each KOP (Table 5-4). Figures 5-2, 5-3, and 5-4 depict visibility of EITP components along with the cumulative projects. The visibility analysis used data for the existing land contours to determine the extent to which each project component could potentially be visible without being visually obstructed by topography; these maps also include a distance zone overlay to differentiate between foreground, middleground, and background distances, as distance is a key factor in determining the intensity of visual impacts. BLM distance zones are foreground (0 to 1 mile), middleground (1 to 3 miles), background (3 to 5 miles), and seldom-seen views (greater than 5 miles) (BLM Manual H-8410-1). The visibility of each project component is constrained to within 5 miles of the KOPs because any greater distance is considered to fall within the seldom seen distance zone. Table 5-4 lists what is visible at each KOP and the sensitivity of each. The sensitivity of these locations considers number of viewers, duration of views, distance between the viewer and the EITP, and viewer expectation. Viewer expectation considers viewer activity, adjacent land uses, special management areas in the vicinity, and any federal, state, or local regulations that protect visual resources in the area.

Table 5-4 EITP Project Components and Cumulative Projects Visible from KOPs

Key Observation Point	Project Component Visible	Distance Zone	Sensitivity	Cumulative Project Visible from KOP location[1]	VRM or VRI Designation
KOP 1: View of the Transmission Corridor Looking Northeast toward the McCullough Mountain Range	Transmission Line	Foreground and Middleground	Moderate	Existing SCE Transmission Line; Jean/Roach Dry Lake SRMA	VRM Class II and VRM Class III
KOP 2: View from the South McCullough Wilderness Area	Transmission Line	Background	Moderate	Existing SCE Transmission Line; Jean/Roach Dry Lake SRMA	VRM Class II
KOP 3: View from Interstate 15 near Jean, Nevada	Transmission Line	Seldom Seen	Low	Existing Transmission Line; AT&T Fiber Optic Cable; Jean/Roach Dry Lake SRMA; DesertXpress; Calnev Pipeline Expansion Project; SNSA	VRM Class III
KOP 4: View from the Desert Oasis Apartments in Primm, Nevada	Transmission Line	Foreground	Moderate to High	Existing Transmission Line; Jean/Roach Dry Lake SRMA; Ivanpah Dry Lake Recreation Area; Primm Casinos; Primm Outlet Mall; Primm Valley Golf Course; Bighorn Electric Generating System; Caltrans Temporary Batch Plant; SNSA; KFC/Taco Bell; ISEGS; First Solar; NextLight; DesertXpress; Calnev Pipeline Expansion Project	VRM Class III and VRI Class III
KOP 5: View from Ivanpah Dry Lake, East of Interstate 15	Transmission Line	Middleground	Moderate to High	Existing Transmission Line; Jean/Roach Dry Lake SRMA; Ivanpah Dry Lake Recreation Area; Molycorp Mine Evaporation Pond; Molycorp Mine Wastewater Pipeline; Primm Casinos; Primm Outlet Mall; Primm Valley Golf Course; Bighorn Electric Generating System; Caltrans Temporary Batch Plant; SNSA; KFC/Taco Bell; ISEGS; First Solar; NextLight; DesertXpress; Calnev Pipeline Expansion Project	VRM Class III
KOP 6: View from Interstate 15 near Primm, Nevada	Transmission Line	Middleground	Low	Existing Transmission Line; Jean/Roach Dry Lake SRMA; Ivanpah Dry Lake Recreation Area; Molycorp Mine Evaporation Pond; Molycorp Mine Wastewater Pipeline; Primm Casinos; Primm Outlet Mall; Primm Valley Golf Course; Bighorn Electric Generating System; Caltrans Temporary Batch Plant; SNSA; KFC/Taco Bell; ISEGS; First Solar; NextLight; DesertXpress; Calnev Pipeline Expansion Project	VRM Class III

Table 5-4 EITP Project Components and Cumulative Projects Visible from KOPs

Key Observation Point	Project Component Visible	Distance Zone	Sensitivity	Cumulative Project Visible from KOP location[1]	VRM or VRI Designation
KOP 7: View from Highway 95 in the Eldorado Valley	Eldorado Substation; Transmission Line	Background	Low	Existing Eldorado Substation; Existing Transmission Line; Nevada Solar One; El Dorado Energy Combined Cycle Power Plant; Cogentrix Solar Services	VRM Class III
KOP 8: View from Highway 164 Overpass in the Ivanpah Valley	Ivanpah Substation; Transmission Line	Background	Low	Primm Valley Golf Course; Caltrans Temporary Batch Plant; Molycorp Wastewater Pipeline; Molycorp Evaporation Pond; DesertXpress; Calnev Pipeline Expansion Project; Power Partners SW; Joint Port of Entry; ISEGS; First Solar.	VRI Class III

Notes:

[1] The cumulative projects listed here include all projects that would be potentially visible from each KOP based on topography. This list does not take into account other factors that may obstruct views of these projects from these locations, such as atmospheric conditions or intervening development. This list also represents projects that would be visible from the KOP in any direction, which does not necessarily correspond to the bearing of the KOP photographs included in Section 3.2: Aesthetics and Visual Resources.

5.3.1.2 Past and Present Project Impacts/Existing Cumulative Conditions

Section 3.2.1, "Environmental Setting," provides an overview of the existing visual setting and the potentially impacted viewer groups of the EITP and its alternatives. Both the Ivanpah and Eldorado valleys are predominantly intact scenically, although development is evident along Interstate 15 (I-15) and Highway 95, the major roads that bisect these valleys, and characterized by large expanses of open scrub land punctuated by flat, barren dry lakes. These vast expanses of gently sloping bajada contrast dramatically with the jagged peaks of the Clark, New York, Lucy Gray, and McCullough mountain ranges that surround the Ivanpah and Eldorado valleys.

Past and present projects have altered the visual character of the cumulative study area. Development in the vicinity of the EITP that has already altered the visual character of the Ivanpah Valley and the Eldorado Valley includes I-15, an existing railroad track, the Primm Valley Golf Course, several large interstate high voltage electric transmission lines and associated infrastructure, the existing Eldorado Substation, the Nevada Solar One Project, the Bighorn Electric Generating Station, numerous mining operations, the Jean/Roach Dry Lake SRMA and Ivanpah Dry Lake Recreation Area, and casino-focused commercial and residential development in Primm, Nevada.

Development has encroached on viewsheds for all of the eight KOPs (Table 5-4). Four of the eight KOPs—KOP 4, KOP 5, KOP 6, and KOP 8—depict views of the Ivanpah Valley area, where development has most encroached on viewsheds. Linear development, including the existing 115-kilovolt (kV) subtransmission line, the existing railroad, and I-15 have introduced vertical lines that bisect viewsheds and darker colors that contrast with the neutral tones of the desert setting. The structures associated with the other development in the area—including the Primm Casinos, the Primm Valley Outlet Mall, the KFC/Taco Bell, the Desert Oasis Apartment Complex, the Bighorn Electric Generating Station, and the Caltrans Temporary Batch Plant have affected the distribution and texture of vegetation in the valley, introduced new colors into the viewshed, required grading that has altered the existing landform, disrupted existing linear elements in views, and introduced structures that dominate viewsheds and draw the attention of the viewer. The Primm Valley Golf Course has introduced dark greens into the viewshed and altered the existing texture by changing the distribution of vegetation.

Three of the eight KOPs—KOP 1, KOP 2, and KOP 3—depict views of the Eldorado Valley west of the McCullough Mountain Range. Development visible in views from these locations includes I-15, the existing railroad, and the existing 115-kV subtransmission line. These projects have introduced new linear features into the viewshed that draw the attention of the viewer; additionally, I-15 and the railroad have introduced moderate color contrast with the neutral tones of the desert landscape. The AT&T fiber optic cable and the existing Calnev pipeline are present in these views, but not visible due to the fact that they were installed underground and vegetation has since concealed cleared and graded areas.

KOP 7 depicts a view of the Eldorado Valley east of the McCullough Mountain Range. Development has encroached on views from this location, including the 115-kV subtransmission line, a Los Angeles Department of Water and Power (LADWP) 500-kV transmission line, the Eldorado Substation, the Nevada Solar One facility, and the El Dorado Energy Combined Cycle Power Plant. These elements have introduced new lines and forms into the viewshed. Clearing and grading activities necessary to accommodate this development has altered the texture created by vegetative distribution and has introduced light tans that contrast with the natural hues of the desert landscape. The Nevada Solar One facility has also introduced deep blues into the viewshed, new linear features created by the rows of solar troughs, and a smooth texture. Overall, development dominates views from this location and draws the attention of the viewer.

The Ivanpah Dry Lake Recreation Area and Jean/Roach Dry Lake Recreation Areas (RA) are visible from all KOPs except for KOP 7. These projects represent areas of land managed for recreation purposes. OHV usage is an allowable use in these areas, so linear elements have been introduced throughout these RAs where OHV trails bisect the area. OHV usage in these locations has also changed the texture of the landscape due to the introduced strips of non-vegetated lines visible along each OHV trail. The RAs do not have structures associated with them.

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LABEL	NAME	STATUS	Acreage*
1	Bighorn Electric Generating Station	Existing	86.9
2	Primm Casinos	Existing	127.8
3	Primm Valley Golf Course	Existing	531.3
4	Primm Outlet Mall	Existing	38.7
5	Ivanpah Dry Lake RA	Existing	12,855.3
6	Molycorp Mine	Existing	862.4
7	Colosseum Mine	Existing	289.9
8	Desert Oasis Apartments	Existing	13.5
9	Molycorp Mine Evaporation Pond	Existing	355.5
10	AT&T FiberOptic Cable	Existing	NA**
11	SCE 115 kV Transmission Line	Existing	NA**
12	Molycorp Wastewater Pipeline	Existing	NA**
13	Jean/Roach Dry Lake SRMA	Existing	224,931.4
14	SNSA	Pending	5,996.6
15	El Dorado Energy Combined Cycle Power Plant	Existing	138.2
16	Nevada Solar One	Existing	400.5
17	KFC/Taco Bell	Existing	3.6
A	First Solar Development	Pending	5,433.4
B	SNSA Ivanpah Airport Environs Overlay	Pending	16,579.6
C	Desert Xpress	Pending	NA**
CC	Searchlight Wind Energy Corp	Pending	19,886.7
DD	BullFrog Green Energy	Pending	3,352.2
E	Joint Port of Entry	Pending	324.7
F	Temporary Batch Plant	Existing	32.4
FF	Cogentrix Solar Services	Pending	640.8
J	Iberdrola Renewables	Pending	1,872.6
JJ	Power Partners SW	Pending	3,874.0
K	Brightsource ISEGS	Pending	4,073.4
Q	Nextlight Renewable Power	Pending	7,837.2
S	CalNev Pipeline Expansion Project	Existing/Pending	NA**
T	Table Mountain Wind	Pending	13,665.4
Z	Oak Creek Energy Systems/Desert Research Inst	Pending	35,530.5

* Cumulative project areas are approximated reflecting the project right-of-way and not necessarily the actual or final project boundary footprint.

** Linear projects not included when calculating overall disturbance acreages.

SOURCE: See source list for Table 5-1 and Table 5-2.

Figure 5-2
Eldorado-Ivanpah Transmission Project
Visibility Analysis for the Eldorado-Ivanpah Transmission Line and the Cumulative Projects

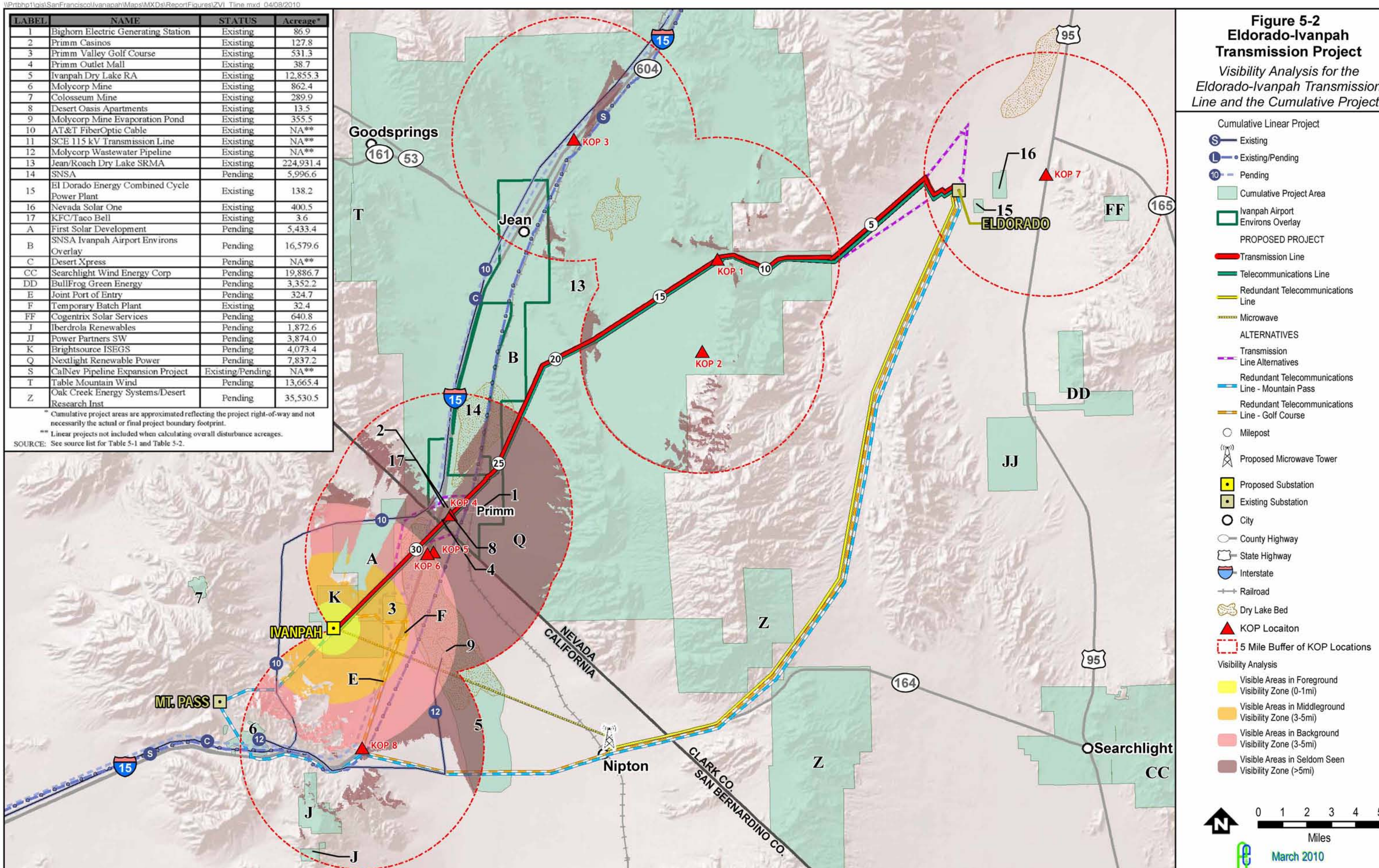

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Figure 5-3
Eldorado-Ivanpah Transmission Project
Visibility Analysis for the Ivanpah Substation and the Cumulative Projects

LABEL	NAME	STATUS	Acreage*
1	Bighorn Electric Generating Station	Existing	86.9
2	Primm Casinos	Existing	127.8
3	Primm Valley Golf Course	Existing	531.3
4	Primm Outlet Mall	Existing	38.7
5	Ivanpah Dry Lake RA	Existing	12,855.3
6	Molycorp Mine	Existing	862.4
7	Colosseum Mine	Existing	289.9
8	Desert Oasis Apartments	Existing	13.5
9	Molycorp Mine Evaporation Pond	Existing	355.5
10	AT&T FiberOptic Cable	Existing	NA**
11	SCE 115 kV Transmission Line	Existing	NA**
12	Molycorp Wastewater Pipeline	Existing	NA**
13	Jean/Roach Dry Lake SRMA	Existing	224,931.4
14	SNSA	Pending	5,996.6
15	El Dorado Energy Combined Cycle Power Plant	Existing	138.2
16	Nevada Solar One	Existing	400.5
17	KFC/Taco Bell	Existing	3.6
A	First Solar Development	Pending	5,433.4
B	SNSA Ivanpah Airport Environs Overlay	Pending	16,579.6
C	Desert Xpress	Pending	NA**
CC	Searchlight Wind Energy Corp	Pending	19,886.7
DD	BullFrog Green Energy	Pending	3,352.2
E	Joint Port of Entry	Pending	324.7
F	Temporary Batch Plant	Existing	32.4
FF	Cogentrix Solar Services	Pending	640.8
J	Iberdrola Renewables	Pending	1,872.6
JJ	Power Partners SW	Pending	3,874.0
K	Brightsource ISEGS	Pending	4,073.4
Q	Nextlight Renewable Power	Pending	7,837.2
S	CalNev Pipeline Expansion Project	Existing/Pending	NA**
T	Table Mountain Wind	Pending	13,665.4
Z	Oak Creek Energy Systems/Desert Research Inst	Pending	35,530.5

* Cumulative project areas are approximated reflecting the project right-of-way and not necessarily the actual or final project boundary footprint.

** Linear projects not included when calculating overall disturbance acreages.

SOURCE: See source list for Table 5-1 and Table 5-2.

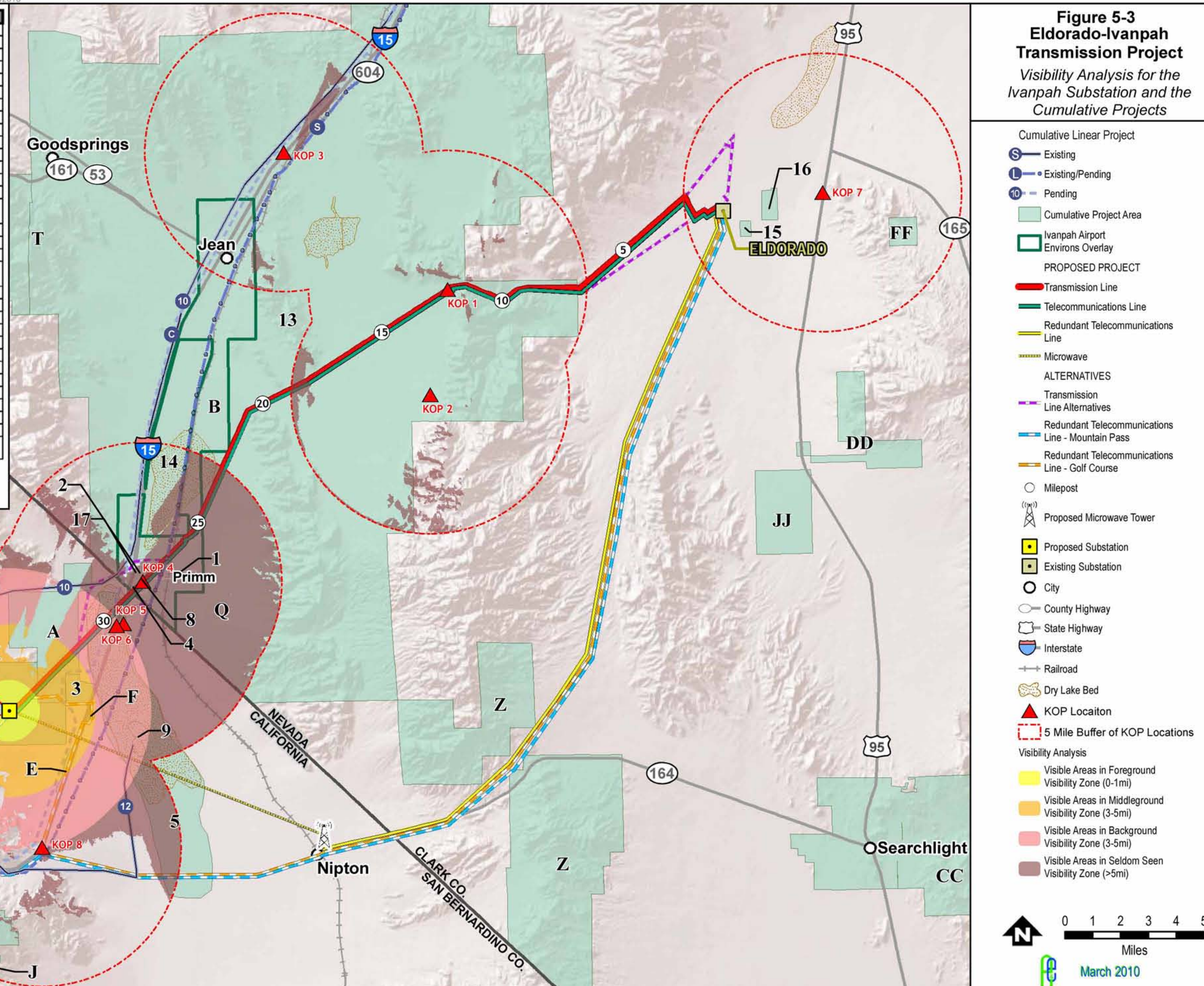

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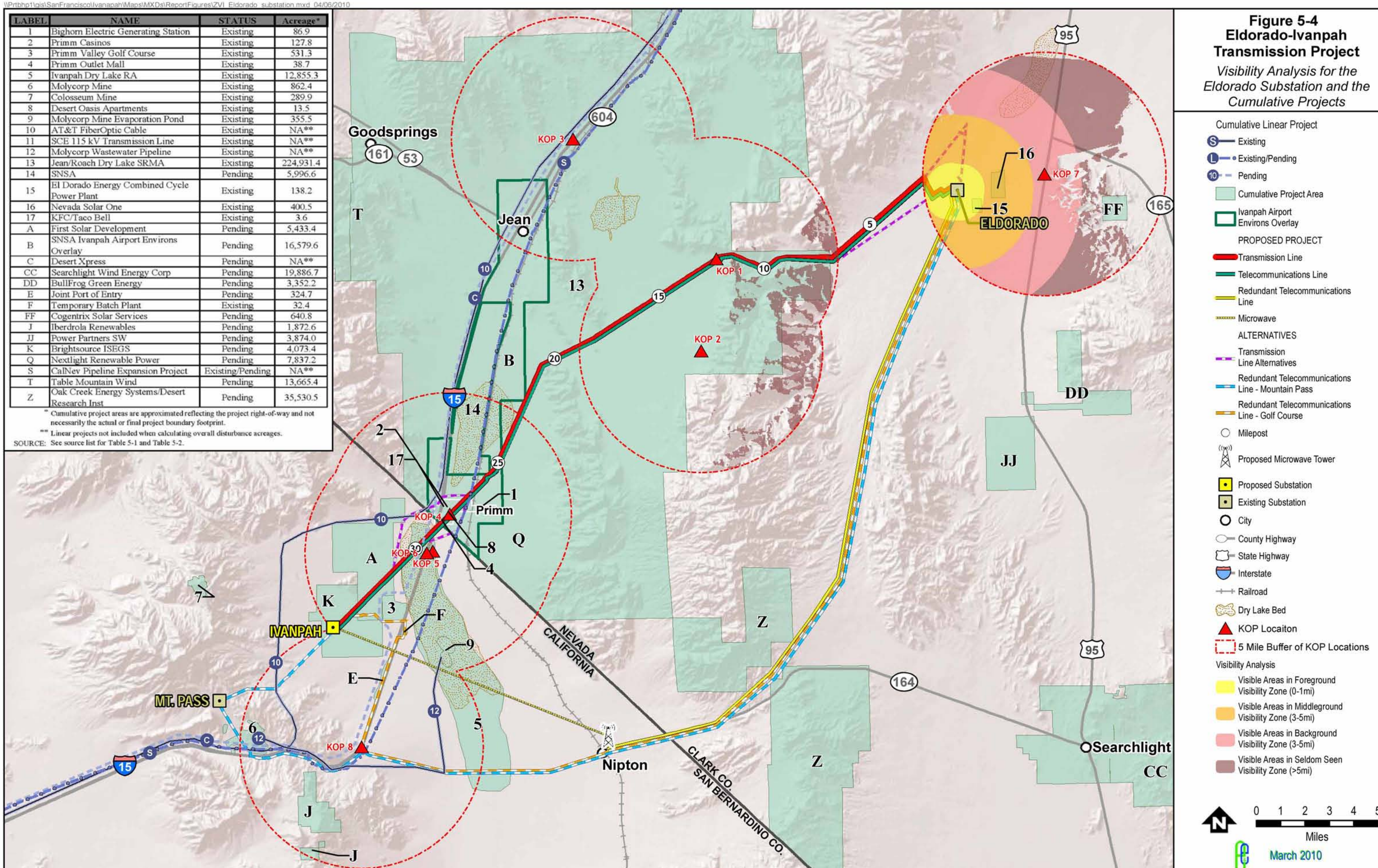
Figure 5-4
Eldorado-Ivanpah Transmission Project
Visibility Analysis for the Eldorado Substation and the Cumulative Projects

LABEL	NAME	STATUS	Acreage*
1	Bighorn Electric Generating Station	Existing	86.9
2	Primm Casinos	Existing	127.8
3	Primm Valley Golf Course	Existing	531.3
4	Primm Outlet Mall	Existing	38.7
5	Ivanpah Dry Lake RA	Existing	12,855.3
6	Molycorp Mine	Existing	862.4
7	Colosseum Mine	Existing	289.9
8	Desert Oasis Apartments	Existing	13.5
9	Molycorp Mine Evaporation Pond	Existing	355.5
10	AT&T FiberOptic Cable	Existing	NA**
11	SCE 115 kV Transmission Line	Existing	NA**
12	Molycorp Wastewater Pipeline	Existing	NA**
13	Jean/Roach Dry Lake SRMA	Existing	224,931.4
14	SNSA	Pending	5,996.6
15	El Dorado Energy Combined Cycle Power Plant	Existing	138.2
16	Nevada Solar One	Existing	400.5
17	KFC/Taco Bell	Existing	3.6
A	First Solar Development	Pending	5,433.4
B	SNSA Ivanpah Airport Environs Overlay	Pending	16,579.6
C	Desert Xpress	Pending	NA**
CC	Searchlight Wind Energy Corp	Pending	19,886.7
DD	BullFrog Green Energy	Pending	3,352.2
E	Joint Port of Entry	Pending	324.7
F	Temporary Batch Plant	Existing	32.4
FF	Cogentrix Solar Services	Pending	640.8
J	Iberdrola Renewables	Pending	1,872.6
JJ	Power Partners SW	Pending	3,874.0
K	Brightsource ISEGS	Pending	4,073.4
Q	Nextlight Renewable Power	Pending	7,837.2
S	CalNev Pipeline Expansion Project	Existing/Pending	NA**
T	Table Mountain Wind	Pending	13,665.4
Z	Oak Creek Energy Systems/Desert Research Inst	Pending	35,530.5

* Cumulative project areas are approximated reflecting the project right-of-way and not necessarily the actual or final project boundary footprint.

** Linear projects not included when calculating overall disturbance acreages.

SOURCE: See source list for Table 5-1 and Table 5-2.



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5.3.1.3 Reasonably Foreseeable Future Projects

Planned development throughout the cumulative impact area for visual resources is dominated by renewable energy projects, including both solar and wind facilities, and the associated infrastructure. Table 5-4 lists the cumulative projects that would be visible with components of the EITP for each KOP. The ISEGS, First Solar, and NextLight Silver State Projects are all planned for the Ivanpah Valley area near Primm, Nevada. These projects would be visible from KOP 4, KOP 5, and KOP 6. The ISEGS and First Solar projects would be visible in distant views from KOP 8.

As described in Section 3.2.5.3, the ISEGS project would result in significant and unavoidable impacts on visual resources. Because the First Solar and NextLight Silver State Projects would use solar PV technology, these projects would result in less impacts from glare and would not have the approximately 450 foot tall towers proposed for ISEGS. These projects would still introduce contrast to the existing landscape similar to the contrast introduced by the Nevada Solar One project discussed above. Both projects would introduce deep blues into the viewshed, new linear features created by the rows of solar troughs, and a smooth texture. Additionally, clearing and grading activities would alter the texture created by vegetative distribution and would introduce light tans that would contrast with the natural hues of the desert landscape. Structures associated with these projects including solar panels, inverters, and gen-tie lines would encroach on foreground views and would attract the attention of the viewer in middleground and background distance zones.

Other development reflects the expansion of southern Nevada as a tourist destination. The proposed SNSA would result in significant and unavoidable adverse changes to existing visual resources, particularly for viewers near Primm, Nevada, on I-15, and within the Jean/Roach Dry Lake SRMA. Large paved areas would introduce greys and blacks that would contrast with the existing neutral tones of the desert landscape. Displacement of vegetation in these areas would also alter the existing texture created by the vegetation distribution. The flat, paved surface would create a new line in the landscape and associated structures would dominate the forms seen in existing views. The DesertXpress high speed rail project would introduce linear and color contrast, similar to the effects described above for the existing railroad.

KOP 7 may have partial views of the Cogentrix Solar Services project in the seldom seen distance zone, but any changes would be minor and difficult to distinguish due to distance and topography (Figure 5-2). KOP 8 may have partial views of the Iberdola Renewables project in the seldom seen distance zone but again, any changes would be minor and difficult to distinguish due to distance and topography (Figure 5-2). As seen in the visibility analyses for Figures 5-2, 5-3, and 5-4, no other projects would be visible from the KOPs.

5.3.1.4 Cumulative Impact Analysis

The potential for the aesthetic and visual impacts of the EITP to combine with the effects of other projects within the geographic extent of the cumulative analysis is described below. As discussed in Section 3.2.3, "Impact Analysis," the EITP would be consistent with VRM or VRI designations for seven of the eight KOPs and, with mitigation, would result in less than significant impacts under CEQA. KOP 1 would result in a major, adverse effect under NEPA.

The methodology and impact criteria used to assess the impacts to visual resources under NEPA and CEQA are discussed in Section 3.2.3. The same KOPs used to assess the proposed project's impacts on visual resources are also used to assess cumulative impacts to visual resources in the Eldorado and Ivanpah valleys. These KOPs were agreed upon by CPUC and BLM staff and represent typical and sensitive viewpoints in the project area. This section discusses the combined effects of the proposed project and past, present, and reasonably foreseeable projects on existing visual character and quality from each KOP. The relevant impact of the proposed project is IMPACT AES-2: Degrade Existing Visual Character or Quality.

Visual Impacts from Construction Activities

As stated above, cumulative impacts could occur if activities associated with the construction of the EITP and any of the cumulative projects were to occur simultaneously. Table 5-5 lists the cumulative projects that would or may overlap with EITP construction activities and the potentially affected KOPs. Any cumulative impacts associated with concurrent construction periods would be temporary.

Table 5-5 Concurrent Construction of the EITP and the Cumulative Projects and Potentially Affected KOPs

Cumulative Project Name	Estimated Construction Period/Year(s) of Construction	Construction Overlap With EITP	Affected KOP(s)	Relevant EITP Component
DesertXpress[1]	2 years/2010 – 2012	Yes	KOP 3, KOP 4[3], KOP 5, KOP 6, KOP 8	Transmission Line and Ivanpah Substation
Southern Nevada Supplemental Airport (SNSA)	7 years/2014 – 2020	Unlikely	KOP 3, KOP 4[3], KOP 5, KOP 6	Transmission Line
Calnev Pipeline Expansion Project	Unknown/Unknown	Potentially	KOP 3, KOP 4[3], KOP 5, KOP 6, KOP 8	Transmission Line and Ivanpah Substation
ISEGS Solar Energy Project[2]	4 years/2010 – end of 2013	Yes	KOP 4[3], KOP 5, KOP 6, KOP 8	Transmission Line and Ivanpah Substation
FirstSolar Project	Unknown/Unknown	Potentially	KOP 4[3], KOP 5, KOP 6, KOP 8	Transmission Line and Ivanpah Substation
NextLight Renewable Power Project	4 years/ 2010 - 2014	Yes	KOP 4[3], KOP 5, KOP 6, KOP 8	Transmission Line and Ivanpah Substation

Sources/Notes:
[1] USDOT FRA 2009
[2] CEC and BLM 2009
[3] KOP 4 is located within the Desert Oasis Apartment Complex that is surrounded by a screening wall; therefore, views of projects from this location may be obscured.

The three renewable energy projects listed in Table 5-5 would be visible from four KOPs in the Ivanpah Valley area near Primm, Nevada. Construction of these solar projects would require grading and the removal of vegetation, which would introduce color contrast through the exposure of bare soils and would alter the existing texture of the landscape by changing the distribution of vegetation. These activities would also introduce new lines and potentially alter existing forms. Temporary signage, as well as storage of construction materials and equipment, would clutter views and draw attention from the existing natural landscape.

The DesertXpress Project and the Calnev Pipeline Expansion Project would be located along the I-15 corridor and would be visible from the five KOPs along the I-15 corridor in both the Ivanpah and Eldorado valleys. These projects are both linear projects that would require grading and the exposure of soils through constructing a raised berm for the DesertXpress and through trenching activities for the Calnev Pipeline Expansion. This would create a new line that would bisect views; however, the area of land that would be disturbed during construction would be on a smaller scale than the area disturbed for the solar projects discussed above and would be less evident in middleground and background views, such as those from KOP 5, KOP 6, and KOP 8.

Construction of the EITP would result in temporary impacts on visual resources that would contribute incrementally to impacts on visual resources from the cumulative projects for KOP 4, KOP 5, KOP 6, and KOP 8. Construction activities would not likely be visible from KOP 3 due to distance and the fact that viewers represented by this KOP would likely be traveling at speeds of approximately 70 miles per hour on I-15. Construction activities for the EITP would require grading and vegetation removal for improvements to access and spur roads, which would introduce new color into views, alter the texture of the landscape, and create a line that would bisect views. The EITP would also require the exposure of bare soils where towers would be installed and where laydown or staging yards would be located. Only KOP 8 would have views of a laydown or staging area. No trenching activities associated with the telecommunications line would be visible from these KOPs. Similar to the construction impacts of the linear projects described above, the EITP's impact on visual resources due to construction activity would be on a smaller scale than the impact of the construction activities associated with the three solar projects in the vicinity of Primm, Nevada. Still, the EITP would contribute to temporary cumulative impacts to the existing viewshed as seen from KOP 4, KOP 5, KOP 6, and KOP 8 by introducing new color and line into views and by altering the existing texture of the landscape.

Operational Impacts on KOPs

Operation of the cumulative projects would permanently alter the existing landscape for the life of the project as seen from the eight KOPs listed in Table 5-4. The cumulative impact on visual resources in the Ivanpah and Eldorado valleys would be considerable, as described below for each KOP Simulations. Displaying both the Project and the cumulative projects in one simulation was not completed due to a lack of available information on project design; therefore, visual impacts are described based on existing publicly available information about the visual impacts of the cumulative projects or, in the absence of published information, based on the visual impacts of similar projects.

KOP 1 and KOP 2

Both KOPs 1 and 2 include views of the existing 115-kV subtransmission line and the existing Jean/Roach Dry Lake SRMA. The impact of these projects on visual resources is described above in Section 5.3.1.2. No reasonably foreseeable future projects would be visible from these locations (Table 5-4). The EITP's impact on visual resources for each of these KOPs is described in Section 3.2.3.5. The EITP would result in a major, adverse and unavoidable impact for KOP 1 and a minor adverse impact for KOP 2. However, because no reasonably foreseeable future projects would be visible from this location, the EITP's impacts on visual resources would not contribute to a cumulative visual impact from these two KOPs.

KOP 3

KOP 3 includes views of the existing 115-kV transmission line, the AT&T fiber optic cable, and Jean/Roach Dry Lake SRMA. The impact of these projects on visual resources is described above in Section 5.3.1.2. Reasonably foreseeable future projects visible from this location include the DesertXpress Project, the Calnev Pipeline Expansion Project, and the SNSA. The DesertXpress Project would be installed on a raised berm that would likely be of a darker color than the surrounding neutral tones of the desert; this would introduce contrast with existing colors and would create a new line that bisects the viewshed. The Calnev Pipeline Expansion would be installed underground and would result in negligible operational impacts on visual resources. The SNSA would result in significant and unavoidable changes to the existing landscape, as described above in Section 5.3.1.3. These changes would not be consistent with the VRM Class III designation for the area affected because visual changes associated with the airport would not repeat the existing patterns of the landscape, would dominate the view, and would not achieve the objective of partial retention of the landscape.

The EITP would result in a negligible impact from this KOP due to distance and the speed of travel of motorists along I-15, as described in Section 3.2.3.5. The EITP would be located approximately 6.5 miles from the viewpoint and would replace an existing 115-kV subtransmission line. While the EITP would require larger towers and larger and more conductors, the incremental difference in size would not be distinguishable at this distance; additionally, the replacement of an existing line would achieve the VRM Class III objective of repeating patterns seen in the existing landscape. Because the impact of the EITP would be negligible at KOP 3, the EITP would not contribute to cumulative visual impacts from this location.

KOP 4

KOP 4 includes a view of the existing 115-kV subtransmission line. The Jean/Roach Dry Lake SRMA, Ivanpah Dry Lake Recreation Area, Primm Casinos, Primm Outlet Mall, Primm Valley Golf Course, Bighorn Electric Generating System, and KFC/Taco Bell could potentially be visible from this location, although the screening wall around the Desert Oasis Apartment Complex has completely obstructed views of these projects.

The only reasonably foreseeable project that would likely be visible from this viewpoint, given the screening wall, is the NextLight Silver State Solar Project. The NextLight Silver State Project would be visible in the middleground between the parking lot perimeter wall and the mountains in the distance. From this distance, solar panels would be visible as flat, geometric forms, which would create a moderate level of contrast with the surrounding environment. These features would create straight lines along the alluvial fan, which would contrast moderately with the more gentle lines of the surrounding environment. The collector fields would appear to be white to black in color and are mostly lighter than the brownish green to gray surrounding environment. The color contrast level is moderate. Further, the features would have a medium to coarse texture, which contrasts weakly with the surrounding environment. The features would attract attention, but would not dominate the view of the casual observer. The NextLight Silver State Project would likely meet the VRM Class III objectives from this KOP.

The EITP would result in a minor adverse impact from this KOP due to the fact that the project would be replacing an existing transmission line and, though the project would require taller poles and larger and more conductors, the project would repeat the existing patterns of the 115-kV transmission line and would achieve the VRM Class III and VRI Class III objective of partially retaining the character of the landscape. While the EITP would result in weak contrast with these existing lines and forms, the project would not introduce contrast with the existing color or texture in the landscape. When considered in conjunction with the presumed impacts of the NextLight Silver State Solar Project, the cumulative impact to visual resources would likely meet the VRM Class III objectives from this KOP as overall contrast would be weak to moderate.

KOP 5

KOP 5 includes the existing 115-kV subtransmission line, the Ivanpah Dry Lake Recreation Area, the Primm Casinos, and the Primm Outlet Mall. The Molycorp Mine Evaporation Pont, the Molycorp Mine Wastewater Pipeline, the Primm Valley Golf Course, the Bighorn Electric Generating System, and the Caltrans Temporary Batch Plant may be visible from this location but are not visible or distinguishable in the KOP photograph (Figure 3.2-12) due to distance, bearing of the photograph, or a combination of both factors. The impact of these projects on visual resources is described above in Section 5.3.1.2.

Reasonably foreseeable future projects that would be visible from KOP 5 include the NextLight Silver State Project, the First Solar Project, the DesertXpress Project and the Calnev Pipeline Expansion. As described above, the DesertXpress Project would be installed on a raised berm that would likely be of a darker color than the surrounding neutral tones of the desert; this would introduce contrast with existing colors and would create a new line that bisects the viewshed. The Calnev Pipeline Expansion would be installed underground and would result in negligible operational impacts on visual resources. The NextLight and First Solar projects are both photovoltaic projects and would be expected to have similar impacts on visual resources. As described above, each of these projects would result in weak contrast to form, weak contrast with existing lines, moderate contrast in color, and weak contrast in texture. In combination, however, these projects would significantly alter existing views from the Ivanpah Dry Lake bed by introducing new, darker colors into the landscape that would contrast with the existing neutral tones of the desert and attract the attention of viewer groups.

The EITP would result in a minor adverse impact from this KOP. All changes to visual elements from this vantage point due to operation of the EITP would be weak, would not attract the attention of the viewer, and would meet the objectives of VRM Class III. The EITP's contribution to impacts on visual resources from this KOP would be minor.

KOP 6

KOP 6 includes views of the existing 115-kV subtransmission line, the Ivanpah Dry Lake Recreation Area, the Primm Casinos, and the Primm Outlet Mall. Similar to KOP 5 described above, other projects may be visible from this location but are not depicted in the KOP photograph due to the bearing of the photograph or may not be distinguishable due to distance. The impact of these projects on visual resources is described above in Section 5.3.1.2.

Reasonably foreseeable future projects that would be visible from KOP 6 include the NextLight Silver State Project, the First Solar Project, the DesertXpress Project and the Calnev Pipeline Expansion. Impacts of these projects on visual resources would be the same as those described above for KOP 5. In combination, these projects would significantly alter existing views from I-15 by introducing new, darker colors into the landscape that would contrast with the existing neutral tones of the desert and attract the attention of viewer groups. However, it should be noted that the sensitivity for this viewpoint is low, as compared to the moderate to high sensitivity for KOP 5.

The EITP would result in a minor adverse impact from this KOP. The proposed transmission line would replace an existing 115-kV subtransmission line, and the route is approximately 1 mile from the KOP, which is considered within the middleground distance zone. Despite the fact that the EITP would require taller poles and larger and more conductors, the impact on visual resources from this KOP would be minor due to the distance and the fact that the EITP would repeat the patterns created by the existing subtransmission line. The EITP's contribution to impacts on visual resources from this KOP would be minor.

KOP 7

KOP 7 includes views of the existing 115-kV subtransmission line, the existing Eldorado Substation, the Nevada Solar One facility, and the El Dorado Combined Cycle Power Plant. The impact of the Nevada Solar One facility is similar to the visual impacts described for the proposed NextLight Solar Project for KOP 4 above: moderate contrast in form, moderate contrast with existing lines, moderate contrast in color, and weak contrast in texture. The El Dorado Combined Cycle Power Plant is less visually distinct than the Nevada Solar One facility due to distance between the viewpoint and the power plant, but nonetheless introduced weak contrast in color and form.

The Cogentrix Solar Services project would be visible from this location, but is not visible in this KOP photograph due to the bearing of the photograph chosen intentionally to show the visible portions of the proposed project; therefore, there would be no cumulative impacts from this KOP due to combined effects with reasonably foreseeable future projects.

The EITP would result in a negligible impact on visual resources from this KOP due to distance, the speed of viewers driving along Highway 95, and the low sensitivity of the viewpoint. Additionally, all additions to the Eldorado Substation would take place within the existing Eldorado Substation footprint and, while the proposed transmission line would require taller towers and larger and additional conductors, these changes would not be distinguishable at a distance of 3.5 miles. Therefore, EITP's contribution to impacts on visual resources from this KOP would be negligible.

KOP 8

KOP 8 includes views of the Primm Valley Golf Course, the Caltrans Temporary Batch Plant, and commercial and residential development in Primm, Nevada (although from this location these projects are not visually distinct from one another). The impact of these projects on visual resources is described above in Section 5.3.1.2. The Molycorp Wastewater Pipeline and Molycorp Evaporation Pond are present in this view but not visually distinct. The existing 115-kV subtransmission line is not visually distinct from this distance.

The DesertXpress, Calnev Pipeline Expansion, Joint Port of Entry (JPOE), ISEGS, and First Solar Project would be visible from this location. The impact on visual resources for the DesertXpress Project and the Calnev Pipeline

Expansion are described above for KOP 3: the DesertXpress Project would introduce contrast in color and would introduce a new line into the viewshed and the Calnev Pipeline Expansion would not be visible because it would be installed underground. The impact on visual resources for ISEGS is described in Section 3.2.5.3. ISEGS would result in substantial adverse impacts to six of ten KOPs chosen for that project (CEC and BLM 2009). The JPOE project would require the expansion of the I-15 corridor and construction of additional structures. From this distance, the JPOE would result in weak contrast in form by introducing new structures into the view, weak to moderate contrast in color depending on the color chosen for the structures, and weak change in line as the existing line of I-15 would be altered. In combination, these projects would significantly alter existing views from I-15 and would result in a major adverse cumulative impact.

The EITP would result in a moderate change in the color of the landform, a weak change in the line of vegetation, and a moderate contrast with existing structures in the background of KOP 8. The changes to the existing environment would be consistent with the VRI Class III designation assigned to these BLM-managed lands because the VRM Class III designation allows for moderate change. Additionally, mitigation measures AES-1, AES-2, and AES-3 would reduce the contrast that would be introduced to the existing colors in the viewshed and minimize the dominance of the substation and microwave tower within the view. Further, if ISEGS is constructed, it would be located between this viewpoint and the proposed Ivanpah Substation. The facilities associated with ISEGS would obstruct any views of the Ivanpah Substation. Therefore, the EITP's contribution to impacts on visual resources from this KOP would be minor.

Scenic Vistas

This section discusses the combined effects on scenic vistas of the EITP and past, present, and reasonably foreseeable projects. The relevant impact of the EITP is IMPACT AES-1: Adverse Impact to a Scenic Vista. There are no designated scenic vistas in the vicinity of the EITP; however, for the purposes of this analysis, the South McCullough Wilderness Area is treated as designated scenic vistas because the BLM manages these lands according to the most stringent restrictions to protect visual resources (VRM Class II). As discussed above for KOP 1 and KOP 2, no cumulative projects would be visible from this location, so no cumulative impact would occur.

Lighting and Glare

This section discusses the combined effects on visual resources due to the introduction of new sources of light or glare of the EITP and past, present, and reasonably foreseeable projects. The relevant impact of the EITP is IMPACT AES-4: Create a New Source of Light or Glare. EITP lighting would be shielded, directed downward, and used only for emergency repairs or maintenance. The EITP's contribution to light and glare from the substation would be infrequent and less than significant. It is possible that project lighting would be required for some towers within 20,000 feet of the SNSA, if the airport is approved and constructed. MM-HAZ 2 required the applicant to consult with the Federal Aviation Administration (FAA) to determine whether a Hazard/No Hazard Determination is required for the EITP and, if so, if lighting would be required for structures within 20,000 feet of the proposed airport. If so, the EITP could contribute to cumulative impact to visual resources by introducing a new source of light into the landscape.

The projects considered in the cumulative scenario might result in cumulatively considerable impacts to visual resources by introducing new sources of light and glare. Solar thermal projects planned in the region that would use power tower technology, such as ISEGS, or any projects that intended to use sterling dish technology, would introduce highly reflective surfaces into viewsheds, which would create glare and contribute to significant cumulative impacts. Additionally, the ISEGS project would require five to ten foot tall day and nighttime strobe lighting on top of its 459 foot power towers under FAA regulations.. This lighting would introduce a new source of light into viewsheds and, therefore, would also contribute to considerable cumulative impacts under this criterion. The proposed Ivanpah Substation would have a negligible contribution to cumulative impacts under this criterion because the lighting would be infrequent, shielded to prevent light spillage, and directed downward. If the EITP is required to install safety lighting on the proposed transmission towers near the SNSA, the EITP would contribute to impacts to visual resources under this criterion.

5.3.1.5 Alternatives

Because no activity is associated with the No Project Alternative, there would be no impacts to visual resources under this alternative. Views from the locations described above would not be altered in any way under the No Project Alternative.

The transmission route alternatives were developed to decrease impacts to specific resources, such as the Ivanpah Dry Lake, residents of the Desert Oasis Apartment Complex, or to address land use concerns near the existing Eldorado Substation. Each alternative deviates from the existing ROW, and all the deviations would result in increased visual contrast. However, these minor route variations are close to the existing transmission line and each would be the same distance from potential viewer groups and the cumulative projects considered in this analysis. Because the viewing groups and viewing distances for the proposed project and the alternatives would be similar, the alternatives' contribution to cumulative impacts to visual resources would be similar to those of the proposed project although incrementally greater due to the fact that new ROW not visually associated with existing ROWs would be required which would result in increased visual contrast.

The Golf Course Telecommunications Alternative and the Mountain Pass Telecommunications Alternative would both require additional undergrounding along Nipton Road and underbuilding on existing distribution lines. Undergrounding would require additional trenching along Nipton Road, within view of the Mojave National Preserve, which would temporarily increase visual contrast; however, once installed, the undergrounded segment of the telecommunications line would not be visible. The segments of the telecommunications line that would be underbuilt on existing distribution lines would result in the same impact to visual resources as the portion of the line that would be underbuilt on the Eldorado-Lugo transmission line. The Golf Course Telecommunications Alternative would require an additional segment of undergrounding under the Primm Valley Golf Course. The portion of the telecommunication line that would be installed under the golf course would result in increased visual impacts to golf course users during the construction period but would not impact views following construction. A portion of the Mountain Pass Telecommunications Alternative would cross through BLM land with a VRI Class II designation, which has a higher level of visual sensitivity than the proposed telecommunications path, which crosses BLM land with VRI Class III designation in California. Both these alternatives would have slightly higher impacts to some viewer groups than the proposed project during construction but would not introduce greater long-term visual contrast than the proposed project. Therefore, they would have similar contribution to cumulative impacts to visual resources as would the proposed project.

5.3.1.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP and ISEGS projects. The section summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM, and evaluates the combined effects of the EITP and ISEGS.

ISEGS Summary

The ISEGS visual analysis determined that the visual impacts of the ISEGS project would be cumulatively significant and unavoidable with respect to the immediate project viewshed. The anticipated cumulative impacts of the ISEGS project in combination with foreseeable future local projects in the Ivanpah Valley would thus be considerable and potentially significant (CEC and BLM 2009).

Cumulative Impact of the Whole of the Action / Cumulative Action

The ISEGS project would be visible from I-15, the Ivanpah Dry Lake, the Clark Mountains, the Stateline Wilderness Area, and Primm, Nevada. The whole of the action / cumulative action (the combined ISEGS and EITP) would unavoidably alter the viewshed. As determined by the ISEGS FSA/DEIS, the combination of the whole of the action / cumulative action and the foreseeable projects could contribute to considerable cumulative visual impacts. Therefore, the whole of the action / cumulative action would have a potentially unavoidable significant contribution to considerable cumulative visual impacts for motorists along I-15, recreationists on the Ivanpah Dry Lake, dispersed recreationists in the Clark Mountains and Stateline Wilderness Area, and residents of or visitors to Primm, Nevada.

5.3.2 Air Quality and Greenhouse Gases

5.3.2.1 Geographic Extent and Timeframe

Air quality impacts resulting from the EITP could occur over the entire route, which includes the natural basin formed within the Ivanpah Valley and Eldorado Valley (as formed by the Spring Mountains, Clark Mountains, New York Mountains, Highland Mountains, and McCullough Mountain Ranges). The potential cumulative impact area encompasses two air basins, two counties, and two local air quality jurisdictions. Since the proposed project has negligible direct operating emissions, this cumulative impact discussion focuses on construction impacts. Therefore, the timeframe for this analysis is the 18 months of construction. Construction impacts are localized and of short duration. Therefore, only projects within 1 mile of the route are considered projects that when combined with impacts from the EITP could contribute to cumulative impacts. Additionally, only projects with construction scheduled concurrently in the same area as the EITP are considered as possible contributors to cumulative impacts.

5.3.2.2 Past and Present Project Impacts / Existing Cumulative Conditions

As discussed previously, EITP construction would take place in desert, rural areas where population is sparse, with the exception of Primm, Nevada. The presence of I-15 and other state routes facilitates travel to, from, and within California and Nevada. The Bighorn Electricity Generating Facility has facilitated growth within Primm. The Molycorp Mine, Bighorn Electricity Generating Facility, and the traffic throughout the Ivanpah Valley generate emissions that affect the current ambient air quality in the region. Air quality, in general, reflects current regional emissions; therefore, this discussion focuses on present conditions and the potential contribution of reasonably foreseeable future projects.

The EITP would be located partially in California, within the Mojave Desert Air Basin. Local air quality in that area would be administered by the Mojave Desert Air Quality Management District (MDAQMD). The EITP would also be located in Clark County, Nevada; local air quality there would be administered by the Clark County Department of Air Quality and Environment Management (DAQEM). The section of the Mojave Desert Air Basin in which EITP activities would occur is currently designated as nonattainment for particulate matter less than or equal to 10 micrometers in diameter (PM_{10}) with respect to National Ambient Air Quality Standards (NAAQS) and as nonattainment for ozone and PM_{10} with respect to California Ambient Air Quality Standards (CAAQS). The portion of Clark County in which EITP activities would occur is designated as nonattainment for ozone with respect to NAAQS. Ambient air quality for the area is described in detail in Section 3.3.1, "Environmental Setting." Since the EITP would be located in areas designated as nonattainment, any significant increase in emissions of nonattainment pollutants (or precursors) could impact air quality adversely.

5.3.2.3 Reasonably Foreseeable Future Projects and Changes

Only the projects listed in Tables 5-1 and 5-2 and shown in Figure 5-1 are considered potential contributors to cumulative impacts. They have the potential to temporally overlap emissions with construction of the EITP, because they are located within 1 mile of the EITP. However, as indicated in Table 5-3, the construction schedule of many of these projects is uncertain, so the construction periods of several projects may not coincide with the EITP.

From southwest to northeast, the proposed Eldorado–Ivanpah 230-kV transmission line would traverse the proposed locations of the ISEGS and First Solar projects, as well as Ivanpah Dry Lake, which is used for recreation in California. Once the proposed transmission line crossed the California-Nevada border, it would be located within 1 mile of all structures in Primm, including the existing rail line, the proposed location of the DesertXpress rail line, the proposed location of the Calnev Pipeline Expansion, and the proposed location of NextLight's Silver State Solar Project.

5.3.2.4 Cumulative Impact Analysis

The potential for air quality impacts of the EITP to combine with the effects of other projects within the geographic extent and timeframe of the cumulative analysis is described below. Since the EITP would have negligible operating emissions, the cumulative impact analysis focuses on construction impacts, which would be localized and of short duration. As discussed above, only projects within 1 mile of the EITP route, as well as projects that would generate emissions during construction of the EITP, are considered for analysis of cumulative impacts. Additionally, only new projects with construction or operating emissions that would occur at the same time as the EITP's construction are considered as part of this cumulative impact analysis; existing emission sources are considered part of the existing ambient background cumulative condition.

A cumulative impact analysis of greenhouse gas (GHG) emissions for the EITP is provided in Section 3.3, "Air Quality and Greenhouse Gases." The analysis in Section 3.3 considers the EITP's contribution to global climate change, which was determined to be less than significant. No further analysis of GHG emissions is included in this section.

Construction Impacts on Air Quality

This section discusses the combined effects on air quality during construction of the EITP and other past, present, and reasonably foreseeable projects. The relevant impacts of the EITP are IMPACT AIR-2: Temporary Ambient Air Quality Impacts Caused by Construction Activities Would Violate or Contribute Substantially to an Air Quality Violation; IMPACT AIR-3: Temporary Emission Increases of NO_x, VOCs, and PM_{10} during Construction Would Contribute to a Cumulatively Considerable Net Increase of a Criteria Pollutant in a Non-Attainment Area; and IMPACT AIR-4: Temporarily Expose Sensitive Receptors to Substantial Pollutant Concentrations.

Construction of the EITP would take 18 months and would generate emissions of carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), sulfur dioxide (SO_2), PM_{10}, and particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$). Ozone is not emitted directly from emission sources but is created in the atmosphere via a chemical reaction between NO_X and VOCs in the presence of sunlight; these compounds are referred to as ozone precursors. The estimated average daily emissions would exceed MDAQMD daily construction emission significance thresholds for NO_X, PM_{10}, and $PM_{2.5}$. This threshold would not necessarily be exceeded daily, but it could be, if all components of the EITP were to be constructed simultaneously. The emissions would be localized to those locations under construction. Facilities such as the Bighorn Electric Generating Station and other existing projects shown in Tables 5-1 and 5-2 are currently generating emissions, and those emissions are factored into the evaluation of air impacts discussed in Section 3.3, "Air Quality."

Construction of the foreseeable projects within 1 mile of the EITP would generate similar types of emissions and could contribute cumulatively to impacts to air quality. Individually, the foreseeable projects could exceed the daily construction emission thresholds for the same or different criteria pollutants as the EITP. As indicated in Table 5-3 and Figure 5-1, some projects could have temporally and spatially overlapping construction. Table 5-6 provides the estimated daily emissions of the EITP and ISEGS. These are the only projects for which there are publicly available emissions data for this area.

Table 5-6 Estimated Daily Construction Emissions of Criteria Pollutants for the Proposed Project and Other Foreseeable Projects[1]

Criteria Pollutant	Maximum Daily Emissions (lb/day)			MDAQMD Daily Emission Significance Threshold (lb/day)
	Proposed Project		ISEGS	
	CA[2]	NV[3]	CA[4]	
CO	164	113	509	548
NO_X	331	201	500	137
VOC	39	23	63	137
SO_2	0.9	1.2	2	137
PM_{10}	401	218	285	82

Notes:
[1] Only data on the ISEGS project were publically available during the preparation of this Draft EIR/EIS.
[2] Construction includes removal of the 115-kV line, installation of the 220-kV and 33-kV lines, construction of the Ivanpah Substation, and installation of the telecommunication line
[3] Construction includes installation of the 220-kV line, expansion of the Eldorado Substation, replacement of the Eldorado–Lugo line, and installation of the telecommunication line
[4] Construction for this project would only take place in California

The construction emissions estimates for ISEGS are likely to be comparable to those for the other solar thermal projects proposed in the area, such as the First Solar project or the NextLight Silver State Solar Project. Given the daily and annual emission estimates, and since the EITP, ISEGS, DesertXpress, and Calnev could occur concurrently, cumulative temporary air quality impacts could occur. These temporary cumulative increases in criteria pollutants could lead to or contribute to violations of ambient air quality standards. In addition, increases in PM_{10}, NO_x, and VOCs from these and other reasonably foreseeable future projects could contribute to a considerable net increase of criteria pollutants in a nonattainment area. Section 3.3.4, "Mitigation Measures," includes a summary of measures to be implemented to mitigate project construction emissions, including the use of low-emission equipment and enhanced fugitive dust controls. These mitigation measures are not expected to reduce emissions from EITP construction activities to below the MDAQMD daily significance thresholds. Thus, the EITP could have a potentially significant and unavoidable contribution to these cumulative impacts.

Diesel particulate emissions also would be generated during project construction. The only receptor that could be exposed to short-term increased pollutant concentrations are residents of the Desert Oasis Apartment Complex. The estimated construction time at this location for the EITP is 2.5 weeks. Installation of the Calnev Pipeline is likely to take several days to install in the area near the Desert Oasis Apartment Complex. Although possible, it is unlikely that these projects would have overlapping construction schedules at this location. Even if the construction schedules overlapped, construction activities would be only for several days in the area of potential exposure; therefore, there would not be a significant cumulative impact to this receptor.

Objectionable Odors

This section discusses the combined effects associated with odors generated during construction of the EITP and other past, present, and reasonably foreseeable projects. The relevant impact of the EITP is IMPACT AIR-5: Temporarily Create Objectionable Odors due to Fuel Combustion that would affect a Substantial Number of People. Vehicle and equipment emissions odors during construction could be perceptible by people when construction was occurring in Primm. No other location along the EITP route has a substantial number of people. Construction in Primm would occur over a 2.5-week period near the Desert Oasis Apartment Complex. As discussed above, although unlikely, the Calnev Pipeline Expansion could have an overlapping construction schedule at this location, but the overlap would only be for a day or two. Even if the construction schedules overlapped, construction activities would be only for several days in the area of potential exposure, there would not be a significant cumulative impact.

5.3.2.5 Alternatives

The No Action Alternative involves no activity; therefore, no emissions would be generated. This alternative would have no direct or cumulative impact on air quality.

Because the alternative transmissions routes and telecommunication alternatives simply vary the route of the proposed project and all the same components would be built, air emissions that would be generated from the alternatives would be similar to those from the proposed project. The amounts of emissions would vary, given the changes in distances of the transmission line and telecommunication route. However, for all the alternatives, contributions to cumulative air quality impacts would be similar to those of the proposed project.

5.3.2.6 Whole of the Action / Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP and ISEGS projects. The section first summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM, and then evaluates the combined effects of the EITP and ISEGS.

ISEGS Summary

The ISEGS FSA/DEIS determined that cumulative impacts would occur under the following circumstances:

- As a result of any project emissions of nonattainment criteria pollutants and their precursors (NO_x, VOCs, and PM_{10}); these are considered CEQA-significant cumulative impacts that must be mitigated
- As a result of a significant contribution to GHG emissions

The ISEGS cumulative analysis for air quality determined there could be significant temporary impacts during construction of other projects in the project vicinity, most notably from construction traffic and fugitive dust associated with other renewable energy projects, a proposed airport, and a commercial/residential development in the town of Jean.

In the long term, several of the developments would have beneficial impacts. For example, the high-speed train would reduce traffic emissions on I-15, and the renewable energy projects would reduce emissions within the area of the Western Electricity Coordinating Council. No additional cumulative air quality impact modeling analysis was performed. While adverse cumulative impacts would likely occur, no CEQA-significant cumulative air quality impacts are expected after implementation of recommended project mitigation measures. However, because there are a large number of renewable projects currently proposed for development in the desert southwest, it is appropriate that emissions reduction practices be integrated into project proposals to reduce any potential cumulative effects, including construction emissions of criteria pollutants and potential contributions to region ozone and particulate matter and haze.

While ISEGS would emit some GHG emissions, its contribution to the system build-out of renewable resources in California would result in a net cumulative reduction of GHG emissions from new and existing fossil resources. The ISEGS project would emit considerably less GHG than would existing power plants and most other generation technologies, and thus would contribute to continued improvement of the electricity system GHG emission rate average for the western United States, and, specifically, California. The ISEGS project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California. The project would result in a cumulative overall reduction in GHG emissions from the state's power plants, would not worsen current conditions, and would thus not result in CEQA impacts that would be cumulatively significant.

Cumulative Analysis of the Whole of the Action / Cumulative Action

As discussed previously, concurrent construction of the EITP, ISEGS, and other foreseeable projects would be likely to result in considerable cumulative impacts to air quality. Therefore, the Whole of the Action / Cumulative Action, combined with the other foreseeable projects, could result in temporary cumulative increases in criteria pollutants that could lead to or contribute to violations of ambient air quality standards. In addition, increases in PM_{10} and the ozone precursors NO_X and VOCs would contribute to a considerable net increase of criteria pollutant in a non-attainment area. The Whole of the Action / Cumulative Action could have a significant contribution to these cumulative impacts. Section 3.3.4, "Mitigation Measures," of this report includes a summary of measures to be implemented to mitigate project construction emissions, including the use of low-emission equipment and enhanced fugitive dust controls. These mitigation measures are not expected to reduce emissions from project construction activities to below the MDAQMD daily significance thresholds. Thus, the EITP could have a potentially significant and unavoidable contribution to these cumulative impacts.

Since ISEGS is not located near any residential center, the cumulative impacts associated with odor and exposure of sensitive receptors to diesel particulate emissions would be similar to the proposed project. That is, there would not be a cumulatively significant impact to either.

Since the EITP would not contribute to air quality impacts during operations of ISEGS, the Whole of the Action / Cumulative Action impacts during operation would be the same as those for the ISEGS project alone. These are discussed above and in Section 3.3, "Air Quality and Greenhouse Gases."

5.3.3 Biological Resources

5.3.3.1 Geographic Extent and Timeframe

Environmental analysis for biological resources is confined by the geographic boundaries of the region in which the EITP is sited. Therefore, cumulative biological impacts associated with the EITP were evaluated within an area that extends west to the Mesquite Valley, east to the Eldorado Valley, and south to the Ivanpah and Piute valleys. This area—the cumulative impact area—is shown in Figure 5-5.

The cumulative impact area reflects natural watershed boundaries and encompasses the local ranges of species that may be affected by the EITP and other projects. The cumulative impact area is an expansion of the area used to assess potential biological impacts of the EITP; this expansion facilitates an evaluation of cumulative impacts on a regional, landscape-level scale. Analysis of cumulative impacts will assess regional impacts on wildlife corridors and species impacts resulting from cumulative habitat fragmentation and loss.

Cumulative loss of biological resources over time from the EITP was assessed through review of existing (present) projects' disturbance legacy and by considering the timeframe for implementation of future projects. The extent of temporal cumulative effects would depend on construction schedules for new projects and the expected operational life of existing and proposed projects. For instance, concurrent construction disturbance would cause short-term but intense impacts in the area, whereas phased construction among projects could cause chronic but less intensive disturbance impacts. For many projects, the extent of biological resource impacts may extend beyond the life cycle of the project due to permanent habitat removal.

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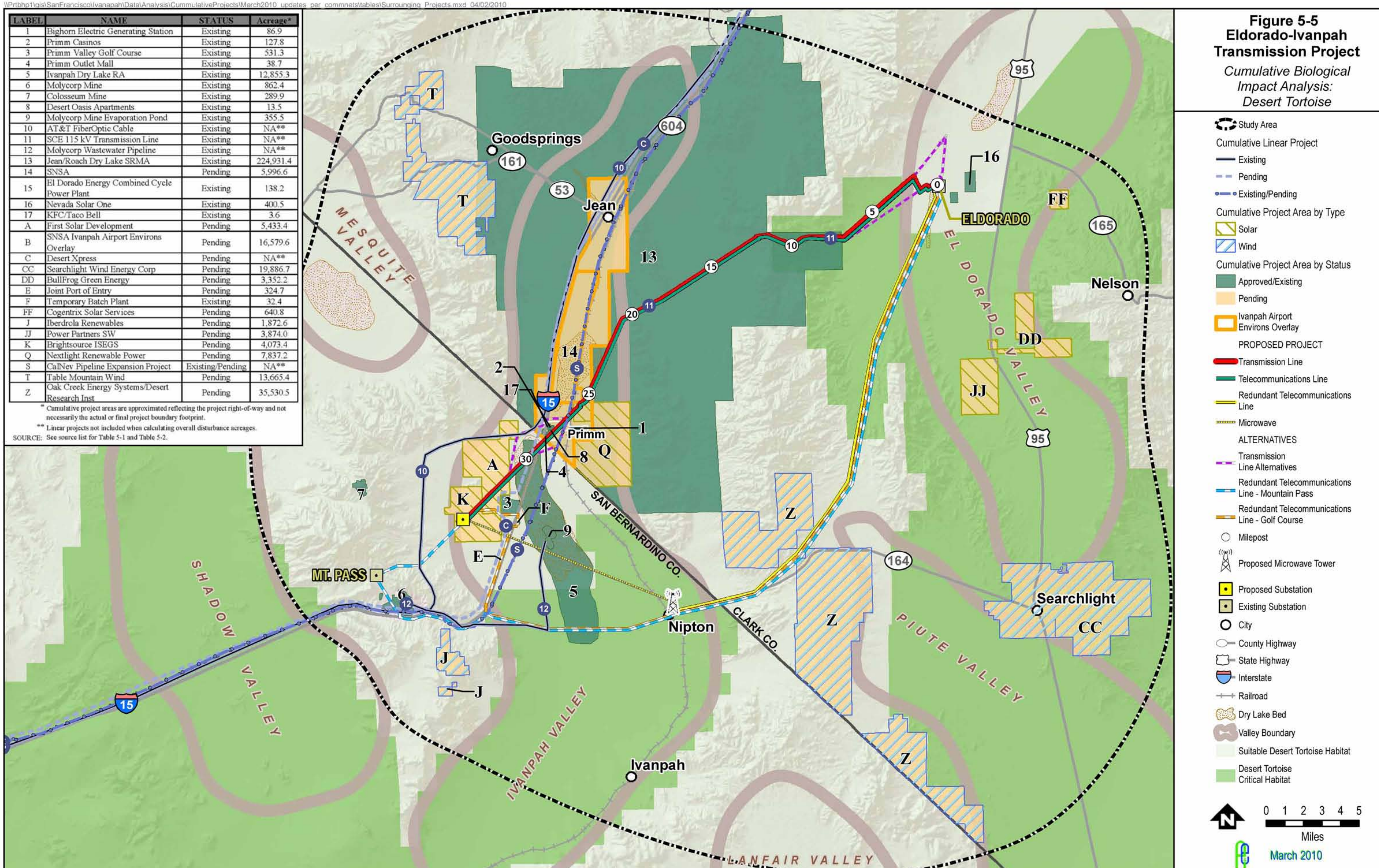
Figure 5-5
Eldorado-Ivanpah Transmission Project
Cumulative Biological Impact Analysis: Desert Tortoise

LABEL	NAME	STATUS	Acreage*
1	Bighorn Electric Generating Station	Existing	86.9
2	Primm Casinos	Existing	127.8
3	Primm Valley Golf Course	Existing	531.3
4	Primm Outlet Mall	Existing	38.7
5	Ivanpah Dry Lake RA	Existing	12,855.3
6	Molycorp Mine	Existing	862.4
7	Colosseum Mine	Existing	289.9
8	Desert Oasis Apartments	Existing	13.5
9	Molycorp Mine Evaporation Pond	Existing	355.5
10	AT&T FiberOptic Cable	Existing	NA**
11	SCE 115 kV Transmission Line	Existing	NA**
12	Molycorp Wastewater Pipeline	Existing	NA**
13	Jean/Roach Dry Lake SRMA	Existing	224,931.4
14	SNSA	Pending	5,996.6
15	El Dorado Energy Combined Cycle Power Plant	Existing	138.2
16	Nevada Solar One	Existing	400.5
17	KFC/Taco Bell	Existing	3.6
A	First Solar Development	Pending	5,433.4
B	SNSA Ivanpah Airport Environs Overlay	Pending	16,579.6
C	Desert Xpress	Pending	NA**
CC	Searchlight Wind Energy Corp	Pending	19,886.7
DD	BullFrog Green Energy	Pending	3,352.2
E	Joint Port of Entry	Pending	324.7
F	Temporary Batch Plant	Existing	32.4
FF	Cogentrix Solar Services	Pending	640.8
J	Iberdrola Renewables	Pending	1,872.6
JJ	Power Partners SW	Pending	3,874.0
K	Brightsource ISEGS	Pending	4,073.4
Q	Nextlight Renewable Power	Pending	7,837.2
S	CalNev Pipeline Expansion Project	Existing/Pending	NA**
T	Table Mountain Wind	Pending	13,665.4
Z	Oak Creek Energy Systems/Desert Research Inst	Pending	35,530.5

* Cumulative project areas are approximated reflecting the project right-of-way and not necessarily the actual or final project boundary footprint.

** Linear projects not included when calculating overall disturbance acreages.

SOURCE: See source list for Table 5-1 and Table 5-2.



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5.3.3.2 Past and Present Project Impacts / Existing Cumulative Conditions

The EITP would be constructed in an area that supports a broad variety of biological resources. The resources within the cumulative impacts area are summarized here, and details are given in Section 3.4, "Biological Resources." The entire EITP is within the Mojave Desert biome, which is comprised of a diverse range of habitat types typical of those found in the Mojave Desert. These habitat types include desert scrub, desert wash, and scattered desert woodlands. The cumulative impact area also includes several dry lake beds, numerous drainages, and areas relatively devoid of native vegetation including developed areas, paved roads, highways, access roads, and other disturbed areas associated with ongoing mining operations. Invasive and noxious weed species have been identified throughout the cumulative impact area.

The area supports habitat for, and populations of, numerous special-status flora and fauna, as described in Section 3.4. These include species under federal and/or state protection, including desert tortoise, desert bighorn sheep, Gila monster, burrowing owl, and other sensitive species in California and Nevada.

Land use in the cumulative impacts area has been historically altered by human activities over the past century (i.e. development has been in earnest at least since the mid-1900's), resulting in conversion of undeveloped land and habitat loss, fragmentation, and degradation. This habitat loss and fragmentation has direct and indirect impacts on special-status species in the cumulative area. Direct effects to special-status wildlife and plants include potential 'take' (injury and/or mortality) of an individual. Indirect effects include alteration of wildlife behavior, loss of genetic pool for plants and wildlife through take, and lowered animal breeding success due to behavior changes. Existing projects such as the Bighorn Electric Generating System, the Eldorado Energy Combined Power Plant, Primm Valley Golf Course, Primm Casinos, Nevada Solar One, and small and large-scale mining projects have permanently removed or altered approximately 2,900 acres of native desert habitat in the cumulative impact area. Project features such as continuously maintained access roads, paved roads and highways, and paved footprints for infrastructure have permanently altered the desert valley habitat. Additionally, ongoing recreational activities and human presence within the Ivanpah Dry Lake Recreation Area and Jean/Roach Dry Lake SRMA disturb wildlife communities on approximately 238,000 acres. The dry lakes themselves, where most of the recreational activities take place, provide significant habitat for only a small suite of plant and wildlife species due to the harsh saline environment and naturally compacted soils. These commercial, industrial, and recreational activities have been present in the area for several decades and will continue into the foreseeable future.

Most of the existing projects are near I-15, which bisects the cumulative impact area and runs between several mountain ranges. This development pattern has resulted in a mosaic of habitat degradation along a linear corridor, and potential barriers and divisions of terrestrial wildlife between the east and west side of the I-15 highway. Some species are more susceptible to habitat fragmentation than others. Wide-ranging mammals and reptiles such as the desert bighorn sheep, badger, Gila monster, and desert tortoise are more strongly negatively affected by habitat fragmentation, as they need larger territories in which to forage and maintain genetic viability of populations. Smaller animals such as desert rodents and lizards, and migratory avian species are generally not as strongly impacted by larger-scale habitat fragmentation.

Several projects are either no longer operational (e.g., Colosseum Mine) or have changed locations of land disturbance activities over time (e.g., Molycorp Mine evaporation ponds and wastewater pipe discharge locations). Despite cessation of activities, these projects have permanently altered the landscape and use of natural habitats by wildlife. Past physical disturbance such as vegetation removal, soil compaction, and colonization by invasive plant species can prevent or reduce the likelihood of re-colonization of the area by native desert plants. Reducing the cover of native plants can, in turn, make an area unattractive to native wildlife that depend on the native desert vegetation. The impacts from these disturbances can last for many years, as recovery of desert systems has been documented to take anywhere from 30 to 60 years, depending on the vegetation type (e.g., perennials and shrubs take less time to recover than do longer-lived vegetation such as Joshua trees, creosote, or pinyon-pine woodlands) (Carpenter et al. 1986, Rundel and Gibson 1996).

Most of the existing past and present projects in the cumulative area are in the desert valley floor, rather than at the higher mountain elevations. An electrical transmission station (Mountain Pass Substation) is located in the Clark Mountains, numerous transmission lines traverse the ranges in the cumulative area, and the Molycorp Mine is located on the lower slopes of the Clark Mountain Range. The locations of the projects affect different suites of wildlife and plant species, as vegetation colonizing the mountains and desert valleys is unique and provides habitat niches for wildlife. For instance, many desert songbirds and migratory birds use both montane and valley floor vegetation for foraging and nesting; bighorn sheep utilize both the upper mountainous areas during lambing and valley floors for migrating, while desert tortoise remain within the valley floor and lower slopes of the bajadas. Specifically, the existing infrastructure found within the mountains (i.e. Molycorp Mine, Mountain Pass Substation, existing transmission lines) have permanently removed approximately 900 acres of montane and desert valley habitat, and on-going operations result in minor but continuous disturbance to wildlife due to on-going operations and human presence. Many special-status species are sensitive to increased human presence and noise, including desert bighorn sheep and nesting migratory birds. These species would be potential present within the higher elevations of the mountain ranges in the cumulative area.

5.3.3.3 Reasonably Foreseeable Future Projects

Reasonably foreseeable future projects that could impact biological resources in the cumulative impact area represent overall development trends in the Ivanpah and Eldorado valleys. These projects are shown in Figure 5-5 and listed in Tables 5-1 and 5-2. Development in the area is dominated by renewable energy. Major renewable projects require extensive access roads, new transmission lines to tie into the existing electrical grid system, and large swaths of cleared and graded land for infrastructure (e.g., substations, solar farms). As currently proposed, renewable solar and wind projects would impact approximately 100,000 acres of desert and mountain range habitat in the cumulative analysis area. These large project footprints are scattered around and throughout the cumulative area, and in many cases are located within special wildlife habitat management areas. Solar farms are located primarily along the valley floors, while wind projects, which encompass approximately 71,000 acres of habitat, are proposed along the upper mountain slopes and ridges.

Other projects in the cumulative impacts area include several large-scale, long-term transportation infrastructure projects, including DesertXpress, the Joint Port of Entry, and the proposed SNSA. These projects also require large swaths of cleared and graded land for infrastructure placement and could require over 23,000 acres. These projects would generally occur along the I-15 corridor and make use of existing ROWs where native habitats have already been disturbed; however, the width of existing linear disturbance within the cumulative impact area would be expanded. Additional ongoing regional trends that have led to degradation of biological resources in the cumulative impact area include population growth and the subsequent demand for new housing and infrastructure, grazing, and recreational activities. Currently, the demand for desert habitat acreage for these human growth indicators is fairly low.

In Nevada, the U.S. Fish and Wildlife Service (USFWS) is collecting information to prepare an EIS under NEPA for the review of a proposed amendment to the Clark County MSHCP. The amendment would increase the total acres of species habitat (protected under the current MCHCP) that could be disturbed by giving Clark County, the cities, and the Nevada Department of Transportation an Incidental Take Permit (ITP). The permit would allow incidental take of covered species on up to 215,000 additional acres in Clark County. The MSHCP amendment would cover disturbance resulting from, but not limited to, residential and commercial development; utility and transportation facilities and other capital improvements and operations activities; flood control; and development of urban parks and recreation facilities. Additionally, the amendment would revise the permit term to 50 years. The proposed amendment is being prepared under Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended. The protected species that could be impacted in the proposed amended planning area would be covered species; these are desert tortoise, southwestern willow flycatcher, Las Vegas buckwheat, Yuma clapper rail, yellow-billed cuckoo, and Las Vegas bearpoppy. Clark County, the cities, and Nevada Department of Transportation propose to reduce the number of species covered under the existing permit but may also seek to address and cover additional rare and/or sensitive species (in addition to the six previously mentioned species) that could occur within the planning area. USFWS conducted meetings in October 2009 and the deadline for public comments was October 30, 2009. At this time, a draft/final EIS is not available for review; therefore, the nature of the contribution of this amendment to cumulative impacts can only be evaluated qualitatively. Impacts for covered species could occur from potential habitat disturbance and removal of 215,000 acres of desert habitat within Clark County.

5.3.3.4 Cumulative Impact Analysis

The potential for impacts to biological resources from the EITP to combine with the effects of other projects within the geographic and temporal extent of the cumulative analysis is described below. As described in Section 3.4, "Biological Resources," the EITP would have adverse impacts on biological resources during construction and operation. For the analysis of cumulative impacts, impacts to biological resources were reviewed for the following reasonably foreseeable projects with publicly available environmental information: DesertXpress, NextLight Solar, Table Mountain Wind, and ISEGS. No other quantitative data were available because the environmental documents have not yet been published for the Calnev Pipeline Expansion project, Searchlight Wind Energy, First Solar Development, Iberdrola Renewables, the SNSA, or any of the other future projects listed in Table 5-1.

Cumulative Impact BIO-C-1: Habitat Fragmentation, Degradation, and Loss

This section discusses the combined effects of habitat fragmentation, degradation, and loss resulting from the EITP and past, present, and reasonably foreseeable projects. The relevant impacts resulting from the EITP are IMPACT BIO-1 through BIO-6.

Cumulative impacts to biological resources can be either additive (that is, directly proportional in severity to the quantity of the resource affected, such as vegetation loss or wetland fill) or exponential. For exponential impacts, increasing levels become disproportionately more substantial if they affect biological features that are critical to the survival of a species. An example of an exponential impact is habitat fragmentation, where the result of the construction of multiple projects in a particular area results in fragmentation of areas that formerly provided contiguous habitat into separate areas too small to support dependent species.

The EITP has a relatively small construction footprint, despite its linear extent, is limited in duration (18 months), and requires a maximum of 190 construction workers. Most of the elements of the EITP would be constructed within an existing ROW where the native vegetation has already been disturbed, with the exception of the Ivanpah Substation, one of the proposed microwave towers, and new access roads, which, together, would temporarily and permanently impact approximately 443 acres of vegetation (see Section 3.4.1.1, "Existing Conditions"). The EITP would have relatively minor impacts on habitat fragmentation, assuming land temporarily disturbed during construction (384 acres) would be restored to its original state to the greatest extent possible. However, these impacts could be significant when combined with impacts from other regional projects. The development of numerous large-scale projects, such as ISEGS, DesertXpress, NextLight, Table Mountain, other wind and solar generation facilities, and the SNSA would result in a substantial permanent conversion (over 120,000 acres) of desert valley and mountain top habitat to industrial/commercial uses. This could have significant effects on a variety of species through direct habitat loss and/or habitat fragmentation.

The EITP, in conjunction with other projects, would result in cumulative impacts on native vegetation communities, including cacti and yucca species, and adversely affect special management areas due to temporary and permanent habitat loss from ground disturbance and inadvertent distribution of noxious weeds, as described in Section 3.4, "Biological Resources." Specifically, ISEGS would disturb approximately 4,073 acres of Mojave creosote scrub, DesertExpress would disturb approximately 278 acres of mesquite scrub and Joshua tree woodlands, Nextlight would disturb 2,967 acres of desert scrub, and Table Mountain could disturb approximately 765 acres of Mojave blackbrush scrub, Joshua trees and montane pinyon-juniper woodland. Thus, in conjunction with the EITP, cumulative impacts to native desert vegetation communities would be approximately 8,500 acres of disturbance. These impacts would be both temporary and permanent, as restoration of habitat back to its baseline condition has a temporal aspect: creosote, Joshua trees, and conifer forests take much longer to re-colonize an area as opposed to smaller cacti and perennial plant species. Nesting birds, bats, reptiles, and other wildlife rely on these vegetation types for forage and nesting opportunities. Removal of vegetation and/or long-term restoration efforts could negatively impact common and special-status wildlife. Cumulative impacts from the projects would affect the desert valley vegetation located along the desert floor and lower bajada slopes, as well as vegetation typically characterizing the desert mountain ridges (i.e. pinyon-pine and juniper woodland and upper elevation scrub).

Cumulative impacts from all projects on these habitat resources could be significant. The contribution of the EITP to these cumulative impacts would be short term and limited, due to the short temporal duration of construction and the relatively limited geographical extent of the EITP's impact area. The EITP's contribution to cumulative impacts is further reduced through avoidance and minimization measures. Avoidance measures that would be implemented during construction would include environmental training, use of biological monitors, pre-construction surveys, biological clearance surveys, and flagging of sensitive areas such as critical nursery areas and aquatic resources. If avoidance were not possible, further mitigation measures proposed to reduce cumulative habitat degradation and loss would include engineering drainage crossings to reduce degradation and impacts, using appropriate BMPs to reduce impacts, restoring temporarily disturbed land after construction, and developing and implementing an Invasive Species Management Plan. It is assumed that similar mitigation would be implemented by other projects, which would be subject to separate, independent environmental review. With the incorporation of mitigation, the EITP's contribution to cumulative impacts on habitat would be less than significant and not considerable.

Cumulative impacts on biological resources could be exacerbated as a result of project schedules. Construction of multiple projects within the same time period can result in greater impacts from emissions, noise, construction equipment and vehicle traffic, and overall habitat degradation and loss. If projects were to be constructed consecutively, project impacts would be reduced in intensity but prolonged in duration, resulting in adverse impacts on the life cycles of species and/or resulting in prolonged or permanent displacement of wildlife from critical habitats. If the EITP were constructed simultaneously with other projects, cumulative construction and operation impacts to habitat could increase, although the contribution of EITP would be minor and not significant due to implemented avoidance and minimization measures.

Cumulative Impact BIO-C-2: Special-Status Species

This section discusses the combined effects on special-status species of EITP and past, present, and reasonably foreseeable projects. Special-status species that could be impacted by the California portions of the EITP are listed in Table 3.4-4, and the special-status species that could be impacted by the Nevada portion of the EITP are listed in Table 3.4-5. Special-status species at the federal level include those listed as threatened, endangered, or proposed, and those that are candidates for listing under the Endangered Species Act. The BLM State Director's Office designates sensitive species. In California, plant and animal species are tracked and monitored by the California Department of Fish and Game via the California Natural Diversity Database. The State of California, through the Fish and Game Code, may also formally designate plants and animals as state-listed threatened or endangered. The California Department of Fish and Game maintains a list of fully protected species that may not be taken or possessed at any time and for which permits are required for scientific collecting and/or relocation (for the protection of livestock). In Nevada, at-risk species are tracked through the Nevada Natural Heritage Program within the Department of Conservation and Natural Resources. The Nevada Natural Heritage Program ranks plant and animal species based on rarity and perceived level of threat. The State of Nevada can fully protect wildlife species through the stipulations of Nevada Revised Statute 501. The state protects "critically endangered" plant species as well as cacti and yuccas under Nevada Revised Statute 527.The relevant impacts from the EITP are IMPACT BIO-1 and BIO-2.

As discussed in Section 3.4, the EITP would result in impacts on special-status plant and animal species that could contribute to cumulative impacts in conjunction with similar impacts from other projects. The EITP would result in habitat impacts to wildlife movement corridors, migratory paths, and critical nursery sites for certain species. Impacts would occur to big game corridors (desert bighorn sheep), general wildlife corridors for species such as large reptiles and wild burro, lambing areas for desert bighorn sheep, and critical habitat found within the EITP that could be used as a movement corridor by desert tortoise. In addition to habitat removal, impacts would result from noise and visual disturbances and increased human/vehicle presence during construction, operation, and maintenance, all of which could have indirect effects such as disruption of normal behavior patterns as well as cause direct injury and/or mortality. Species potentially affected would include special-status plants and several special-status wildlife species (reptiles, mammals, and birds) with potential for significant impacts to desert tortoise, desert bighorn sheep, American badger, and raptors, including the burrowing owl.

Many of the reasonably foreseeable future projects could also negatively impact special-status plant and animal species in the cumulative impact area. These impacts are discussed generally below in the context of large-scale habitat disturbance and loss because sufficient, comparable data are not available on a project-specific basis to support further quantitative analysis. However, this approach is appropriate as macro-level impacts on habitat communities would result in corollary effects on the plants and wildlife that thrive on the unique desert habitat.

As identified in the environmental documentation for several cumulative projects, the EITP and other reasonably foreseeable future projects could have an adverse cumulative impact on populations and individuals of rare plant species such as Mojave milkweed, desert pincushion, Parish's club-cholla, white-margined beardtongue, rosy two-toned beardtongue, and Aven Nelson phacelia, all of which occur within the cumulative impact area. These plants could be directly removed and/or crushed by construction activities or indirectly affected by increased fugitive dust, erosion, invasive plant propagation, and altered drainage. Several projects have generally assessed impacts to plant species from construction, but specific population numbers and locations of affected plants for ISEGS, NextLight, Table Mountain, and DesertXpress are not available. However, each of these projects has recommended mitigation measures such as avoidance, salvage, restoration, and compensation to reduce impacts to special-status plants to less than significant. Similar mitigation measures have been included for the EITP to reduce impacts. If these measures are applied over the cumulative impacts area, the EITP would have a negligible contribution to cumulative impacts to special-status plant populations.

Although for many future developments specific data are not available, impacts on desert tortoise and bighorn sheep are quantified here as an example of the extent of wildlife impacts that could occur in desert valley and upper mountain habitat within the EITP cumulative analysis area. Desert tortoise has commonly been used as an indicator species to illustrate broader-ranging potential impacts on desert habitat and wildlife. Bighorn sheep could similarly be used as an indicator of potential impacts to mountainous areas and the wildlife species that utilize that niche such as migratory birds and large mammals.

The range of the desert tortoise encompasses virtually all of the cumulative impact area (Figure 5-5), incorporates most of the habitat types that would be used by other potentially impacted species such as American badger, Gila monster, and desert birds, and includes the locations of the majority of the past, present, and future cumulative projects evaluated in this analysis. Additionally, tortoise populations have been eliminated or reduced in large parts of their ranges in California and in areas near Las Vegas as a result of human activities and disease (USFWS 2008a). This historical decline, coupled with potential impacts from future projects, makes any future impacts potentially significant. The range of the desert tortoise is limited at higher elevations, as the species is generally not found above 5,000 feet. In contrast, desert bighorn sheep are well-adapted to the higher elevations of desert mountain ranges, and in the EITP cumulative area, are known to occupy the Clark, Spring, and McCullough Mountain ranges. These mountains provide forage, shelter, and potential critical lambing areas for the sheep, in addition to serving as large-scale migratory pathways among the desert valleys.

One potential impact from reasonably foreseeable future projects, including the EITP, could be habitat loss over a large area. The use of both desert tortoise and bighorn sheep as potential indicators for cumulative impacts is appropriate to address large-scale disturbance and/or loss of desert valley and mountain habitat. Coupled with historical losses, this extensive habitat loss would result in significant cumulative impacts. As discussed in Section 5.3.3.2, there are currently approximately 240,500 acres of habitat that have been disturbed (approximately 238,000 acres) and/or converted to infrastructure (approximately 3,000 acres). Reasonably foreseeable future projects are expected to result in approximately 120,000 acres of habitat disturbance/loss. Of that, future wind projects encompass approximately 71,000 acres of upper desert valley and mountain tops within the cumulative study area.

As currently proposed, the EITP would contribute 0.1% to future cumulative impacts on non-critical desert tortoise habitat and 0.4% on critical habitat (Table 5-7). The small percentage of desert valley habitat loss from EITP would result in a minor cumulative impact. The EITP would also result in modification of desert mountain habitat within the Clark and McCullough Mountains, affecting approximately 150 acres of mountain pass and lower bajada slope areas. This would be a small contribution (0.2%, or 150/71,000 acres) to cumulative desert mountain habitat loss as compared to other future projects sited in mountainous areas. Overall, contributions from the EITP to habitat loss and potential impacts to special-status wildlife would be minor. However, cumulative impacts on desert tortoise could be major and considerable.

Table 5-7 Impacts on Desert Tortoise Habitat from the EITP and Other Proposed Projects

Desert Tortoise Habitat Type	EITP[1] (acres)	Other Projects[2] (acres)	Total Impacts (EITP + Other Proposed Projects)	Contribution of EITP to Cumulative Impacts (%)
Critical	72	17,979	18,051	0.40
Non-Critical	301	310,221	310,522	0.10
Total	**373**	**328,200**	**328,573**	**0.11**

Notes:
[1] See PEA 2009. These are both temporary and permanent impacts.
[2] For data source, see Figure 5-5

MM BIO-12 would require the applicant to coordinate with wildlife resource agencies, provide rigorous clearance surveys and construction monitoring for the desert tortoise, and limit human/equipment interactions with individual tortoises. Documentation of the coordination efforts with wildlife resource agencies will be provided to the CPUC. Implementation of this mitigation measure would reduce the EITP's contribution to cumulative impacts on desert tortoise to less than significant.

Although desert tortoise impacts could be significant, the contribution of the EITP to overall cumulative habitat loss would be short term and limited due to the short duration of construction and relatively small footprint of the EITP's impact area. The EITP's contribution could be reduced to less than significant with implementation of general avoidance mitigation measures. Mitigation measures would include pre-construction surveys, biological monitoring during construction, and preventive measures such as fencing to protect wildlife from injury and entrapment within construction areas. It is assumed that similar mitigation would be implemented by other projects, which would be subject to separate, independent environmental review. If avoidance of impacts to wildlife were not possible, those impacts would be mitigated by species-specific measures detailed in Section 3.4, "Biological Resources." These would include consultation with USFWS, pre-construction surveys, biological monitoring, relocation activities (desert tortoise), and limitations on construction activities and timing. Therefore, with the exception of desert tortoise, the EITP's contribution to cumulative impacts on wildlife species would be minor.

5.3.3.5 Alternatives

Because the No Project / No Action Alternative involves no activity, there would be no impacts on biological resources under NEPA or with respect to any of the CEQA criteria under this alternative, and there would be no contribution to cumulative impacts.

The alternative transmission routes and the telecommunication alternatives would involve the same project components as the EITP; only the route would vary. The alternatives would result in cumulative impacts similar to those of the proposed project, with the exceptions described below.

Transmission Alternative Routes A, B, and C would have a slightly higher contribution to impacts on native vegetation and listed plant and animal habitat and species because they would involve a larger area of permanent and temporary disturbance. There would also be slightly higher impacts on suitable and critical habitat for desert tortoise and therefore a slightly increased contribution to cumulative impacts on this species. Routes A and B would impact critical habitat within BLM special management areas and within the BCCE conservation area.

Transmission Alternative Routes C and D and Subalternative E would have lower impacts on vegetation directly adjacent to the dry lake and substrate within the dry lake because they would avoid a portion of Ivanpah Dry Lake. However, in avoiding the dry lake, these routes would disturb other previously undisturbed desert scrub habitat areas, which have greater amounts of suitable habitat for desert tortoise. Therefore, these alternative routes would have greater impacts to suitable desert tortoise habitat than would the proposed project. Thus, these alternatives could result in higher cumulative impacts to desert tortoise.

The Golf Course and Mountain Pass Telecommunication Alternatives would contribute to cumulative impacts to the same degree as would the proposed project but would have a higher contribution to cumulative impacts on native vegetation, including upper mountain pinyon-pine woodland, and listed plant and animal habitat and species, including bighorn sheep and montane bird species. This contribution would be associated with a larger area of permanent and temporary disturbance. These alternatives would also contribute more to cumulative impacts associated with inadvertent noxious weed dispersal due to the increased length of disturbance in areas without previous disturbance. Compared with the proposed project, these alternatives would have higher impacts on critical desert tortoise habitat, potential bighorn sheep habitat, and montane bird habitat. Therefore, these two alternatives would have an increased contribution to cumulative impacts on these species.

5.3.3.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative effects of the EITP and the ISEGS project combined, in order to assess cumulative impacts from both the generation and transmission aspect of the proposed action. First, the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM is summarized. Next, the combined effects of the EITP and the ISEGS project are evaluated.

ISEGS Summary

The BLM and the CEC (the Staff) have concluded that without mitigation the ISEGS project would contribute substantially to the cumulative impact of significant loss of Ivanpah Valley's biological resources, including the threatened desert tortoise and other special-status species. Impact avoidance and minimization measures described in the Staff's analysis and included in the conditions of certification would help reduce these impacts. However, compensatory measures are also necessary to offset project-related losses and to assure compliance with state and federal laws such as endangered species acts and regulations protecting waters of the state. In the case of special-status plants, impacts would remain significant according to CEQA standards despite compensatory mitigation.

Past and current actions have significantly reduced and degraded the plant communities and wildlife habitat within the Ivanpah Valley, and the ISEGS project would substantially contribute to the further loss of biological resources and genetic diversity of special-status species. Given the ISEGS project's location on a large portion of the Ivanpah Valley, and, in particular, the presence of bajada and alluvial fans that support special-status plant species, a substantial portion of the suitable habitat for these plants would be negatively affected by construction of the ISEGS project. This effect would increase the threat of elimination of the Ivanpah Valley portion of these species' ranges. ISEGS, combined with future proposed projects, would also significantly affect a genetically distinct subpopulation of desert tortoise within the Northeastern Mojave Recovery Unit that occurs in the Ivanpah Valley (Murphy et al. 2007, USFWS 2008b).

While no precise estimate can be made of the future habitat loss, collectively the ISEGS project and other projects would remove and fragment tens of thousands of acres of additional habitat. The ISEGS project, combined with the proposed 4,000-acre First Solar development immediately to the east, would eliminate a large swath of the higher quality desert tortoise habitat found on the west side of I-15 within the Ivanpah Valley. All of these past, present, and future proposed activities would contribute to the significant loss of Ivanpah Valley vegetation communities, wildlife habitat, and special-status species. With the exception of special-status plant species, this significant cumulative impact may be reduced to less than significant levels with appropriate levels of compensatory mitigation. Cumulative impacts to special-status plants would remain significant according to CEQA standards despite compensatory mitigation.

Cumulative Analysis of the Whole of the Action / Cumulative Action

In combination with ISEGS, the EITP would incrementally contribute to the projected loss of natural vegetation and sensitive natural communities within the cumulative impact area. The combined effects of the conversion of native desert habitat to developed uses associated with past, present, and future projects could exacerbate adverse impacts associated with the EITP and ISEGS through habitat fragmentation and cumulative loss of habitats used by special-status species and sensitive natural communities. Indirect impacts also may be increased as a result of decreased quality of the remaining areas of habitat from habitat fragmentation and adverse effects (e.g., increased stormwater runoff, noise, and disturbance) resulting from increased proximity to commercial and industrial land uses.

Together, the EITP and ISEGS would disturb and/or remove approximately 4,500 acres of desert vegetation, including temporary and permanent impacts to several special-status plants. Of the total habitat acerage, 150 acres would occur within mountainous terrain and the rest (4,350 acres) would occur within desert valley habitat. The EITP has a relatively small construction footprint, despite its linear extent, is limited in duration (18 months), and requires a maximum of 190 construction workers. Most of the elements of the EITP would be constructed within an existing ROW where the native vegetation has already been disturbed. However, the construction of the Ivanpah Substation, as part of both EITP and ISEGS, would require a large swath of habitat disturbance/removal in previously undisturbed, higher quality desert vegetation. ISEGS would therefore have a relatively large construction footprint, would require 4 years of construction, and require a relatively large workforce (Table 5-3). The geographic and temporal extent of impacts from EITP in combination with ISEGS would result in substantial contributions to cumulative impacts in the cumulative analysis area.

The EITP and ISEGS projects would contribute 1.41% of the future cumulative impacts on non-critical desert tortoise habitat and 0.4% on critical habitat (Table 5-8). The percentage of desert valley habitat loss from EITP and ISEGS would result in a substantial cumulative impact without mitigation. The EITP would also result in modification of desert mountain habitat within the Clark and McCullough Mountains, affecting approximately 150 acres of mountain pass and lower bajada slope areas. ISEGS would not impact mountainous areas as it is located wholly within the desert valley floor. There would be a small contribution (0.2%, or 150/71,000 acres) to cumulative desert mountain habitat loss from the combined EITP and ISEGS as compared to other future projects sited in mountainous areas. Overall, contributions from EITP and ISEGS to habitat loss and potential impacts to special-status wildlife would be major, including cumulative impacts on desert tortoise and special-status plants.

Table 5-8 Impacts on Desert Tortoise Habitat from the EITP/ISEGS and Other Proposed Projects

Desert Tortoise Habitat Type	EITP and ISEGS[1] (acres)	Other Projects[2] (acres)	Total Impacts (EITP/ISEGS + Other Proposed Projects)	Contribution of EITP/ISEGS to Cumulative Impacts (%)
Critical	72	17,979	18,051	0.40
Non-Critical	4,374	306,148	310,522	1.41
Total	**4,446**	**324,127**	**328,573**	**1.35**

Notes:
[1] See PEA 2009. These are both temporary and permanent impacts.
[2] For data source, see Figure 5-5

The contribution of the EITP and ISEGS combined to overall cumulative habitat loss would be long term and major due to permanent habitat removal and the geographic extent. These impact contributions could be reduced to less than significant with implementation of general avoidance mitigation measures. Mitigation measures would include pre-construction surveys, biological monitoring during construction, and preventive measures such as fencing to protect wildlife from injury and entrapment within construction areas. If avoidance of impacts to wildlife and plants were not possible, those impacts would be mitigated by species-specific measures detailed in Section 3.4, "Biological Resources" of the EITP document, and in the ISEGS environmental documentation (CEC and BLM 2009). These measures would include consultation with USFWS, pre-construction surveys, biological monitoring, relocation activities (desert tortoise), limitations on construction activities and timing, and compensatory measures for loss of special-status species and suitable habitat. Even after mitigation, cumulative impacts on desert tortoise and special-status plants could be major and considerable. Therefore, with the exception of desert tortoise and special-status plants, the contribution of the EITP in conjunction with ISEGS to cumulative impacts on habitat and wildlife species would be reduced to minor.

5.3.4 Cultural Resources and Native American Values

5.3.4.1 Geographic Extent and Timeframe

The proposed project could result in impacts to cultural resources by removing, disturbing, or causing damage to a cultural resource or group of resources present within the project area. The integrity of the regional resource base and the significance of a given cultural resource or group of resources are considered when determining the significance of impacts to that resource. Because the number of cultural resources is finite, limited, and non-renewable, assessment of cumulative impacts must consider resources that would be impacted by the project, the extent to which those impacts would degrade the integrity of the regional resource base, and impacts other projects might have on the regional resource base. These effects, taken together, are "considerable" if they result in degradation of the resources base. Therefore, the geographic extent of cumulative impacts for the proposed project's cultural resources analysis comprises not only the areas within the ROW where ground disturbing activities would occur, but also the Eldorado Valley, McCullough Mountains, New York Mountains, Jean Valley, the Ivanpah Valley, Clark Mountains, and other adjacent areas. The proposed project's impacts would occur during construction; however, their contribution to cumulative impacts would occur over the lifetime of the project. Therefore, the timeframe of cumulative impact analysis is the lifetime of the proposed project.

The proposed project would require the removal and destruction of the historic Boulder Dam-San Bernardino Transmission Line (36-10315 [CA-SBR-10315H]/53-8280). Cumulative impacts to this resource could occur if any of the cumulative projects would also result in degradation of the resource. Because this is a linear resource that exists outside the geographic scope described above, geographic scope for the cumulative impacts analysis for this specific resource comprises the entire ROW of the transmission line from Victorville to Hoover Dam.

5.3.4.2 Past and Present Project Impacts/Existing Cumulative Conditions

Section 3.5.1.1, "Environmental Setting," provides an inventory of cultural resources within the vicinity of the EITP and its alternatives. The survey of the EITP proposed route resulted in the discovery or re-recording of cultural resources along the proposed transmission route, telecommunications route, and alternative routes.. No previously recorded resources were located during the background search and no newly discovered resources were identifies during the field survey of the Ivanpah Substation site. For the cumulative analysis, the geology of the area within the geographic extent described above includes areas with alluvial deposits dating to the Holocene, which have the potential to contain buried cultural resources.

The condition of known cultural resources varies and reflects the natural and anthropogenic effects that can alter the integrity of any resource or group of resources. In the cumulative impact area, sun exposure, wind, erosion, and sedimentation are the natural factors affecting the integrity of cultural resources; however, human activities can exacerbate these effects and have resulted in the most apparent cultural resources impacts in the cumulative impacts area. In some cases, these effects have damaged or destroyed the most significant qualities of the resource. Road construction, for example, can destabilize slopes and increase erosion of archaeological sites. One previously recorded historic site (36-10873) in the EITP ROW is located within the I-15 median and is not considered eligible for listing in the NRHP because it has been damaged, likely by road construction and maintenance (Chambers 2009). Desirable recreational sites could coincide with the locations of cultural resources. Land sailing activities that occur at Ivanpah Dry Lake come into contact with cultural resources on the dry lake bed, resulting in damage or alternation of sites or isolated finds. Recreational OHV activities are popular in the Ivanpah Valley—such as take place at the Jean/Roach Dry Lake SRMA—and also contribute to damage and destruction of cultural resources. Other human activities that impact cultural resources include agricultural practices that disturb sediments that contain sites and commercial and community expansion that results in the loss or destruction of resources. Many of the cultural resources in the cumulative impact area have been affected to some extent by one or a combination of these factors.

5.3.4.3 Reasonably Foreseeable Future Projects

Reasonably foreseeable future projects in the cumulative impact area could result in direct andindirect impacts to cultural resources that could contribute to cumulative resources. Impacts to cultural resources due to the combined effects of the proposed project and past, present, and reasonably foreseeable projects do not depend on the timing of construction or operation. Therefore, all reasonably foreseeable future projects within the cumulative impact area for cultural resources are considered.

Proposed projects in the EITP cumulative impact area that have evaluated and published information regarding their potential to impact cultural resources include the DesertXpress and the ISEGS projects. The ISEGS project would contribute to impacts on CA-SBR-10315H; these effects would be cumulative rather than direct or indirect. BrightSource would be required by the BLM and the CEC mitigate impacts of ISEGS on significant cultural resources including CA-SBR-10315H as part of the Conditions of Certification, should the project be permitted This mitigation includes evaluation and documentation of any potentially significant cultural resources as listed in Section 3.5.5.4.

For the segments of the DesertXpress project that would cross the Eldorado and Ivanpah Valleys, 34 eligible or listed cultural resource sites would be located within the project area that could be directly or indirectly impacted by the project. Construction of the DesertXpress project would include ground-disturbing activities that could result in impacts on these known resources as well as on unknown archaeological resources within the project's cumulative impact area; to reduce potential impacts on archaeological resources, DesertXpress would be required to implement four strategies: 1) avoidance; 2) evaluation and data recovery or other mitigation through archaeological investigation; 3) monitoring during construction, and 4.) vibration monitoring for historic structures. A description of all mitigation measures applicable to cultural resources for the DesertXpress is included in the Draft EIS for the project (USDOT FRA 2009).

Other proposed projects in the cumulative impact area that could potentially impact cultural resources include the reasonably foreseeable future projects listed on Tables 5-1 and 5-2 The cultural resource studies for these projects have not been made public; however, it is likely that these projects would be required to adopt mitigation measures similar to those described above, including avoidance, evaluation and data recovery for cultural resources that cannot be avoided, and monitoring during construction.

5.3.4.4 Cumulative Impact Analysis

The potential for cultural resources impacts from the proposed project to combine with the effects of past, present, and reasonably foreseeable projects within the cumulative impact area is described below.

Known Cultural Resources

The relevant impact of the proposed project is IMPACT CR-1: Impacts to Cultural Resources 36-10315 (CA-SBR-10315H)/53-8280 (Boulder Dam to San Bernardino 132-kV Transmission Line) and 36-7694 (CA-SBR-7694H)/26CK4957 (LADWP Boulder Transmission Line). Nine other potentially significant cultural resources were recorded within the EITP's cumulative impact area, but the EITP would not impact these resources or these resources were determined to be ineligible to be listed as described in Section 3.5.3.5. A cumulative impact could occur if one or more of the projects on the cumulative project list would damage the same resource as the EITP or if one or more of the projects on the cumulative project list, together with the EITP, would degrade the integrity of the regional resources base by damaging a known cultural resource.

Proposed projects in the EITP cumulative impact area that have evaluated and published information regarding their potential to impact cultural resources include the DesertXpress and the ISEGS projects. As stated in Section 3.5.5.3, one cultural resource on the ISEGS project site, CA-SBR-10315H (the Boulder Dam to San Bernardino Transmission Line), has been determined eligible for the NRHP, and is listed on the CRHR, and the potential effects of the project on the resource would be cumulative rather than direct or indirect. Analysis of the impact determined that the ISEGS project would be responsible for partial (approximately 21%) destruction of the resource, but these impacts would be mitigated through evaluation and documentation of the resource. As discussed above, impacts to known cultural resources from the DesertXpress project would be mitigated through avoidance, documentation and evaluation, and monitoring, including vibration monitoring. To minimize impacts to historic architectural structures, such as the Boulder Dam-San Bernardino Transmission line, DesertXpress would be required to comply with MM CR-2: Data Evaluation and Recovery/Other Measures, which requires HAER documentation for any historic structures that would be impacted by the project (USDOT FRA 2009).

The impact analysis for known cultural resources for the EITP concluded that there would be a potential to disturb, destroy or remove the eleven known cultural resources within the transmission line ROW and telecommunications line route through ground disturbance during construction. However, the analysis concluded that nine of the eleven cultural resources either would not be impacted through use of the APMs listed in Section 3.5.3.4 or were not considered eligible for listing on the NRHP. Construction of the EITP would result in a direct, adverse, and permanent impact to Cultural Resources 36-10315 (CA-SBR-10315H) and 36-7694 (CA-SBR-7694H)/26CK4957 by altering the setting and disturbing elements of the site that contribute to its historic significance. The construction plans call for removal of portions of these historic resources. These impacts would be mitigated through sufficient HABS/HAER documentation of the known cultural resource, as approved by the appropriate regulatory body.

Construction of the DesertXpress and ISEGS projects would also result damage to, removal of, or destruction of segments of the Boulder Dam–San Bernardino 132-kV Transmission Line (36-10315 [CA-SBR-10315H]), similar to the impact of the EITP on this cultural resource. Therefore, the construction of these three projects could result in a cumulatively considerable impact to this cultural resource. The proposed project's contribution to cumulative impacts would be mitigated through adequate documentation. If adequate measures and mitigations were implemented by all the foreseeable construction projects that could affect other known cultural resources, then there would not be cumulatively considerable impacts to known cultural resources.

Previously Unidentified Cultural Resources and Human Remains

This section discusses the combined effects on previously unidentified cultural resources and human remains that could result from the proposed project and past, present, and reasonably foreseeable projects. The relevant impacts of the proposed project are IMPACT CR-2: Impacts to Previously Unidentified Cultural Resources and IMPACT CR-3: Unanticipated Discovery of Human Remains. For the reasons discussed below, cumulative impacts to unidentified cultural resources and human remains were not found to be significant or cumulatively considerable assuming proper mitigation for all projects.

Given the nature of the sediments and the historical activities in the area, cultural resources may be buried in the cumulative impact area. Therefore, subsurface unknown cultural resources could be unearthed by any ground disturbing activity for all reasonably foreseeable future projects. Additionally, many of the cumulative projects that have not published any results of cultural resource field surveys or record searches; additional cultural resources may be identified as a result of pending surveys for these sites. To estimate the potential number of cultural resources in the cumulative impact area, a records search was conducted for the EITP that provided information about the distribution of previously recorded cultural resources within a one-mile buffer of the project routes. The results of this search allow for an order of magnitude estimate of 100 to 200 cultural resources in the cumulative impact area (PEA 2009). This is a conservative estimate based on 43 reasonably foreseeable future projects that would impact over 290,000 acres (this number does not include the disturbance of linear projects). Since the order of magnitude estimate was calculated, a number of these projects have withdrawn their application; the cumulative projects listed in Tables 5-1 and 5-2 reflect this decrease and include 14 reasonably foreseeable future projects that would impact approximately 100,000 acres. Therefore, the number of cultural resources in the cumulative impact area would likely be less than the order of magnitude estimate of 100 to 200. Regardless, it is reasonable to assume that additional cultural resources are located in the cumulative impact area that are currently unknown due to the publication of survey results for many of the cumulative projects.

Ground disturbing activities associated with the construction of the reasonably foreseeable future project could result in impacts to these resources by demolishing, destroying, or altering the resource and its immediate surroundings in a way that dimishes its integrity and impairs its ability to be considered for listing in the NRUP or the CRHR. Effects on unique archaeological resources, as defined under California Public Resources Code 21083.2(g), would also be considered significant if the impact would diminish information contained in the sites. For the two cumulative projects that have published information on cultural resource impacts, ISEGS would be required mitigate potential impacts to unknown cultural resources through use of monitors, preparation of a Cultural Resources Monitoring and Mitigation Plan, and other measures as outlined in Section 3.5.5.5. As discussed above, DesertXpress would be required to implement four strategies: 1) avoidance; 2) evaluation and data recovery or other mitigation through archaeological investigation; 3) monitoring during construction, and 4.) vibration monitoring for historic structures to reduce impacts to unknown cultural resources.

Because the reasonably foreseeable future projects would also be evaluated for their potential impacts to cultural resources under CEQA or NEPA, as applicable, it is reasonable to assume that these projects would be required to reduced potentially significant impacts by mitigation measures similar to those described above for the ISEGS and DesertXpress projects. All reasonably foreseeable future projects would be subject to Section 106 regulations (36 CFR 800). If adequate measures and mitigations are implemented by all the foreseeable construction projects, then there would not be considerable cumulative impacts to known cultural resources.

As discussed above, the sediments within the proposed project area have the potential to contain buried and therefore previously unidentified cultural resources. Such an unanticipated cultural resource could be impacted by ground disturbing activities associated with construction of the EITP, as the disturbance could diminish the scientific or cultural integrity of the resource. The applicant would reduce such impacts through APMs CR-5 and CR-6, and implementation of MM CR-1 would further reduce potential impacts to minor levels. As discussed above, it would be expected that the reasonably foreseeable future projects would adopt similar measures or be required to implement similar mitigation measures; therefore, there would be no cumulative impact to unknown cultural resources.

Additionally, the reasonably foreseeable future project and the EITP could result in impacts on human remains if there were unanticipated discoveries of human remains during construction. For the EITP, SCE would reduce impacts on human remains by following the steps outlined in APM CR-6. It would be expected that the reasonably foreseeable future projects would be required to implement similar mitigation measures in compliance with applicable regulations; therefore, there would be no cumulative impact due to the unanticipated discovery of human remains.

5.3.4.5 Alternatives

Because no activity is associated with the No Action Alternative, it would not contribute to adverse cumulative impacts to cultural resources.

Alternative Transmission Route C would result in the same adverse permanent impacts to Boulder Dam–San Bernardino 132-kV Transmission Line as the proposed project. APM CR-1, CR-2, CR-3b, and CR-4b would reduce the impact. Impacts to this resource would be mitigated through sufficient HABS/HAER documentation.

No previously recorded cultural resources were located during the pre-field research, and no new cultural resources were found during the field survey of Alternative Transmission Routes A, B, and D, Subalternative E, Telecommunications Alternative (Golf Course), and Telecommunication Alternative (Mountain Pass). Due to the lack of known resources and the likely measures to be implemented, there would be no cumulatively considerable impact to previously identified cultural resources.

Alternative Transmission Routes A, B, C, and D; Subalternative E; and the Telecommunication Alternatives would require excavation of sediments that have the potential for buried previously unidentified cultural resources or human remains. Similar to measures implemented for the proposed project, mitigation measures MM CR-1, APM CR-5, and APM CR-6 would be implemented for these alternatives. If such measures would be implemented by all foreseeable projects constructing in sediments, then there would not be cumulatively considerable impacts to previously unidentified cultural resources and human remains.

5.3.4.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP project and the ISEGS. The section first summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM, and then evaluates the combined effects of the EITP and ISEGS.

Summary

According to the ISEGS FSA/DEIS, ISEGS would make a significant contribution to the combined cumulative impacts of several foreseeable projects on the Boulder Dam–San Bernardino 132-kV Transmission Line. However, impacts of the ISEGS project would not have the potential to combine with impacts of past, present, and reasonably foreseeable projects to result in a significant contribution to local cumulative impacts to other known or unknown resources (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action

Construction of the proposed project and ISEGS, the whole of the action, would contribute to cumulative adverse impacts to the Boulder Dam–San Bernardino 132-kV Transmission Line that have been previously described; however, impacts would be mitigated through sufficient HABS/HAER documentation of the resource.

Because these projects would be constructed in similar sediments and alluvium, they both have the potential to disturb buried cultural resources or human remains. Each project has measures to mitigate the potential adverse impacts. Construction of the foreseeable projects in this area would likely require implementation of similar mitigation measures or would require clearance before construction occurred. Therefore, there would not be cumulatively considerable impacts to the disturbance of undiscovered cultural resources or human remains in the area.

5.3.5 Geology, Soils, Minerals, and Paleontology

5.3.5.1 Geographic and Temporal Extent

The geographic scope for considering cumulative impacts on geology, soils, minerals, and paleontology is the proposed EITP ROW, alternatives, and Ivanpah Substation site. Impacts on these resources would be limited to those that would be affected by project construction. The timeframe for the cumulative analysis is the operational lifetime, because the EITP could have impacts (on soils, in particular) for as long as it is present. However, most impacts would occur during construction.

5.3.5.2 Past and Present Project Impacts / Existing Cumulative Conditions

The project area is in the Mojave Desert, an area with a low potential for seismic activity and geologic hazards. There is no history of seismic activity in the Ivanpah or Eldorado valleys, and there are only two active faults in the region, the Black Hills Fault and the Stateline Fault System (SFS). The town of Primm lies near the SFS.

Most of the soils in the proposed project area are sand and gravel, which is typical of Ivanpah and Eldorado valley soils. There are no active mining operations along the proposed project corridor.

The actual number and type of paleontological resources that might be adversely affected by the cumulative projects is unknowable without a comprehensive inventory of the area defined for the analysis. Development of such an inventory is beyond the reasonable scope of this analysis. Typically, cultural and paleontological resources are identified as part of the permitting process for individual undertakings, and often are discovered only during ground-disturbing activities. Applicable laws and regulations, as discussed in Section 3.7.3, afford specific protections to discovered resources.

5.3.5.3 Reasonably Foreseeable Future Projects

Reasonably foreseeable future projects in the cumulative impact area for geology, soils, minerals, and paleontological resources include ISEGS, First Solar, NextLight, SNSA, Bull Frog Solar, Power Partners Solar, DesertXpress, and the Calnev Pipeline Expansion. For the complete listing of relevant cumulative projects in the Ivanpah and Eldorado valleys see Tables 5-1 and 5-2.

Cumulative geologic impacts could occur where future or existing projects cross or would be located adjacent to the proposed project (or vice-versa). The proposed project would cross several proposed solar projects (ISEGS, First Solar Development, and NextLight Renewable Power) and would be close, at certain locations, to the existing Calnev pipelines, the proposed Calnev Pipeline Expansion project, and the proposed DesertXpress High-Speed Rail project. Consequently, reasonably foreseeable future projects that could contribute to cumulative impacts related to geologic impacts are limited to parallel and crossing transmission lines, crossing passenger rail lines, and local commercial developments.

Impacts on geology, soils, and minerals, including accelerated erosion, slope failures, and loss of mineral resources, from future foreseeable projects could occur and could contribute to cumulative impacts on these resources during both construction and operation phases; therefore, the temporal context for the cumulative impact analysis for these resources includes the life of the cumulative projects, beginning with construction.

For paleontological resources, impacts typically occur during ground-disturbing activities associated with construction; therefore, the temporal context for the cumulative impact analysis for paleontological resources is limited to overlapping construction phases.

5.3.5.4 Cumulative Impact Analysis

The potential for impacts on geology, soils, minerals, and paleontological resources from the proposed project to combine with the effects of other projects within the cumulative impact area and timeframe is described below. The impact analysis in Section 3.6, "Geology, Soils, Minerals, and Paleontology," concluded that construction and operation of the proposed project in compliance with existing regulations, standard operating procedures, APMs, and mitigation measures would reduce potential impacts on those resources to negligible or less than significant.

While projects could affect resources, resources could also affect projects. Examples are seismic impacts (groundshaking, earthquake-induced ground failure, and fault rupture) from the numerous local and regional faults and impacts from unstable soils. For this cumulative impact area, geologic resources' impacts on projects would not be cumulatively considerable.

Geology and Geologic Hazards

This section discusses the combined effects related to geology and geologic hazards of the proposed project and past, present, and reasonably foreseeable projects. The relevant impacts of the proposed project are IMPACT GEO-1: Rupture of Earthquake Fault Across the Transmission Line Route, IMPACT GEO-2: Exposure of People or Structures to Potential Adverse Effects due to Seismic Ground Shaking, IMPACT GEO-3: Exposure of People or Structures to Potential Adverse Effects due to Seismic-Related Ground Failure, and IMPACT GEO-4: Expose People or Structures to Adverse Effects due to Landslides.

The project would cross the SFS on the California side just before the California/Nevada border south of Primm, Nevada. The Calnev Pipeline and the proposed DesertXpress High-Speed Rail Project also cross the SFS at a similar location. Buildings in Primm at the outlet mall and stretches of I-15 immediately south of the California-Nevada state line would be close to EITP structures and would be exposed to the same geologic hazards if they occurred. Movement along the SFS could cause earthquakes, resulting in damage to existing structures. However, as noted above, seismic impacts (groundshaking, earthquake-induced ground failure, and fault rupture) from the numerous local and regional faults would be impacts from the geologic environment on individual future or existing projects and would not introduce considerable cumulative impacts.

Further, there are no highly sensitive geologic formations in the project area. Therefore, the proposed project does not contribute to cumulative impacts to geologic resources. From the available information, no reasonably foreseeable future projects indicate plans to significantly alter sensitive geologic formations. However, the available information is limited.

Construction of ISEGS, First Solar, NextLight, SNSA, Bull Frog Solar, Power Partners Solar, DesertXpress High-Speed Rail, and the Calnev Pipeline Expansion would disturb the ground surface; however, each project would be required to protect existing surface materials and topsoil by complying with regulations and implementing project-specific Stormwater Pollution Prevention Plans (SWPPPs) and grading permits. For discussion of disturbance to the dry lakes, see Section 5.3, "Hydrology and Water Resources."

Due to the active geologic environment of the region, reasonably foreseeable future projects would likely be required to prepare a geotechnical report. Applicants for the proposed project, ISEGS, and the Joint Point of Entry project in the cumulative impacts area intend to complete geotechnical testing to ensure sound foundations for transmission line towers, solar heliostats, and other project components. A temporary use permit for geotechnical testing and soil sampling is in process for the Joint Point of Entry project located 2.5 miles south-southeast of the proposed project. The impact from the geotechnical testing on geologic resources would be negligible or less than significant. Therefore, there would not be a considerable cumulative impact to geologic resources from the testing.

Soils

This section discusses the combined impacts on soils of the proposed project and past, present, and reasonably foreseeable projects. The relevant impacts of the proposed project are IMPACT GEO-6: Structural Failure of Towers and Substation Facility due to Unstable Soil Conditions Resulting in Subsidence or Collapse and IMPACT GEO-7: Structural Failure of Towers or Substation Facility due to Expansive Soils.

Similar to seismic impacts, structural impacts from unstable soils are an impact of the geologic environment on individual projects and would not introduce considerable cumulative impacts.

Only during the construction phase could the proposed project result in release of chemicals or pollutants that would contaminate soil, so it would be only during construction when any such release could be combined with the release of pollutants by other sources in the cumulative impacts area. This potential cumulative impact is discussed in Section 5.6, "Health, Safety, and Hazards."

For an estimate of cumulative impacts to lands and biological habitat, and related disturbance to soil, see Section 5.10, "Land Use, Agricultural Resources, and Special Management Areas," and Section 5.5, "Biological Resources."

Minerals

This section discusses the combined effects on minerals of the proposed project and past, present, and reasonably foreseeable projects. The relevant impact of the proposed project is IMPACT MR-1: Loss of Mineral Resource of Value to Region and the Residents of the State.

None of the reasonably foreseeable future projects in the cumulative impacts area are expected to interfere with active mining operations. The Molycorp Mine is located near Mountain Pass and approximately 5 miles south-southwest of the proposed Ivanpah Substation. This open pit mine is expected to continue operations until mid-2020. The routes for the Calnev Pipeline Expansion and the DesertXpress High-Speed Rail pass between Mountain Pass and the Molycorp Mine to the north of Highway 10. The EITP's Mountain Pass Telecommunications Alternative would pass through the Molycorp Mine, resulting in minor, short-term, adverse impacts from interrupting mining operations.

Most of the multiple mining claims registered with the BLM in the region (Figure 3.6-3) are inactive. Available information on cumulative projects does not indicate any interference with active mining operations. Therefore, there is no considerable cumulative impact to mining claims.

The proposed project would not require extraction of minerals or prevent access to any active mining operations. The project would be on land designated as an energy corridor. The land is not eligible for mining, and the project would not limit any existing mining claims. Therefore, incremental impact of the proposed project on any cumulative impacts on minerals would be negligible or less than significant.

Paleontological Resources

This section discusses the combined effects on paleontological resources of the proposed project and past, present, and reasonably foreseeable projects. The relevant impact of the proposed project is IMPACT PALEO-1: Directly or Indirectly Damage or Destroy Paleontological Resources.

ISEGS, First Solar, Calnev Pipeline Expansion, DesertXpress High-Speed Rail, and SNSA are reasonably foreseeable future projects that are close to the dry lakes. The dry lakes are on either side of I-15 to the north and south of Primm, Nevada, as shown in Figure 5-1. Dry lakes are the only locations in the cumulative impacts area known to have sensitivity for paleontological resources. Construction of projects could impact paleontological resources in the dry lakes, since ground-disturbing activities would be necessary during construction. The combined impacts from the proposed project and reasonably foreseeable future projects in the cumulative impact area on paleontological resources may be significant. APMs for the proposed project impacts, consisting of monitoring, field surveys, and data recovery, would reduce impacts to less than significant. If the other proposed projects also implement similar measures following NEPA regulations (United States Code, Section 4321 et seq.; 40 CFR 1502.25) and Appendix G of the CEQA guidelines (Section (V) (c)), potential cumulative impacts on paleontological resources associated with the proposed project, in conjunction with other proposed projects in the cumulative impact area, would be negligible or less than significant.

Paleontological resources are similar to cultural resources in that impacts are limited to specific undiscovered sites or fossils that could be discovered and potentially impacted through ground-disturbing activities. Therefore, the cumulative scope for paleontological resources would be the same as for cultural resources (see Section 5.6, "Cultural Resources"). Unknown, unrecorded paleontological resources may be found at nearly any development site. As they are discovered, sites are recorded and information is retrieved. If the nature of the resource requires it, the resource is protected. When discovered, paleontological resources are treated in accordance with applicable federal and state laws and regulations as well as the mitigation measures and permit requirements applicable to a project.

As discussed before, paleontological resources are known to be present in the cumulative impact area, particularly for those projects that would be located near the dry lakes, such as ISEGS, First Solar, NextLight, the DesertXpress High-Speed Rail, and the Calnev Pipeline Expansion. If resources were discovered during construction of these projects, they would be subject to legal requirements designed to protect them, thereby reducing impacts. Therefore, proposed project impacts combined with impacts from past, present, and reasonably foreseeable projects would not be significant and no additional mitigation measures would be necessary.

5.3.5.5 Alternatives

The No Project Alternative involves no activity; therefore, under this alternative, there would be no impacts on geology, soils, minerals, or paleontological resources, nor would there be a contribution to cumulative impacts.

The alternative transmission routes and the telecommunication alternatives merely vary the route of the proposed project; the same components would be built. The impact on geology, soils, minerals, or paleontological resources for all the alternatives would be similar to the impacts of the proposed project, with the exception of the Mountain Pass Telecommunications Alternative. This alternative would pass through the Molycorp Mine, resulting in minor, short-term, adverse impacts from interruptions in mining operations. Overall, the alternatives would all have approximately the same contribution to cumulative impacts.

5.3.5.6 Whole of the Action / Cumulative Action

This section analyzes the potential cumulative effects of the EITP and the ISEGS project combined. The section first summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM, and then evaluates the combined effects of the EITP and ISEGS.

ISEGS Summary

The potential for significant adverse cumulative impacts to ISEGS from geologic hazards during its design life and to potential geologic, mineralogic, and paleontological resources from the construction, operation, and closure of the ISEGS project is not significant with respect to CEQA or NEPA. Most cumulative impacts related to geology and paleontology only have the potential to occur within boundaries of the ISEGS project site itself because geologic materials occur at specific locales and are only affected by activities acting on them directly. Geologic impacts from the ISEGS project would be site-specific and would therefore not have the potential to combine with impacts from other projects.

The ISEGS project site is currently not used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. Sand and gravel resources are present at the site; however, such materials are present throughout the region and the ISEGS would not have a significant impact on their availability. In addition, these resources would become available again following decommissioning of the project. As a result, the project would not have any cumulative impacts on the development of geologic or mineral resources.

The construction and operation of other projects within the vicinity of ISEGS could result in increased stormwater and sediment transport impacts. However, all of these projects would be designed to avoid, manage, and mitigate potential stormwater and sediment impacts. Likewise, the ISEGS project has been designed to be in compliance with existing laws, ordinances, regulations, and standards and would use a stormwater and sediment pass-through design that would result in only a minor increase of sediment downgradient of the proposed project. Therefore, the construction and operation of the proposed ISEGS project would not impact water resources from erosion, stormwater, or sediment aggradation or degradation.

No paleontological resources have been documented on the ISEGS project site or at the proposed laydown area. However, based on the geology of the site and because paleontological resources have been discovered on sites within 2 miles of the ISEGS project, the probability of encountering paleontological resources is high on portions of the project site, and also during construction of other projects in the Ivanpah Valley. The project would include conditions of certification that would require a worker education program in conjunction with monitoring of earthwork activities by qualified professional paleontologists. The certification conditions would require that earthwork be halted any time potential fossils were recognized by either a paleontologist or workers. When properly implemented, the conditions of certification yield a net gain to the science of paleontology, since fossils that would not otherwise have been discovered can be collected, identified, studied, and properly curated. It is reasonable to assume that the reasonably foreseeable projects would include similar measures. Therefore, ISEGS would not contribute to any considerable cumulative impacts to paleontological resources (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action / Cumulative Action

The ISEGS project and the proposed EITP would have negligible or less than significant impacts on geology (including geologic hazards), soils, minerals, and paleontological resources in the Ivanpah Valley; therefore, the Whole of the Action / Cumulative Action of EITP and ISEGS would not contribute to considerable or significant cumulative impacts on these resources.

5.3.6 Hazards, Health, and Safety

5.3.6.1 Geographic Extent and Timeframe

Impacts resulting from hazards and hazardous materials would be limited to the proposed project site and directly adjacent land because impacts would result only from incidents associated with hazardous materials during construction or maintenance activities. Therefore, the geographic extent for the analysis of cumulative impacts related to hazards, hazardous materials, and potential environmental contamination is limited to the immediate vicinity surrounding project substations, staging areas, laydown areas, and transmission and telecommunications line ROWs. These cumulative impacts could occur during construction and operation and would be limited to the areas of concurrent construction or maintenance. Although incidents could occur during maintenance activities, if cumulative impacts were to occur, they would be more likely to occur during the 18-month construction period because greater volumes of hazardous materials and more equipment would be in use. Therefore, the timeframe for the cumulative impact analysis with respect to hazardous materials will be the construction period.

The geographic extent of the cumulative impacts analysis with respect to fire hazards is limited to the Ivanpah and Eldorado valleys because all construction and operation activities associated with the proposed project and any proposed alternatives would take place within the EITP ROW in the County of San Bernardino, California, and Clark County, Nevada. The timeframe for this cumulative impacts analysis with respect to fire hazards is also the construction period for two reasons: 1) The construction period is the more likely time for a fire hazard because there is more activity, and 2) the proposed project is replacing an existing transmission line. Therefore, the presence of the new transmission line would have the same cumulative contribution to fire hazards as the existing transmission line.

5.3.6.2 Past and Present Project Impacts/Existing Cumulative Conditions

In California, the area along the route of the proposed project alignment consists of undeveloped land, open space, and scattered rural residences.

Hazardous Materials and Wastes

Past and present projects that have had an impact on the Ivanpah Valley in California with respect to hazardous materials and wastes include the Molycorp Mine and its Evaporation Pond and Wastewater Pipeline; CalNev Pipeline; and the flyash land disposal site located near the Primm Valley Golf Course. Although the Colosseum Mine could have residual contamination, it is too far from the construction corridor of the proposed project to have the potential to contribute to cumulative impacts. Biogen operated a coal power plant near the present location of the Primm Valley Golf Course. A by-product of coal-fired power plants is fly ash. Biogen disposed of the fly ash in an on-site landfill which is in the vicinity of the Primm Valley Golf Course; however, the Biogen facility was closed in the early 1990s (Cass 2010). The past and present impacts of the other cumulative projects listed above are described below.

The Molycorp Mine was originally opened in the early 1950s near the town of Mountain Pass, California, and is an active lanthanide mining and milling operation. According to the Toxic Release Inventory Database, the Molycorp Mine emits air quality contaminates, but there are no surface water discharges and no underground injection. Lead compounds are shipped off-site for disposal (U.S. EPA 2010). The Molycorp Mine has a history of contamination. Under a 1994 settlement, Molycorp agreed to close the drum yard and the concrete casting and staging areas at the Mountain Pass Facility in order to remove all drummed wastes and close all lead waste impacted areas. By the end of 2003, DTSC's Geology, Permitting, and Corrective Action Branch accepted the closure certification of these units and released Molycorp from closure financial responsibility (DTSC 2010). According to Envirostor, the Molycorp Mountain Pass Facility currently has a non-operating hazardous waste facility (DTSC 2010). There is also groundwater contamination associated with the on-site evaporation pond (Cass 2010).

The Mountain Pass Telecommunication Alternative follows the route of the Molycorp wastewater pipeline down the mountain, and both the Mountain Pass and Golf Course Telecommunication Alternatives follow its path along a portion of Nipton Road. The Molycorp Pipeline also has a history of contamination. Between 1984 and 1993, Molycorp reported over 40 spills from the pipeline, totaling 727,000 gallons. In 1996, there were at least 11 spills from pipeline ruptures, totaling in excess of 350,000 gallons. Some of the waste contained heavy metals and low levels of radioactivity, up to 100 times acceptable (background) levels. In 1997, the Lahontan RWQCB issued Cleanup and Abatement Order 6-97-66, and Molycorp completed the cleanup in 1998. More than half of the wastes were radioactive. In 1998, the Lahontan RWQCB issued orders requiring Molycorp to cease disposing of and clean up radioactive and hazardous waste in ponds on the playa and at the mill site and subsequently identified additional areas of the pipeline that required remediation and developed a plan for pipeline removal. Following a civil suit from county prosecutors for violating state drinking water safety laws, Molycorp temporarily suspended operations at the mine and mill in September 1998 until environmental reviews were complete and a solution to its wastewater issues was reached (EPA 2010). Much of the contamination along the pipeline has been removed (Cass 2010).

Contamination has also occurred at the evaporation pond sites. The wastewater pipeline discharged to two different sets evaporation ponds. From 1980 to 1987, wastewater was discharged to the Old Ivanpah Evaporation Ponds (OIEP) located approximately 10 miles east of the mine along Nipton Road. Operations at the OIEP were discontinued when it was discovered that the underlying groundwater was contaminated with total dissolved solids (TDS), nitrate, and strontium that appeared to be related to the ponds. In 1987, wastewater discharge was moved to the New Ivanpah Evaporation Ponds (NIEP), located approximately three miles north of the OIEP near the center of the Ivanpah Playa. The NIEP location was selected based on naturally poor groundwater quality (high saline and TDS) that exists beneath the dry lakebed. The wastewater discharged to the NIEP contained elevated TDS, primarily chloride and sodium with lower concentrations of strontium, nitrate, barium, lead, and radionuclides. The media of concern at the NIEP is surface soils and groundwater. The NIEP has not been formally closed. Groundwater monitoring for TDS, nitrates/nitrites, strontium, and lead is on-going around the NIEP (Arcadis 2009).

Currently, Chevron Corporation owns the wastewater discharge pipeline and the evaporation ponds. Molycorp Minerals LLC owns and operates the mine. Chevron is in the process of removing the pipeline and removing residual contamination associated with the pipeline. It is also monitoring the groundwater at the evaporation ponds. Molycorp Minerals LLC is currently operating the mine but is not mining. It is processing stockpiled materials (Hunter 2010).

The existing CalNev Pipeline Corridor transects the Ivanpah Valley. There are no known leaks or releases in this area from this underground pipeline system. However, contaminated soils may be present in the subsurface and could be found if the pipeline expansion occurs. The proposed project crosses this pipeline corridor less than 1 mile northeast of Primm (see Figure 5-6).

Within Primm, Nevada, there are residential developments and commercial and industrial properties. Underground storage tanks (USTs) are present at the local gas stations. There could be contamination associated with these tanks, but if there is it would not contribute to any contamination found or cause by the project because the proposed project does not pass in close proximity to these USTs. The remainder of the route is primarily undeveloped open space. Within the undeveloped and open space land and residential areas there is little likelihood of significant soil or groundwater contamination, based on a lack of uses that would involve hazardous materials. Refer to Tables 3.7-1 and 3.7-2 for a list of the hazardous waste sites and permitted facilities UST sites and land disposal sites.

Fire Hazards

The area along I-15 in San Bernardino County is classified as a moderate fire zone (SB County Fire 2010). Primm has a low fire hazard with low ignition risks (Resource Concepts, Inc. 2005). The route to the Eldorado Substation would likely have a low fire hazard (see Section 3.7.1.8: Fire Hazards).

5.3.6.3 Reasonably Foreseeable Future Projects

Reasonably foreseeable future projects identified for this analysis include the ISEGS, FirstSolar, NextLight, the CalNev Pipeline Expansion Project, and the DesertXpress High-Speed Rail Project because of the proposed project crosses or intersects each of these projects (see Figure 5-6), and there is the potential for overlapping construction schedules (Table 5-3). Construction of these projects would require the use of fuels and hazardous materials. They would also use equipment that could act as an ignition source.

The analysis considers the location of known significant soil or groundwater contamination. Sites with known environmental contamination would be legally required to be investigated and remediated in accordance with regulatory agency standards prior to redevelopment. Although localized areas of soil contamination could be encountered by some of these projects, most are new developments in open areas where there has been no historical industrial use. Areas with previously unknown contamination will likely be discovered during planning, followed by the required reporting and cleanup.

5.3.6.4 Cumulative Impact Analysis

The potential for hazards and hazardous materials impacts of the proposed project to combine with the effects of other projects within the cumulative impact area is described below. Regarding cumulative environmental contamination impacts, the proposed project's contribution to a cumulative impact would only be considered significant if it combined with other projects to result in substantial volumes of contaminated soil that required offsite treatment and that, as a combined volume, exceeded the capacity of available treatment facilities or resulted in substantial exposure of hazardous materials to the public. For the reasons discussed below, the proposed project would not contribute to considerable cumulative impacts.

Hazardous Materials, Spills, and Potential Exposures

This section discusses the combined effects on hazards and hazardous materials of the proposed project and past, present, and reasonably foreseeable future projects. The relevant impacts of the proposed project are IMPACT HAZ-1: Create Hazards through Routine Transport, Use, or Disposal of Hazardous Materials; IMPACT HAZ-2: Create Hazards through Accidental Release of Hazardous Materials into the Environment; and IMPACT HAZ-3: Expose the Public or Environment to Contaminated Soil or Groundwater. In addition, this section addresses the related NEPA criteria.

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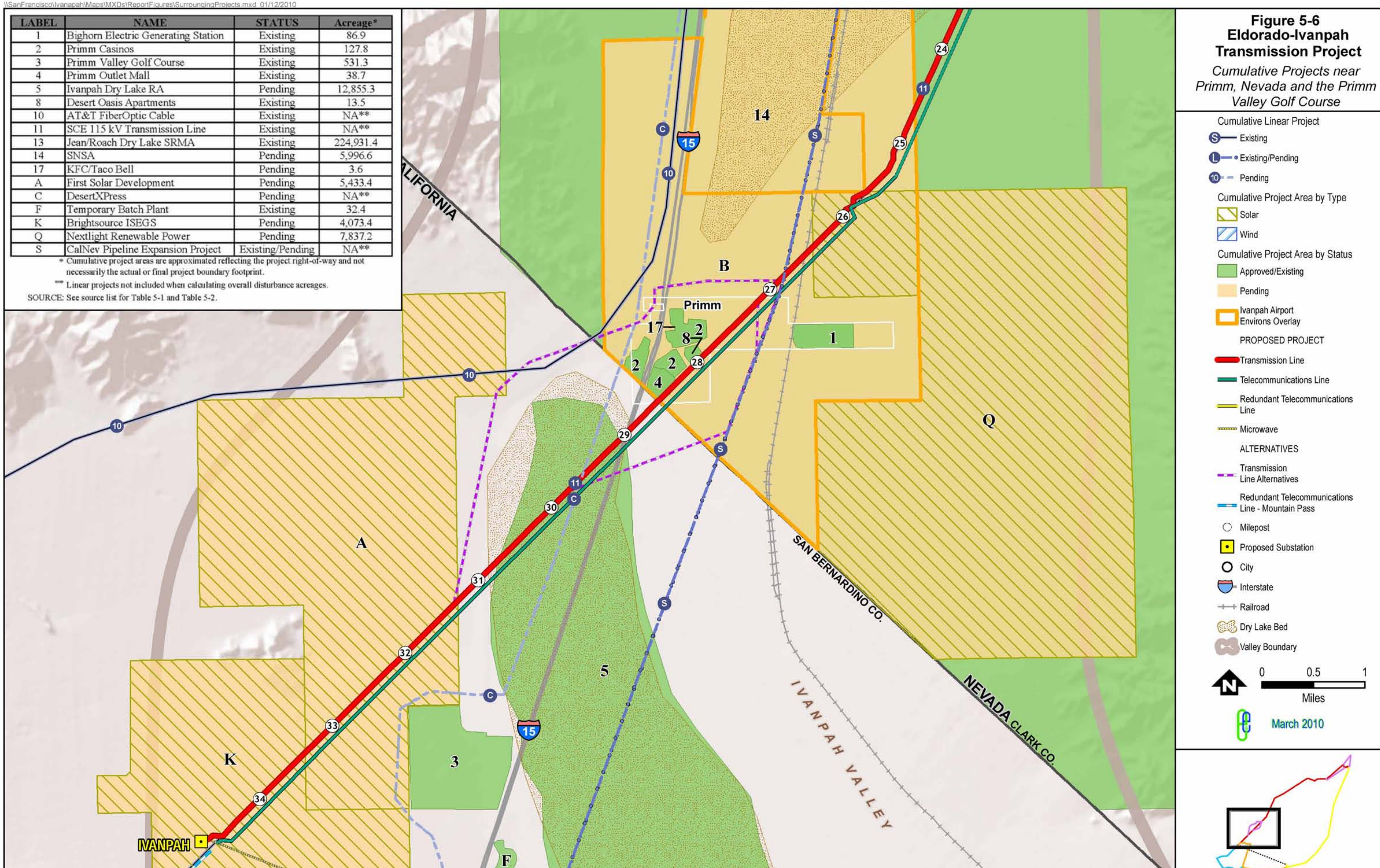
LABEL	NAME	STATUS	Acreage*
1	Bighorn Electric Generating Station	Existing	86.9
2	Primm Casinos	Existing	127.8
3	Primm Valley Golf Course	Existing	531.3
4	Primm Outlet Mall	Existing	38.7
5	Ivanpah Dry Lake RA	Pending	12,855.3
8	Desert Oasis Apartments	Existing	13.5
10	AT&T FiberOptic Cable	Existing	NA**
11	SCE 115 kV Transmission Line	Existing	NA**
13	Jean/Roach Dry Lake SRMA	Existing	224,931.4
14	SNSA	Pending	5,996.6
17	KFC/Taco Bell	Pending	3.6
A	First Solar Development	Pending	5,433.4
C	DesertXPress	Pending	NA**
F	Temporary Batch Plant	Existing	32.4
K	Brightsource ISEGS	Pending	4,073.4
Q	Nextlight Renewable Power	Pending	7,837.2
S	CalNev Pipeline Expansion Project	Existing/Pending	NA**

* Cumulative project areas are approximated reflecting the project right-of-way and not necessarily the actual or final project boundary footprint.

** Linear projects not included when calculating overall disturbance acreages.

SOURCE: See source list for Table 5-1 and Table 5-2.

Figure 5-6
Eldorado-Ivanpah Transmission Project
Cumulative Projects near Primm, Nevada and the Primm Valley Golf Course



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As discussed above, potential cumulative effects of hazardous materials spills and potential exposures could only occur in the immediate vicinity of the proposed project area. Construction and operational activities associated with the proposed project could result in releases of hazardous materials in localized areas of the transmission line, substations, or telecommunication lines. The applicant would implement programs and measures to reduce the potential for a spill and to address ones that occur. A hazardous materials and waste handling management program (APM HAZ-2) would contain emergency release response procedures. The applicant would also be required to implement a Stormwater Pollution Prevention Plan (SWPPP) during construction and a Spill Prevention, Control, and Countermeasure (SPCC) plan (APM HAZ-5) during operations at substations. Over the entire construction period, over 700,000 gallons of fuels would be used. Typically spills occur during refueling, which typically takes place at construction yards. The applicant would establish hazardous material transportation procedures as well as fueling and maintenance of construction equipment procedures (APM HAZ-2). The measures described above would reduce the potential for spills of hazardous materials and ensure cleanup measures would be implemented if a spill occurred.

The reasonably foreseeable future projects that would be crossed by the proposed project and could have concurrent construction schedules are ISEGS, First Solar, NextLight, DesertXpress and the CalNev Pipeline Expansion. The ISEGS project would implement measures that are similar to those in this project to remediate spills as described in Section 3.7.5. DesertXpress would implement a SWPPP and SPCC Plan to prevent and address spills. It is likely that the CalNev Pipeline Expansion, First Solar, and NextLight would have similar measures to prevent and cleanup spills, but these projects have not completed their environmental review processes; therefore, the exact steps that they would undertake to prevent and cleanup spills is not known. However, they would be required to comply with state and federal laws and regulations. Therefore, it is unlikely that there would an incident where multiple projects would have a hazardous materials release in close proximity to each other such that could be cumulative effects. Any release of hazardous materials would have to be remediated according to state and federal regulations.

As discussed in Section 3.7: Hazards, Health and Safety, contaminated soils or water are unlikely to be encountered during construction of the proposed project. However, the applicant has committed to conducting a Phase I Environmental Site Assessment prior to construction to identify potential contamination in areas to be graded or excavated as part of the proposed project (APM HAZ-1). In case residual soil contamination were found along the proposed project route, the applicant would implement a Soil Management Plan (APM HAZ-3) to guide the characterization and cleanup of contaminated the soils according to applicable regulations. Encountering contaminated groundwater would be unlikely at any of the sites on the floors of the valleys because the depth to groundwater is over 500 feet below ground surface (bgs). Surface water bodies are ephemeral in the area, so surface water contamination would not likely be encountered.

Cumulative impacts could occur if multiple projects would be unearthing and exposing contamination in close proximity to each other. The proposed project would cross the construction corridor of DesertXpress and the CalNev Pipeline Expansion at discrete locations. The potential for concurrent construction is unlikely. DesertXpress has included mitigation measures to address the potential for unearthing contaminated soil. The CalNev Pipeline Expansion would involve the installation of a new 16-inch pipeline. Most of the construction would occur in their existing pipeline ROW. The existing CalNev pipelines transports fuel products. There is the possibility that the existing CalNev pipelines have leaked; therefore, when the pipeline ROW is unearthed, some soil could be contaminated with petroleum products. Due to this possibility, the CalNev proponent would likely also be required to have a plan to address the potential of unearthing contaminated soil. Although it is unlikely that the proposed project and these projects would be constructed in the same location at the same time, the Soil Management Plan (APM HAZ-3) that the proposed project would use and the mitigation measure that other projects would likely use would reduce the potential for exposing the public or wildlife to existing contamination to negligible levels.

The proposed project would cross within one mile to several miles of the right-of-way for the ISEGS, FirstSolar, and NextLight solar projects. For these projects, there is the possibility of concurrent construction in close proximity. Like the proposed project, ISEGS has included mitigation measures to address the potential for unearthing contaminated soil. FirstSolar and NextLight are likely to include similar mitigation measures. Because any soil contamination encountered would be removed and/or remediated prior to construction, impacts of the proposed project would not combine with impacts of other projects, and there would not be a considerable cumulative effect.

Airport Risks

This section discusses the combined effects on airports of the proposed project and past, present, and reasonably foreseeable projects. The relevant impact of the proposed project is IMPACT HAZ-4: Increase Safety Hazards for People Residing or Working within 2 Miles of a Public Airport or Public Use Airport. The proposed 230-kV transmission line would be constructed within 0.5 miles of the southern boundary of the proposed SNSA that is scheduled for completion by 2020. However, the EIS for the SNSA is currently in progress and is not expected to be completed until the forth quarter of 2012. Therefore, it is not possible to conclusively state whether the EITP would impact the future SNSA until completion of its EIS and approval of that project. The 230-kV transmission line lattice steel towers would be 180 feet high. Per MM HAZ-2, the applicant would be required to consult with the FAA to determine whether a Hazard/No Hazard Determination is required and whether the EITP's final design should incorporate measures to reduce obstructions to air navigation (such as lighting on tower structures).

Regardless of whether the FAA determines that a Hazard/No Hazard Determination is required for the EITP, if the SNSA is approved, the FAA would review any project that is proposed to be located within 20,000 feet of the airport before it could be approved for construction. Any new project that represented an airport risk would either not be approved or would have to be modified or mitigated such that it would not represent an airport risk when it was constructed or operational. The ISEGS project would require five to ten foot tall day and nighttime strobe lighting on top of its 459 foot power towers under FAA regulations. At this time, it is not known whether there would be any of the other foreseeable projects that would have structures that would exceed the FAA 200-foot height limit and potentially conflict with the airport requirements. One of the currently proposed projects could have effects that are not compatible with the operations of an airport. Based on knowledge of past wind projects and the proximity of the Table Mountain Wind Project, there could be radar interference issues with two SNSA radar facilities.

In order to further reduce potential hazards associated with SNSA, the applicant will implement MM HAZ-2. MM HAZ-2 requires that the applicant consult with the FAA regarding final project design and whether a Hazard/No Hazard Determination is required. Therefore, the proposed project's contribution to potential future airport risks would be negligible. At this time, it is not possible to assess the cumulative potential airport risks at the proposed SNSA because insufficient information is available about SNSA and the proposed projects that would be located within 20,000 feet of the SNSA.

Emergency and Evacuation Routes

This section discusses the combined effects on emergency and evacuation routes of the proposed project and past, present, and reasonably foreseeable projects. The relevant impact of the proposed project is IMPACT HAZ-5: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan.

I-15 is an emergency evacuation route. Traffic congestion on I-15 could delay response times for emergency vehicles that are servicing the area or could impede use of I-15 as an evacuation route. Section 3.14: Traffic and Transportation, describes in detail the impacts of congestion and lane closures. Temporary lane closures and increased traffic congestion might occur during construction of the proposed project and other foreseeable projects. The proposed transmission line would cross I-15 near MP 29 at the California/Nevada border. The DesertXpress is proposed to follow I-15 near the California-Nevada border in California and would be within the I-15 corridor in Nevada. The construction period for DesertXpress would be from 2010 to 2012, therefore, there could be overlap with the proposed project. The boundary of the proposed SNSA would be I-15; therefore, they could impacts to I-15; however the construction period would not overlap with the proposed project. If lane closures were necessary for construction or maintenance of the proposed project or the DesertXpress, the applicant or the proponent for DesertXpress would have to obtain an encroachment permit from the appropriate authorities (e.g., Caltrans or Nevada Department of Transportation) for work that would performed within roadway and railroad

ROWs (APM-TRA-1). Increased traffic congestion could occur from construction vehicles and worker's vehicles transiting to and from project sites. The applicant would implement a Traffic Management and Control Plan (APM TRA-2) that would specify how the flow of traffic would be controlled and how emergency situations would be addressed. Impacts related to ground transportation risks would be reduced by minimizing the use of local streets (APM TRA-3) and by implementing BMPs such as using flaggers, identifying detours, and communicating with stakeholders.

Concurrent construction of the proposed project and ISEGS, FirstSolar, NextLight, the CalNev Pipeline Expansion Project, and DesertXpress could increase traffic congestion and flow; therefore, there could be cumulative impacts to access and use of emergency routes. The other foreseeable projects would work with local authorities to develop traffic management plans similar to those for the proposed project. The authorities could plan for potential traffic delays using their knowledge of traffic patterns, and could schedule lane closures so they would not jeopardize traffic flow or the security of evacuation routes. Overall, a considerable increase in traffic congestion could result in a cumulative impact; however, traffic management plans would likely reduce this impact so that it would not be considerable.

Fire Hazards

This section discusses the combined effects on fire hazards of the proposed project and past, present, and reasonably foreseeable projects. The relevant impact of the proposed project is IMPACT HAZ-6: Expose People or Structures to Wildland Fires. Wildfire risks of construction and operations are associated with combustion of native materials due to smoking, refueling, sparks from welding, and operating vehicles and other equipment off roadways. Brushing activities for vegetation control and removal during construction could result in fire. These risks would be associated with construction of the proposed project and large foreseeable projects, as previously discussed. The applicant would implement a Fire Management Plan (APM HAZ-4) that would establish standards and practices to minimize the risk of fire danger, and, in case of fire, provide for immediate suppression and notification.

Past and present projects have contributed to the existing fire hazard conditions. The Ivanpah Valley in California has a moderate fire risk. In Nevada, the fire risk outside of Primm is not known, although the city of Primm has a low fire risk. Concurrent construction of the foreseeable construction in California, such as ISEGS, First Solar, the Calnev Pipeline Expansion, and the DesertXpress rail line, could increase the fire risks. However, each project would likely implement its own fire management program to reduce the potential risk of fires. Therefore, there would not be a considerable cumulative impact.

5.3.6.5 Alternatives

Because no activity is associated with the No Action Alternative, this alternative would not contribute to cumulative impacts associated with hazards.

Construction and operation of all the transmission routes and telecommunications alternatives would require use of hazardous materials. Since any spills would be cleaned up, there would not be the potential for impacts of the proposed project to combine with impacts of other projects and there would not be considerable cumulative impacts.

Most of the alternatives are unlikely to encounter any existing contamination. The telecommunications alternatives are in closer proximity to known hazardous materials and contamination. The Mountain Pass Telecommunications Alternative would cross through the Molycorp Mine facility. This portion of the telecommunication line would be constructed aboveground (e.g. an overhead wire); therefore, potential on-site contamination would not be unearthed. Construction through this type of facility would increase the potential for exposure of workers to hazardous materials or wastes. Project workers would have to comply with the health and safety requirements of the facility and those of the Applicant's Health and Safety Plan (MM HAZ-1). This alternative would also travel along the same corridor as the Molycorp Wastewater Pipeline which historically leaked, but the historical soil contamination was removed. This portion of this alternative would be both aboveground and underground. Since a cleanup has been conducted in this area, It would be unlikely that contaminated soil would be encountered. In addition, any known contamination would be removed and/or remediated prior to construction. Therefore, it would be unlikely for the proposed project to combine with impacts of this past project, so there would not be considerable cumulative impacts.

The Golf Course Telecommunications Alternative would be routed along the south side of the golf course, but would be strung aboveground; therefore it is unlikely that fly ash associated with the former Biogen land disposal facility would be disturbed during the installation of this alternative, so there would not be cumulatively considerable impacts.

Of the project alternatives, only Alternative Transmission Routes C and D and Subalternative E are near the proposed SNSA. Alternative Transmission Route C is closer to the proposed airport than is the proposed project, and Alternative Transmission D and Subalternative E would be further from the proposed airport than is the proposed project. Closer proximity of structures to the proposed airport could increase safety hazards. However, it is assumed that the applicant would comply with FAA's Determination of Hazard/No Hazard for whichever alternative is selected. Therefore, as discussed above, there would be no significant cumulative impacts to airport safety.

Of the project alternatives, Alternative Transmission Routes C and D and Subalternative E, as well as Telecommunications Alternative (Mountain Pass) and Telecommunications Alternative (Golf Course), cross or are parallel to I-15, an evacuation route. Similar to the proposed project, encroachment permits would have to be obtained for these alternatives, and traffic management plans would have to be implemented in consultation with local transportation authorities. This would be the case for the other foreseeable projects, as well. Therefore, there would not be considerable cumulative impacts to emergency response/evacuation plans.

Similar to the proposed project, Alternative Transmission Routes A, B, C, and D and Subalternative E would not contribute to considerable cumulative impact to wildland fire hazards.

5.3.6.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP project and ISEGS. The section first summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM, and then evaluates the combined effects of the EITP and ISEGS.

Summary

The evaluation of cumulative impacts for this resource in the ISEGS FSA/DEIS considered the potential for simultaneous release of a hazardous chemical from the proposed ISEGS and release from other existing or foreseeable nearby facilities. It was determined that because of the quantities of hazardous chemicals to be stored at the facility, there would be no possibility of an offsite impact. In addition, there are no nearby facilities that use large quantities of hazardous chemicals, so there is little to no possibility that vapor plumes would mix to produce airborne concentrations that would present a significant risk. Hazardous material use, storage, and transportation would not pose a significant cumulative impact with respect to CEQA or NEPA regulations (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action/Cumulative Action

The cumulative impacts of the EITP and ISEGS projects combined would be similar to those of the proposed project alone. Since any hazardous materials spills that occurred during construction would likely be small, localized, and cleaned up, there would not be the potential for impacts of both to combine with impacts of other projects, and there would not be a considerable cumulative impact.

During operations, the proposed project would store fuel at the substations. ISEGS would use large quantities of natural gas. Calnev currently transports multiple different types of fuels. Operations of any of the new facilities would require transportation, storage, use, and disposal of hazardous materials according to local, state, and federal regulations. Implementation of SPCC plans would be necessary, depending on the amounts of fuel stored. For each operation, standards and codes would apply to ensure the safety of workers and the public. Although there would be multiple projects operating within the cumulative impact area of the Ivanpah and Eldorado valleys and each would increase the risk of spills, contamination, and exposure to the public, those risks would be minimized by the projects operating under legal requirements and industry standards. Any hazardous materials spills that occurred during operations would likely be small, localized, and cleaned up. Therefore, there would not be the potential for impacts of the combined project to combine with impacts of other projects, and there would not be considerable cumulative impacts due to spills, contamination, or accidents related to the transportation, storage, use, or disposal of hazardous materials.

Since ISEGS would not be within 2 miles of an airport nor would it involve lane closures of major thoroughfare, the contribution to cumulative impacts would only be from the EITP, as discussed above. Therefore, there would be no considerable cumulative impacts to airports.

ISEGS would use large quantities of natural gas during operations and therefore there are fire risks. However, the natural gas would not be stored on site but would be delivered via an existing underground pipeline. ISEGS would reduce the risk of a fire and/or explosion to insignificant levels through adherence to applicable codes and implementation of effective safety management practices. In addition, the proponent's Safety Management Plan would address handling and use of natural gas and reduce the potential for equipment failure due to improper maintenance or human error. As discussed above, each foreseeable project would likely implement its own fire management program to reduce the potential risks of fires. Therefore, there would not be a considerable cumulative impact due to fire risk.

5.3.7 Hydrology and Water Quality

5.3.7.1 Geographic Extent and Timeframe

In general, impacts to hydrology and water quality are contained within watersheds. Water quality regulations, such as total maximum daily loads (TMDLs), are generally implemented at the watershed level. Therefore, the cumulative impacts area for this cumulative analysis of hydrology and water quality consists of the watersheds and subwatersheds of the Ivanpah and Eldorado valleys. The timeframe for the cumulative analysis is the life of the project because the presence of the project would alter the hydrology of the area as long as it is present.

5.3.7.2 Past and Present Project Impacts / Existing Cumulative Conditions

Although there is some development in the cumulative impact area for hydrology and water quality, the area is largely undeveloped, and the hydrology and water quality reflect this. Development within Primm, Nevada, at the Primm Valley Golf Course, and at the Molycorp Mine has altered the natural hydrology of these areas and, therefore, has contributed to the current condition of the hydrology and water quality in the cumulative impacts area.

The presence of the town of Primm and the Primm Valley Golf Course has altered drainage patterns. The town and golf course use groundwater drawn from the local aquifer, thus further altering hydrology. Construction of the town and golf course altered the local topography. The Molycorp Mine also has altered the landscape and changed the local hydrology. It uses water in operations and it has a surface impoundment. The mine has also introduced contamination into the local water table. Formerly, the mine discharged wastewater to Ivanpah Dry Lake through a wastewater pipe. The effects of these past projects were considered in the impact assessment for the EITP in Section 3.8.3.

5.3.7.3 Reasonably Foreseeable Future Projects

Reasonably foreseeable future development throughout the cumulative impacts area for hydrology and water quality is dominated by proposed renewable energy projects, specifically ISEGS, First Solar, and NextLight (see Figure 5-1 and Tables 5-1 and 5-2). Other projects within the watersheds that could contribute to cumulative impacts include the

SNSA, the Calnev Pipeline Expansion, and the DesertXpress High-Speed Rail. The SNSA is still in the planning phase and, if built, would not be completed until 2020; therefore, it could only contribute to impacts during operations. The other projects could have overlapping construction schedules; therefore, they could contribute to cumulative impacts during construction (see Table 5-3).

5.3.7.4 Cumulative Impact Analysis

The potential for hydrology and water quality impacts of the proposed project to combine with the effects of other projects within the geographic extent and timeframe of the cumulative analysis is described below.

Hazardous Materials Spills

This section addresses the combined effects of the EITP on potential hazardous material releases (IMPACT HYDRO-1: Introduction of Hazardous Contamination into Surface and Groundwater) and the similar reasonably foreseeable future projects. The potential cumulative effects of past and present hazardous material releases are discussed in 5.3.6 Hazards, Health, and Safety.

Although hazardous material spills can occur on any construction site, the applicant would implement many programs and measures to reduce the potential for a spill and to address ones that occur. These include measures such as a hazardous materials and waste handling management program (APM HAZ-2) that has emergency release response procedures to address any potential release of hazardous materials (APM W-10). Since the EITP would store quantities of fuel at the substations, SPCC plans (APM W-14) would be required.

The large reasonably foreseeable future construction projects, such as ISEGS, FirstSolar, the Calnev Pipeline Expansion, SNSA, and DesertXpress, would also be required by law to implement a SWPPP because of the amount of soil that would be disturbed and would likely have the same type of hazardous materials management programs as the applicant. They also would be required by law to implement an SPCC plan if they would have aboveground oil storage capacity greater than 1,320 U.S. gallons or completely buried oil storage capacity greater than 42,000 U.S. gallons.

With successful implementation of the spill prevention measures, any release from either the EITP or the reasonably foreseeable future projects would likely have short-term and localized effects. Given the ephemeral nature and small number of water bodies in the area, considerable cumulative impacts to water quality would not be likely. In addition, groundwater is located from over 200 feet to over 500 feet below ground surface within the Ivanpah Valley, and it is unlikely any contamination would migrate to that depth before actions were taken to remediate it. Therefore, it is unlikely that there would be a significant cumulative impact to water quality that would result in a violation of water quality standards.

Erosion

This section addresses the potential for erosion from the combined impacts of the EITP and past, present, and reasonably foreseeable future projects. The relevant impacts of the EITP are IMPACT HYDRO-1: Introduction of Hazardous Contamination into Surface and Groundwater and IMPACT HYDRO-3: Increased Erosion or Siltation due to Alteration of Surface Drainage Patterns.

The estimated total land disturbance from the EITP would be approximately 470 acres during construction, and permanent disturbance would be approximately 60 acres. ISEGS would disturb approximately 4,100 acres and NextLight would disturb approximately 3,000 acres. First Solar has requested use of approximately 4,100 acres, and the SNSA would require approximately 6,000 acres. Both DesertXpress and the Calnev Pipeline Expansion would be linear projects. Calnev would have an approximate 100-foot construction corridor. The construction corridor for the DesertXpress is not known but the permanent ROW would be 60 feet (URS 2007 and USDOT 2009). In the Eldorado Valley, Bull Frog Green Energy has requested a ROW of over 3,300 acres and Power Partners Solar Project has requested over 3,800 acres in ROWs; however, not all this land would likely be developed.

During construction of the EITP, the applicant would implement the required SWPPP and MM W-1 (Erosion Control Plan). This would help ensure all the appropriate erosion control measures were used during construction to prevent onsite or of-site siltation or erosion. Since the EITP would mostly be replacing an existing transmission line, the installation of replacement towers would not substantially alter existing drainage patterns. The access roads, substations, and tower foundation would be installed using erosion controls that are consistent with design standards and practices and/or landowner requirements.

The large reasonably foreseeable future construction projects, such as ISEGS, FirstSolar, NextLight, the Calnev Pipeline Expansion, SNSA, and DesertXpress, would also be required by law to implement SWPPPs to prevent erosion. Therefore, there would not be a considerable cumulative impact to erosion in the cumulative impact area.

Cumulative Impact WAT-C-1: Water Use

This section addresses the combined effects of water use by the EITP and past, present, and reasonably foreseeable future projects. The relevant impact of the EITP is IMPACT HYDRO-2: Lowering of Water Table or Interference with Aquifer Recharge.

The EITP would use between 30.6 acre feet per annum and 38.3 acre feet per annum of water during construction. The source of this water is currently unknown but would be a local vendor or agency. The applicant would not drill any wells. MM W-3 would require the applicant to develop and implement a Water Use Plan that specified all resources and the potential impacts. The foreseeable solar projects within the Ivanpah Valley are shown in Figure 5-1. Within the Ivanpah Valley, ISEGS, FirstSolar, and NextLight solar projects would occupy over 11,000 acres. ISEGS is the only project within the Ivanpah Valley that has completed an environmental analysis. ISEGS has estimated that it would use no more than 100 acre feet per annum during construction and operations. ISEGS would draw its water from two wells located close to its site (CEC and BLM 2009). Therefore, First Solar would probably use 100 acre feet per annum and NextLight would use somewhat less. It is not known what the source of water would be for the EITP or most of the other proposed solar projects.

The capacity of the local aquifer is not currently known. The town of Primm and the Primm Valley Golf Course are drawing upon water in the Ivanpah Valley. Without knowing the water sources for the EITP or the reasonably foreseeable future projects, it is not possible to assess the magnitudes of the impacts, but if all the water needed to support the foreseeable projects were drawn from the local water table, there could be a considerable cumulative impact on the local water table. The EITP's contribution would depend on the volume of water to be drawn from the local aquifer and the total amount drawn by other foreseeable projects. Because the source of water is currently unknown, MM PUSVC-C-1 is necessary.

MM PUSVC-C-1. This mitigation measure will require the applicant to demonstrate to the BLM and CPUC that the supplier of the water to be used for the EITP has an adequate supply such that the existing local public and private water usages are not altered. Implementation of this mitigation measure would reduce the EITP's incremental contribution to less than significant or to minor.

Groundwater Recharge

This section addresses the combined effects on groundwater recharge of the EITP and past, present, and reasonably foreseeable future projects. The relevant impact of the EITP is IMPACT HYDRO-2: Lowering of Water Table or Interference with Aquifer Recharge.

Most of the construction of the EITP would involve replacement of existing towers; however, the Ivanpah Substation, microwave tower site, expansion of the Eldorado Substation, and new tower locations would be new facilities. Altogether, the EITP would be in four largely undeveloped groundwater basins covering 1,587 square miles (or more than 1 million acres). Assuming there would be approximately 60 acres of impervious surfaces associated with the EITP, that area would total 0.01% of surfaces in the cumulative impact area, a miniscule increase. The areas with the most impervious surfaces in the cumulative study area include Primm (880 acres) followed by Nevada Solar One (approximately 400 acres). I-15 also represents an impervious surface in Ivanpah Valley. If the SNSA is approved, it would occupy approximately 6,000 acres; the wind projects could occupy over 70,000 acres; and the solar projects could occupy 28,000 acres, all built on previously undisturbed land. Although solar projects would not pave the total area that they occupy, the solar panels would re-direct precipitation. Also, while wind projects would not create as impervious or semipervious a surface as solar projects, they would add some impervious surfaces to the cumulative study area. Collectively, these projects could result in a cumulative alteration of the local groundwater recharge. Insufficient information is available to characterize or quantify the exact nature of the cumulative alteration; however, considering the relative lack of impervious surfaces that would be associated with the EITP, it is estimated that the area of new impervious surfaces created by the EITP would be so small in reference to the size of the recharge area that it would not alter groundwater recharge within the local basins and would therefore not contribute to a considerable cumulative impact.

Alteration of Drainage Patterns

This section discusses the combined effects on drainage patterns of the EITP and past, present, and reasonably foreseeable projects. The relevant impacts of the EITP are IMPACT HYDRO-3: Increased Erosion or Siltation due to Alteration of Surface Drainage Patterns and IMPACT HYDRO-4: Altered Course of Stream or River due to Modification of Surface Drainage Patterns.

Past projects have altered drainage patterns by changing local topography. Each time a site is graded and developed, natural drainage features are culverted, redirected, or, in the case of small desert washes, eliminated. Aerial photographs of Primm, the Primm Golf Course, the I-15 corridor, and Molycorp Mine show small ephemeral washes around the perimeter of each site that do not continue into these developed areas.

Construction of the EITP could alter drainage patterns; however, the applicant would avoid stream channels (APM W-1) and avoid placing transmission poles within active drainage channels (APM W-4) to minimize the alteration. Alterations that occurred would likely be short term and localized, but some could be long term and localized. In an additional effort to prevent alteration of drainage patterns, the applicant would be required to conduct onsite flow modeling (MM W-4). The modeling would predict any alteration in flow paths and establish a channel system to mitigate any impacts. ISEGS, First Solar, NextLight, SNSA, Bull Frog Green Energy, Power Partners Solar, DesertXpress, and Calnev Pipeline Expansion would be constructed on the floors of the Ivanpah or Eldorado valleys and could also alter drainage patterns. As part of the permitting process, the projects would be required to coordinate development with the U.S. Army Corps of Engineers. The projects would likely be required to minimize changes to natural drainage patterns; however, the presence of 29,000 acres of facilities on the floors of the Ivanpah Valley and the Eldorado Valley could nonetheless alter drainage patterns in the valleys. Although the alterations would be localized, given the acreage that these projects could cover within the valleys there could be considerable cumulative alterations. Insufficient data are available to predict the exact nature of these alterations; however, the EITP's contribution to cumulative impacts would be localized and relatively small given its footprints for construction (470 acres) and operations (60 acres).

Flood Hazards

This section discusses the combined effects on flood hazards of the EITP and past, present, and reasonably foreseeable future projects. The relevant impacts of the EITP are IMPACT HYDRO-5: Modified Runoff Characteristics, Possibly Leading to Flooding or Inundation by Mudflow; IMPACT HYDRO-7: Exposure to a Significant Risk of Flooding; and IMPACT HYDRO-6: Placement of Structures within a 100-year Flood Hazard Area.

During construction of the EITP, flooding or inundation of the alluvial fans crossed by the EITP due to random storm events would be unlikely. Alluvial fans have established drainage patterns for normal precipitation events, but the sediments of alluvial fans can shift during flash floods. The applicant would keep construction equipment out of flowing streams (APM W-1), avoid tower placement in active drainage channels (APM W-4), create a system of diversion dikes around any sites where active channels could not be avoided (APM W-5), collect and divert runoff from roadways (APM W-6), develop a ditch and install drainage devices to reduce stormwater speed (APM W-7), and implement a SWPPP (APM W-9). Construction across Ivanpah Dry Lake would result in disturbance to the playa surface and normal flooding processes. MM W-5 (Restoration of Dry Lake) would require the applicant to restore the lake surface to preconstruction conditions. Even with these measures, construction activities could change natural runoff patterns, thereby affecting waterbody volume and flow, possibly affecting flooding patterns of local waterways.

Using the results of the hydrological modeling of the alluvial fan (MM W-6), the applicant would site structures in those areas in a way that would reduce the possibility of floods.

ISEGS, First Solar, NextLight, Calnev Pipeline Expansion, SNSA, Bull Frog, Power Partners, and DesertXpress would be constructed on alluvium on the valley floors and sloping alluvial fans. The analysis of the ISEGS project indicated that the ISEGS project area is subject to flash floods and mass erosion. The results of hydrological modeling indicated that a 100-year flood event would inundate most of the proposed ISEGS project area through canalized and sheet flows and would be primarily erosive rather than depositional. Scour analysis was used to ensure that the project design could withstand flash flood flows with minimal damage to site structures and heliostats (CEC and BLM 2009). The Calnev Pipeline Expansion and the DesertXpress High-Speed Rail (segment 4B) would cross Ivanpah Dry Lake. DesertXpress would implement mitigation to restore areas to preconstruction conditions to allow for revegetation and would give special attention to erosion control near ephemeral drainages and within playas (USDOT 2009). No specific restoration requirements are specified for the Calnev Pipeline Expansion (URS 2007). The DesertXpress drainage facilities and culverts would be sized to handle the flow of a 100-year, 24-hour storm event (USDOT 2009). The other foreseeable future projects would be required to take similar measures to reduce the potential adverse effects of flood events; therefore, the potential cumulative risks would be reduced. As long as the foreseeable projects did the appropriate hydrologic modeling to site their facilities in the areas with lowest flood risk and their structures were designed to accommodate a 100-year, 24-hour flood event, there would not be a significant cumulative impact to flood risks. However, most of the reasonably foreseeable future projects have not completed their environmental analysis, so it is not possible to determine if all the proper steps will be taken.

Debris Flow

This discussion focuses on the consequences of debris flow and the related issues in IMPACT HYDRO-5: Modified Runoff Characteristics, Possibly Leading to Flooding or Inundation by Mudflow. As discussed above, portions of the cumulative impact area are vulnerable to flooding. A potential consequence of flooding is debris flow in flood waters. If EITP structures were to become detached from their footings or foundations, they could be part of a debris flow. Debris flows also include rocks, boulders, and any other objects that are dislodged by a flood. Since multiple structures may be built near each other, one dislodged EITP tower could dislodge or damage other nearby structures, which could then damage or dislodge still others, thus causing a public safety hazard. The applicant would implement multiple measures (APM W-1, APM W-4, APM W-5, and APM W-7) to ensure that active drainage channels would not be hindered by construction activity. In addition, hydrological modeling of the alluvial fan (MM W-6) would be used in the project siting process to ensure that project components would be sited in areas of the alluvial fan that are least likely to shift. This would reduce the long-term public safety risk associated with flooding to moderate.

Other foreseeable future projects on alluvial fans include ISEGS, NextLight, First Solar, and DesertXpress; however, these projects may not do comparable modeling for siting of facilities. The Big Horn Electric Generating Station is located on an alluvial fan. Therefore, there could be considerable cumulative impacts to public safety due to debris flow during flooding. The EITP's contribution to cumulative public safety risks associated with flooding would be long term (throughout the life of the project) but minor. Because the EITP would have a smaller footprint than many of the foreseeable projects in the Ivanpah and Eldorado valleys and the towers would be designed to resist scour, debris flows would be more likely to pass EITP structures without dislodging them.

100-Year Flood Zone Hazards

The transmission line tower footings in Ivanpah Dry Lake and the telecommunication line near Nipton Road would be located within a 100-year flood hazard zone. During a flood event, flood flow would be diverted at the location of individual structures; however, the topography of the area is sufficiently flat such that localized diversions would not significantly redirect or impede the overall flow of flood waters within the cumulative impact area. Additionally, the tower footings' size would not significantly redirect or impeded the flow of flood waters, and the applicant would design transmission tower footings to withstand scour and inundation from a 100-year flood (APM W-3). All other foreseeable projects within a 100-year flood zone would undertake similar measures to reduce this potential cumulative impact; however, given the number of new structures in the area, there could be an increase in the volume of flood waters diverted. Due to the relatively small number of new EITP structures and components in the over all cumulative impact area, the EITP would likely have a less than significant or negligible contribution to this cumulative impact.

5.3.7.5 Alternatives

The No Action Alternative involves no activity; therefore, there would be no impacts on water resources or contributions to cumulative impacts.

Because the transmission and telecommunication alternatives merely vary the route of the proposed project, the same components would be built, and the cumulative impact on hydrology and water resources would be similar to the proposed project.

5.3.7.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP and ISEGS. The section first summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM and then evaluates the combined effects of the EITP and ISEGS.

ISEGS Summary

According to the ISEGS FSA/DEIS, the effects of ISEGS, combined with other projects, would be to increase the total basin pumping by 11%. This is a minimal increase and would not substantially reduce flow to Las Vegas Valley or other basin users. ISEGS and cumulative pumping from existing and proposed projects would therefore not substantially deplete groundwater supplies or interfere substantially with groundwater recharge (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action / Cumulative Action

The cumulative impacts of the Whole of the Action / Cumulative Action would be similar to that of the EITP. Similar to the EITP, the Whole of the Action / Cumulative Action combined with foreseeable future projects in the cumulative impact area would not contribute to cumulative impacts on groundwater and surface water quality because all projects would be required to comply with the appropriate laws and regulations for the management of hazardous materials. Likewise, both the EITP and the ISEGS project would be required to comply with SWPPPs to prevent on-site and off-site erosion during construction, thereby limiting erosion to negligible or less than significant levels. As discussed above, the Whole of the Action / Cumulative Action, combined with the other foreseeable projects, could result in considerable cumulative impacts to groundwater quantity if water use is not strictly controlled through the implementation of measures similar to MM W-2 and MM PUSVC-C-1. Though water use for ISEGS would be more than for the EITP, water use for both projects would be limited through implementation of mitigation measures, resulting in negligible or less than significant impacts to groundwater quantity; however, the foreseeable future projects in the cumulative impact area could result in considerable cumulative impacts to groundwater recharge due to the increase in impervious surfaces. The Whole of the Action / Cumulative Action would increase impervious area in the Ivanpah Valley, especially on the west side of Ivanpah Dry Lake. Because both projects were found to have negligible or less than significant impacts to groundwater recharge and their combined acreage would still be small relative to the whole groundwater basin, the increases in impervious area for the Whole of the Action / Cumulative Action would also have negligible or less than significant reductions in groundwater recharge.

As stated above, the construction of reasonably foreseeable future projects could result in considerable cumulative impacts to drainage patterns. Due to the combined number of structures, the Whole of the Action / Cumulative Action could have minor, long-term impacts to drainage patterns resulting in increased flooding risk, especially on the west side of Ivanpah Dry Lake near ISEGS and the Ivanpah Substation. The Whole of the Action / Cumulative Action could also result in minor, long-term increase in risk associated with debris flow damage. Because the Whole of the

Action / Cumulative Action would alter drainage patterns, there would be an increased risk for debris flows. If a debris flow were to occur and cause the collapse of an EITP transmission tower near ISEGS, it could result in more damage to ISEGS structures and subsequently in additional material, specifically, mirrors, in the debris flow. This would increase the cumulative risk associated with debris flow damage. However, as described in Section 3.8.5.4, "ISEGS Conditions of Certification / Mitigation Measures," the ISEGS FSA/DEIS recommends that the CEC impose Condition of Certification SOIL& WATER-5, which requires BrightSource to design ISEGS such that heliostats are reinforced to withstand 6 feet of scour. Additionally, they are required to develop a Stormwater Damage Monitoring and Response Plan that includes a strategy to clean up and mitigate broken or transported heliostats. BrightSource would also be required to establish a baseline and monitor for changes to the surface of Ivanpah Dry Lake and would develop standards and procedures for reassessing the proposed stormwater management plan if it does not perform as planned. SOIL&WATER-5 would reduce the risk and mitigate the impacts of debris flow damage; therefore, the Whole of the Action / Cumulative Action would have negligible or less than significant cumulative impacts under this criterion.

ISEGS would not be located within a 100-year flood hazard zone; therefore, the potential for the Whole of the Action / Cumulative Action to impede or redirect flood flow is consistent with the EITP and negligible or less than significant.

5.3.8 Land Use

5.3.8.1 Geographic Extent and Timeframe

Land use impacts caused by the EITP would be limited to grazing allotments, Animal Unit Months (AUMs) allocated for grazing, and designated areas within the Ivanpah Valley; therefore, the geographic area analyzed for cumulative land use impacts is limited to land uses in the Ivanpah Valley. The timeframe for this analysis is the period of construction and operation of the project because the land use changes would be remain for as long as the transmission line was operational.

5.3.8.2 Past and Present Project Impacts

As discussed in Section 3.9, "Land Use," almost all of the land on the California side of the proposed EITP route is managed by the federal government through the BLM. Since the California Desert Conservation Area Plan was adopted in 1980 (as amended), all land within the California Desert Conservation Area has been given specific designations with regard to allowable use. For example, energy corridors were designated to place energy projects, such as transmission line and natural gas pipeline projects, as close together as feasible.

Since Nevada became a state, nearly all of the land in the Eldorado and Ivanpah valleys has been managed by the federal government through the BLM for multi-purpose uses, such as for recreational use, livestock grazing, and energy project ROWs, such as electric and gas transmission projects, fiber-optic cable projects, and power generating projects. In the mid-1990s the Desert Tortoise Recovery Plan (Mojave Population) was initiated, and the BLM Las Vegas Field Office designated the Piute-Eldorado ACEC in the Eldorado Valley to provide protection of desert tortoise and critical desert tortoise habitat. In 1998, the BLM Las Vegas Field Office adopted the current resource management plan which provides management recommendations for all of the land under its jurisdiction, including all BLM land crossed by the proposed project in Nevada.

In the mid-1990s, a large area of land, now known as the BCCE, surrounding the Eldorado Substation was transferred to Boulder City and Clark County and is managed under the Clark County MSHCP, the primary goal of which is to protect desert tortoise and critical desert tortoise habitat. This action prohibits any development within the BCCE unless given written approval from Boulder City and Clark County.

5.3.8.3 Reasonably Foreseeable Future Projects

For cumulative impacts to land use policies, grazing allotments, AUMs allocated for livestock, and designated areas, the First Solar Photovoltaic Project, ISEGS, DesertXpress, and the Joint Port of Entry facility were determined to contribute to cumulative impacts of the proposed project and alternatives. Descriptions of these projects are provided in Tables 5-1 and 5-2, and their locations are given in Figure 5-1.

The SNSA is a reasonably foreseeable future project. To date, the SNSA has not been approved and the EIS for the SNSA is not scheduled to be published until late 2012 or early 2013. However, Clark County has included in their South County Land Use Plan of 2008 the following goals and policies for the Ivanpah Airport Environs Overlay:

- *Goal SC13: Provide for compatibility between Ivanpah Airport Environs and existing or proposed land uses.*
- *Policy SC13.1: New development projects located in the Ivanpah Airport Noise Compatibility Area (ANCA) shall comply with additional ANCA land use regulations.*
- *Policy SC13.2: Encourage building and structures to comply with any regulations established for the Ivanpah Airport Noise Compatibility Area (ANCA) unless deviations are deemed appropriate by the Airport Hazard Areas Board of Adjustment.*
- *Policy SC13.3: Encourage development patterns and standards compatible with the future operations of the Ivanpah Airport since most of Jean and Primm will be within the Airport Noise Compatibility Area (ANCA).*

These restrictions would only apply to the Ivanpah Airport Environs Overlay (see Figure 5-1 or Figure 3.9-1). Any projects that are proposed within the Ivanpah Airport Environs Overlay would have to adhere to the above guidelines and policies.

As discussed in Section 5.3.6, “Hazards, Health, and Safety,” MM HAZ-2 requires the applicant to consult with the FAA to determine if a Hazard/No Hazard Determination is required for the EITP. The applicant would then be required to incorporate any recommendations into their final design prior to EITP construction. Because the SNSA is a reasonably foreseeable future project, it is expected that the FAA could require special lighting on certain transmission towers or other measures. The FAA is also required to assess whether any reasonably foreseeable future projects located within 20,000 feet of the airport would represent hazards or obstructions to air navigation if SNSA was approved. Any new project that represented an airport risk would either not be approved or would have to be modified or mitigated such that it would not represent an airport risk when it was constructed or operational.

5.3.8.4 Cumulative Impact Analysis

The potential for impacts of the EITP from land use, grazing allotments, AUMs allocated for grazing, and designated areas to combine with the effects of other projects within the geographic extent and timeframe of the cumulative analysis is described below. There would be construction-related impacts on the Ivanpah Dry Lake Recreation Area and the Jean/Roach Dry Lake SRMA. Cumulative impacts to those recreation areas are discussed in this chapter in Section 5.3.13, “Recreation.”

Grazing Allotments

The EITP would have long-term impacts to grazing in the cumulative impact area. Acreage and AUMs of grazing allotments would be permanently impacted by the EITP when combined with other future foreseeable projects as provided in Table 5-8.

Table 5-8 Permanent Acreage and AUM Loss to the Clark Mountain Grazing Allotment

Total Clark Mountain Allotment Acreage	Total Clark Mountain Allotment Available AUMs
97,560	*1,428*

	Acreage Loss	Acreage Loss as a Percentage	AUM Loss	AUM Loss as a Percentage
EITP				
Proposed Transmission Route (Excluding Ivanpah Substation)	38.5	0.04%	0.66	0.05%
Transmission Alternative C	5.3	0.005%	0.09	0.00001%
Transmission Alternative D	0.2	0.00001%	0.02	0.00001%
Future Foreseeable Projects*				
ISEGS (Including Ivanpah Substation)	4,073	4.2%	70.0	4.9%
First Solar Photovoltaic Project	4,160	4.3 %	71.0	5.0%
DesertXpress	87	.09%	1.5	0.1%
I-15 Port of Entry	unknown	Unknown	unknown	Unknown

* Please note that Calnev was not considered in this analysis because it is an underground pipeline system. Its presence does not affect grazing allotments.

The EITP would remove for the lifetime of the project approximately 38.5 acres of land from the Clark Mountain Grazing Allotment and reduce the allotment by 0.66 AUMs. If the EITP and the other foreseeable projects were constructed, the total grazing acreage loss to the Clark Mountain Allotment would be approximately 8,320 acres with an AUM loss of 142.5. This represents approximately 8.59% percent of the total acreage and an estimated 10% percent of the AUMs allocated for livestock in the Clark Mountain Grazing Allotment. This impact is determined to be an unavoidable cumulatively considerable impact; however, the EITP's contribution would be negligible because the EITP's contribution to acreage and AUM loss would be less than half of one percent of the total acreage and available AUMs within the Clark Mountain Allotment. Such an incremental contribution to total acreage and AUM loss is so small as to be considered negligible.

Land Use Policy

The proposed EITP route, DesertXpress, and the Calnev Pipeline Expansion would cross through land designated as the Ivanpah Airport Environs Overlay for the SNSA. In order to ensure that there are no impacts related to land use planning efforts for the future SNSA, the applicant would have to adhere to the policies of the South County Land Use Plan. Implementation of MM HAZ-2 would help fulfill these policies by requiring consultation with the FAA. MM HAZ-2 requires the applicant to consult with the FAA to determine whether a Hazard/No Hazard Determination is required and whether the FAA has any recommendations, such as lighting on transmission towers, which should be integrated into the final design. The proponents of DesertXpress and the Calnev Pipeline Expansion would also have to adhere to the policies of the South County Land Use Plan or seek an exemption that would be agreed to by Clark County in order to proceed with construction. Therefore, there would not be a cumulatively considerable impact to land use policies in Clark County.

The proposed project would be routed through the BCCE, which is managed by Clark County and the City of Boulder City with specific utility corridors reserved to the BLM. No reasonably foreseeable future project is proposed within this conservation easement, so there would not be any cumulative impacts.

5.3.8.5 Alternatives

Grazing Allotments

The permanent grazing acreage lost from development of the foreseeable projects in the Clark Mountain Grazing Allotment and Alternative C would be 8,325.3 with an AUM loss of 142.5 and would be 8,317.2 with an AUM loss of 142.52 for the combined development with Alternative D. Both scenarios represent 8.6% of the total acreage and 10% of the AUMs allocated for livestock in the Clark Mountain Grazing Allotment (see Table 5-8). This impact would be an unavoidable significant cumulative impact to the Clark Mountain Grazing Allotment. However, the incremental contribution of these alternatives would be negligible because they would contribute to less than 5% of the grazing acreage and AUM loss.

5.3.8.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative impacts of the combined EITP and ISEGS. The section first summarizes the Land Use and Livestock Grazing cumulative analysis from ISEGS FSA/DEIS prepared by the CEC and the BLM and then evaluates the combined impacts of the EITP and ISEGS.

ISEGS Summary

Impacts of the ISEGS project would combine with impacts of present and reasonably foreseeable projects to result in a contribution to cumulative impacts in the Ivanpah Valley area related to land use that would be significant with respect to CEQA as well as NEPA. Impacts of the ISEGS project could also combine with the potential impacts of reasonably foreseeable renewable energy projects in the southern California Mojave Desert to result in significant and immitigable regional cumulative impacts related to land use.

In addition to the ISEGS facility, there are other reasonably foreseeable future actions that could contribute to impacts to the Clark Mountain Allotment. Regionally, impacts to livestock grazing in the planning area have been occurring for 100 years or more. Authorized and unauthorized vehicle use, maintenance, and construction of utility ROWs can have an impact to livestock grazing by removing vegetation used for forage. The impact of other proposed and probable development projects (mineral production, solar projects, rail lines, and airports) may be more substantial if they require significant reductions in the acreage of existing allotments.

Cumulative impacts on the Clark Mountain Allotment, as well as the overall availability of land for grazing, could result from the combination of the EITP with other proposed land uses that would require reduction of total permitted AUMs, including other solar energy projects and the proposed DesertXpress rail line. With respect to NEPA, the overall impact of the proposed projects in the area on the Clark Mountain Allotment may be considerable if the proposed DesertXpress line is constructed and the rail line cuts off livestock access to portions of the allotment. The ISEGS project, by itself, would reduce the area of the Clark Mountain Allotment by approximately 4% and would reduce the AUMs permitted on the allotment by 4.7%. Overall, the impact on the grazing allotment would not be significant with respect to CEQA because the discontinuance of livestock grazing at the ISEGS site would not contribute to considerable cumulative impacts to the desert environment or to livestock. With respect to NEPA, the overall impact of the proposed projects in the area might be considerable if the DesertXpress line is constructed. However, the contribution of the ISEGS project to that cumulative impact would be relatively small.

Cumulative Analysis of the Whole of the Action / Cumulative Action

The EITP and ISEGS combined would permanently remove 4,073 acres from the Clark Mountain Grazing Allotment and reduce the allotment's AUMs by 70. This is 4.2% of the total acreage of the allotment and 4.9% of the AUMs allocated for livestock on the Clark Mountain Allotment. The total grazing acreage loss to the Clark Mountain Allotment as a result of the Whole of the Action / Cumulative Action and future foreseeable projects that would have permanent impacts to the Clark Mountain Allotment would be approximately 8,320 acres, with an AUM loss of 142.5.

This represents 8.59% of the total acreage and an estimated 10% of the AUMs allocated for livestock in the Clark Mountain Grazing Allotment. This impact is an unavoidable minor cumulative impact.

5.3.9 Noise

5.3.9.1 Geographic Extent and Timeframe

Noise impacts are limited to where there are receptors to hear noise. Because the EITP route and the areas near substation locations are sparsely populated, there are only two noise receptors that could be potentially impacted by construction or operation noise. These are the Primm Valley Golf Club in California and the Desert Oasis Apartment Complex in Primm, Nevada. Development within 2 miles of these receptors could contribute to increases in ambient noise levels to these receptors. Noise impacts were limited to period of construction. Therefore, the geographic area analyzed for cumulative noise impacts is a 2-mile radius around each noise receptor and the timeframe for the analysis is the 18-month construction period.

5.3.9.2 Past and Present Project Impacts/Existing Cumulative Conditions

Noise, in general, reflects the current noise generated, rather than noise from past projects; therefore this cumulative analysis will focus on present conditions and the potential contribution of reasonably foreseeable future projects.

Ambient noise levels reflect current land uses and development. Ambient noise levels at certain locations along the project route are provided in Section 3.10.1.2, “Local Setting.” The character of the area along the project route varies from desert open space to rural to urbanized. As discussed above, the Desert Oasis Apartment Complex and Primm Valley Golf Course are the current noise-sensitive receptors. The Desert Oasis Apartment Complex in Primm, Nevada, is in the urbanized area closest to the EITP route. At this location, current contributors to noise are I-15 and a nearby truck stop. The Primm Valley Golf Course is currently surrounded by open space. At this location, current contributors to existing noise levels are I-15 and noise due to golf course activities.

5.3.9.3 Reasonably Foreseeable Future Projects

Noise levels in San Bernardino and Clark counties reflect an increasing number of sources of noise due to increased highway traffic, air traffic, construction projects, and expanded development. Approved, pending, and reasonably foreseeable projects would add to the future expected noise levels throughout the geographic area. However, various noise levels will continue to be experienced in the area regardless of projects, depending on the proximity to human activity. Open space and rural communities will remain the quietest.

Ongoing and anticipated development near the Primm Valley Golf Course is dominated by energy developments in California, specifically the Calnev Pipeline Expansion, ISEGS, and the First Solar Photovoltaic Project (see Table 5-1 and Figure 5-1). This trend will continue for reasonably foreseeable future projects forecasted throughout the project area. Anticipated development near the Desert Oasis Apartment Complex will include more urbanization as well as the Calnev Pipeline Expansion (see Table 5-2 and Figure 5-1). The potential for future projects to contribute to cumulative noise impacts would depend on their distance from the noise receptors as well as the potential for overlapping construction schedules. Approved, pending, and reasonably foreseeable future projects identified in this document would not increase the number of noise-sensitive uses in the area. The EITP has no adverse operational impacts from noise, so only projects that could have concurrent construction periods are considered in this analysis.

5.3.9.4 Cumulative Impact Analysis

<u>Construction Noise</u>

This section addresses the combined effects of construction noise from the EITP and past, present, and reasonably foreseeable future projects. The relevant impact from the EITP is IMPACT NOI-1: Project Construction Noise

Exceeding Noise Levels or Standards and IMPACT NOI-5: Cause a Substantial Temporary Increase in Ambient Noise Levels in the Project Vicinity.

Increases in ambient noise levels due to EITP construction activities would be short term. EITP construction contractors would comply with local noise ordinances (APM NOI-1), keep construction equipment in working order (APM NOI-2), and maintain equipment according to manufacturer's recommendations (APM NOI-3). In addition, they would muffle the noise generated by construction equipment (APM NOI-4) and minimize idling time (APM NOI-5).

However, the EITP would contribute to an increase in ambient noise levels due to corona noise during operations. This increase would contribute to the anticipated increased ambient noise level for residents of the Desert Oasis Apartment Complex and users of the Primm Valley Golf Course. Existing and reasonably foreseeable future projects within 2 miles of these receptors could also contribute to a significant increase in ambient noise levels. Table 5-9 lists the existing and foreseeable future projects within 2.5 miles of the Desert Oasis Apartment Complex and users of the Primm Valley Golf Course.

Table 5-9 Existing and Foreseeable Projects within 2.5 miles of the Noise Receptors

Existing or Foreseeable Projects[1]	Distance from Noise Receptor (miles)
Projects Near Desert Oasis Apartment Complex	
EITP	*0.01*
KFC/Taco Bell	0.4
Calnev Pipeline	*0.5*
Primm Outlet Mall	0.9
BLM-sanctioned recreational activities	1.0
Primm Casino	1.7
Bighorn Electric Generating Station	1.7
Projects Near Primm Valley Golf Course	
Temporary asphalt batch plant	0.5
ISEGS	*0.5*
EITP	*0.6*
First Solar	*1.0*
Calnev Pipeline Expansion	*1.3*
Ivanpah Dry Lake Special Recreation Management Area	1.8
Ivanpah Substation	*2.4*

Note:
[1] Italics indicate reasonably foreseeable future projects.

Desert Oasis Apartment Complex

The analysis in Section 3.10, "Noise and Vibration," concluded that the installation of the proposed EITP would result in direct minor adverse noise impacts due to project construction at residences located at the Desert Oasis Apartment Complex for a 2.5-week period despite implementation of MM NOI-1. This analysis took into account the noise currently generated at this receptor from existing facilities, such as the Primm Outlet Mall, Primm Casino, and Bighorn Electric Generating Station. However, the largest contributors to noise at these apartments were traffic noise on I-15 and at the nearby truck stop.

Based on a projected 12-month construction period, installation of the Calnev Pipeline could occur at a rate between 1 and 2 miles per day in the vicinity of Primm; therefore, its potential impacts to the Desert Oasis Apartment Complex would be for one or three days. Calnev would implement noise control measures to ensure noise levels would be reduced to acceptable levels (URS 2007). If construction of the Calnev Pipeline was concurrent with construction of the EITP, the noise levels are unlikely to exceed the noise generated by the EITP because of the distances from the noise source to the receptor. Therefore, at this receptor, the cumulative impact would be equivalent to the direct impact from the EITP, which was evaluated as minor, short term, localized, and less than significant because of its duration. In addition, there are no noise level limits for construction noise in Clark County although construction must be limited to daytime hours.

Primm Valley Golf Course

Noise from the construction of the Ivanpah Substation would be less than 46 dBA at Primm Valley Golf Course. This level is lower than the 24-hour equivalent sound level (L_{eq}) of 55 dBA (ambient noise level) measured during the November 2008 ambient noise survey. Concurrent construction of the proposed Ivanpah Substation and ISEGS, First Solar, Calnev Pipeline, as well as other components of the EITP, would increase the volume of noise in the area. Data are available about the anticipated noise generated for ISEGS and the Calnev Pipeline; however, none are available for First Solar. The installation of the Calnev Pipeline and the EITP in this area would be short, so these projects would contribute to a very short increase in noise levels. In contrast, the substation would take 16 months to construct, ISEGS would take 48 months, and First Solar would probably take about 48 months also.

The estimated construction noise from ISEGS could reach levels of 50 dBA L_{eq} at the Primm Valley Golf Course. The ISEGS FSA/DEIS estimated that the combined construction noise from First Solar and ISEGS would reach levels of 51 to 56 dB at the Primm Valley Golf Course. However, if pile driving were necessary for construction of ISEGS, noise could approach 58 dBA at the Primm Valley Golf Course. Mitigation for this potential impact would be to limit pile driving to the hours between 7 a.m. and 7 p.m. (CEC and BLM 2009). The estimated combined construction noise at the Primm Valley Golf Course of the proposed Ivanpah Substation, the Eldorado-Ivanpah transmission line, likely noise generated from the construction of the Calnev Pipeline (based on noise generated from other pipeline construction projects and the distance from the receptor), ISEGS, and First Solar would be 59 dBA with pile driving at the ISEGS project and 57 dBA without pile driving. The level does not exceed San Bernardino County's allowable noise level of 60 dBA for other commercial purposes; therefore, there would not be a considerable cumulative impact.

Groundborne Vibration and Noise

This section addresses the combined effects of the groundborne vibration and noise from the EITP and from past, present, and reasonably foreseeable future projects. The relevant impact from the EITP is IMPACT NOI-3: Groundborne Vibration or Groundborne Noise due to Construction Activities.

Construction of the EITP is estimated to generate 76 velocity decibels (VdB) of groundborne noise at the Desert Oasis Apartment Complex. This level exceeds the FTA threshold of 75 VdB by 1 VdB. Concurrent construction of the EITP and the Calnev Pipeline could increase, but could also have no affect on, the level of groundborne vibration and noise at this receptor. Insufficient data are currently available to calculate the level, and it is not known whether concurrent construction would at occur at this location. Nevertheless, the combined impact would be limited to a short time period. Because of the short duration and as long as construction was limited to daytime hours, the cumulative impact would be less than significant.

5.3.9.5 Alternatives

Because no activity is associated with the No Action Alternative, it would not contribute to adverse cumulative noise impacts.

Alternative Transmission Routes A and B would not contribute to noise or groundborne vibration impacts at the two noise receptors because of their distances from the receptors, and therefore, they could not contribute to cumulative noise impacts.

Alternative Transmission Route C and D and Subalternative Route E would be located further from the Desert Oasis Apartment Complex (the most sensitive noise receptor) than the proposed project; thus, their potential contribution to noise and vibration impacts would be less and they would contribute incrementally less to the cumulative noise and vibration impacts at the most sensitive noise receptor.

Because of their distance from the noise receptors, the Mountain Pass and Golf Course Telecommunication Alternatives would not contribute to cumulative noise or vibration impacts to noise receptors in this analysis.

5.3.9.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP and ISEGS. The section first summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM, and then evaluates the combined effects of the EITP and ISEGS.

ISEGS Summary

According to the ISEGS FSA/DEIS cumulative analysis, the First Solar Photovoltaic Project is the only one of the reasonably foreseeable future projects in the vicinity that would be located close enough to the ISEGS project to potentially contribute to cumulative noise impacts. Noise generated during construction of the ISEGS project could reach 50 to 55 dBA L_{eq} at the Primm Valley Golf Course, but such levels would not likely be annoying to golfers. Noise from the First Solar Photovoltaic Project could combine with noise generated by the ISEGS project; however, because doubling the distance from a noise source reduces the sound pressure level by 6 dB, noise from construction of the First Solar Photovoltaic Project would be expected to be roughly 6 dB quieter at the golf course than noise from ISEGS. Combined construction noise from the two projects would thus reach levels of 51 to 56 dB at the golf course, an unnoticeable increase over noise from one project alone. Noise impacts of the ISEGS project would thus not combine with impacts of past, present, and reasonably foreseeable projects to result in a significant contribution to local or regional cumulative impacts related to noise (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action / Cumulative Action

The EITP and ISEGS are likely to be constructed concurrently and would increase noise levels at the closest noise receptor, the Primm Valley Golf Course. As discussed above, the estimated cumulative noise level at this receptor from these projects and the other foreseeable project in the noise cumulative impact area would range from 57 to 59 dBA. This level does not exceed San Bernardino County's allowable noise level of 60 dBA for other commercial purposes. Therefore, the cumulative impacts would not be significant.

Due to distance, the Whole of the Action / Cumulative Action would not result in detectable levels of vibration at the Primm Valley Golf Course; therefore, there would be no cumulative impact due to vibration.

5.3.10 Public Services and Utilities

5.3.10.1 Geographic Extent and Timeframe

Public services and utilities impacts from the EITP are limited to the area from which the Ivanpah and Eldorado valleys draw public services and utilities; therefore, the geographic area analyzed for cumulative public services and utilities impacts comprises the public services and utilities systems that service the Ivanpah and Eldorado valleys. The timeframe for the cumulative analysis is the period of operation of the transmission line because operational water usage would occur during the entire time period of operations.

5.3.10.2 Past and Present Project Impacts/Existing Cumulative Conditions

Much of the EITP route is characterized by sparsely populated open space and agricultural land, with the exception of Primm, Nevada. Primm is urbanized with multiple casinos and other services; however, its permanent population is approximately 1,000 (www.primmnevada.net). Primm has over 2,500 hotel rooms and has the infrastructure and services to accommodate many more people than its permanent population.

Within the Ivanpah Valley in California, most services and utilities are currently provided by San Bernardino County from either Barstow or Baker (see Section 3.11.1, "Environmental Setting"). Water is provided by local wells. In Nevada, services are provided from Las Vegas, Boulder City, Searchlight, and Jean. Most wastewater is discharged and treated through septic systems, but Primm has a wastewater treatment plant.

Solid waste generated in this area of California would go to either the Barstow Sanitary Landfill or the Victorville Sanitary Landfill. The Barstow Sanitary Landfill, located approximately 110 miles southwest of the proposed Ivanpah Substation, can accept up to 600 tons of solid waste per day. Although the current facility is nearing capacity, the recently approved Barstow Sanitary Landfill Expansion Project would expand the landfill by 284 acres (San Bernardino County 2009a, 2009c). According to the CEQA Findings and Final EIR for that project, the landfill will be increased in size according to the actual inflow rate during expansion (San Bernardino County 2009a); however, if the landfill is not expanded in time to accept wastes generated by the EITP, the Victorville Sanitary Landfill is the next closest landfill in California. It is approximately 140 miles southwest of the proposed Ivanpah Substation. The Victorville Sanitary Landfill accepted approximately 980 tons of wastes per day in 2006 and 890 tons of wastes per day in 2007. It is permitted to accept up to 3,000 tons of wastes per day and is not nearing capacity (CIWMB 2009).Therefore, the local California landfills have capacity to accept additional solid waste.

5.3.10.3 Reasonably Foreseeable Future Projects

This area is likely to experience considerable changes in the reasonably foreseeable future. Multiple large-scale renewable energy projects are proposed (Tables 5-1 and 5-2). This could include as many as six solar projects (ISEGS, First Solar, NextLight, Bull Frog Green Energy, Power Partners Solar, and Cogentrix) and four wind projects (Table Mountain, Iberdola Renewables, Oak Creek Energy Systems, and Searchlight Wind). In addition, the construction of the SNSA, DesertXpress, and the Calnev Pipeline Expansion would require hundreds to thousands of workers. Depending on the timing of each construction project, services could be strained during the construction period. Table 5-3 lists projected overlap in construction schedules. The construction of the SNSA would not overlap with the construction of the EITP; but many of the others projects could, such as DesertXpress and ISEGS. There are no known reasonably foreseeable future projects that would increase the amount of housing in Primm. When and if the reasonably foreseeable future projects become operational, some would have permanent staff, but the number of employees would be considerably fewer than during construction (see Section 3.13, "Socioeconomics, Population and Housing, and Environmental Justice").

5.3.10.4 Cumulative Impact Analysis

The potential for the public services and utilities impacts of the EITP to combine with the effects of other projects within the geographic extent and timeframe of the cumulative analysis is described below.

There would be no impacts related to the following CEQA considerations:

- Requiring new or physically altered public facilities;
- Exceeding wastewater requirements of the RWQCB;
- Exceeding wastewater requirements of existing treatment facilities; or
- Requiring or resulting in the construction of new stormwater drainage facilities.

Therefore, these criteria are not discussed in the cumulative impact analysis below.

Public services and utilities impacts from the EITP would occur primarily during the construction phase, so the cumulative impact analysis is limited primarily to that phase. During operation, the EITP's impacts to public services and utilities would affect water usage; therefore, for this criterion, the cumulative impact analysis considers the potential for cumulative impacts over the life of the project.

Emergency Response Services

This section discusses the combined effects on emergency services of the EITP and past, present, and reasonably foreseeable projects. The relevant impact of the EITP is IMPACT PUSVC-1: Emergency Services Needed in Response to an Accident or Other Emergency Incident.

With respect to the EITP, the applicant would minimize the potential for workplace accidents and fires by operating under a Site Safety Plan (MM HAZ-3) and implementing a Fire Management Plan (APM HAZ-4). In addition, the applicant would implement a Hazardous Materials Management Program (APM HAZ-2) that would use emergency response procedures to address potential releases. This would minimize the need to use local emergency medical or fire services. The need for police services would be minimized by security design features described in Section 3.11, "Public Services," to prevent potential vandalism during construction and operations. These features would include patrolling sites and fencing facilities, among other measures.

Concurrent construction of multiple reasonably foreseeable future construction projects, such as ISEGS and DesertXpress, could increase demands on emergency services, but each project would likely take steps to minimize its demand on these services. However, these projects would also use safe work practices and implement plans to prevent spills, fires, and other emergency situations to minimize the demand on emergency services. Therefore, concurrent construction of multiple projects would not likely create a significant cumulative impact on emergency services, and there would not be a considerable cumulative impact.

Cumulative Impact PUSVC-C-1: Water Use

This section discusses the combined effects of water use of the EITP and past, present, and reasonably foreseeable projects. The relevant impact of the EITP is IMPACT PUSVC-2: Project Construction Temporarily Increases Water Use, and Project Operation Contributes to Increased Long-term Water Consumption. During construction of the EITP, between 32,000 and 40,000 gallons of water could be used per day. The applicant estimates that between 30.6 and 38.3 acre feet per annum of water would be used during construction. The source of this water is currently unknown, but the applicant has stated that they would not drill any wells. MM W-2 (Water Use Plan) would require the applicant to develop and implement a Water Use Plan that specifies all water sources and the upper limit of water usage. The DesertXpress DEIS did not discuss their source of water during construction, but concluded that the rail lines would not require the use of water (USDOT 2009). ISEGS would draw water from one of two wells that its applicant would install near the facility. ISEGS estimated that it would use no more than 100 acre feet per annum, and it would be required to monitor its potential impact on groundwater levels (CEC and BLM 2009). Given that multiple reasonably foreseeable future construction projects in the area could occur concurrently with the EITP, there could be a cumulatively significant impact on local water use, depending on the water sources. At this time, there is insufficient data available to calculate the cumulative water usage of the all the reasonably foreseeable future projects; therefore, the EITP's contribution to the cumulative impact cannot be estimated. Mitigation is necessary to decrease the potential cumulative impact. Implementation of MM PUSVC-C-1 will require the applicant to demonstrate that the supplier of the water to be used for the EITP has an adequate supply such that there will be no adverse impacts on local public and private water supplies.

MM PUSVC-C-1. This mitigation measure will require the applicant to demonstrate to the BLM and CPUC that the supplier of the water to be used for the EITP has an adequate supply such that the existing local public and private water usages are not altered. Implementation of this mitigation measure would reduce the EITP's incremental contribution to less than significant or to minor.

Solid Waste

This section discusses the combined effects on solid waste generation of the EITP and past, present, and reasonably foreseeable future projects. The relevant impacts of the EITP are IMPACT PUSVC-3: Solid Waste Generated During

Construction of the Project Exceeds Landfill Requirements and IMPACT PUSVC-4: Solid Waste Generated During Construction of the Project Results in Noncompliance with Federal, State, or Local Statutes, Regulations, or Policies. Solid waste generated by construction of the EITP would include the removed power line towers and poles; removed conductor cable; removed overhead ground wires; substation construction waste; and excess materials. During construction, the applicant has estimated that a total of 540 tons of waste would be created, of which approximately 400 tons (74 percent) would be salvaged or recycled and approximately 140 tons (26 percent) would be disposed of in landfills; therefore, the applicant would be on track to meet solid waste management requirements in both California and Nevada. Existing solid waste facilities have adequate capacity to accommodate project-related solid wastes. With the implementation of MM PUSVC-1: Construction Waste Disposal Plan, potential impacts on landfills would be less than significant.

ISEGS would generate approximately 280 tons of solid waste over the four-year construction period that would be either recycled or disposed of in a Class III landfill. ISEGS would implement a similar Construction Waste Disposal Plan. First Solar and the other proposed solar projects would be anticipated to generate similar volumes of solid waste that would go to local landfills (CEC and BLM 2009). The other reasonably foreseeable future renewable energy projects would be expected to dispose of solid waste in the same landfills as the EITP. Construction of the DesertXpress High-Speed Rail is anticipated to generate negligible quantities of waste (USDOT 2009).

All of the reasonably foreseeable future projects would contribute solid waste to landfills in either California or Nevada. However, state and local regulations and plans require recycling to varying degrees. Therefore, the total solid waste from each project that goes to a landfill would be reduced. Although the EITP and other reasonably foreseeable future projects would use local landfills, the landfills appear to have the capacity to accept more waste than they are currently accepting. There would not be a significant cumulative impact on the capacity of local landfills as long as all of the projects adhered to local policies and regulations related to recycling. There would not be a considerable cumulative impact to either the Barstow and Victorville Sanitary Landfills because once Barstow facility is expanded both landfills will have sufficient capacity for many years.

5.3.10.5 Alternatives

The No Project Alternative involves no activity; therefore, no use of public services or utilities would be needed and there would be no contribution to cumulative impacts.

The alternative transmission line routes and the telecommunication alternatives simply vary the route of the proposed project. All of the same components would be built. Use of public services and utilities for all of these alternatives would be similar to use for the proposed project. Therefore, these alternatives would have the same contribution to cumulative impacts as would the proposed project.

5.3.10.6 Whole of the Action/Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP project and ISEGS. The section first summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM, and then evaluates the combined effects of the EITP and ISEGS.

Summary

The ISEGS FSA/DEIS cumulative analysis evaluated potential impacts on fire and emergency service capabilities in San Bernardino County, California, and Clark County, Nevada, during construction and operation of the EITP in conjunction with potential emergency service requirements of other existing and future projects. The limited fire risks and potential for hazardous materials incidents at the ISEGS site during construction and operation would not be expected to pose significant added demands on local fire protection services. Therefore, the EITP would not contribute to a considerable cumulative impact on existing local fire protection services.

The ISEGS project would generate nonhazardous solid waste that would add to the total waste generated in San Bernardino County and Clark County. Although wastes would be generated in modest quantities, waste recycling would be employed wherever practical, and sufficient capacity is available at several treatment and disposal facilities to handle the volumes of wastes that would be generated. Most of the other projects identified are of similar or smaller scale than ISEGS and would therefore be expected to generate a similar or smaller volume of nonhazardous waste. The FSA/DEIS concludes that the total amount of available solid waste landfill capacity in the ISEGS project vicinity is more than sufficient to accept waste from multiple projects even if all of the cumulative projects were constructed. Therefore, waste generated by the ISEGS project would not result in significant cumulative impacts associated with nonhazardous solid waste.

Cumulative Analysis of the Whole of the Action/Cumulative Action

With respect to emergency services, both during construction and operations EITP and the ISEGS project measures would be implemented to minimize potential use of emergency services, similar to other foreseeable projects, such as the Calnev Pipeline Expansion or DesertXpress, through use of safe work practices and plans to prevent spills, fires, and other emergency situations and minimize the demand on emergency services. Therefore, it would be unlikely that Whole of the Action / Cumulative Action impacts combined with impacts from other reasonably foreseeable future projects would create a significant cumulative impact on emergency services. Therefore, there would not be a considerable cumulative impact.

As discussed above, both EITP and ISEGS would require water during construction and operations. EITP would need a maximum of 38.3 acre feet per annum during its construction. During operations, it would need a minimal amount of water. Mitigation measures would require ISEGS to limit its water usage to 100 acre feet per annum for construction and operations. ISEGS would draw its water from two local wells. The storage capacity of the groundwater basin on the California side of the Ivanpah Valley is estimated to be 3.09 million acre feet (CEC and BLM 2009). Given that 1) multiple projects are proposed to be built in the area that would all need a local water source, 2) that there are existing wells using the same water sources, and 3) that the area is a desert with low precipitation, there could be a considerable cumulative impact on local water supplies. Until the source of water for EITP construction is known, it is not possible to estimate the exact contribution of the Whole of the Action / Cumulative Action to cumulative impacts; therefore, it is potentially significant. As discussed in CUMULATIVE IMPACT PUSVC-C-1: Water Use, MM PUSVC-C-1 would be implemented to ensure that the applicant's water use would have no adverse impacts on local public and private water supplies.

EITP and the ISEGS project combined with the other foreseeable projects would dispose of solid waste in local landfills; however, significant cumulative impacts to landfill capacity would be unlikely. All projects would have to comply with local recycling policies and regulations, and the local landfills appear to have adequate capacity to accommodate the anticipated solid waste. Therefore, there would be no significant cumulative impacts to landfill capacity.

5.3.11 Recreation

5.3.11.1 Geographic Extent and Timeframe

Recreational impacts caused by the EITP would be limited to the recreational areas crossed by the EITP; the Ivanpah Dry Lake Recreation Area and Jean/Roach Dry Lake SRMA; therefore, the geographic area analyzed for cumulative recreational impacts is the Ivanpah Valley within the timeframe of construction.

5.3.11.2 Past and Present Project Impacts

The past and present projects have created opportunities for indoor and outdoors recreation throughout the region. Over the last 20 years, the Ivanpah Valley has experienced minor development with projects like the Bighorn Electric Generating Station, the Buffalo Bills Hotel and Casino, and several fast food establishments near the California-Nevada border at Primm, Nevada. Additionally, Primm has experienced several linear energy projects, including the Kern River Pipeline Expansion Project, upgrades to I-15, and fiber-optic telecommunication line projects. In addition, recreation areas and facilities have been established including the Jean/Roach Dry Lake SRMA, the Ivanpah Dry Lake Recreation Area, and the Prim Valley Golf Club.

The expansion of the I-15 corridor and the construction of the Buffalo Bills Hotel and Casino have resulted in beneficial impacts on recreation in the Ivanpah and Eldorado valleys. For example, the I-15 corridor expansion has allowed greater accessibility by a greater number of people to the recreational areas and facilities, and the Buffalo Bills Hotel and Casino has allowed for the extended enjoyment of recreational areas and facilities by providing lodging for recreationists to stay for multiple days. Of the projects described in the previous paragraph, none has had a negative effect on recreation in the Ivanpah and Eldorado Valleys.

The Ivanpah Dry Lake Recreation Area is managed by the BLM and is popular for land sailing and kite buggying (PrimmNevada.net 2010) but is closed to motorized vehicles. Free permits are required to access the site for recreation, and commercial or organized events require special recreation permits (BLM 2010). The Ivanpah Desert Wildlife Management Area (DWMA), an overlay to Ivanpah Dry Lake, is south of the EITP and east of I-15. Some areas allow camping, but land sailing is not permitted in the southern half of the dry lake, which is primarily used for very low-level, widely dispersed motorized recreational activities (BLM 2002).

The Jean/Roach Dry Lake SRMA is illustrated in Figure 5-1. It provides opportunities for recreation, including motorcycling, OHV and 4 x 4 driving, horseback riding, mountain biking, small-game hunting, and organized racing events (BLM 2007).

5.3.11.3 Reasonably Foreseeable Future Projects

Reasonably foreseeable projects that might contribute to cumulative impacts to recreation areas crossed by EITP are those that might be constructed simultaneously or that would temporarily limit or restrict access to a recreational area sequentially. A specific foreseeable project that meets these criteria is the NextLight Silver State Solar Project.

5.3.11.4 Cumulative Impact Analysis

The potential for cumulative impacts on recreation from the EITP and other projects within the geographic extent and timeframe of the cumulative analysis is described below. As discussed in Section 3.12.3, “Impact Analysis,” construction of the EITP would result in minor, short-term, and adverse impacts on recreation resources. The EITP would not result in demand for new or expanded recreation facilities within the cumulative impact area nor would the EITP result in increased use of existing recreation facilities that would substantially degrade the facility; therefore, impacts under the CEQA recreation criteria are not discussed in the cumulative impact analysis.

<u>Cumulative Impact REC-C-1: Restricting Access to Areas within the Jean/Roach Dry Lake SRMA</u>

The EITP would cross the Jean/Roach Dry Lake SRMA between MP 7 and MP 28.5. Construction of the transmission line would temporarily restrict access to several trail segments. As part of the project (APM REC-1), the applicant would coordinate closures of recreational facilities with the facility owners and would schedule construction to avoid heavy use periods. MM REC-1 requires the applicant to locate extra workspace areas outside of the Ivanpah Dry Lake Recreation Area and Jean/Roach Dry Lake SRMA, which would further minimize the temporary disturbance on recreation in the vicinity of the dry lakes.

The Nextlight Silver State Solar Project would be located entirely within the boundary of the Jean/Roach Dry Lake SRMA and would be constructed on two sections of a competitive OHV racing trail. If the EITP and NextLight Silver State Solar Project had overlapping construction schedules, there could be a considerable short-term cumulative impact to the Jean/Roach Dry Lake SRMA because each would temporarily restrict access to trails. Based on the duration of construction in the Jean/Roach Dry Lake SRMA and the area of the Jean/Roach Dry Lake SRMA crossed by the EITP, the project would have a minor short-term contribution or less than significant contribution with mitigation to cumulative impacts on recreation in the Jean/Roach Dry Lake SRMA.

5.3.11.5 Alternatives

There would be no contribution to cumulative impacts to recreation as a result of the proposed transmission and telecommunication alternatives.

5.3.11.6 Whole of the Action/Cumulative Action

This section analyzes the cumulative impacts of the combined EITP and ISEGS project to recreation. The section first summarizes recreation cumulative analysis from ISEGS FSA/DEIS prepared by the CEC and the BLM, followed by a discussion of the cumulative impacts of the Whole of the Action / Cumulative Action with respect to recreation areas.

ISEGS Summary

According to the ISEGS FSA/DEIS, ISEGS would contribute incrementally to the long-term reduction of outdoor recreation quality available in the Ivanpah Valley area of the California Desert due to the cumulative effects of development leading to a transformation from a natural setting to a more industrial setting. The adverse effect of development on recreational resources within the Ivanpah Valley area may become pronounced due to the proximity of the area to Las Vegas, ease of public access from I-15, increasing tourist use of the Primm area, and other planned development projects including the First Solar Photovoltaic Project, the DesertXpress High-Speed Rail Project, and the SNSA. Therefore, ISEGS would contribute to diminishing the quality of outdoor recreation experiences in the Ivanpah Valley area; however, even when considered with other existing and foreseeable projects, ISEGS would not contribute to a considerable cumulative impact on recreation in the Ivanpah Valley and surrounding area (CEC and BLM 2009).

With respect to recreational use of Ivanpah Dry Lake, the ISEGS project would cause a slight overall average decrease in ground-level wind speeds and a slight increase in ground-level wind turbulence. This would not be a significant adverse impact to land sailing on Ivanpah Dry Lake (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action/Cumulative Action

Approval of the ISEGS project would directly remove approximately 3,712 acres from potential use for recreational opportunities such as camping, hiking, hunting, and wildlife viewing. This acreage is approximately 10% of the land available for recreation within the Ivanpah Valley. However, it is unlikely that this area is used for recreation (CEC and BLM 2009). The EITP would remove only 38.5 acres (Ivanpah Substation and the communications site) from land available for recreation, because much of the EITP would be in existing ROWs.

Since ISEGS would not be located on or directly adjacent to any existing recreational facility, and therefore would not have a direct impact on recreational resources, the cumulative effect of the Whole of the Action / Cumulative Action would be the same or similar to the EITP, which would be temporarily restricting access to areas of the Jean/Roach Dry Lake SRMA during project construction.

5.3.12 Socioeconomics

5.3.12.1 Geographic Extent and Timeframe

The socioeconomic impacts of the EITP would be limited to the local and regional economy within the Eldorado and Ivanpah valleys and the local communities within that region; therefore, the geographic area analyzed for cumulative socioeconomic impacts was selected to encompass potential impacts on the local and regional economy and on the local population within the Eldorado and Ivanpah valleys. Since the EITP comprises the replacement of an existing transmission line, the occurrence of potential economic impacts would be limited to the period of construction. The 18-month construction phase has therefore been used as the timeframe for this cumulative analysis.

5.3.12.2 Past and Present Project Impacts/Existing Cumulative Conditions

Section 3.13.1, "Environmental Setting," describes existing socioeconomic conditions within the cumulative study area, including demographics, housing, and workforce characteristics. Socioeconomic conditions in the Ivanpah Valley have been historically influenced by the construction and operation of the three local casinos and outlet mall in Primm, which have affected demand for and supply of jobs as well as housing demand, business revenues, and property values. Local demand for housing and workforce has historically reflected the area's prevailing level of development and growth.

As stated in Section 3.13, "Socioeconomics, Population and Housing, and Environmental Justice," both Clark County and San Bernardino County have been affected by the recent economic downturn in the last two to three years, with unemployment increasing and housing development and population growth decreasing. Employment and population growth have been trending downwards within the region since 2008. As of September 2009, unemployment in San Bernardino and Clark counties was over 13 percent, with approximately 261,000 people out of work.

5.3.12.3 Reasonably Foreseeable Future Projects

Construction and operation of the EITP in conjunction with ISEGS, First Solar, NextLight Silver State Solar, SNSA, Bull Frog Green Energy, Power Partners Solar, Cogentrix, DesertXpress, Calnev Pipeline Expansion, Table Mountain Wind, Iberdola Renewables, OakCreek Energy Systems, and Seachlight Wind would increase the use of local businesses and hotels and could increase business and tax revenues within the Ivanpah and Eldorado valleys. However, the largest cumulative positive effects would be limited to those reasonably foreseeable future projects that would be constructed currently with the EITP—DesertXpress and ISEGS.

5.3.12.4 Cumulative Impact Analysis

The potential for socioeconomic and environmental justice impacts of the EITP to combine with the impacts of other projects within the geographic extent and timeframe of the cumulative analysis is described below. The incremental contribution of the EITP combined with similar effects of other projects would make up the overall cumulative impacts on socioeconomic resources.

Under CEQA, the proposed project was determined to have no impact on the following criteria and, therefore, it could not contribute to cumulative impacts on these criteria:

- Inducing population growth
- Increasing demand for permanent and temporary housing
- Displacing existing residences

Therefore, impacts associated with these criteria are not discussed in this cumulative analysis.

Local Economy, Labor Force, and Tourism

During construction of the EITP, local spending would increase within the Ivanpah Valley and, to a lesser degree, in the Eldorado Valley. This would benefit the local and regional economy through expenditures on goods and services. The EITP would provide approximately 34 local jobs and tax revenue to local communities. Approximately 156 out-of-town construction workers would be employed in the area for 12 to 18 months (PEA 2009). Operation and maintenance of the project would not provide any new, local jobs. Project materials and equipment would be sourced locally or regionally wherever possible, which would also benefit the local economy.

While all of the projects considered in the cumulative impacts analysis would be expected to have some influence on socioeconomic resources, within the Ivanpah Valley, a number of major construction projects are planned which would be expected to have particular influence on socioeconomic conditions. These include three linear construction projects (the Calnev Pipeline, the DesertXpress High-Speed Rail, and the AT&T Fiber Optic Replacement), as well numerous solar and wind projects. Many of the foreseeable projects would require hundreds to thousands of laborers during construction but would have a smaller labor force for operations (see Table 5-3).

While other reasonably foreseeable future projects would likely draw on the unemployed construction workforce, they could also attract workers from other regions. Local construction workers on the EITP or any of the other foreseeable projects would receive additional income for the duration of their employment, some of all of which would likely be spent in the local area. Non-local construction crews would use local accommodations for lodging, which would have a nominal beneficial impact on tourism in the area. The reasonably foreseeable future projects would also draw on locally procured materials, goods, and services, and some regional suppliers could also benefit by these purchases. As it is anticipated that additional clean energy projects would be proposed and permitted over time, in order to meet California's renewable portfolio standard mandates, regional suppliers of clean energy technology and equipment would likely benefit from implementation of clean energy infrastructure and development. These benefits would reflect the timing of construction and operation of all the permitted facilities, as well as project-specific requirements and therefore cannot be predicted at this time.

The concurrent construction of the reasonably foreseeable future projects would result in a beneficial cumulative impact on the local and regional economy and tourism and could decrease unemployment during periods of construction. As the construction schedule and worker requirements of many of the reasonably foreseeable future projects are not currently known, it is not possible to determine the quantity or duration of any potential net change in local and/or regional employment The EITP would be constructed by a specialized crew made up primarily of workers relocating from outside the region; of the 190 people anticipated to be employed during construction, approximately 34 would be hired locally. Due to the relatively short length of time of construction (18 months) and the small number of people who would be employed compared with the unemployment rate in the region, the EITP's contribution to the cumulative impact on the economy and employment would be negligible.

Environmental Justice

Most of the proposed EITP transmission line corridor follows existing ROWs and crosses undeveloped areas with dispersed and sparse populations. Three census tracts in the vicinity of the EITP corridor comprise low-income populations more than double county averages (see Table 3.13-9). Potential cumulative impacts identified in this analysis that could disproportionately affect these communities, resulting in a cumulative environmental justice impact, include impacts to air quality, recreation, water supply, and traffic.

The other linear projects (the AT&T Fiber Optic Replacement, the Calnev Pipeline Expansion, and the DesertXpress High-Speed Rail Project) would also have impacts similar to those of the EITP in that there would be increased levels of dust and traffic. Aside from the NextLight Silver State Solar Project, the proposed renewable energy projects in the Ivanpah and Eldorado valleys would be built in remote areas that are sparsely populated. The NextLight Silver State Solar Project would be built within 1 mile of Primm. These projects, in conjunction with the EITP, would result in cumulative impacts to air, noise, public services, and traffic that may effect low-income populations in Primm, Nevada.

However, these impacts would not disproportionately affect these communities, as described below, and therefore would not result in a cumulative environmental justice impact.

Residents along the EITP route may be exposed to short-term increases in criteria pollutant emissions. The estimated construction time at any one location for the EITP is 2.5 weeks which could potentially overlap with construction of other cumulative projects in the cumulative study area. Although possible, it is unlikely that the Calnev Pipeline Expansion and DesertXpress would have overlapping construction schedules within the immediate vicinity of receptors along the route. Given that construction activities would be transient in the area of potential exposure, there would not be a significant cumulative impact. Similarly, because of the relatively short duration of construction and the unlikelihood of overlapping construction schedules within the vicinity of receptors along the routes, the EITP's contribution to cumulative impacts due to objectionable odors would be negligible. Because cumulative impacts to air quality would be negligible and not significant for the entirety of the route, low-income populations along the route would not be disproportionately affected by cumulative impacts to air quality.

The EITP would also contribute to cumulative impacts to recreation, specifically temporarily restricting access to the Jean/Roach Dry Lake SRMA and Ivanpah Dry Lake Recreation Area. Cumulative impacts to recreation by restricting access, particularly to planned recreation events on the dry lakes, could impact residents of low-income communities in the area; however, these events attract visitors from beyond the local community, and therefore, this cumulative impact would not disproportionately affect low-income groups.

The cumulative analysis identified a potentially significant cumulative impact to local water supplies (Section 5.3.10.4), which could disproportionately impact low-income communities in the vicinity of the EITP. However, MM PUSVC-C-1 will require the applicant to demonstrate that the supplier of the water to be used for the EITP has an adequate supply such that there will be no adverse impacts on local public and private water supplies. Therefore, this would not result in a cumulative environmental justice impact.

Similar to cumulative recreation impacts, cumulative impacts to traffic would not disproportionately affect low-income populations along the route because the transportation routes that would be impacted by the project and the cumulative projects are used by a much broader population than the local community. These cumulative impacts to traffic would uniformly affect all travelers on I-15, which is used largely for travel between the Los Angeles area and Las Vegas, Nevada.

5.3.12.5 Alternatives

The No Project Alternative would not contribute to any cumulative impacts on the local economy, labor force, tourism, or minority/low-income populations.

Because Alternative Transmission Routes A, B, C, and D, Subalternative Route E, and the telecommunication alternatives (both Golf Course and Mountain Pass) only vary the route of the EITP, they would contribute to cumulative socioeconomic impacts to a degree similar to that of the proposed project. That is, they would have a negligible contribution to the cumulative beneficial impacts to the local and regional economies, tourism, and employment.

5.3.12.6 Whole of the Action / Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP and ISEGS projects and presents a summary of the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM and evaluates the combined effects of the EITP and ISEGS.

Summary

According to the ISEGS FSA/DEIS, ISEGS would not result in any cumulative socioeconomic impacts. ISEGS requires relatively few construction workers relative to the amount of available workers for both construction and operation and so would not contribute to cumulative socioeconomic impacts resulting from an influx of non-local workers (CEC and BLM 2009).

The long-term payment of taxes and fees and distribution of operations and maintenance and payroll dollars associated with the ISEGS project is expected to have a significant benefit to San Bernardino County, California, and Clark County, Nevada, by increasing the amount of public funds available to the counties. These benefits from ISEGS plus benefits of the revenues from other reasonably foreseeable projects would result in cumulative benefits (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action / Cumulative Action

Construction and operation of the Whole of the Action / Cumulative Action (the combined EITP and ISEGS) would result in a beneficial impact to the local economy, tourism, and employment that would be larger than benefits from either of the individual projects alone. According to the ISEGS FSA/DEIS, ISEGS would generate approximately $2.2 million per year from assessed property tax values. Its annual operational and maintenance budget would be $340,500 (CEC and BLM 2009). There would be a considerable beneficial cumulative impact on the local economy, tourism, and employment from the construction and operations of the Whole of the Action / Cumulative Action and other foreseeable projects. However, given the size of the economy and the level of employment locally, the contribution of the Whole of the Action / Cumulative Action would be negligible.

Similar to the EITP, the Whole of the Action / Cumulative Action and foreseeable projects are unlikely to result in significant disproportionately high adverse cumulative impacts to minority/low-income populations.

5.3.13 Transportation and Traffic

5.3.13.1 Geographic Extent and Timeframe

Traffic impacts of the EITP would be limited to the regional freeways and local roads that comprise the local transportation network during construction; therefore, the geographic area analyzed for cumulative traffic and transportation impacts is the road network within the Ivanpah and Eldorado valleys. The timeframe for this cumulative analysis is the construction period because the impact evaluation in Section 3.14, “Traffic and Transportation,” determined that there were no impacts to ground traffic and transportation during operations. However, the EITP would require helicopter usage during operation and maintenance procedures. Therefore, the timeframe for the cumulative analysis for air traffic is the lifetime of the project.

5.3.13.2 Past and Present Project Impacts/Existing Cumulative Conditions

Except for the small community of Primm, Nevada, the EITP is located in a rural, sparsely populated area with a significant amount of publicly owned land. Past projects related to transportation and traffic within the Ivanpah and Eldorado valleys include I-15, State Route (SR) 164, SR 161, SR 604, and US-95. These projects have resulted in the current conditions. As discussed in Section 3.14, “Traffic and Transportation,” the level of service (LOS) for these roads is adequate, except for I-15. On most days, I-15 experiences an average daily traffic volume of approximately 38,000 trips (LOS C), which means the flow of traffic has been determined to be stable; however, on Fridays from approximately noon to 10 p.m., traffic on northbound 1-15 increases to an hourly average of between 1,700 and 2,000 trips (LOS D; Green 2009).

5.3.13.3 Reasonably Foreseeable Future Projects

Ongoing and foreseeable development throughout the cumulative impact area for traffic and transportation is dominated by proposed renewable energy projects. As shown in Figure 5-1 and described in Tables 5-1 and 5-2, additional renewable energy development is expected in the area. The renewable projects that have the potential to affect traffic because of their proximity to Primm and I-15 and their potentially overlapping construction schedules would be ISEGS, FirstSolar, and Nextlight Silver State. Other projects in the vicinity of I-15 include the SNSA, the Calnev Pipeline Expansion, and the DesertXpress High-Speed Rail.

The start time for construction of the SNSA is not known, but based on the current environmental review status, it is not likely to begin until 2014. The EITP would begin construction in 2011 and be completed during 2013; therefore, the SNSA is not considered in the analysis of ground traffic impacts. The projected construction schedule of the Calnev Pipeline Expansion and First Solar are unknown, but DesertXpress is projected to be constructed between 2010 and 2012. ISEGS is projected to be built between 2010 and 2013, while NextLight Renewable Power is projected to be built from 2010 to 2014. These projects are considered in this analysis (see Table 5-3).

5.3.13.4 Cumulative Impact Analysis

The potential for traffic and transportation impacts of the EITP to combine with the effects of other projects within the geographic extent and timeframe of the cumulative analysis is described below.

Cumulative Impact TRANS-C-1: Traffic Load, Capacity, and Level of Service

This section discusses the combined effects on traffic load, capacity, and LOS standards of the EITP and past, present, and reasonably foreseeable projects. Relevant impacts of the EITP are IMPACT TRANS-1: Traffic Load and Capacity and IMPACT TRANS-2: Level of Service Standard and Lane Closures.

Most roads in the cumulative impact area are infrequently used and would not be adversely affected by a slight, temporary increase in road traffic; however, construction of the EITP would increase use of I-15 by a maximum of 200 vehicles. Northbound I-15 experiences periods of heavy use on Friday from approximately noon to 10 p.m. because of motorists traveling between the Las Vegas and Los Angeles areas.

The applicant would acquire encroachment permits (APM TRA-1) and implement a Traffic Management and Control Plan (APM TRA-2) to reduce impacts. The Traffic Management Plan would provide strategies to assure safe and effective passage of through-traffic along I-15 and SR 164/Nipton Road. In addition, the implementation of MM TRANS-1 would minimize potential impacts to I-15 by requiring the applicant to limit construction activities so that lane closures did not occur during peak usage times on Fridays from noon to 10 P.M.

The EITP, ISEGS, the First Solar Project, the NextLight Silver State Solar Project, the Calnev Pipeline Expansion Project, and the DesertXpress High-Speed Rail Project would be located near the I-15 corridor. It is likely that during certain periods, construction of these projects could have overlapping schedules (see Table 5-3). As would the EITP, the large construction projects would have to obtain encroachment permit to minimize impacts to I-15. ISEGS would implement a Traffic Control Plan that contains a Traffic Management Plan; however, it could not be determined if the DesertXpress would have a comparable plan. Calnev, First Solar, and NextLight would likely also implement Traffic Management Plans.

With concurrent construction of the projects mentioned above, the number of vehicles using I-15 would increase and would adversely impact traffic load and LOS on I-15 principally on Fridays from noon to 10 p.m. However, the exact number of vehicles to be added cannot be determined with the available information. The EITP would contribute a maximum of 200 vehicles over an 18-month period and would minimize impacts through use of a Traffic Management Plan; therefore, the contribution of the EITP's impact on traffic and transportation would be minor.

However, the EITP's incremental effect could result in a considerable cumulative impact; therefore, mitigation would be necessary.

MM-C-TRANS-1 will require the applicant to limit the use of I-15 on Fridays from noon to 10 p.m. This will require using alternative routes or planning sufficiently such that vehicular use of I-15 would be limited to fewer than 15 vehicles every 15 minutes, resulting in a minor, short-term cumulative impact. Implementation of this mitigation measure would reduce the EITP's incremental contribution to less than significant or minor.

EITP construction would result in short-term adverse traffic impacts where vehicles and equipment would enter or leave construction yards and at crossing points along the transmission line route. Crossing points which are in and near Primm, were considered for this cumulative analysis. However, these effects, even when combined with the existing traffic in Primm and the reasonably foreseeable future projects that would be located in and near Primm (DesertXpress Rail Line, Calnev Pipeline Expansion, First Solar, and NextLight), are so localized and temporary that they would not measurably change the existing conditions; therefore, no cumulative impacts on ground traffic would occur.

<u>Air Traffic</u>

Helicopter use during maintenance procedures is common for linear projects. Calnev Pipeline requires helicopter use and other existing transmission lines may also use helicopters in the cumulative impact area. If the SNSA is constructed, use of helicopters during operations could contribute to a cumulative impact; however, given the infrequency of use, the EITP's contribution to this impact would be negligible. MM TRANS-2, which requires coordination with the FAA regarding a Helicopter Flight Plan and Safety Plan, would be sufficient to reduce impacts. In addition, it is reasonable to assume that any existing or future projects in the cumulative impact area that require the use of helicopters would similarly consult with the FAA.

<u>Emergency Access</u>

The EITP, in combination with the other projects mentioned above that are in close proximity to I-15 and would be constructed concurrently, would not interfere with emergency response activities. Emergency response providers near the cumulative study area would be notified in advance about the exact location of construction and road or route closure schedules. Like the EITP, the foreseeable projects would coordinate with local police and traffic engineers to plan appropriate access alternatives for temporary street closures and traffic disruption, if closures were required. Therefore, there would not be a considerable cumulative impact to emergency access.

5.3.13.5 Alternatives

Because no activity is associated with the No Project Alternative, it would not contribute to short-term or long-term adverse cumulative impacts on transportation and traffic.

Because construction vehicles would travel along the same traffic corridors to and from construction yards and the construction location for all alternatives, all would contribute to cumulative impacts on traffic load and LOS on Fridays. In addition, construction of some of the alternative routes would require construction crossing or along I-15. Both the Mountain Pass and Golf Course Telecommunication Alternatives cross I-15 and travel along it for part of their routes. Transmission Alternatives C and D near Primm also cross I-15. Any of the alternatives' incremental effects could result in a considerable cumulative impact; therefore, MM-C-TRANS-1 would be necessary regardless of the alternative selected.

Alternative transmission routes A, B, C, and D and Subalternative Route E and the Telecommunication Alternatives would have short-term, minor, adverse traffic impacts at construction yards and crossing points (MP 29) similar to those of the EITP because the same construction yards would be used for all alternatives. However, these effects, even when combined with the existing traffic in Primm and the reasonably foreseeable future projects that would be located in and near Primm (DesertXpress, Calnev Pipeline, First Solar, and NextLight), are so localized and temporary that they would not measurably change the existing conditions; therefore, no cumulative traffic impacts would likely occur.

Like the other alternatives, the Mountain Pass and Golf Course Telecommunication Alternatives would cause a direct, short-term, minor adverse traffic impact at construction yards and crossing points along the telecommunication line route.

5.3.13.6 Whole of the Action / Cumulative Action

This section analyzes the potential cumulative effects of the combined EITP and ISEGS project. The section summarizes the cumulative analysis presented in the ISEGS FSA/DEIS prepared by the CEC and the BLM and then evaluates the combined effects of the EITP and ISEGS.

ISEGS Summary

According to the ISEGS FSA/DEIS, traffic and transportation impacts of the ISEGS project would not combine with impacts of any past, present, or reasonably foreseeable projects to result in cumulatively considerable impacts to local streets in the immediate vicinity of the ISEGS project site. However, traffic and transportation impacts of the ISEGS project would result in a considerable local and regional cumulative impact to northbound I-15, related primarily to motorists travelling to Las Vegas. Vehicle trips generated during construction and operation of the ISEGS project would contribute to an adverse direct and cumulative impact, which would be significant with respect to CEQA and NEPA, on northbound I-15 on Fridays between noon and 10 p.m. This impact would remain even with implementation of mitigation limiting the amount of project-related traffic generated on area roadways on Friday afternoons (CEC and BLM 2009).

Cumulative Analysis of the Whole of the Action / Cumulative Action

The EITP and ISEGS are likely to be constructed concurrently and would have similar impacts on traffic volumes on northbound I-15 on Fridays between noon and 10 p.m. These impacts could not be completely mitigated. Therefore, concurrent construction of any of the other foreseeable renewable energy projects with these projects would contribute to considerable cumulative impacts on traffic load/volume. The contribution of the combined projects would depend on the amount of time that construction overlapped. Like the EITP, the Whole of the Action / Cumulative Action contribution to impacts to traffic load and LOS could be significant, but implementation of MM-C-TRANS-1 and a similar mitigation proposed for ISEGS would reduce the cumulative effects and would reduce the Whole of the Action / Cumulative Action's contribution to cumulative effects to minor, short-term, less than significant impacts; however, the cumulative impact to traffic on Fridays could still be significant.

Similar to the analysis provided for the proposed project, a considerable cumulative impact to emergency access with respect to the Whole of the Action / Cumulative Action would not occur.

6. Other Considerations

Additional topics associated with implementation of the Eldorado–Ivanpah Transmission Project (EITP or the proposed project) and its alternatives that must be considered under the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) are discussed in this chapter. The following additional considerations are discussed: environmental impacts that cannot be mitigated to less than significant levels; irreversible and irretrievable commitment of resources; growth-inducing effects; and a summary of cumulative impacts. The Ivanpah Solar Electric Generating System (ISEGS) project is also discussed. While the EITP would not be a source of additional power, the Bureau of Land Management (BLM) and the California Public Utilities Commission (CPUC) have determined that because the EITP is intended to facilitate the transmission of power from ISEGS, power generation from ISEGS should be considered in this EIR/EIS (Figure 1-1).

6.1 Significant Unavoidable Adverse Impacts

The proposed project and its alternatives would result in significant unavoidable adverse impacts on biological resources and potentially significant impacts air quality, hydrology and water quality, and public services and utilities. Under NEPA, the proposed project would result in major, adverse and unavoidable impacts on aesthetics and visual resources for one of the eight key observation points (KOPs) analyzed; with mitigation, impacts on aesthetics and visual resources would be less than significant under CEQA. As discussed in Section 3.4, "Biological Resources," the proposed project would impact several special-status wildlife species and their habitat. Mitigation measures would reduce impacts to less than significant for all of the species discussed, except for desert tortoise. Impacts on desert tortoise and its habitat would be significant even after mitigation (IMPACT BIO-2).

As described in the analysis of IMPACT AIR-2, the estimates of average daily emissions of $PM_{2.5}$, PM_{10} and NO_X from project construction activities exceed The Mojave Desert Air Quality Management District (MDAQMD) daily significant thresholds. Implementation of MM AIR-1 (low-emission equipment) and MM AIR-2 (enhanced fugitive dust control measures) would reduce potential impact but are not expected to reduce emissions from construction activities to below the MDAQMD daily significant thresholds. Long-term impacts would not occur because construction would be temporary at any one location. Therefore, temporary ambient air quality impacts caused by construction activities would violate or contribute substantially to an air quality violation.

In addition, construction of the proposed project or its alternatives would occur in an area designated non-attainment for ozone and PM_{10} (IMPACT AIR-3). The estimates of average daily emissions of PM_{10} and ozone precursors, NO_X and VOCs, from project construction activities exceed MDAQMD daily significant thresholds. The construction is expected to adversely impact the proposed project region for a short term. Mitigation measures to be implemented, including the use of low-emission equipment and enhanced fugitive dust control measures are not expected to reduce PM_{10} and NO_X emissions from construction activities to below the MDAQMD daily significant thresholds. Therefore, temporary emission increases of NO_x, VOCs, and PM_{10} during construction would contribute to a cumulatively considerable net increase of a criteria pollutant in a non-attainment area.

The proposed project and its alternatives could also result in a significant impact on water resources by impacting aquifer recharge processes and exceeding existing levels of groundwater withdrawal (IMPACT HYDRO-2). This potentially significant impact relates to IMPACT PUSVC-2, which indicates that construction of the proposed project would temporarily increase water use. Depending on the quantity and sources of water to be used, the proposed project could decrease local groundwater supply and recharge. Because the sources of the water to be used during construction is currently unknown, the impact on groundwater supplies could be significant (Section 3.8, "Hydrology and Water Quality" and Section 3.11, "Public Services and Utilities").

6.1.1 Ivanpah Solar Electric Generating System Project

The ISEGS project would result in significant unavoidable adverse impacts on existing scenic visual resources as seen from several key observation points in the Ivanpah Valley and Clark Mountains (CEC and BLM 2009, CEC 2010). ISEGS project impacts, when combine with the impacts of present and reasonably foreseeable projects, would also result in significant and unavoidable cumulative impacts with respect to visual resources, land use, and traffic and transportation (CEC 2010). These ISEGS project impacts are further reviewed in Section 3.2, "Visual Resources" and Chapter 5, "Cumulative Scenario and Impacts," of the EITP EIR/EIS.

6.2 Irreversible and Irretrievable Commitment of Resources

This section discusses irreversible and irretrievable commitments of resources as a result of energy and materials consumption, accidental release of hazardous materials, land disturbance (and associated habitat loss for sensitive biological resources), damage to or the loss of cultural or paleontological resources, land use, and visual impacts. During the proposed project's operational phase, the transmission of electrical power generated from nonrenewable resources would continue. Operation of the proposed project, however, would facilitate the distribution of solar energy from the ISEGS project and accommodate the area's potential for renewable power generation in order to achieve the State of California Renewables Portfolio Standard goals. For this reason, the irreversible and irretrievable resource commitments discussed in this section are considered to be acceptable.

6.2.1 Energy and Materials Consumption

Implementation of the proposed project would result in the consumption of energy and materials. Fossil fuels would be required for construction of the proposed project as well as operation and maintenance. A total of 35,000 gallons of gasoline, 665,000 of diesel, and 8,300 of aviation fuel are estimated to be required for construction of the proposed project. The amount of fossil fuels to be stored for the emergency back-up generator for microwave telecommunications is estimated at 499 gallons.

The proposed Ivanpah Substation would be routinely visited on a monthly basis, and the Eldorado–Ivanpah Transmission Line would be monitored routinely in its entirety by helicopter or truck on an annual basis. Additional visits for maintenance purposes would be expected in response to inclement weather or other issues as needed—generally five or more times annually for the transmission line and 20 or more times annually for the substation. The Nipton, California, microwave site would also be visited for operations and maintenance purposes several times annually.

Additionally, construction would require the manufacture of new materials, some of which would not be recyclable after the estimated 80-year lifespan for the proposed project. The raw materials and energy required for the production of these materials would also result in an irretrievable commitment of natural resources. Operation and maintenance of the proposed project or its alternatives would not cause a substantial increase in the consumption or use of non-renewable resources.

6.2.2 Hazards and Hazardous Materials

Construction activities could result in the accidental release of hazardous materials in localized areas of the transmission line, Ivanpah Substation, or telecommunication lines. Such accidents could pose a hazard to humans or result in long-term impacts on the environment. With mitigation, however, potential impacts would be reduced to less than significant levels. No long-term adverse impacts would occur as result of construction, operation, or maintenance of the proposed project or its alternatives.

6.2.3 Land Disturbance

Clearing and grading activities for proposed project infrastructure (e.g., the new substation; improvements to existing access and spur roads; new access and spur roads; staging areas; powerline tension and pull areas; stringing and splicing areas; and tower and pole installation) would cause direct losses of vegetation communities and would be potential sources of direct mortality to wildlife. Wildlife would also be indirectly impacted through the loss or modification of vegetation.

Approximately 51 acres of land would permanently be disturbed with implementation of the proposed project. Consequently, 51 acres of plant and wildlife habitat would be eliminated. Approximately 424 acres would temporarily be disturbed during construction of the proposed project; therefore, total land disturbance would be approximately 465 acres (464.9; Table 6-1). The extent that temporary land disturbances would impact biological resources would vary by vegetation or wildlife community and the location of disturbance. The loss of habitat from permanently disturbed land would be long-term, enduring throughout the 80-year lifespan estimated for the proposed project.

The amount of land that would be disturbed with the implementation of each alternative is provided in Table 6-1. The effect of land disturbance with the implementation of each alternative would be similar to that of the proposed project. Potential impacts from land disturbance are further analyzed in Section 3.4, "Biological Resources."

Table 6-1 Estimated Land Disturbance by Alternative

Component	Acres Disturbed During Construction [1, 2]	Acres Permanently Disturbed [1]
Proposed Project (Proposed Action)	464.9	51.2
Transmission Route Alternative A	536.3	59.3
Transmission Route Alternative B	605.5	61.2
Transmission Route Alternative C	551.8	57.7
Transmission Route Alternative D	526.9	52.4
Transmission Route Alternative E	525.1	52.2
Golf Course Telecommunication Alternative	475.5	51.3
Mountain Pass Telecommunication Alternative	475.7	51.3

Notes:
[1] Land disturbance estimations are based on the applicant's preliminary design information and are subject to change during final engineering.
[2] Construction land disturbances include both temporary and permanent land disturbance estimations.

Transmission Alternative Route A would shorten the overall length of the proposed project by one mile but require additional right-of-way (ROW). There would be an increase in total permanent impacts by 0.2 acres and an increase in temporary impacts by 17 acres in previously undisturbed desert habitat. The increase in acreage of both permanent and temporary impacts would be due to construction activities required for the completion of this alternative. Transmission Alternative Routes B and C and would result in a longer transmission line and require additional ROW, which would increase the acreage of permanent and temporary impacts. Transmission Alternative Route D and Subalternative E would result in a slightly longer transmission line, which would increase the acreage of habitat that is temporarily impacted. The acreage permanently impacted would be slightly greater than under the proposed project.

The Golf Course and Mountain Pass Telecommunication Alternatives would result in the installation of additional communication line (20 and 25 miles, respectively). There would be a substantial increase in the acreage of habitat that would be impacted as a result of these alternatives. The No Project Alternative would not result in impacts to biological resources. Under this alternative, construction, demolition, or ground disturbance would not occur because neither the proposed project nor the alternatives would be implemented.

6.2.4 Cultural Resources

Construction of the proposed project would result in a significant impact on cultural resource sites 36-10315 and 36-7694/26CK4957 (Section 3.5, "Cultural Resources"). Without mitigation, impacts would be adverse and permanent. Implementation of mitigation measures, however, would reduce all potentially significant impacts associated with the proposed project to less than significant levels.

Site 36-10315/26CK8280, the Boulder Dam–San Bernardino 132-kV Transmission Line, would be impacted by the EITP because towers from this line would be removed and replaced with new towers to accommodate the existing and new transmission capacity. While this impact could not be avoided, mitigation would be incorporated that would require a full record be made of the resource before impacts are made. Site 36-7694/26CK4957, the Los Angeles Department of Water and Power Boulder Transmission Line, was determined eligible for the National Register of Historic Places in 1994. The applicant intends to span over the line using H-Frame towers, which would allow the EITP line to cross the historic line without impacting it. Implementation of APM CR-2 would minimize impacts to less than significant levels.

Transmission Route Alternatives A and B would cross no known cultural resources, and no newly discovered cultural resources were found during the field survey of this alternative. Transmission Route Alternative C would result in significant adverse permanent impacts to sites 36-10315 and 36-7694/26CK4957 by altering the setting and disturbing elements of the site that contribute to its historic significance. Without mitigation, impacts would be adverse and permanent. With mitigation, potential impacts would be reduced to less than significant levels.

Transmission Route Alternatives D and E would not result in impacts on cultural resources. The alternative routes contain no previously recorded cultural resources, and no newly discovered cultural resources were found during the field surveys. The Golf Course and Mountain Pass Telecommunication Alternatives would also not result in impacts to known cultural resources. The No Project Alternative would not result in impacts to cultural resources.

If subsurface cultural resources or human remains are discovered with the implementation of the proposed project and any of the alternatives, an impact could occur. Implementation of the mitigation described in Section 3.5, "Cultural Resources," would reduce potential impacts to less than significant levels.

6.2.5 Geology, Soils, Minerals, and Paleontology

The proposed project would result in minor long-term impacts to geology and soil resources because of transmission line, Ivanpah Substation, and telecommunication line construction. Activities associated with the construction of access road and structures along the transmission and telecommunication line routes would disturb the existing ground surface and natural drainages, causing minor erosion-related impacts. Operations and maintenance activities would result in continued erosion.

Expansive soils in the proposed project area could result in low to moderate levels of structural failure of the transmission and telecommunication line poles and towers and the Ivanpah Substation. There is also the potential for impacts as a result of changing geologic conditions including seismic events (fault rupture and ground shaking), subsidence, or liquefaction. Numerous non-metallic and metallic mineral deposits occur along or near the transmission line route. Non-metallic deposits within the general project area include pumice, feldspar, limestone, and sand and gravel, with sand and gravel potential being the highest along the routes.

Several paleontological resources would be located within 1 mile of the proposed project and one paleontological resource location would be within 300 feet. The nearest location identified in record searches indicated the presence of indeterminate large mammal bone fragments. All potentially significant geology, soil, mineral, and paleontological impacts would be mitigated to less than significant levels. All potentially significant short and long-term geology, soil, mineral, and paleontological impacts associated with the proposed project would be mitigated to less than significant levels (Section 3.6, “Geology, Soils, Minerals, and Paleontology”).

Implementation of Transmission Route Alternatives A and B would result in negligible impacts associated with seismic ground shaking, and seismic-related ground failure including liquefaction. Minor impacts would be associated with erosion and unstable geologic units (subsidence). Negligible impacts would be associated with expansive soil and non-metallic mineral resources. Construction of Transmission Route Alternatives A and B may also impact buried paleontological resources as a result of ground-disturbing activities. The two routes could impact areas where underlying formations have been identified as high paleontological sensitivity.

Implementation of Transmission Route Alternative C could result in several impacts. A segment of the Stateline Fault System crosses Transmission Route Alternative C along the California–Nevada border. This impact would be negligible and localized but long term. Minor impacts would be associated with erosion and result from unstable geologic units (subsidence). Negligible impact would be associated with expansive soil and non-metallic mineral resources. Areas where underlying formations have been identified as high paleontological sensitivity could also be impacted.

Impacts and mitigation associated with Transmission Route Alternatives D and E would be similar to those associated with Transmission Route Alternative C. Only Transmission Route Alternatives C and D, however, would cross a segment of the Stateline Fault System. Impacts associated with the Golf Course and Mountain Pass Telecommunication Alternatives would also be similar to those associated with the proposed project and Transmission Route Alternatives A, C, and D. The No Project Alternative would have no impact on existing geologic, soil, mineral, or paleontological resources. All potentially significant short and long-term geology, soil, mineral, and paleontological impacts associated with the alternatives would be mitigated to less than significant levels (Section 3.6, “Geology, Soils, Minerals, and Paleontology”).

6.2.6 Land Use

Long-term negligible adverse impacts on the Clark Mountain grazing allotment would occur as a result of proposed project construction. No additional long-term adverse impacts on existing, approved land use plans, livestock grazing management, livestock, or Special Management Areas would occur as a result of implementation of the proposed project or Transmission Route Alternatives A through E, the Golf Course or Mountain Pass Telecommunication Alternatives, or the No Project Alternative (Section 3.9, “Land Use”).

While an EIS for the Southern Nevada Supplemental Airport is currently in progress and is expected to be completed by 2012, the applicant would consult with the Federal Aviation Administration prior to final project design to determine if a Hazard/No Hazard Determination is necessary as discussed in Section 3.7, “Hazards, Health, and Safety.” Once this determination is made, land use impacts on the Ivanpah Airport Environs Overlay would be reduced.

The portion of the proposed project that crosses the BCCE would be constructed mostly within the boundary of BLM-managed utility corridors; however, less than one mile would cross outside of the corridor at MP 2 along an existing 70-foot ROW, which would require approval from Clark County and Boulder City. With the approval of these jurisdictions, impacts on land use within the BCCE would be reduced.

6.2.7 Visual Impacts

The proposed project would result in permanent, minor, adverse impacts on visual resources because of the use of taller transmission line structures and construction of the Ivanpah Substation and microwave tower. The undergrounded portion of the telecommunications line would result in temporary moderate impacts on visual resources. All visual impacts would be consistent with applicable BLM visual resource designations for the proposed project area, however, and would not significantly impact visual resources (Section 3.9, "Visual Resources").

Implementation of Transmission Route Alternatives A through E would result in stronger overall visual contrast in comparison to the proposed project. Increased visual contrast would occur in areas where the alternative routes would veer from the existing transmission line route. Visual impacts would still be consistent with applicable BLM visual resource designations, however, and would not significantly impact visual resources.

The Golf Course and Mountain Pass Telecommunication Alternatives would result in moderate temporary impacts on visual resources because of an additional segment of trenching along Nipton Road but would not result in long-term impacts. A segment of the Mountain Pass Telecommunication Alternative would traverse an area designated by the BLM with stricter objectives for visual resources than the proposed project or other alternative routes, but would still not result in significant impacts. This segment of telecommunication line would be strung on existing 33-kV distribution structures. It would not result in a visual impact because the new telecommunication line would not be noticeable with respect to the existing distribution lines. Under the No Project Alternative, there would be no impact on visual resources.

6.2.8 Hydrological and Water Quality

Construction of the proposed project and its alternatives would result in localized erosion and sedimentation impacts ranging from minor to moderate. Additionally, the proposed project and its alternatives would use water for dust suppression during construction, and water would be used at the substation for sanitary purposes and fire control during emergencies during proposed project operation. The applicant has stated that no wells would be drilled for water supply; however, until the water source is identified by the applicant, potential minor to moderate localized impacts on groundwater are assumed (see MM W-2, Water Use Plan).

6.2.9 Ivanpah Solar Electric Generating System Project

Implementation of the ISEGS project would result in the consumption of a substantial amount of energy from fuel (i.e., gasoline, diesel, and jet fuel) for construction activities. Additionally, construction would require the manufacture of new materials, some of which would not be recyclable when the ISEGS project is decommissioned. The raw materials and energy required for the production of these materials would also result in an irretrievable commitment of natural resources. Operation of the ISEGS project would not cause a substantial increase in the consumption or use of non-renewable resources.

The use of a limited amount of hazardous materials (e.g., fuel, lubricants, and cleaning solvents) would be required. Hazardous materials would be stored, handled, and used in accordance with best management practices and applicable federal, state, and local regulations. Assuming appropriate implementation of plans and practices, impacts associated with the degradation of the environment because of the accidental release of hazardous materials would be less than significant.

Implementation of the ISEGS project would require the loss of approximately 4,073 acres of vegetation and wildlife and habitat. The loss of this habitat would be long-term, enduring throughout the proposed 50-year lifespan of the ISEGS project facility. Following decommissioning, restoration would be conducted which would involve removal of structures, restoration of topography, and revegetation, all of which would work towards restoration of the original habitat. However, it is likely that restoration of native vegetation would be slow and the success uncertain. The loss of desert tortoise habitat would be permanent since restoration of vegetation for which they depend for foraging and other factors affecting the quality of the restored habitat would be uncertain.

The majority of access required for construction, operation, and maintenance of the ISEGS project would use existing ROW and access roads. Opportunities for public access would not be significantly affected nor would previously inaccessible areas be made accessible.

Visual impacts would be significant and long-term enduring throughout the proposed 50-year lifespan of the facility. The ISEGS project site would be near a national preserve, two designated wilderness areas, and an area used for *land sailing*—moving on land in a wind-powered wheeled vehicle with a sail on flat open spaces such as Ivanpah Dry Lake. Concerns were expressed during the public comment period regarding potential impacts on visual resources as well as the level of glare from the solar towers; and concern over cumulative visual effects of renewable projects on the Southern California Mojave Desert as a whole. After the end of the ISEGS project's useful life, it would be decommissioned and the area restored and revegetated, but visual recovery is would likely take a very long period of time.

6.3 Growth-Inducing Effects

The proposed project would induce growth if it results in additional development, such as increases in population, employment and/or housing above and beyond what is already assumed will occur in local and regional land use plans or in projections made by regional planning authorities, irrespective of the proposed project. Under CEQA (Section 15126.2(d)), the proposed project would be growth-inducing if it:

- Directly or indirectly fosters economic or population growth or the construction of additional housing;
- Taxes community facilities to the extent that the construction of new facilities would be necessary;
- Removes obstacles to population growth; or
- Encourages or facilitates other activities that cause significant environmental effects.

Typical growth inducing factors might be the extension of urban services or transportation infrastructure to a previously unserved or under-served area or the removal of major barriers to development. This section evaluates the proposed project's potential to create such growth inducements. It should also be noted that growth inducement can be positive or negative depending on resulting effects and the development objectives of the planning authorities in the proposed project area. Negative impacts associated with growth inducement would occur only where growth associated with the proposed project would result in significant/adverse environmental impacts.

6.3.1 Workforce for the Proposed Project / Proposed Action

6.3.1.1 Construction

Section 3.13, "Socioeconomics, Population and Housing, and Environmental Justice" provides a detailed description of the availability of existing labor within the proposed project area. Construction employment for the proposed project would include both skilled and semi-skilled positions. The construction workforce available in San Bernardino County, California is 35,973 and Clark County, Nevada 92,364. As discussed in Chapter 2.0, "Description of the Proposed Project and Alternatives," construction of the proposed project would occur over an estimated 18-month period and require a total construction workforce of approximately 190 workers.

Because the total expected construction workforce is 190 workers (approximately 0.015 percent of the total workers available), it is not expected that any additional workers would be required to relocate into the proposed project area during construction. The presence of 190 workers in the proposed project area would have a localized beneficial effect as a result of the temporary localized spending on goods and services, but this effect would be short-term and would not be expected to result in a permanent increase in housing or need for community facilities that could not be met by existing services and facilities.

The analysis presented in Section 3.11, "Public Services and Utilities," confirms that construction of the proposed project would not create significant additional demands for emergency response services, schools, drinking water, or solid waste and wastewater facilities that could not be met by existing providers and facilities. Therefore, workforce required for construction of the proposed project would not have any direct or indirect growth inducing effect.

6.3.1.2 Operation

Operation and maintenance of the proposed project would be conducted by the existing work force currently assigned to the operation and maintenance of the existing Eldorado–Ivanpah Transmission Line (Section, "Socioeconomics, Population and Housing, and Environmental Justice") and would not create new jobs locally or regionally. Operation of the proposed project would not cause growth in population, employment, or housing because no additional workers would be required beyond those currently employed.

The analysis presented in Section 3.11, "Public Services and Utilities," confirms that operation and maintenance of the proposed project would not create long-term demands for emergency response services, schools, drinking water, or solid waste and wastewater facilities that could not be met by existing services and facilities. Therefore, workforce required for operation and maintenance of the proposed project would not have any direct or indirect growth inducing effect.

6.3.1.3 Alternatives

Potential growth-inducing impacts from implementation of each alternative would be similar to that for the proposed project. The alternatives would require a similar number of workers as the proposed project. Under the No Project Alternative, there would be no growth-inducing impacts on the proposed project area. Therefore, workforce required for implementation of the alternatives would not have any direct or indirect growth inducing effect.

6.3.2 Provisions for Additional Electric Power

As described previously, growth inducement can occur directly, as a result of increases in employment, housing, and demands for public facilities and services. Growth inducement can also occur indirectly as the result of the removal of existing constraints to growth or the creation of factors that encourage or otherwise facilitate development that would not otherwise have occurred. The provision of electrical power can be a trigger for growth, either by alleviating a constraint where limitations on power availability are curtailing development and growth that would otherwise occur or by providing easier and/or cheaper access to power.

The purpose of and need for the EITP is to connect renewable generation sources in the Ivanpah Valley region to the existing electrical transmission grid and to enable the applicant to comply with California's Renewables Portfolio Standards (Chapter 1, "Purpose and Need"). The Renewables Portfolio Standards and Energy Action Plan require utilities, including the applicant, to increase the sale of electricity produced by renewable energy sources including solar facilities to meet a goal of 20 percent renewable energy generation by 2010. The Ivanpah Valley area has been identified as an area with high potential for solar resource development. The proposed project would allow the applicant to increase the percentage of renewable resources in its energy portfolio and assist them in reaching the goals set in the Renewable Portfolio Standards.

In addition, the Energy Policy Act of 2005 requires the Department of the Interior (the BLM's parent agency) to approve at least 10,000 megawatts (MW) of renewable energy on public lands by 2015. Currently, proposed renewable energy projects amounting to 1,900 MW of electricity are on file with the BLM for the Ivanpah Valley area. The EITP would allow for the transmission and distribution of energy from proposed renewable energy generation facilities.

Irrespective of the proposed project, population in both San Bernardino and Clark counties has increased substantially in the last decade and is expected to continue to increase (Section 3.13, "Socioeconomics, Population and Housing, and Environmental Justice"). It is anticipated that growth would occur regardless of the availability of additional renewable energy and electrical transmission capacity. Further, it is not anticipated that the proposed project would have any effect on population growth because associated energy demands would be met by other means.

Additionally, as described in Section 2.3.5, "No Project/No Action Alternative," if the EITP is not constructed, it is assumed that the proposed renewable power generation projects that the EITP would be intended to serve would still proceed. These renewable power projects would need alternate means to connect to electrical transmission systems. SCE or other electrical transmission companies that currently serve the Ivanpah Valley region would be likely candidates for providing electrical transmission projects if the EITP was not constructed.

Therefore, because the proposed project would not result in increases in employment, housing, or the demands for public facilities and services nor result in the removal of existing constraints to growth or the creation of factors that encourage or otherwise facilitate development that would not otherwise have occurred, its implementation would not have any direct or indirect growth inducing effect due to the provision for additional electric power.

6.3.2.1 Alternatives

Potential growth-inducing impacts from implementation of each alternative would be similar to that for the proposed project. The alternatives comprise route variations of the proposed project transmission and telecommunication lines and would not result in differences in the amount of power that would be transmitted or the location of substations where power would be transmitted. Under the No Project Alternative, there would be no growth-inducing impacts on the proposed project area. Therefore, provisions for additional electric power resulting from implementation of the alternatives would not have any direct or indirect growth inducing effect.

6.3.3 Ivanpah Solar Electric Generating System Project

The ISEGS project would employ up to 959 construction personnel and 90 operations personnel. Construction workers would commute as much as 2 hours each direction from their communities rather than relocate, and operations workers would commute as much as 1 hour.

Socioeconomics data for the 1- and 2-hour commute ranges in counties were reviewed. The counties included San Bernardino and Clark and others that were within the commute range. It was determined that there are approximately 231,000 construction workers within the commute-range study area. The number of workers required for the ISEGS project would be negligible with respect to the total number of workers available. Additionally, all workers would reside within the study area, and no impacts on existing population levels would occur.

The primary need for the ISEGS project relates to federal and state requirements for the generation of renewable energy. According to the California Energy Commission (CEC), peak electricity demand within California is projected to increase at a rate of 1.35 percent per year (CPUC, CEC, and CPA 2008), and therefore, additional generating capacity from new sources will be required. The ISEGS project is not intended to supply power related to growth for any particular development and would not result in direct growth-inducing impacts. However, the ISEGS project could facilitate growth indirectly through the additional increased capacity of electric power that it would make available (CEC and BLM 2009). This finding differs from the discussion of the EITP above, which concludes that there would no direct or indirect growth inducing impact from the implementation of the EITP.

7. Consultation and Coordination

7.1 Public Participation and Notification

The public participation and notification program for the EITP EIR/EIS focused on two primary areas under CEQA and NEPA; these areas were (1) the Public Scoping process and (2) the Draft EIR/EIS public review process. This section discusses the specific public scoping methods used for this EIR/EIS to comply with state and federal public outreach requirements.

7.1.1 Scoping Process

Scoping Requirements

Scoping is required by CEQA for projects of "statewide, regional or area-wide significance" per §21083 of the California Public Resources Code and by NEPA pursuant to the Council on Environmental Quality 1979 regulations (40 CFR 1501.7). This process ensures that significant public issues, alternatives, and impacts are addressed in environmental documents and determines the scope and degree to which these issues and impacts will be analyzed.

Scoping for Proposed Project EIR/EIS

The scoping process for the EITP EIR/EIS consisted of the following four main elements:

1. Publication of the Notice of Preparation (NOP) to prepare an EIR and the Notice of Intent (NOI) to prepare an EIS.
2. Establishment of public information repositories for scoping and project documents, including a website and an electronic mail address for comments.
3. Hosting of public scoping meetings and an agency consultation meeting.
4. Documentation of all public and agency comments received in a Scoping Summary Report.

These elements are described in the following sections.

As part of the project approval process and in compliance with the requirements of CEQA and NEPA, the public scoping process was intended to allow the public and regulatory agencies an opportunity to comment on the scope of the EIR/EIS and to identify issues that should be addressed in the document. Federal, state, regional, and city agencies; Native American tribes and communities; businesses; and interested groups and individuals were given the opportunity to participate in the scoping process by providing comments and recommendations at the scoping meetings or via the EITP scoping comment repositories.

7.1.1.1 Notices of Preparation and Intent

NOP/NOI Requirements

After deciding that an EIR/EIS is needed, both the state and federal lead agencies are required to prepare and distribute a notice informing interested parties that an EIR or EIS, respectively, will be prepared. CEQA requires that the state lead agency prepare an NOP, and NEPA requires that the federal lead agency prepare an NOI. The NOP and NOI are prepared to inform interested parties about the proposed project and to solicit their participation in the EIR/EIS scoping process.

CEQA states that an NOP be sent “immediately after deciding that an environmental impact report is required for the project” (15082[a]) and include “sufficient information describing the project and the potential environmental effects to enable the responsible agencies to make a meaningful response” (15082[a][1]). Similar to an NOP, an NOI is published by the lead federal agency to serve as the official legal notice that an EIS is being prepared for a project (40 Code of Federal Regulations [CFR] 1501.7). The NOI must include a description of the proposed project and possible alternatives, the federal lead agency’s scoping process, and the lead agency’s contact information for the project (40 CFR 1508.22).

NOP/NOI for the Eldorado–Ivanpah Transmission Project EIR/EIS

Pursuant to the state and federal requirements discussed above, an NOP and an NOI were distributed for the EITP. The CPUC provided an NOP to the California State Clearinghouse for release on July 23, 2009. The NOP was mailed to133 government agencies, as well as 96 residents and nongovernmental organizations to inform the public of the proposed project and provide notice of the public scoping meetings. The BLM published an NOI for NEPA in the Federal Register on July 27, 2009.

The NOP and NOI are provided as an appendix to the Scoping Summary Report in Appendix E of this EIR/EIS.

7.1.1.2 Scoping Meetings

Scoping Meeting Requirements

CEQA recommends that public scoping be combined to the extent possible with consultation with responsible agencies, as required under 14 California Code of Regulations (CCR) 15802. Consultation is conducted with agencies that will be involved in the environmental review process locally, as well as state and federal agencies and tribal governments, as appropriate.

When public scoping is conducted, NEPA requires that public meetings be conducted in accordance with statutory requirements and other criteria (e.g., consideration of the interest in or environmental controversy of the proposed project; 40 CFR 1506.6[c]).

Scoping Meetings

The CPUC and the BLM conducted joint public scoping meetings along the proposed route in Nipton, California, on Tuesday, July 28, 2009, and in Las Vegas, Nevada, on Wednesday, July 29, 2009 (Table 7.1). The format for the scoping meetings included an open house, a PowerPoint presentation describing the EITP, and an opportunity to provide verbal or written comments.

Table 7.1 Public Scoping Meetings

Date and Time	Location	No. of People Signed-in	Comments Received at Meeting
Tues., July 28, 2009, 4–7 p.m.	Primm Valley Golf Club, Nipton, CA	3	0
Wed., July 29, 2009, 6–9 p.m.	South Point Hotel, Las Vegas, NV	7	0

An open house was held for one hour prior to each scoping meeting so that participants could review displays, maps, and literature, as well as meet members of the EIR/EIS project team, agency staff, and project personnel. To encourage public comment, repositories were provided to receive written comments. Several informational sheets about the proposed project and extra copies of the NOP/NOI were made available to the public at each venue.

Each scoping meeting began with presentations by the CPUC and the BLM describing their roles as lead agencies under the CEQA/NEPA processes, followed by an overview of the technical aspects of the proposed project. This included a detailed presentation of the current route, accompanied by an explanation of the project need. Lastly, the environmental consulting firm preparing the EIR/EIS for the CPUC and the BLM explained its role as third-party consultant, discussed opportunities for public involvement, and provided an overview of the environmental issues already identified that would be addressed in the EIR/EIS.

Each meeting concluded with a public comment period in which the agencies invited the public to comment verbally on the project. A court reporter was available to record comments. Participants were also given the opportunity to provide written comments or to take a comment form to fill out and mail in later. Attendees were encouraged to take additional comment forms with them to distribute. Nine persons attended the two meetings.

The following handouts and informational materials were available at the public meetings:

- Public scoping and public involvement overview
- Scoping meeting fact sheets
- NOP copies
- NOI copies
- Electric transmission information
- Project overview
- Noise and electric and magnetic fields (EMF) information
- Project overview and Public scoping and public involvement overview also available in Spanish

Alternatives Screening

The range of alternatives evaluated in the alternative screening process was identified through the CEQA/NEPA scoping process and through supplemental studies and consultations that were conducted during this analysis. The range of alternatives considered in the screening analysis comprised (1) alternatives identified by the applicant as part of the Preliminary Environmental Assessment (PEA), (2) alternatives requested by the CEQA lead agency (CPUC) or the NEPA lead agency (BLM), and (3) alternatives identified by the general public during the 30-day public scoping period (July 23 to August 26, 2009), in accordance with CEQA and NEPA requirements. The Alternatives Screening Report (Appendix A) provides a detailed discussion of the alternatives screening process.

7.1.1.3 Scoping and Alternatives Reports Summaries

Scoping Report Summary

In accordance with 40 CFR 1503.4, which requires that all substantive comments be considered to the extent feasible prior to project decisions, comments received during the scoping period were categorized by issue and included in a comprehensive scoping summary report entitled *Southern California Edison Eldorado–Ivanpah Transmission Project Scoping Summary Report*, issued and made available on the CPUC website for the project in October 2009 (Appendix E). The report summarized the comments and issues raised during the scoping period between July 27 and August 26, 2009.

Four primary areas of concern were identified during the public scoping process: (1) impacts of the project on several biological resources, especially desert tortoise, (2) compatibility with regional land uses such as the planned Southern Nevada Supplemental Airport, (3) compatibility with other existing rights-of-way designations, and (4) cumulative impacts.

Alternatives Screening Report Summary

As a result of the alternatives screening process, seven of the initial 17 alternatives were chosen for detailed analysis in the EIR/EIS. Chapter 2 describes each alternative considered for analysis, in detail, and provides a determination for each based on the advantages and disadvantages identified from the screening criteria, as detailed in the Alternatives Screening Report (Appendix A).

7.1.2 Notice of Availability

CEQA Guidelines Section 15085 requires that a Notice of Completion (NOC) be filed by the lead state agency upon completion of the Draft EIR. The NOC informs the reviewers that a Draft EIR is complete. Similarly, NEPA requires that a Notice of Availability (NOA) that corresponds to the NOC be filed by the lead federal agency once the EIR/EIS is available for public review (40 CFR 1506.10). The NOC is filed with the State Clearinghouse. An NOA of the Draft EIR/EIS must also be published in the Federal Register.

7.1.3 Draft EIR/EIS Public Hearings/Meetings

A 45-day public review period for the Draft EIR/EIS will include public meetings. Review period and meeting information is provided in the NOA.

7.1.4 Document Repository Sites

Document Repository Site Requirements

Both CEQA and NEPA require the state and federal lead agencies to make project documents available to the public. CEQA CCR Section 15087 provides requirements that apply to the public review of the Draft EIR. NEPA 40 CFR 1506.6(f) states that the lead federal agency is required to "make environmental impact statements, the comments received, and any underlying documents available to the public pursuant to the provisions of the Freedom of Information Act (5 U.S.C. 552)." In addition, CEQA requires that the ISEGS Final Staff Assessment / Draft EIS (FSA/EIS), incorporated herein by reference, also be made available to the public per CCR Section 15150(b).

Public Repository Sites

To accommodate public review, copies of the EITP Draft and Final EIR/EIS, and documents produced during the course of the environmental review process, are available for public review at the Las Vegas BLM Field Office and at the Las Vegas Library located at 833 Las Vegas Boulevard North in Las Vegas, Nevada. Project information is also posted on the CPUC website at http://www.cpuc.ca.gov/Environment/info/ene/ivanpah/ivanpah.html and the BLM website at http://www.blm.gov/ca/st/en/fo/needles.html.

The ISEGS Final Staff Assessment / Draft Environmental Impact Statement is available for review on the California Energy Commission website at http://www.energy.ca.gov/sitingcases/ivanpah/index.html or the BLM's website at http://www.blm.gov/ca/st/en/fo/needles/nefo_nepa.html. Copies are also available for review at the Needles BLM Field Office and the BLM California State Office in Sacramento.

7.1.5 Project Notification List and Document Distribution List

Ecology and Environment, Inc., (E & E) compiled a comprehensive mailing list for the EITP that included approximately 229 entries. E & E used the mailing list to distribute the NOP and scoping meeting postcards. The mailing list was updated to include individuals who attended the scoping meetings or requested inclusion on the list after the initial mailing of the NOP and the postcard. E & E will use this mailing list to distribute subsequent notices, information, or documents, as applicable. E & E will continue to update the mailing list as new entries become available.

The mailing list includes the following categories:

- Federal, state, and local agency representatives;
- Representatives of non-governmental organizations;
- Native American tribal government representatives; and

- List of property owners within 300 feet of the EITP footprint from Southern California Edison.

7.2 Organizations and Persons Consulted

CEQA guideline 15129 states, "The EIR shall identify all federal, state, or local agencies, other organizations, and private individuals consulted in preparing the draft EIR, and the persons, firm, or agency preparing the draft EIR, by contract or other authorization." Parties consulted in preparation of the EIR/EIS are listed in Table 7.2.

Table 7.2 Organizations and Persons Consulted

Name	Title	Organization/Agency
Air Quality		
Alan De Salvio	Supervising Air Quality Engineer	Mojave Desert Air Quality Management District
Biological Resources		
Michael Burroughs	Lead Tortoise Biologist	United States Fish and Wildlife Service
Becky Jones	Environmental Scientist	California Department of Fish and Game
Lawrence Whalon	Deputy Superintendent	Mojave National Preserve
Brad Hardenbrook	Supervisory Biologist	Nevada Department of Wildlife (Southern Region)
Roddy Shepard	Roddy Shepherd	Nevada Department of Wildlife
Public Services and Utilities		
Michael R. Richardson	Supervisor/Compliance and Enforcement Branch	Nevada Division of Environmental Protection (Bureau of Waste Management)
Mark Harris	Resource Planning Engineer	Nevada Public Utilities Commission
Clark County Desert Conservation Program		
Susan Wainscott	Adaptive Management Coordinator/Project Manager	Clark County Desert Conservation Program
Land Use		
Dionicio Gordillo	Principal Planner	Clark County Department of Planning
Jacquelyne Brady	Town Manager	Town of Laughlin, Managers Office
Carrie Hyke	Supervising Planner	San Bernardino County Planning Department
Socioeconomics		
Brok Armantrout	Director	Boulder City Community Development
Transportation and Aviation		
David Kessler (AWP-610.1)	Environmental Protection Specialist	FAA Western Pacific Region, Airports Division
Dan Kopulsky	Senior, Special Studies and IGR/CEQA	California Department of Transportation
Robert Tweedy	Airport Development Administrator	Clark County Department of Aviation
Teresa Motley	Airport Planning Manager	Clark County Department of Aviation
Mark Silverstein	Principal Planner	Clark County Department of Aviation
Tucker Field	Management Analyst II	Clark County Department of Aviation
Scott Thompson	Consultant	Trison Consulting (for CCDOA)
Catherine van Heuven	Consultant	Kaplan, Kirsch & Rockwell LLP (for CCDOA)

7.3 Preparers and Contributors

Persons from the lead agencies (the CPUC and the BLM) involved in the review of the EIR/EIS are listed in Table 7.3.

Table 7.3 Lead Agency Project Team

Name	Title	Agency
Monisha Gangopadhyay	Project Manager	California Public Utilities Commission
Jason Reiger, Esq.	Attorney	California Public Utilities Commission
Tom Hurshman	Project Manager	Bureau of Land Management

Table 7.3 Lead Agency Project Team

Name	Title	Agency
George R. Meckfessel	Planning and Environmental Coordinator	Bureau of Land Management
Mike Ahrens	Recreation and Wilderness Staff Chief	Bureau of Land Management
Mona Daniels	Wilderness Specialist	Bureau of Land Management
Ken Downing	Geologist/Hydrologist	Bureau of Land Management
Larry LaPre	Wildlife Biologist	Bureau of Land Management
Sally Murray	Archaeologist	Bureau of Land Management
Everett Bartz	Weeds/Range Management	Bureau of Land Management
Mark Chandler	Realty Specialist	Bureau of Land Management
Jeff Steinmetz	Planning and Environmental Coordinator	Bureau of Land Management
Suzanne Rowe	Archaeologist	Bureau of Land Management
Sarah Peterson	Hydrologist	Bureau of Land Management
Jayson Baranga	Wildlife Biologist	Bureau of Land Management
Lisa Christianson	Air Quality Specialist	Bureau of Land Management
Beth Ransel	Assistant Field Manager	Bureau of Land Management

Persons who prepared or participated in the preparation of the EIR/EIS are listed in Table 7.4. Preparers' qualifications are also included.

Table 7.4 EIR/EIS Preparers and Reviewers

Name	Title (Years of Experience) Degree/Expertise	Sectioned Authored/Role
Tom Dildine	Environmental Planner (20 Years) MS, Environmental Science BA, Landscape Architecture	Aesthetics and Visual Resources
Annie Menon	Environmental Engineer (4 Years) MS, Environmental Engineering BS, Civil Engineering	Air Quality
Paul Van Kerkhove	Air Quality Engineer (20 Years) MS, Environmental Science/ Engineering BS, Chemical Engineering	Air Quality
Dru Krupinsky	Greenhouse Gas Specialist (5 Years) BA, Environmental Studies/Planning	Air Quality; Greenhouse Gases
Tina Willis	Environmental Planner (22 Years) BA, Economics/Urban Planning	Alternative Screening Report
Kim Zuppiger	Environmental Planner (18 Years) BA, Social Ecology	Alternative Screening Report; Health, Safety, and Hazards
Julie Watson	CEQA/NEPA Specialist (16 Years) MS, Landscape Ecology and Management BS, Biological Sciences and Ecology Executive Certificate, Sustainable Management	Alternatives Summary; Socioeconomics; Population and Housing; Growth-Inducing Impacts; Other Considerations
Ilja Nieuwenhuizen	Ecologist (10 Years) BS, Ecology, Behavior and Evolution	Biological Resources
Jason Zoller	Ecologist (10 Years) MS, Biology BS, Fisheries and Wildlife	Biological Resources
Jennifer Siu	Aquatic Ecologist (12 Years) MS, Environmental Engineering BA, Biology	Biological Resources
Mike Donnelly	Senior Environmental Specialist (23 Years) MEM, Environmental Management BS, Applied Biology Certified Professional Wetland Scientist	Biological Resources

Table 7.4 EIR/EIS Preparers and Reviewers

Name	Title (Years of Experience) Degree/Expertise	Sectioned Authored/Role
Paul Smith	Ecologist (25 Years) BS, Range Science	Biological Resources
Christine McCollum	Environmental Specialist (8 Years) BA, Anthropology	Consultation and Coordination; Public Scoping; Recreation; Cultural Resources; Executive Summary
Sandra Pentney	Cultural Resource Specialist (9 Years) MA, Archeology Registered Professional Archeologist	Cultural Resources
Tim Gross	Cultural Resource Specialist (30 Years) PhD, Anthropology	Cultural Resources
Travis Whitney	Environmental Specialist (7 Years) BS, Geography	Cumulative Impacts
Louise Flynn	Environmental/Public Health Scientist (23 Years) MPH, Public Health MES, Environmental Studies BA, Biology and Society	Cumulative Impacts; Noise, Public Services and Utilities
Erica Brown	Environmental Specialist (5 Years) BA, English	Deputy Project Manager; Hydrology and Water Quality; Public Services and Utilities; Aesthetics and Visual Resources; Cumulative Impacts; Purpose and Need
Cheryl Karpowicz	Vice President/Environmental Planner (36 Years) BA, Interdepartmental Studies Certified Planner, AICP	EIR/EIS Principal Review
Jim Harries, PE	Electrical Engineer (38 Years) BS, Electrical Engineering	Electrical Interference and Hazards
Mark Roeder	Certified Paleontologist (28 Years) BA, Anthropology	Geology, Soils, Minerals, and Paleontology
Dale Schneeberger, PG	Principal Geologist (30 Years) MS, Geology BS, Geology BA, Biology	Geology, Soils, Minerals, and Paleontology
Tom Ferraro	Hydrogeologist (30 Years) MS, Geology BS, Earth Science	Geology, Soils, Minerals, and Paleontology; Hydrology and Water Quality
Amber Lauzon	GIS Analyst (8 Years) MA, Geography BS, Geology	GIS
Debbie Linton	Geographer (19 Years) BA, Geography	Graphics
Brenda Powell	Ecologist (14 Years) MS, Environmental Biology BS, Biology	Hazards, Health, and Safety
Robin Clemens	Chemist (23 Years) BA, Chemistry	Hazards, Health, and Safety
Stephanie Buss	Hazards Specialist/Toxicologist (13 Years) MS, Environmental Health BS, Environmental Science	Hazards, Health, and Safety
Emily Doren	Environmental Specialist (7 Years) BA, Geology	Hydrology and Water Quality
Conor Doyle	Environmental Specialist (2 Years) BA, Political Science	Land Use; Recreation; Cumulative Impacts
Howard Levine	Environmental Planner (29 Years)	Land Use; Recreation; Transportation and

Table 7.4 EIR/EIS Preparers and Reviewers

Name	Title (Years of Experience) Degree/Expertise	Sectioned Authored/Role
	MPS, Natural Resource Policy/Planning BA, Geography	Traffic; Purpose and Need
Rachel Wilkinson	Technical Editor/Writer (7 Years) BA, English	Lead Technical Editor; Public Services and Utilities; Land Use; ; Transportation and Traffic Hazards, Health, and Safety; Scoping Report; Consultation and Coordination
Barry Epstein	CEQA/NEPA Legal Expert (25 Years) JD, University of Michigan Law School MPP, Masters of Public Policy BS, Business Administration	Legal Expertise
Tom Siener	Certified Industrial Hygienist (32 Years) BS, Biology	Noise
Silvia Yanez	Environmental Specialist (7 Years) MS, Development and Environment MS, Environmental Management BS, Chemical Engineering	Project Description and Alternatives
Jennifer Rouda	Environmental Scientist (12 Years) MS, Earth Sciences BS, Geology/Chemistry	Project Manager
Rob Peterson	Technical Writer (8 Years) PhD, Education BS, Communication	Public Services and Utilities; Other Environmental Considerations
Lauren Eisele	CEQA/NEPA Specialist (22 Years) BS, Geology/Environmental Studies	Senior Review; Health, Safety, and Hazards; Land Use; Transportation and Traffic; Recreation
Alexis Amaye-Hunter	Environmental Planner (5 Years) MSPH, Environmental Health BA, Political Science/Spanish	Socioeconomics
Ian Miller	Economist (21 Years) MS, Economics BA, Economics/Political Science	Socioeconomics
Anita Wahler	Technical Editor/Writer (18 Years) BS, Environmental Education/Biology	Technical Editor
Nick Figone	Planner (4 Years) BA, Political Science/Philosophy	Transportation and Traffic

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