Draft

SOUTHERN CALIFORNIA EDISON'S LOCKHART SUBSTATION PROJECT

CPUC A.11-05-006
Initial Study / Mitigated Negative Declaration

Prepared for
California Public Utilities Commission

May 2011

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

To: **State Clearinghouse, Responsible and Trustee Agencies, Property Owners & Interested Parties**

From: **Iain Fisher, Environmental Project Manager**

Subject: **NOTICE OF INTENT TO ADOPT AN INITIAL STUDY/MITIGATED NEGATIVE DECLARATION (IS/MND): Abengoa Mojave Solar Project SPS Upgrades Project (A11-05-006)**

Date: **May 16, 2011**

Description of the Proposed Project
Pursuant to the California Environmental Quality Act (CEQA), the State of California Public Utilities Commission (CPUC) has prepared a Draft Initial Study/Mitigated Negative Declaration (Draft IS/MND) for consideration of the application (A.11-05-006) filed by Southern California Edison (SCE) on May 5, 2011, for a Permit to Construct the Lockhart Substation Project to allow the Abengoa Mojave Solar Project (AMSP) to connect and deliver solar generation to the power grid to the electric grid (Project). The Project consists of:

- A 220 kilovolt (kV) substation (Lockhart Substation) occupying approximately 10 acres of the approximately 1,765 acres that comprise the AMSP site;
- Two parallel transmission line segments (each approximately 1,500 feet) to connect the substation to the existing Coolwater-Kramer No. 1 220 kV transmission line;
- Two generation-tie lines (gen-ties) to connect the two AMSP built gen-ties into the proposed substation;
- Two 5-inch underground conduits to connect the proposed substation to the existing 12 kV Hutt Poletop Substation to supply substation light and power, as well as construction power; and
- Three fiber-optic communication routes and related infrastructure to connect the Project to SCE's existing telecommunications system, including the installation of 85 miles of new fiber-optic cables on existing transmission line poles and on seven replacement poles, construction of new interest poles, and placement of some cable in existing and new underground conduit.

Location of the Proposed Project
The Lockhart Substation, transmission line segments, gen-ties, underground conduits and most of the fiber-optic routes are proposed in unincorporated San Bernardino County. Portions of the fiber-optic routes pass through the cities of Adelanto, Victorville and Barstow and cross BLM-administered lands.

Issues Addressed in the Draft IS/MND
Environmental impacts of the Lockhart Substation Project Upgrades were analyzed in large part by the California Energy Commission in its September 2010 Commission Decision pursuant to its licensing of the

AMSP and by the U.S. Department of Energy and the U.S. Department of the Interior Bureau of Land Management in the Environmental Assessment prepared pursuant to these agencies' consideration of Mojave Solar LLC's applications for a loan guarantee for the AMSP and right-of-way for the installation of the approximately 17 miles of the proposed fiber-optic network that crosses BLM-administered lands. However, additional analysis is required of the Project (specifically the telecommunications links) to satisfy the CPUC's obligation under CEQA to consider SCE's application.

The Draft IS/MND describes the Project in the context of the AMSP; evaluates potential environmental impacts associated with construction, operation and maintenance; identifies impacts that could be significant, and mitigation measures that would avoid or substantially reduce these impacts. Prior environmental analyses of the Project are summarized and incorporated by reference in the IS/MND; the source documents are posted on the CPUC's website for the Project: http://www.cpuc.ca.gov/Environment/info/esa/lockhart/index.html.

Public Comment on the Draft IS/MND

The Draft IS/MND is available for a 30-day comment period. The public may present comments and concerns regarding the Project and the adequacy of the Draft IS/MND. Written comments on the Draft IS/MND must be postmarked or received by fax or e-mail no later than **June 14, 2011**. Please include your name, address, and telephone number in your correspondence. Written comments on the Draft IS/MND should be sent to:

Mr. Iain Fisher
Lockhart Substation Project
c/o Environmental Science Associates
225 Bush Street, Suite 1700
San Francisco, CA 94104-4207

Fax: (415) 896-0332
E-mail: lockhart@esassoc.com

Following the public comment period, responses to all comments received on the Draft IS/MND and submitted within the specified 30-day review period will be prepared by the CPUC and included in a response to comments document, which together with the Draft IS/MND, will constitute the Final IS/MND for the Project.

Availability of Draft IS/MND.

Copies of the Draft IS/MND will be available for public review on the CPUC's project website, which will be used to post all public documents and announcements during the environmental review process. Hard copies or CD copies of the Draft IS/MND may be requested by telephone at (415) 962-8453 or by e-mail at lockhartsubstation@esassoc.com.

Copies of the Draft IS/MND also will be available for public review at the following libraries:

Adelanto Branch Library 11497 Bartlett Avenue Adelanto, CA 92301-1901 Phone: 760-246-5661	Barstow Branch Library 304 East Buena Vista Barstow, California 92311 Phone: 760-256-4850

REMINDER: Comments on the Draft IS/MND will be accepted by fax, e-mail, or postmark through June 14, 2011. Please include your name, address, and telephone number in your correspondence

Draft

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ESA

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EXECUTIVE SUMMARY

ES.1 Introduction

Southern California Edison (SCE), in its California Public Utilities Commission (CPUC) application (A.11-05-006), filed on May 5, 2011, seeks a Permit to Construct (PTC) the Lockhart Substation and related facilities to allow the Abengoa Mojave Solar Project (AMSP) and other renewable generation development projects in the Mohave Desert to connect and deliver solar generation to the electric grid via the existing Cool Water-Kramer No.1 220 kV transmission line (Project). The Project consists of a 220 kilovolt (kV) substation (Lockhart Substation), two parallel transmission line segments of approximately 1,500 feet each, two 220 kV generation tie lines (gen-ties) to connect the two AMSP-built gen-ties into the proposed substation, a 12 kV distribution system to provide substation light and power as well as electricity during construction of the substation and AMSP, and fiber optic telecommunications links to other SCE facilities in the region. Approximately 17 miles of the total of 85 miles of new fiber-optic routes would cross lands administered by the Department of the Interior Bureau of Land Management (BLM); all 85 miles of fiber-optic lines would be installed in existing transmission corridors.

Under CPUC General Order (GO) 131-D, approval of the Project must comply with the California Environmental Quality Act (CEQA).[1]

ES.2 Overview of the Project's CEQA Context

Mojave Solar, LLC (Mojave Solar) submitted an Application for Certification (AFC) to the California Energy Commission (CEC) on August 10, 2009, proposing to construct, own, and operate the AMSP, a 250 megawatt (MW) solar power generating facility using solar parabolic trough technology, in unincorporated San Bernardino County, California. The solar power plant would be located entirely on private land. The Project facilities for which SCE has submitted an application to the CPUC are necessary to interconnect the AMSP, and thereby distribute the solar power it would generate, to the electric grid.

[1] CEQA is codified at California Public Resources Code Sections 21000-21177. Its implementing regulations, known as the CEQA Guidelines, are found in Title 14 of the California Code of Regulations Sections 15000-15387.

Environmental impacts of the Project have been analyzed under CEQA by the CEC pursuant to its licensing of the AMSP. [2] They also are being analyzed under the National Environmental Policy Act (NEPA) by the U.S. Department of Energy (DOE)[3] and the BLM in the Environmental Assessment (EA) prepared pursuant to these agencies' evaluation of Mojave Solar's applications for a loan guarantee for the AMSP and right-of-way grant for the installation of the approximately 17 miles of the proposed fiber-optic network that crosses BLM-administered lands. However, additional analysis is required of the Project (specifically the telecommunications links) to satisfy the CPUC's obligation under CEQA for the Project.

ES.3 Approach to Analysis

CEQA Guidelines Section 15150 authorizes public agencies to "incorporate by reference [in an EIR] all or portions of another document which is a matter of public record or is generally available to the public." Information and analyses of the CEC and DOE for the AMSP provide the basis for the CPUC's preparation of the Draft Initial Study/Mitigated Negative Declaration (IS/MND) for this Project. The CPUC has independently reviewed these documents, and incorporates relevant portions of them by reference. A general summary of the documents is provided below; more specific summaries of the information relied upon are provided in each of the individual resource sections of Chapter 3, *Environmental Checklist and Discussion*. Portions of the documents identified are incorporated by reference into this analysis and, consistent with CEQA Guidelines Section 15150, "the incorporated language shall be considered to be set forth in full as part of the text of the EIR."

Each of the documents incorporated by reference is a matter of public record. In addition to being posted on the CEC's and DOE's websites as indicated below, each of these documents also is available on the website established by the CPUC for purposes of posting all of the public documents and announcements for the Project during the environmental review process: http://www.cpuc.ca.gov/Environment/info/esa/lockhart/index.html. Each of these documents also has been provided on CD with printed copies of the IS/MND. Printed copies of the IS/MND are available for public inspection at the following locations:

- California Public Utilities Commission, 505 Van Ness Avenue, San Francisco, California
- Adelanto Branch Library, 11497 Bartlett Avenue, Adelanto, CA 92301-1901
- Barstow Branch Library, 304 East Buena Vista, Barstow, California 92311

[2] The CEC has licensing jurisdiction over all thermal power plant projects 50 megawatts (MW) and larger proposed to be built and operated in California. As the CEQA lead agency for the AMSP, the CEC approved the 250 MW concentrated solar thermal AMSP on September 8, 2010, relying in part on environmental analysis developed as part of its certified regulatory program (Pub. Res. Code §§ 25500-25543; CEQA Guidelines § 15251(j)).

[3] The DOE is considering whether to grant a construction loan guarantee for the AMSP pursuant to its authority under the Energy Policy Act of 2005, as amended by Section 406 of the American Recovery and Reinvestment Act of 2009 and responsibility under NEPA. As the NEPA lead agency for the AMSP, the DOE issued an Environmental Assessment (EA) for the AMSP on April 4, 2011. State Clearinghouse No. 2010074001 has been assigned for the DOE's consideration of the Abengoa Mojave Solar Project.

The Commission Decision issued by the CEC

The CEC issued a final Commission Decision for the AMSP on September 8, 2010 (CEC-800-2010-008 – CMF, Docket Number 09-AFC-5) for the construction, ownership, and operation of a new solar electric generating facility. This decision is referred to in the IS/MND as the "Commission Decision." The Commission Decision is the culmination of the agency's CEQA-equivalent environmental review process (Pub. Res. Code § 21080.5; CEQA Guidelines § 15251(j)). It evaluates direct, indirect and cumulative impacts of the AMSP, including components of the Project. In addition to the repositories noted above, the Commission Decision is available to the public on the CEC's *Abengoa Mojave Solar Power Plant Licensing Case Documents Page* established on the agency's website for the AMSP: http://www.energy.ca.gov/ 2010publications/ CEC-800-2010-008/CEC-800-2010-008-CMF.PDF. No State Clearinghouse Number has been established for documentation of the CEC's environmental review of the AMSP.

The Supplemental Staff Assessment issued by the CEC

The CEC issued the Supplemental Staff Assessment (SSA) for the AMSP in three parts. It refined and further developed the analysis set forth in the Staff Assessment (see below) and corrected errors in response to comments received during the comment period for the Staff Assessment. The SSA does not include each technical section, but rather only includes sections that were revised or had public comments.

Supplemental Staff Assessment - Part A was issued on May 12, 2010 (CEC-700-2010-003 - SUPA). It is referred to in this IS/MND as "SSA Part A." SSA Part A addresses potential impacts primarily on the AMSP/Lockhart Substation site related to Hazardous Materials, Noise and Vibration, Public Health, Traffic and Transportation, Visual Resources, Waste Management, and Worker Safety and Fire Protection. It may be accessed from the CEC's website: http://www.energy.ca.gov/2010publications/CEC-700-2010-003/CEC-700-2010-003-SUPA.PDF.

Supplemental Staff Assessment - Part B was issued on May 25, 2010 (CEC-700-2010-003 - SUPB). It is referred to in this IS/MND as "SSA Part B." SSA Part B addresses potential impacts primarily on the AMSP/Lockhart Substation site related to Air Quality, Biological Resources, Cultural Resources, Land Use, Soils and Water Resources and Transmission System Engineering. It may be accessed from the CEC's website: http://www.energy.ca.gov/2010publications/CEC-700-2010-003/CEC-700-2010-003-SUPB.PDF.

Supplemental Staff Assessment - Part C was issued in June 2010 (CEC-700-2010-003 - SUPC). It is referred to in this IS/MND as "SSA Part C." SSA Part C Appendix A provides a "screening level" analysis of environmental impacts associated with the facilities that would be designed, built, and operated by SCE and that are required for the AMSP to connect to SCE's Kramer-Coolwater 230-kV transmission line (SSA Part C, p. A-15). It was intended to inform subsequent environmental review of these components (Id.). SSA Part C addresses Air Quality, Biological Resources, Cultural Resources, Geology and Paleontology, Land Use, Noise and Vibration, Socioeconomics, Soil and Water Resources, Traffic and Transportation, Waste Management and Hazardous Materials, Worker Safety/Public Health and Safety, and Visual Resources. SSA Part C

may be accessed from the CEC's website: http://www.energy.ca.gov/2010publications/CEC-700-2010-003/CEC-700-2010-003-SUPC.PDF.

The Staff Assessment issued by the CEC

The CEC issued the Staff Assessment for the AMSP on March 15, 2010 (CEC-700-2010-003). It is referred to in this IS/MND as the "Staff Assessment" or "SA." The Staff Assessment included Energy Commission staff's analysis of direct, indirect and cumulative impacts, conclusions, and recommendations for the AMSP. It may be accessed from the CEC's website: http://www.energy.ca.gov/2010publications/CEC-700-2010-003/CEC-700-2010-003.PDF.

Draft Environmental Assessment issued by the Department of Energy

The DOE issued the Draft Environmental Assessment for the Department of Energy Loan Guarantee to Mojave Solar, LLC for the Abengoa Mojave Solar Project near Barstow, California, on April 4, 2011. The DOE's analysis is referred to in this IS/MND as the "DOE EA."

The DOE evaluates direct, indirect and cumulative environmental impacts under NEPA that are associated with the AMSP, including all of the facilities required to interconnect the AMSP to the grid. In other words, the DOE EA evaluates impacts associated with the AMSP as well as the Project under federal law. Resources and issues analyzed include: Land Use; Visual Resources; Air Quality; Noise; Geology, Soils, and Seismicity; Paleontological Resources, Water Resources, Biological Resources, Cultural Resources, Socioeconomics, Environmental Justice, Public Health and Safety, and Transportation. The DOE EA may be accessed from the DOE Loan Program Office's Environmental Assessments page: https://lpo.energy.gov/?page_id=1514.

This IS/MND issued by the CPUC

As described above, the CEC and DOE both reviewed the AMSP, including SCE's proposed Lockhart Substation Project components, collectively, as the totality of the action in their respective environmental documents. However, the fiber optic telecommunications links to various substations in San Bernardino County were considered in the CEC's CEQA-equivalent document only at a screening level. In order for the CPUC to approve SCE's PTC, a full environmental review of the telecommunication links must be performed. This MND performs that review and includes all of SCE's actions within the larger context of the whole of the action as defined by CEC. This document incorporates by reference the CEC's environmental review of the AMSP, and to the extent the impacts from the AMSP affect the impacts from SCE actions they are discussed as cumulative impacts in Section 3.18, *Mandatory Findings*. This focused IS/MND approach is performed in lieu of a supplement to the CEC document, which would have an even narrower focus, and instead of an MND or EIR on the whole of the action, which already has been studied in the CEC's CEQA-equivalent document. This approach is not precedential.

ES.4 Organization of the Document

This IS/MND is organized as follows:

- This Executive Summary introduces the Project, provides an overview of the Project's CEQA context, explains the approach to analysis (including by identifying and describing prior environmental analysis, portions of which are incorporated by reference), summarizes the organization of the document, identifies the method for reviewing and submitting comments on the Draft IS/MND, and provides a summary of the impacts and mitigation measures.
- Chapter 1, *Environmental Determination*, includes the CPUC's finding with regard to the type of environmental review that is required.
- Chapter 2, *Project Description*, introduces the Project and describes its location, components and details about activities associated with its pre-construction, construction and operation and maintenance.
- Chapter 3, *Environmental Checklist and Discussion*, identifies all of the CEQA Appendix G checklist items, analyzes potential environmental impacts of the Project, and recommends mitigation measures where appropriate to avoid or substantially reduce the significance of such impacts.
- Chapter 4, *Report Preparers*, summarizes the names and affiliations of persons involved with development of this IS/MND.

ES.5 Public Review Period and Comments

CEQA and the CPUC encourage public participation in the planning and environmental review processes. The public may present comments and concerns regarding the Project and the adequacy of the Draft IS/MND during a 30-day public review and comment period. Written comments may be submitted to the CPUC at any time before 5 p.m. on June 9, 2011.

How to Get a Copy of the IS/MND

Copies of the Draft IS/MND are available for public review at the CPUC's office, which is located at 505 Van Ness Avenue, San Francisco, California.

Copies also are available on the CPUC's project website, which will be used to post all public documents and announcements during the environmental review process: http://www.cpuc.ca.gov/Environment/info/esa/lockhart/index.html.

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Copies of the IS/MND also may be reviewed at the following San Bernardino County libraries:

- Adelanto Branch Library, 11497 Bartlett Avenue, Adelanto, CA 92301-1901
- Barstow Branch Library, 304 East Buena Vista, Barstow, California 92311

How to Submit Comments

Mail: Lockhart Substation Project
c/o Environmental Science Associates (JAS)
225 Bush Street, Suite 1700
San Francisco, CA 94104

E-mail: lockhartsubstation@esassoc.com

Fax: (415) 896-0332, attention JAS

ES.6 Project Description

The Project consists of construction, operation and maintenance of:

- **Lockhart Substation:** Construct a 220 kV substation (Lockhart Substation)[4] to loop-in the existing Coolwater-Kramer No. 1 220 kV transmission line and to provide two 220 kV line positions to terminate two new 220 kV gen-ties owned by Mojave Solar.
- **Generation Tie Line Connections:** Connect the two Mojave Solar-built gen-ties into SCE's proposed Lockhart Substation. This work would involve construction of two single spans of conductors between the Lockhart switchrack and the last Mojave Solar-owned tower(s).
- **Distribution Facilities:** Connect the proposed substation to SCE's existing Hutt 12 kV distribution circuit out of the Hutt Poletop Substation. A range of approximately 200 – 400 feet of two 5-inch underground conduits (along with conduits for telecom) would be installed from the proposed riser pole west of the proposed substation to the 12 kV rack to provide a path for the required station light and power, as well as temporary power necessary for the construction of the proposed substation and AMSP facilities.
- **Transmission Lines:** Loop the existing Coolwater-Kramer No. 1 220 kV transmission line into the proposed substation. The transmission loop would require construction of approximately 3,000 feet of new transmission line segments (parallel lines, each approximately 1,500 feet) creating the new Lockhart-Kramer and Coolwater-Lockhart 220 kV transmission lines.
- **Telecommunications Facilities:** Install fiber-optic communication cables, associated poles, conduits, and other telecommunication facilities, including a telecommunications room at Tortilla Substation, to provide diverse path routing of communications required for the AMSP interconnection, and to provide communications redundancy at the two AMSP power blocks. Work also would include installing communication paths between the Victor, Roadway, Tortilla, Kramer, Lockhart, and Coolwater Substations by means of stringing cable on existing transmission line poles and on seven replacement poles, constructing new interset poles, placing segments of cable in existing underground conduit, and placing cable in new underground conduit. Approximately 85 miles of fiber-optic cable is proposed for these three routes, 17 miles of which would cross BLM-administered lands. Portions of the fiber-optic cable routes would pass through the cities of Adelanto, Victorville and Barstow.

[4] The Lockhart facility is actually a switching station because it is only one voltage and does not transform power from one voltage to another; however, it is referred to in prior environmental documentation as the "Lockhart Substation." This convention is followed throughout this IS/MND.

ES.7 Potential Environmental Impacts

As the CEQA lead agency for the Project, the CPUC prepared an Initial Study. The Initial Study analyzes potential environmental impacts that would result from construction, operation and maintenance of the Project. In addition to the measures proposed by SCE to reduce or avoid potential environmental impacts, each of the design features, environmental protection measures, and best management practices (BMPs) imposed pursuant to the other agencies' environmental analyses would be implemented as part of the Project. Based on independent review of the Project, including these measures, the Initial Study determined that the Project would have no impact or a less-than-significant impact related to the following environmental resources:

- Aesthetics
- Agriculture and Forestry
- Air Quality
- Cultural Resources
- Geology, Soils, and Seismicity
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

The Initial Study also concluded that implementation of the Project would result in potentially significant impacts related to two resource areas:

- Biological Resources (i.e., rare plants)

- Greenhouse Gas Emissions (i.e., consistency with Scoping Plan Measure H-6 related to high global warming potential gas reductions from stationary sources – SF_6 leak reduction and recycling in electrical applications)

The Initial Study identifies mitigation measures that would reduce these potential significant impacts to a less-than-significant level. A Mitigated Negative Declaration (MND) is the appropriate CEQA document to be prepared under these circumstances (Pub. Res. Code § 21064.5).

ES.8 Mitigation and Monitoring

Each of the impacts identified as potentially significant could be mitigated to avoid or reduce the impact to a less-than-significant level. The mitigation measures recommended in the IS/MND have been agreed to by SCE. Table ES-1 provides a summary of the environmental impacts that require mitigation, as well as the mitigation measure language for the Project. Full descriptions of how all mitigation measures would be implemented are included in Appendix B of this IS/MND, the Mitigation Monitoring, Reporting, and Compliance Plan.

TABLE ES-1
SUMMARY OF IMPACTS OF AND MITIGATION MEASURES FOR THE LOCKHART SUBSTATION PROJECT

Environmental Impact	Mitigation Measures Proposed in this IS/MND	Implementing Actions	Monitoring/ Reporting Requirements	Timing
Aesthetics				
None required				
Agricultural and Forestry Resources				
None required				
Air Quality				
None required				
Biological Resources				
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 California Department of Fish and Game or U.S. Fish and Wildlife Service	**Mitigation Measure CPUC-BIO-1**: Floristic surveys shall be conducted along downstream upgrades in accordance with CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG, 2009). Rare plants encountered shall be subject to the following: a. 100 feet from any occurrences. b. Plant species shall be included in the Worker Environmental Awareness Program. c. If California Rare Plant Rank 1 plants are detected in the Project disturbance area, the Project owner shall prepare and implement a Special-Status Plant Mitigation Plan, with a goal of retaining at least 75% of the local population of the affected species. Compensatory mitigation at a ratio of 3:1 shall be required for the portion that is not avoided. At a minimum, the Plan shall include a description and discussion of the species, a description of avoidance and minimization measures, and a compensation plan if total avoidance is not possible. d. If California Rare Plant Rank 2 plants are detected in the Project disturbance area, the Project owner shall prepare and implement a Special-Status Plant Mitigation Plan, with a goal of retaining at least 75% of the local population of the affected species. Compensatory mitigation at a ratio of 2:1 shall be required for the portion that is not avoided. At a minimum, the Plan shall include a description and discussion of the species, a description of avoidance and minimization measures, and a compensation plan if total avoidance is not possible. e. Where compensatory mitigation is required, it shall consist of acquisition of habitat supporting the target species, or restoration/ enhancement of existing populations. The Project owner shall provide funding for the acquisition and/or restoration/enhancement,	SCE and its contractors to implement measure as defined.	SCE to submit documentation to CPUC and CDFG demonstrating compliance with CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG, 2009). CPUC mitigation monitor to monitor compliance.	Submit documentation to CPUC prior to commencement of construction activities.

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS OF AND MITIGATION MEASURES FOR THE LOCKHART SUBSTATION PROJECT

Environmental Impact	Mitigation Measures Proposed in this IS/MND	Implementing Actions	Monitoring/ Reporting Requirements	Timing
Biological Resources (cont.)				
	initial improvement, and long-term maintenance and management of the acquired or restored lands. In the event that no opportunities for acquisition or restoration/enhancement exist, the Project owner can fund a species distribution study designed to promote the future preservation, protection, or recovery of the species. f. If California Rare Plant Rank 3 plants are detected in the Project disturbance area, and the occurrence has local or regional significance, the occurrence shall be treated as a Rank 2 plant species, as above. A plant occurrence would be considered to have local or regional significance if: (1) it occurs at the outermost periphery of its range in California; (2) it occurs in an atypical habitat, region, or elevation for the taxon that suggests the occurrence may have genetic significance; or (3) it exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or subspecies. g. For all rare plant impacts, seeds shall be collected from the affected plants onsite, prior to construction, to conserve germplasm and provide a seed source for restoration efforts. Seed shall be collected under the supervision or guidance of a reputable seed storage facility, and costs associated with long-term storage shall be the responsibility of the Project owner.			
Cultural Resources				
None required				
Geology, Soils, and Seismicity				
None required				
Greenhouse Gas Emissions				
Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	**Mitigation Measure CPUC-GHG-1: Low SF_6 Leak Rate Circuit Breakers and Monitoring.** The Applicant shall ensure that the new circuit breakers installed at the Lockhart Substation have guaranteed SF_6 leak rates of 0.5 percent by volume or less. The Applicant shall provide CPUC with documentation of compliance, such as specification sheets, prior to installation of the circuit breakers. In addition, the Applicant shall monitor the SF_6-containing circuit breakers at the substation consistent with Scoping Plan Measure H-6 for the detection and repair of leaks.	SCE and its contractors to implement measure as defined.	SCE to provide CPUC with documentation of compliance, such as specification sheets. SCE shall monitor the SF_6-containing circuit breakers at the substation consistent with Scoping Plan Measure H-6 for the detection and repair of leaks.	Submit documentation prior to installation of the circuit breakers.

TABLE ES-1 (Continued)
SUMMARY OF IMPACTS OF AND MITIGATION MEASURES FOR THE LOCKHART SUBSTATION PROJECT

Environmental Impact	Mitigation Measures Proposed in this IS/MND	Implementing Actions	Monitoring/ Reporting Requirements	Timing
Hazards and Hazardous Materials				
None required				
Hydrology and Water Quality				
None required				
Land Use and Planning				
None required				
Mineral Resources				
None required				
Noise				
None required				
Population and Housing				
None required				
Public Services				
None required				
Recreation				
None required				
Transportation and Traffic				
None required				
Utilities and Service Systems				
None required				

CHAPTER 1
Environmental Determination

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

5/10/2011

Date

Iain Fisher

Printed Name

CHAPTER 2
Project Description

2.1 Introduction

Southern California Edison (SCE), in its California Public Utilities Commission (CPUC) application (A.11-05-006), filed on May 5, 2011, requests a Permit to Construct (PTC) a new 220 kilovolt (kV) substation (Lockhart Substation) and associated transmission lines, generation-tie lines (gen-ties) distribution facilities, and fiber optic telecommunications links to various substations in San Bernardino County. The Lockhart Substation Project (herein called the Project) would allow the Abengoa Mojave Solar Project (AMSP) proposed by Mojave Solar, LLC (Mojave Solar) to connect and deliver solar generation to the power grid. Under CPUC General Order 131-D, approval of the Project must comply with the California Environmental Quality Act (CEQA).[1]

As part of its CEQA process, the CPUC prepares an Initial Study for discretionary projects such as the Project to determine whether it may have a potentially significant effect on the environment. If an Initial Study prepared for a project indicates that such an impact could occur, the CPUC shall prepare an Environmental Impact Report (EIR). Alternatively, if there is no substantial evidence of such an effect, or if the potential effect can be reduced to a point where clearly no significant effect on the environment would occur, a Negative Declaration shall be prepared (Pub. Res. Code § 21080(c)(1)). A Mitigated Negative Declaration (MND) may be prepared when "the initial study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment" (Pub. Res. Code § 21064.5). On May 6, 2011, the CPUC determined, based on the results of an initial study, that the appropriate level of CEQA documentation for the Project is an MND.

This Draft Initial Study/Mitigated Negative Declaration (IS/MND) considers the potential environmental impacts of the Project. The information presented in this Section 2 of the IS/MND was extracted not only from SCE's Application for a Permit to Construct (PTC) (SCE, 2011), but also from prior analysis of environmental impacts of the Project prepared under CEQA by the

[1] CEQA is codified at California Public Resources Code Section 21000 et seq. Its implementing regulations (CEQA Guidelines) are found in Title 14 of the California Code of Regulations Section 15000 et seq.

California Energy Commission (CEC) pursuant to its licensing of the AMSP,[2] and under the National Environmental Policy Act (NEPA) by the U.S. Department of Energy (DOE)[3] and the Department of Interior Bureau of Land Management (BLM) in the Environmental Assessment (EA) prepared pursuant to these agencies' evaluation of Mojave Solar's applications for a loan guarantee for the AMSP and right-of-way grant for the installation of the portion of the proposed fiber optic network that would cross BLM-administered lands.

The CEC and DOE both reviewed the AMSP, including the SCE substation and related transmission and telecommunication facilities, collectively, as the totality of the action in their respective environmental documents. However, the fiber optic telecommunications links to various substations in San Bernardino County were considered in the CEC's CEQA-equivalent document only at a screening level. In order for the CPUC to approve SCE's PTC, a full environmental review of the telecommunication links must be performed. This MND performs that review and includes all of SCE's actions within the larger context of the whole of the action as defined by CEC. This document incorporates by reference the CEC's environmental review of the AMSP, and to the extent the impacts from the AMSP affect the impacts from SCE actions they are discussed as cumulative impacts in Section 3.18, *Mandatory Findings*. This focused MND approach is performed in lieu of a supplement to the CEC document, which would have an even narrower focus, and instead of an MND or EIR on the whole of the action, which has already been studied in the CEC's CEQA-equivalent document. This approach is not precedential.

This Chapter 2 is intended to provide a description of Project construction, operation and maintenance, serving to provide a common understanding of the Project parameters and, thereby, to inform the CPUC's environmental analysis of the Project. The Project components are described in CEC Commission Decision Section I (p. 9 et seq.); CEC SSA Part C Appendix A Section 2.0 (p. A-4 et seq.); CEC SSA Part B (p. 3-1 et seq.); and in the CEC Staff Assessment (p. 3-1 et seq.). The Project also is described in DOE EA Section 2.1, Proposed Action (p. 2-1 et seq.) and Appendix F. These sections of the CEC and DOE analyses are incorporated by reference. For convenience to the reader, SCE's project description contained as Appendix F in the DOE EA is included in this IS/MND as Appendix C.

2.2 Project Location

The proposed Lockhart Substation and interconnection to the adjacent SCE power lines would be located on the 1,765-acre AMSP site (near Harper Lake) and the land adjacent and south, where it connects to the existing east-west power lines. The fiber optic routes diverge from the AMSP/ Lockhart Substation site into three directions covering approximately 85 miles of corridors.

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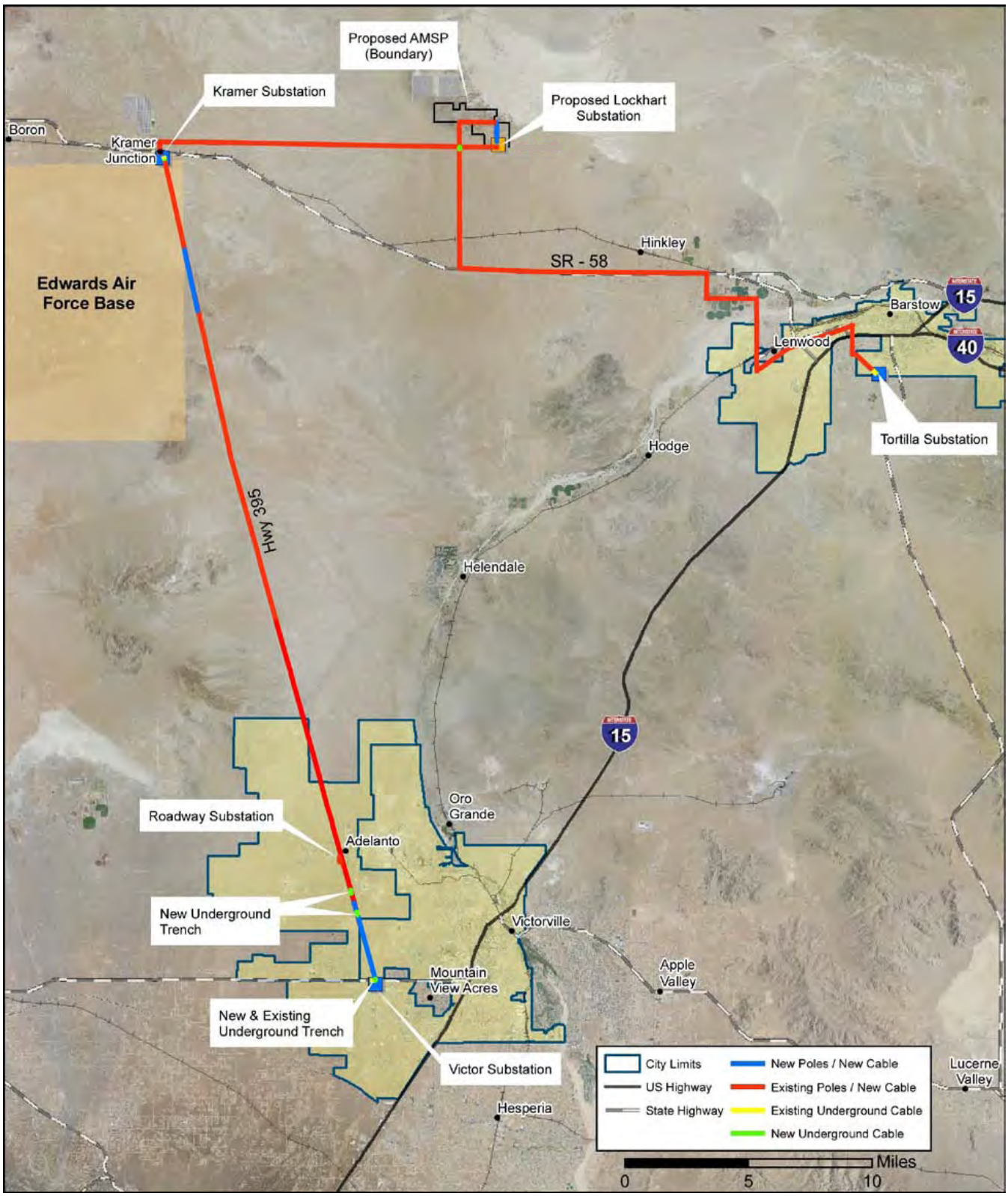
2 The CEC has licensing jurisdiction over all thermal power plant projects 50 megawatts (MW) and larger proposed to be built and operated in California. As the CEQA lead agency for the AMSP, the CEC approved the 250 MW concentrated solar thermal AMSP on September 8, 2010, relying in part on environmental analysis developed as part of its certified regulatory program (Pub. Res. Code §§ 25500-25543; CEQA Guidelines § 15251(j)).

3 The DOE is considering whether to grant a construction loan guarantee for the AMSP pursuant to its authority under the Energy Policy Act of 2005, as amended by Section 406 of the American Recovery and Reinvestment Act of 2009 and responsibility under NEPA. As the NEPA lead agency for the AMSP, the DOE issued an Environmental Assessment (EA) for the AMSP on April 4, 2011. State Clearinghouse No. 2010074001 has been assigned for the DOE's consideration of the Abengoa Mojave Solar Project.



Lockhart Substation Project . 207584.10

SOURCE: DOE, 2011

Figure 2-1
Project Location and Vicinity Map

Portions of the fiber optic routes pass through the cities of Adelanto, Victorville and Barstow and cross BLM-administered lands. See Figure 2-1, *Project Location and Vicinity Map*.

The proposed Lockhart Substation would be located within the AMSP site boundary. Mojave Solar LLC will develop the AMSP on approximately 1,765 acres of private land located approximately 5.5 miles north-east of the intersection of California State Highway 58 and Harper Lake Road in unincorporated San Bernardino County. The site is generally north of the cities of Victorville and Adelanto, northwest of the City of Barstow, and northeast of the Southern California Logistics Airport (formerly George Air Force Base) (DOE EA, p. 2-1). Access to the substation site for both construction and operation would be gained through the AMSP internal road network from its main access on Harper Lake Road (DOE EA, p. 2-22). The entire length of the transmission gen-tie line is located on the AMSP/Lockhart Substation site; vehicle access to the transmission line gen-ties would be from maintenance roads within the AMSP boundary (DOE EA, p. 2-20). See DOE EA Figure 2-1, *AMSP/Lockhart Substation Site*, p. 2-4.

The electrical distribution system to provide station light and power, as well as temporary power for construction of the Lockhart Substation and AMSP, would connect into the existing Hutt 12 kV distribution circuit that is adjacent to the Lockhart Substation site.

The fiber optic telecommunication system would diverge from the AMSP/Lockhart Substation site into three directions covering approximately 85 miles of corridors:

- **Lockhart-to-Tortilla Fiber Optic Line:** This route includes approximately 31 miles of new fiber optic cable to be installed between the proposed Lockhart Substation and the existing Tortilla Substation, located to the southeast in Barstow. Of this distance, approximately 3.62 miles of the route follows existing transmission line corridors and ROWs that cross BLM-administered land (DOE EA, p. 2-25). DOE EA Figure 2-11, *Fiber Optic Line – Lockhart to Tortilla Substation* (p. 2-24), shows this route, including the portion administered by the BLM.

- **Lockhart-to-Kramer Fiber Optic Line:** This route includes approximately 16 miles of new fiber optic cable to be installed between the proposed Lockhart Substation and the existing Kramer Substation. Of this distance, approximately 7 miles would cross BLM-administered land (DOE EA, p. 2-27). DOE EA Figure 2-12, *Fiber Optic Line – Lockhart to Kramer Substation* (p. 2-26), shows this route, including the portion administered by the BLM.

- **Kramer to Victor Substation Fiber Optic Line:** This route includes approximately 38 miles of new fiber optic cable to be installed between the existing Kramer and Victor substations. Of this distance, approximately 8.5 miles would cross BLM-administered land (DOE EA, p. 2-29). DOE EA Figure 2-13, *Fiber Optic Line – Kramer to Victor Substation* (p. 2-28), shows this route, including the portion administered by the BLM.

2.3 Project Overview

SCE proposes to construct the Lockhart Substation and associated facilities to interconnect the 250-MW AMSP to SCE's existing Coolwater-Kramer No.1 220 kV transmission line. Major components of the Project are summarized below:

- **Lockhart Substation[4]:** Construct a new 220 kV substation would loop-in the existing Coolwater-Kramer No. 1 220 kV transmission line and provide two 220 kV line positions to terminate two new 220 kV generation tie lines (gen-ties) owned by Mojave Solar LLC.

- **Generation tie (gen-tie) Line Connections:** Connect the two AMSP-built gen-ties into the SCE-owned Lockhart Substation. This work would involve construction of two single spans of conductors between the Lockhart switchrack and the last AMSP-owned tower(s). Approximately 30 new steel/concrete mono-poles would connect the AMSP's Alpha Plant site and approximately 9 new poles would connect the AMSP's Beta Plant site to the Lockhart Substation. The poles are expected to average approximately 80 feet in height (maximum pole height of 110 feet), with a span length expected to average 500.

- **Interconnection:** Construct approximately 3,000 feet of new transmission line segments (comprised of two line segments of approximately 1,500 feet each), connecting the new Lockhart Substation to SCE's existing 220-kV Coolwater-Kramer No. 1 transmission line, which is located adjacent to the southern border of the AMSP site. These two new lines would create the new Lockhart-Kramer and Coolwater-Lockhart 220 kV transmission lines on private land or on public lands within BLM utility corridors.

- **Distribution Line for Lockhart Substation Light and Power:** Connect the existing Hutt 12 kV distribution circuit out of the Hutt Poletop Substation replacing one and removing one existing pole approximately 40 feet north of the Lockhart Substation within the boundary of the AMSP. Approximately 200-400 feet of underground conduit would be installed from the replaced pole to the Lockhart Substation to provide a path for one of the two required sources of station light and power. This line also would provide temporary power for the construction of the Lockhart Substation and the AMSP facilities.

- **Telecommunications Facilities:** Install fiber optic communication cables, associated poles, conduits, and other telecommunication facilities to provide diverse path routing of communications required for the AMSP interconnection, and to provide communications redundancy at the two AMSP power blocks. Facilities would include construction of a telecommunications room at SCE's existing Tortilla Substation. Work also would include installing communication paths between the Victor, Roadway, Tortilla, Kramer, Lockhart, and Coolwater Substations.

These Project components are described in greater detail below.

2.4 Project Components

The Project consists of four primary components: (1) constructing and operating a new 220 kV substation; (2) constructing and operating new transmission lines and related structures; (3) connecting the existing Hutt 12 kV distribution circuit out of the Hutt Poletop Substation; and (4) and installing fiber optic communication cables, associated poles, conduits, and other telecommunication facilities.

[4] The Lockhart facility is actually a switching station because it is only one voltage and does not transform power from one voltage to another; however, it is referred to in prior environmental documentation as the "Lockhart Substation." This convention is followed throughout this Draft IS/MND.

2.4.1 Lockhart Substation

The new Lockhart Substation would be an unattended 220 kV collector station; no power transformation would occur. It would be developed on approximately 10 acres within the boundary of the AMSP and surrounded by a wall or chain-link fence with two gates. Its internal measurements would be approximately 450 feet by 550 feet.

The substation would be constructed with a six-bay 220-kV switchrack. One bay would be used to loop the Coolwater to Kramer 220-kV No. 1 transmission line, and two bays would be used to terminate the two solar plant gen-ties. The three remaining bays would be available for future use. The Lockhart Substation initially would be equipped with two overhead 220-kV buses, seven 220-kV circuit breakers, 220- kV disconnect switches, one mechanical electrical equipment room (MEER), and light and power. There would be one back-up generator. Figures 1 and 2 in Appendix C show the location of the proposed substation, substation fence line, SCE transmission right-of-way, and the AMSP solar plant fence line based on conceptual engineering.

2.4.1.1 Generation Tie Lines and Related Structures

Generation Tie Lines

There would be one Mojave Solar LLC-owned double circuit structure outside the Lockhart Substation to support connection of the two Mojave Solar-owned gen-ties. SCE would connect the gen-ties from the Mojave Solar-owned dead end structures to the appropriate 220 kV position inside Lockhart Substation. The span needed for this connection is estimated to be up to 300 feet depending on the location of the transmission line tower relative to the Lockhart Substation. The conductor used would be a single 1590 kcmil “Lapwing” Aluminum Conductor Steel Reinforced (ACSR) per phase.

The proposed gen-ties would be installed on approximately 30 new steel/concrete mono-poles from the AMSP’s “Alpha” plant site and approximately 9 poles from its Beta plant site. The poles are expected to average approximately 80 feet in height (maximum pole height of 110 feet), with a span length expected to average approximately 500 feet (DOE EA, p. 2-20). DOE EA Figure 2-10, *Typical Pole (Onsite)* (p. 2-21), illustrates the conceptual design of a typical pole that would be used on the Mojave Solar portion of the gen-tie line. The SCE portion of the gen-tie line would require installation of a tower versus a pole. DOE EA Section 2.1.1.3 (p. 2-18 et seq.) describes the proposed gen-ties, and DOE EA Figure 2-9, *Lockhart Substation Details*, shows their proposed location.

220 kV Transmission Line Loop-In

SCE would connect the proposed Lockhart Substation to the Coolwater-Kramer No. 1 220 kV transmission line via loop-in transmission segments. The two loop-in line segments would create two new separate transmission lines: the Coolwater-Lockhart 220 kV transmission line and the Kramer-Lockhart 220 kV transmission line. Each transmission line segment into the Lockhart Substation would be approximately 1,500 feet long. The proposed loop-in of the existing No. 1 Coolwater–Kramer 220-kV transmission line would require approximately four double-circuit

lattice steel towers to enter the Lockhart Substation. Two of the 220-kV double-circuit structures would be placed just outside of the substation fence or wall but within the AMSP boundary. The other two structures would be used to reroute the No. 1 Coolwater–Kramer 220-kV transmission line into the Lockhart Substation. The proposed conductor is a single 1590 thousand circular mil (kcmil)[5] "Lapwing" ACSR conductor per phase. The section of line connecting the existing Coolwater-Kramer No. 1 220 kV transmission line to the first structure outside of Lockhart Substation would require a new right of way, as shown in DOE EA Appendix F Figure 2, between SCE's existing ROW and the new Lockhart Substation facilities. The exact location of new and replaced towers would be determined during detailed engineering. DOE EA Appendix F Figures 4-1 and 4-2 provide renderings of lattice steel and tubular steel poles. See, DOE EA Section 2.1.1.3, p. 2-18, describing the proposed 220 kV transmission loop-in lines.

Existing 220 kV Transmission Line Structure Modification/Replacement Design

To support the loop-in, one existing double circuit transmission structure may need to be removed. However, the exact number of towers to be removed would be determined during detailed engineering.

2.4.1.2 Distribution System for Station Light and Power

As analyzed as part of the AMSP, the existing Hutt 12 kV distribution circuit out of Hutt Poletop Substation would remain in place, located near Roy Street and a private dirt road, to provide station light and power to the proposed Lockhart Substation. One existing pole would be replaced and one existing pole would be removed approximately 40 feet north of the Lockhart Substation, and a range of approximately 200-400 feet of underground conduit would be installed from the replaced pole to the substation to provide this service.

A new distribution riser pole would be installed from an existing pole on the west side of the proposed Lockhart Substation. An Omni-rupter switch would be installed on the distribution 12 kV riser pole along with the distribution riser. Approximately 200-400 feet of 2 five-inch conduits would be installed on a new 12 kV station light and power rack location within the proposed substation adjacent to the MEER. Portions of these facilities also could be used to install the telecommunication fiber optic cables into Lockhart Substation that are described below in Section 2.4.1.4, *Telecommunication System*.

The 12 kV Hutt distribution circuit would extend through one of the new five-inch conduits with 1/0 aluminum jacketed concentric neutral (JCN), cross-linked polyethylene (CLP) cable to connect the existing overhead tap line to the back-up station light and power transformers mounted on the 12 kV rack within the substation. For temporary power, SCE would install a 200 amp, 120/240 volt, 3-phase, 4-wire panel. An open delta transformer bank would be installed on an existing 12 kV distribution pole to the west of the proposed Lockhart Substation.

[5] A "thousand circular mil" or "kcmil" is a unit of the conductor's cross sectional area. When divided by 1,273, the area in square inches is obtained.

2.4.1.3 Telecommunication System

Telecommunication System Design

New fiber optic cables for a total (combined) length of approximately 100 miles would be installed partly on the existing overhead transmission (115 kV) and distribution (33 kV) wood and steel poles, partly on new wood poles, and partly through new and existing underground conduits. The proposed telecommunication system would be installed to provide transmission line protection, SPS monitoring, and remote operation capabilities of the electrical equipment at the proposed Lockhart Substation. As shown in Appendix C, Figures 3-1 through 3-6, the new telecommunication system would connect the proposed Lockhart Substation to SCE's existing network via the following routes:

- Lockhart substation to Alpha and Beta switchyards – about 3 miles in a new corridor entirely within the AMSP project site;
- Kramer substation to Lockhart substation – a distance of about 18 miles within an existing transmission corridor;
- Lockhart substation to Tortilla substation – about 31 miles in an existing corridor;
- Victor substation to Kramer substation – about 36 miles in an existing corridor; and
- Tortilla substation to Coolwater substation – about 12 miles in an existing corridor.

The telecommunication route between the Tortilla and Coolwater substations is being considered and its potential environmental impacts are being fully analyzed as part of a separate review and permitting process being conducted by the County of San Bernardino and Bureau of Land Management. However, in the event that the other project is cancelled or delayed, the Tortilla-Coolwater fiber optic cable independently would be required for the Lockhart Project. Accordingly, the Tortilla-Coolwater route is described here and analyzed in this document.

As summarized in Table 2.4-1, *Summary of Anticipated Fiber Optic Cable Routes*, and described in detail below, the new fiber optic cables would have a total length of approximately 100 miles for the combined routes and would be installed partly on the existing overhead transmission (115 kV) and distribution (33 kV) wood and light duty steel poles, partly on new wood poles, and partly through new and existing underground conduits. Routing of fiber optic cable from Lockhart Substation to AMSP's Alpha and Beta power facilities would be dependent on easements and paths provided by Abengoa; however, the routing would be entirely within the ASMP site boundaries (see Appendix C, Figure 3-5).

In addition, a new telecommunication facility would be required at the Tortilla substation to support the additional telecommunication equipment being installed there (see Appendix C, Figure 3-7).

Telecommunication System Equipment

The following telecommunications equipment would be installed:

- New overhead/underground 48-strand fiber optic cables to connect the Lockhart Substation to the Kramer and Tortilla Substations as well as to AMSP's Alpha and Beta Substations.

TABLE 2.4-1
SUMMARY OF ANTICIPATED FIBER OPTIC CABLE ROUTES[1]

	Kramer to Lockhart	Lockhart to Tortilla	Victor to Kramer	Tortilla to Coolwater[2]
Proposed Fiber Optic Length	92,000 feet (18 miles)	164,000 feet (31 miles)	185,000 feet (35 miles)	57,900 feet (11 miles)
Total Length Underground (UG)	3,100 feet	1,900 feet	2,300 feet	2,460 feet
• Existing UG conduits	2,000 feet	500 feet	700 feet	2,460 feet
• New UG conduits	1,100 feet	1,400 feet	1,600 feet	0 feet
Total Length Overhead (OH)	88,000 feet	162,000 feet	182,700 feet	440 feet
• Existing OH	82,000 feet	150,000 feet	182,700 feet	55,440 feet
• New OH	6,000 feet	12,000 feet	0 feet	0 feet
• Existing Poles	250	655	226	220
• New Poles	30	0	30	0
Estimated Ground Disturbance	7,500 sq. ft	13,700 sq. ft	226,500 sq. ft.	3,400 sq. ft.
Time and Resources to Construct (4 people per crew)	38 crew days	64 crew days	154 crew days	19 crew days
Total Worker Days Required	152 worker days	256 worker days	755 worker days	97 worker days

NOTES:
1 These figures are estimates only; actual values could change based upon final engineering.
2 The Tortilla-Coolwater fiber optic cable is in the permitting phase as part of a separate project; however, it is described in this Chapter 2, *Project Description*, and analyzed in Chapter 3, *Environmental Checklist and Discussion*, in case the other project is delayed.

SOURCE: Appendix C, Table 8

- New overhead/underground 96-strand fiber optic cables to connect the Kramer and Victor substations.
- New fiber optic multiplex equipment and channel equipment in the Lockhart Substation MEER.
- New telecommunications room within SCE's existing Tortilla Substation.
- New fiber optic multiplex equipment and channel equipment at the Kramer, Tortilla, Coolwater, Roadway, Lugo Substations and any other location necessary to support the communication requirements for the Lockhart Project.
- Replacement of existing poles if determined required during final engineering.

Cable Route from Kramer to Lockhart

The cable route between the Lockhart and Kramer substations would proceed north from the Kramer Substation's MEER building approximately 800 feet, installing underground cable in an existing underground trench; would continue west approximately 525 feet, installing underground cable in existing underground conduit; and would continue north approximately 725 feet, installing underground cable in existing underground conduit to pole 1793491E rise up. From there, the route would continue north approximately 2,000 feet, installing ADSS overhead cable on existing overhead structures; continue east within the right-of-way approximately 63,500 feet, installing overhead cable on existing overhead structures; continue north on Harper Lake Road approximately 5,700 feet, installing overhead cable on existing overhead structures, continue east on Lockhart

Road approximately 11,000 feet, installing overhead cable on existing overhead structures to pole 4488408E; where the route would continue south approximately 5,700 feet, installing overhead cable on new overhead structures to be installed for station light and power for Lockhart Substation. Finally, a riser would be installed and the route would continue for approximately 1,000 feet, installing underground cable in new underground conduit structures to the proposed Lockhart Substation MEER.

Cable Route from Lockhart to Tortilla

The cable route from the proposed Lockhart Substation to Tortilla Substation would proceed south from the Lockhart Substation's MEER for approximately 1,000 feet, installing underground cable in new underground conduit to a new pole with riser. From this point, the route would continue west on existing overhead H-frame subtransmission structures within SCE's existing Coolwater-Kramer 115 kV right-of-way for approximately 11,000 feet (see Appendix C, Figure 7). A riser would be installed on the last pole near the intersection with Harper Lake Road. The route would continue south on Harper Lake Road for approximately 400 feet, installing new underground cable and conduit to pole 4349976E where a new riser would be installed, and then would continue south on Harper Lake Road to Highway 58 for approximately 26,000 feet, installing ADSS overhead cable on existing overhead structures.

From Highway 58, the Lockhart-Tortilla cable route would continue east for approximately 52,600 feet, installing overhead cable on existing overhead structures; continue south on Summerset Road for approximately 5,300 feet, installing overhead cable on existing overhead structures; and continue east on Community Boulevard for approximately 10,600 feet, installing overhead cable on existing overhead structures to Lenwood Road. From there, the route would continue south for approximately 13,500 feet, installing overhead cable on existing overhead structures; continue south on Sun Valley Drive for approximately 2,000 feet, installing overhead cable on existing overhead structures; continue northeast on the existing SCE Poco 33 kV pole line for approximately 25,000 to Avenue I, installing overhead cable on existing overhead structures; continue south approximately 1,850 feet, installing overhead cable on existing overhead structures; continue south crossing over Interstate 15 for approximately 425 feet to pole 1847916E on I Street; and, from there, continue south approximately 4,500 feet to Siderite Road, installing overhead cable on the existing overhead structures. From Siderite Road, the route would continue east for approximately 1,400 feet, installing overhead cable on existing overhead structures; continue northwest on SCE's existing Kramer-Tortilla 115 kV right-of-way for approximately 6,100 feet, installing overhead cable on existing overhead structures to pole 2263364E drop down existing riser; and, finally, continue east for approximately 500 feet, installing underground cable in existing underground conduit to the Tortilla Substation MEER.

Cable Route from Lockhart to AMSP Alpha and Beta Switchyards

The routing of fiber optic cable from the proposed Lockhart Substation to the AMSP's Alpha and Beta power facilities would occur entirely within the AMSP plant boundary and depend on easements and paths provided by Abengoa. However, it is expected that the Lockhart substation to Alpha switchyard gen-tie connection would be provided via a new 2.17-mile long single circuit 230 kV overhead line on 80 to 110-foot steel poles and that the Lockhart-Beta gen-tie connection

would be provided via a new 0.84-mile long single circuit 230 kV overhead line also on 80 to 110-foot steel poles (CEC, 2010). It is reasonable to conclude, therefore, that the fiber optic cable from the Lockhart Substation to the Alpha and Beta Switchyards would be constructed as underbuild on the AMSP gen-tie structures, and no additional ground disturbance would occur.

Cable Route from Victor to Kramer

To provide for the required SPS, SCE would install a fiber optic cable between SCE's existing Kramer and Victor substations. SCE evaluated the possibility of installing a telecommunication All-Dielectric Self-Supporting Aerial (ADSS) fiber optic cable on the existing Kramer-Victor 115 kV pole line. The completion of the initial evaluation identified that the SCE's Kramer-Victor 115 kV pole line is adequate to support the ADSS fiber optic cable. However, approximately 30 new wood or lightweight steel interset poles would have to be installed in specific areas within existing right-of-way to support ground clearance requirements. The number and exact location, as well as type of interset poles would be determined during final engineering (see Appendix C, Figure 5).

The cable route between the Victor Substation and Kramer Substation (see Appendix C, Tables 10 and 11 would proceed approximately 225 feet northwest from the Victor MEER in a new conduit to a new riser to be installed on 115 kV pole 4409452E. From this new line riser, approximately 14,750 feet of new overhead fiber optic cable would be installed on the existing Kramer-Victor 115 kV overhead structures, which generally parallel Highway 395 toward the Kramer Substation. A new riser drop down, approximately 500 feet of new underground conduit, and a new line riser would be required to cross under 287 kV transmission lines owned by the Los Angeles Department of Water and Power. From here, the new fiber optic cable route would be installed on the existing Kramer-Victor 115 kV overhead structures for approximately 4,300 feet. A new riser drop down, approximately 500 feet of new underground conduit, and a new line riser would be required to cross under the existing Kramer-Lugo 220 kV transmission lines.

From this point, installation of the new fiber optic cable would resume on the existing Kramer-Victor 115 kV overhead structures for approximately 6,400 feet, where it then would be routed in and out of SCE's Roadway 115 kV Substation. To route into the Roadway 115 kV Substation MEER, a new riser drop down and approximately 350 feet of new underground conduit would be needed. To route out of the Roadway 115 kV Substation MEER, approximately 575 feet of new cable would be installed on existing underground conduit, approximately 600 feet of new cable would be installed on new underground conduit, and a new line riser would be required.

From this point, approximately 570 feet of new overhead cable would be installed back to the Kramer-Victor 115 kV line where it would then head north for approximately 155,000 feet toward the Kramer Substation. A new riser drop down would be required on the last Kramer-Victor 115 kV pole just outside the Kramer Substation, and approximately 1,000 feet of new underground conduit toward the Kramer Substation MEER would complete the fiber optic communications path between SCE's existing Victor Substation and Kramer Substation. Approximately 30 new wood or lightweight steel interset poles would have to be installed in specific areas within existing right-of-way to support ground clearance requirements. The number and exact location, as well as type of interset poles would be determined during final engineering.

Cable Route from Tortilla to Coolwater

The Tortilla-Coolwater cable route would proceed from the Coolwater MEER east approximately 196 feet and south approximately 789 feet, installing underground cable in existing underground conduit to the existing riser pole 2311957E, go up existing riser and continue west approximately 910 feet, installing overhead cable on existing overhead structures to pole 2311962E. From there, it would continue south approximately 255 feet, installing overhead cable on existing overhead structures to riser pole 2311963E; continue south approximately 1,026 feet, installing underground cable in underground conduit to riser pole 1847660E; go up riser and continue west approximately 3,071 feet, installing overhead cable on existing overhead structures to pole 2311982E; continue south approximately 500 feet, installing overhead cable on existing overhead structures to pole 83120S; continue west approximately 16,675 feet, installing overhead cable on existing overhead structures to pole 430515S; and continue south approximately 420 feet, installing overhead cable on existing overhead structures to pole 430514S. From this point, the route would continue west approximately 17,903 feet, installing overhead cable on existing overhead structures to pole 1771073E; continue south approximately 200 feet, installing overhead cable on existing overhead structures to pole 1771075E; continue west approximately 14,931 feet, installing overhead cable on existing overhead structures to pole 1730385E; continue north approximately 300 feet installing overhead cable on existing overhead structures to pole 1730387E; and continue west approximately 268 feet, installing overhead cable on existing overhead structures to pole 4699300E; continue south approximately 75 feet, installing overhead cable on existing overhead structures to "no tag" pole; continue west approximately 322 feet, installing overhead cable on existing overhead structures to new riser pole 4645190E; and install riser on pole drop down riser and continue north and east approximately 395 feet, installing underground cable in new underground conduit to existing substation cable trench. To complete the connection, the route would continue north approximately 45 feet, installing underground cable in existing substation cable trench into the Tortilla Substation MEER.

2.4.2 Other Project Components

2.4.2.1 Hazards, Hazardous Materials, and Waste Management

Lockhart Substation

Construction and operation of the Lockhart Substation would require the limited use of hazardous materials such as fuels, lubricants, and cleaning solvents. SCE would comply with all applicable laws relating to hazardous materials use, storage, and disposal. A Stormwater Pollution Prevention Plan (SWPPP) also would be prepared by Abengoa for the Lockhart Substation Project.

Construction of the Lockhart Substation would result in the generation of various waste materials including soil, vegetation, and sanitation waste (portable toilets). Soil excavated for the Lockhart Substation site (see Table 2.7-1, *Lockhart Substation Materials and Estimated Land Disturbance Volumes*) either would be used as fill or disposed of off-site at an appropriately licensed waste facility. Sanitation waste, i.e., human generated waste, would be disposed of according to sanitation waste management practices.

Transmission Lines and Related Structures

No hazardous materials would be used in installing overhead transmission lines and related structures. These activities would not require local services or utilities. All construction materials and debris would be removed from the area by SCE and recycled or properly disposed of at an off-site disposal facility in accordance with all applicable laws.

Distribution System for Station Light and Power

No hazardous materials would be used in installing the distribution system and related structures. These activities would not require local services or utilities. All construction materials and debris would be removed from the area by SCE and recycled or properly disposed of at an off-site disposal facility in accordance with all applicable laws.

Telecommunication System

No hazardous materials would be used in installing underground conduit, new wood communication poles, or the stringing of fiber optic cables overhead. These activities would not require local services or utilities. Waste generated during installation of the telecommunication system for the Project (including empty cable reels, cut-off pieces of fiber cable and other materials) would be disposed of at existing SCE facilities.

2.4.2.2 Water Use

Construction-related Water Use

During construction, water trucks may be used to minimize the quantity of airborne dust created by construction activities. Water may also be used for transmission tower concrete footings if commercial ready-mix concrete supply facilities do not exist within the general area of need.

Operation and Maintenance-related Water Use

Water use is not anticipated during operation and maintenance of the Project.

2.5 Right-of-Ways Requirements

New right-of way would be required to construct, operate or maintain the Project.

2.6 Preconstruction Activities

2.6.1 Geotechnical Studies

Prior to the start of its construction of the AMSP, Abengoa would conduct a geotechnical study of the AMSP plant site, which includes the proposed Lockhart Substation site and Project-related transmission line routes, including an evaluation of the depth to the water table, evidence of faulting, liquefaction potential, physical properties of subsurface soils, soil resistivity, slope stability, and the presence of hazardous materials.

2.7 Construction

Details about the construction of the Abengoa Mojave Solar plant site are provided in DOE EA Section 2.1.1.2, (p. 2-15 et seq.). Preconstruction activities are expected to commence in Spring 2011, with construction lasting up to 31 months. At the peak of employment, the solar project would involve 1,162 workers; average construction employment levels would be about 830 people.

With regards to construction work activities, SCE anticipates working typical construction schedules; however, the actual construction hours may vary.

2.7.1 Construction Overview

2.7.1.1 Construction Schedule

Pre-Construction activities requiring ground disturbance are expected to begin in the third quarter of 2011, with construction to begin in the fourth quarter of 2011. Construction would continue for approximately two years. The completion of construction and occurrence of the commercial operation date is expected in the fourth quarter of 2013.

2.7.1.2 Grading and Ground Disturbance

Because the Lockhart Substation would be located within the boundaries of the AMSP, the grading of the substation site would be included within Abengoa's overall grading design. Therefore, SCE neither would prepare a grading and drainage plan, nor would apply for grading permits from the County of San Bernardino. Prior to Abengoa's submittal of the site grading application to the County, SCE would review and approve that portion of the grading design pertaining to the substation location. Abengoa would carry out site grading in accordance with its County-approved grading plans. Land disturbance areas and earth moving quantities, including vehicle emissions at the substation location, also are included within the AMSP facilities application. Upon completion of Project site preparation by Abengoa, SCE would assume responsibility for the remainder of the Lockhart Substation construction including the installation of a temporary chain-link fence surrounding the construction site.

Table 2.7-1, *Lockhart Substation Materials and Estimated Land Disturbance*, provides the approximate area of land disturbance at the Lockhart Substation site within the substation fences, and the approximate volume and type of earth materials that would be used or disposed by SCE during construction of the substation.

Table 2.7-2, *Transmission Line Construction-related Land Disturbance*, provides information on temporary and permanent land disturbance areas related to the construction of the transmission lines and related structures.

Table 2.7-3, *Kramer-Victor Fiber Optic Cable Construction-related Land Disturbance*, provides the temporary and permanent disturbance area associated with this fiber-optic route.

TABLE 2.7-1
LOCKHART SUBSTATION MATERIALS AND ESTIMATED LAND DISTURBANCE

Element	Material	Approximate Volume (yd3)
Substation Equipment Foundations	Concrete	1,350
Equipment and cable trench excavations[1]	Soil	1,530
Cable trenches[2]	Concrete	25
Internal driveway	Asphalt concrete Class II aggregate base	440 630
Substation rock surfacing	Rock, nominal 1 to 1-1/2 inch	2,400

NOTES:
1 Excavation "spoils" would be placed on site during the below-ground construction phase to the extent possible.
2 Standard cable trench elements are factory fabricated, delivered to the site and installed by crane. Intersections are cast in place concrete.

SOURCE: Appendix C, Table 1.

TABLE 2.7-2
TRANSMISSION LINE CONSTRUCTION-RELATED LAND DISTURBANCE

Project Feature	Site Quantity	Disturbed Acreage (LxW)	Acres Disturbed During Construction	Acres to be Restored	Acres Permanently Disturbed
Modify Existing 220 kV Lattice Steel Tower[1]	0	150' x 150'	0	0	0
Remove Existing 220 kV Lattice Steel Tower[1]	1	150' x 150'	0.517	0.517	0
Temporary Conductor Field Snub/Transfer Area[2]	6	200' x 150'	4.132	4.132	0
Construct New 220 kV Lattice Steel Tower[3]	4	200' x 200'	1.837	1.200	0.637
Construct New 220 kV Gen-Tie Structure[5]	0	200' x 200'	0	0	0
Conductor & OHGW Stringing Setup Area – Puller[6]	3	300' x 150'	3.099	3.099	0
Conductor & OHGW Stringing Setup Area – Tensioner[7]	3	500' x 150'	5.165	5.165	0
New Access/Spur Roads[8]	0.6	Linear miles x 14' wide	1.018	0	1.018
Lockhart Sub - Material & Equipment Staging Area	1	Approx. 1.5 acres	1.5	1.5	0
Total Estimated[6]			**17.268**	**15.613**	**1.6552**

NOTES:
1 Includes the removal of existing conductor, teardown of existing structure, and removal of foundation 2' below ground surface.
2 Includes area needed for temporary conductor transfer towers and/or conductor removal, field snubs, and splicing new conductor; area to be restored after construction.
3 Includes foundation installation, structure assembly & erection, and conductor & OHGW attachment; a majority of the area to be restored after construction; a portion of ROW beneath and within 35' of the LST to remain permanently cleared of vegetation and access area of 25' around structure; area to be permanently disturbed for each 220 kV LST equals 0.3183 acres.
4 Includes foundation installation, structure assembly & erection, and conductor & OHGW attachment; a majority of the area to be restored after construction; a portion of ROW beneath and within 25' of the LST to remain permanently cleared of vegetation and access area of 25' around structure; area to be permanently disturbed for each LST equals 0.2173 acres.
5 Includes foundation installation, structure assembly & erection, and conductor & OHGW attachment; a majority of the area to be restored after construction; a portion of area within 25' of the structure to remain permanently cleared of vegetation; approximately 0.057 acre would be permanently disturbed for the structure.
6 Based on 9,000' conductor reel lengths, number of circuits, and route design.
7 Based on length of road in miles x road width of 14'.
8 The disturbed acreage calculations are estimates based upon SCE's preferred area of use for the described Project feature, the width of the existing right-of-way, or the width of the proposed right-of-way and, they do not include any new access/spur road information; they are subject to revision based upon final engineering and review of the Project by SCE's Construction Manager and/or Contractor awarded the Project.

SOURCE: Appendix C, Table 3.

TABLE 2.7-3
KRAMER-VICTOR FIBER OPTIC CABLE CONSTRUCTION-RELATED LAND DISTURBANCE

Project Feature	Site Quantity	Disturbed Acreage (LxW)	Acres Disturbed During Construction	Acres to be Restored	Acres Permanently Disturbed
Construct New Light Weight Steel Pole[1]	30	75 ft x 75 ft	3.9	2.4	1.5
Fiber Optic Setup Area-Tensioner[2]	18	40 ft x 60 ft	1.0	1.0	0
Fiber Optic Splicing Setup Areas[2]	18	20 ft x 30 ft	0.2	0.2	0
New Access Roads[3]	0.1	Linear miles x 14 ft wide	0.1	0	0.1
Total Estimated[4]			**5.2**	**3.6**	**1.6**

NOTES:

1 Includes structure assembly and erection, conductor & ADSS installation. Area to be restored after construction. Portion of right-of-way within 25 feet of the TSP and within 10 feet of LWS Pole, and H-Frame to remain cleared of vegetation. Permanently disturbed areas for TSP=0.06 acre, LWS=0.05 acre, and H-Frame=0.06 acre.

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

3 Based on approximate length of road in miles multiplied by road width of 14 feet.

4 The disturbed acreage calculations are estimates based upon SCE's preferred area of use for the described project feature, the width of the existing right-of-way, or the width of the proposed right-of-way. They do not include any new access/spur road information. These calculations are subject to revision based upon final engineering.

ASSUMPTIONS FOR FOOTING / BASE VOLUME AND AREA CALCULATIONS:

- Average TSP depth 30ft deep, 7ft diameter, qty 1 per TSP: earth removed for footing = 42.8 cu. yds.; surface area = 38.5 sq.ft.
- Average LWS depth 12ft deep, 2.5ft diameter, qty 1 per LWS: earth removed for pole base = 2.2 cu. yds.; surface area = 4.9 sq. ft.
- Average Wood H-Frame depth 12ft deep, 2.5ft diameter, qty 2 per H-Frame: earth removed for pole base = 4.4 cu. yds.; surface area = 9.8 sq. ft.

SOURCE: Appendix C, Table 11.

2.7.1.3 Construction Equipment and Workforce Estimates

Table 2.7-4, *Equipment and Workforce Estimates for Lockhart Substation Construction*, provides information about the number of people, types of equipment and duration of work required to construct the Lockhart Substation.

TABLE 2.7-4
EQUIPMENT AND WORKFORCE ESTIMATES FOR LOCKHART SUBSTATION CONSTRUCTION

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Survey (2 people)	10	2-Survey Trucks (Gasoline)	8
Grading (8 people)	40	1-Dozer (Diesel)	4
		2-Loader (Diesel)	4
		1-Scraper (Diesel)	3
		1-Grader (Diesel)	3
		1-Water truck (Diesel)	2
		2-4X4 Backhoe(Diesel)	2
		1-4X4 Tamper (Diesel)	2
		1-Tool Truck (Gasoline)	2
		1-Pickup 4X4 (Gasoline)	2

TABLE 2.7-4 (Continued)
EQUIPMENT AND WORKFORCE ESTIMATES FOR LOCKHART SUBSTATION CONSTRUCTION

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Fencing (4 people)	25	1-Bobcat (Diesel)	8
		1-Flatbed Truck (Gasoline)	2
		1-Crewcab Truck (Gasoline)	4
Civil (8 people)	70	1-Excavator (Diesel)	4
		1-Foundationauger (Diesel)	5
		2-Backhoes (Diesel)	3
		1-Dump Truck (Diesel)	2
		1-Cement truck (Diesel)	2
		1-Skip Loader (Diesel)	3
		1-Water Truck (Diesel)	3
		2-Bobcat Skid Steer (Diesel)	3
		1-Forklift (Propane)	4
		1-17-ton Crane (Gasoline)	2 hours/ day for 45 days
		1-Tool Truck (Gasoline)	3
MEER (4 people)	40	1-Carry-all Truck (Gasoline)	3
		1-Stake Truck (Gasoline)	2
Electrical (8 people)	90	2-Scissor Lifts (Propane)	3
		2-Manlifts (Propane)	3
		1-Reach Manlift (Propane)	4
		1-15-ton Crane (Diesel)	3
		1-Tool Trailer	3
		2-Crew Trucks (Gasoline)	2
Wiring (2 people)	50	1-Manlift (Propane)	4
		1-Tool Trailer	3
Maintenance Crew Equipment Check (2 people)	45	2-MaintenanceTrucks (Gasoline)	4
		1- Wiring Truck (Gasoline)	3
Testing (2 people)	80	1-Crew Truck (Gasoline)	3
Asphalting (6 people)	50	2-Paving Roller (Diesel)	4
		1-Asphalt Paver (Diesel)	4
		1-Stake Truck (Gasoline)	4
		1-Tractor (Diesel)	3
		1-Dump Truck (Diesel)	3
		2-Crew Trucks (Gasoline)	2
		1-Asphalt Curb Machine (Diesel)	3

SOURCE: Appendix C, Table 2

Table 2.7-5, *Equipment and Workforce Estimates for Transmission Lines*, provides information about the number of people, types of equipment and duration of work required to construct the transmission lines and related structures proposed as part of the Project.

TABLE 2.7-5
EQUIPMENT AND WORKFORCE ESTIMATES FOR TRANSMISSION LINES

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Survey (4 people)	6	2-3/4-ton Pickup 4x4 200 horsepower (hp) (gasoline)	8
Temporary Equipment and Material Staging Area (4 people)	Duration of the Project	1-1-ton Crew Cab 4x4 300 hp (diesel)	2
		1-30-ton Crane Truck300 hp (diesel)	2
		1-Water Truck 350 hp (diesel)	8
		1-10,000 lb Rough Terrain Fork Lift 200 hp (diesel)	5
		1-Truck, Semi, Tractor 350 hp (diesel)	1
Roads & Landing Work for 4 pads (5 people)	4	2-1-Ton Crew cab 4x4 300 hp (diesel)	2
	4	1-Road Grader 350 hp (diesel)	4
	4	1-Backhoe/Front Loader 350 hp (diesel)	6
	4	2-10-cubic yard Dump Truck 350 hp (diesel)	8
	4	1-Drum Type Compactor 250 hp (diesel)	4
	4	1-Track Type Dozer 350 hp (diesel)	6
	2	2-Lowboy Truck / Trailer 500 hp (diesel)	2
Install Foundations for 4 LSTs (9 people)	6	2-1-ton Crew Cab Flat Bed 4x4 300 hp (diesel)	2
	6	1-30-ton Crane Truck 300 hp (diesel)	5
	6	1-Backhoe / Front Loader 200 hp (diesel)	8
	6	1-Auger Truck 500 hp (diesel)	8
	6	2-10-cubic yard Dump Truck 350 hp (diesel)	8
	4	4-10-cubic yard Concrete Mixer Truck 425 hp (diesel)	5
Steel Haul for 4 LSTs (6 people)	4	2-1-ton Crew Cab Flat Bed 4x4 300 hp (diesel)	2
	4	1-10,000 lb Rough Terrain Fork Lift 200 hp (diesel)	6
	4	1-40-foot Flat Bed Truck / Trailer 350 hp (diesel)	8
Steel Assembly for 4 LSTs (14 people)	11	3-3/4 Ton Pickup 4x4 300 hp (diesel)	4
	11	2-1-ton Crew cab Flat Bed 4x4 300 hp (diesel)	4
	11	1-10,000 lb Rough Terrain Fork Lift 200 hp (diesel)	6
	11	2-30-ton Crane Trailer 300 hp (diesel)	8
	11	2-Compressor Trailer 350 hp (diesel)	6
Erection of 4 LSTs (8 people)	16	2- ¾ ton Pickup 4x4 300 hp (diesel)	5
	16	2-1-ton Crew Cab Flat Bed 4x4 300 hp (diesel)	5
	16	1-Comrpessor Trailer 120 hp (diesel)	6
	16	1-80 ton Rough Terrain Crane 350 hp (diesel)	6
Install Conductor and OHGW for 0.6 Circuit Miles (16 people)	6	2- ¾ Ton Pickup 4x4 300 hp (diesel)	8
	6	2-1-ton Crew Cab Flat Bed 4x4 300 hp (diesel)	8
	6	2-Wire Truck / Trailer 350 hp (diesel)	2
	5	1-Dump Truck (Trash) 350 hp (diesel)	2
	6	1-20,000 lb Rough Terrain Fork Lift 350 hp (diesel)	2
	6	1-22 ton Manitex 350 hp (diesel)	8
	6	2-30 Ton Manitex 350 hp (diesel)	6
	6	1-Splicing Rig 350 hp (diesel)	2
	4	1-Slicing Lab 300 hp (diesel)	2
	4	1-Spacing Cart 10 hp (diesel)	8
	6	1-Static Truck / Tensioner 350 hp (diesel)	2
	6	1-3-Drum Straw Line Puller 300 hp (diesel)	4

TABLE 2.7-5 (Continued)
EQUIPMENT AND WORKFORCE ESTIMATES FOR TRANSMISSION LINES

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Install Conductor and OHGW for 0.6 Circuit Miles (16 people) (cont.)	6	1-601k Puller 525 hp (diesel)	3
	6	1-Sag Cat with 2 winches 350 hp (diesel)	2
	6	1-580 Case Backhoe 120 hp (diesel)	2
	6	1-D8 Cat 300 hp (diesel)	3
	6	1-Lowboy Truck / Trailer 500 hp (diesel)	2
Restoration (7 people)	3	2-1 Ton Crew Cab 4x4 300 hp (diesel)	2
	3	1-Road Grader 350 hp (diesel)	6
	3	1-Backhoe / Front Loader 350 hp (diesel)	6
	3	1-Drum Type Compactor 250 hp (diesel)	6
	3	1-Track Type Dozer 350 hp (diesel)	6
	3	1-Lowboy Truck / Trailer 300 hp (diesel)	3

SOURCE: Appendix C, Table 4

Table 2.7-6, *Equipment and Workforce Estimates for Generation Tie Line Connections*, provides information about the number of people, types of equipment and duration of work required to construct the generation tie line connections for the Project.

TABLE 2.7-6
EQUIPMENT AND WORKFORCE ESTIMATES FOR GENERATION TIE LINE CONNECTIONS

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Survey (4 people)	2	2-3/4-ton Pickup 4x4 200 horsepower (hp) (gasoline)	8
Temporary Equipment and Material Staging Area (4 people)	Duration of the Project	1-1-ton Crew Cab 4x4 300 hp (diesel)	2
		1-Water Truck 350 hp (diesel)	8
		1-30-Ton Crane Truck 300 hp (diesel)	2
		1-10,000 lb Rough Terrain Fork Lift 200 hp (diesel)	5
		1-Truck, Semi, Tractor 350 hp (diesel)	1
Roads & Landing Work for 1 Pad (5 people)	2	2-1-Ton Crew cab 4x4 300 hp (diesel)	2
	1	1-Road Grader 350 hp (diesel)	4
	2	2-10-cubic yard Dump Truck 350 hp (diesel)	6
	2	1-Backhoe / Front Loader 350 hp (diesel)	6
	2	1-Drum Type Compactor 250 hp (diesel)	4
	2	1-Track Type Dozer 350 hp (diesel)	6
	2	2-Lowboy Truck / Trailer 500 hp (diesel)	2
Install Foundation for 1 TSP (7 people)	2	3-1-ton Crew Cab Flat Bed 4x4 300 hp (diesel)	2
	2	1-30-ton Crane Truck 300 hp (diesel)	5
	1	1-Backhoe / Front Loader 200 hp (diesel)	8
	2	1-Auger Truck 500 hp (diesel)	8
	2	2-10-cubic yard Dump Truck 350 hp (diesel)	8
	1	4-10-cubic yard Concrete Mixer Truck 425 hp (diesel)	3

TABLE 2.7-6 (Continued)
EQUIPMENT AND WORKFORCE ESTIMATES FOR GENERATION TIE LINE CONNECTIONS

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Haul for 1 TSP (3 people)	1	1-3/4-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	5
	1	1-80 Ton Rough Terrain Crane 350 hp (diesel)	8
	1	1-Flat Bed Truck / Trailer 350 hp (diesel)	6
Assembly of 1 TSP (8 people)	1	2-3/4 Ton Pickup 4x4 300 hp (diesel)	5
	1	2-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	5
	1	1-80 Ton Rough Terrain Crane 350 hp (diesel)	6
	1	1-Compressor Trailer 350 hp (diesel)	5
Erection of 1 TSP (8 people)	1	2- 3/4 Ton Pickup 4x4 300 hp (diesel)	5
	1	2-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	5
	1	1-Comrpessor Trailer 120 hp (diesel)	5
	1	1-80 Ton Rough Terrain Crane 350 hp (diesel)	6
Install Conductor and OHGW (16 people)	4	4-3/4 Ton Pickup 4x4 300 hp (diesel)	8
	4	4-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	8
	2	4-Wire Truck / Trailer 350 hp (diesel)	2
	4	1-Dump Truck (Trash) 350 hp (diesel)	2
	4	1-20,000 lb Rough Terrain Fork Lift 350 hp (diesel)	2
	4	1-22 Ton Manitex 350 hp (diesel)	8
	4	4-30 Ton Manitex 350 hp (diesel)	6
	4	2-Splicing Rig 350 hp (diesel)	2
	2	2-Slicing Lab 300 hp (diesel)	2
	2	2-Spacing Cart 10 hp (diesel)	8
	2	1-Static Truck / Tensioner 350 hp (diesel)	2
	2	2-3-Drum Straw Line Puller 300 hp (diesel)	4
	2	1-601k Puller 525 hp (diesel)	3
	2	2-Sag Cat with 2 winches 350 hp (diesel)	2
	4	1-580 Case Backhoe 120 hp (diesel)	2
	2	2-D8 Cat 300 hp (diesel)	3
	4	1-Lowboy Truck / Trailer 500 hp (diesel)	2
Restoration (7 people)	3	2-1 Ton Crew Cab 4x4 300 hp (diesel)	2
	1	1-Road Grader 350 hp (diesel)	6
	1	1-Backhoe / Front Loader 350 hp (diesel)	6
	1	1-Drum Type Compactor 250 hp (diesel)	6
	1	1-Track Type Dozer 350 hp (diesel)	6
	3	1-Lowboy Truck / Trailer 300 hp (diesel)	3

SOURCE: Appendix C Table 5

Table 2.7-7, *Equipment and Workforce Estimates for Transmission Line Structure Removal*, provides information about the number of people, types of equipment and duration of work required to remove transmission line structures for the Project.

TABLE 2.7-7
EQUIPMENT AND WORKFORCE ESTIMATES FOR TRANSMISSION LINE STRUCTURE REMOVAL

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Temporary Equipment and Material Staging Area (4 people)	Duration of the Project	1-1-ton Crew Cab 4x4 300 hp (diesel)	2
		1-Water Truck 350 hp (diesel)	8
		1-30-Ton Crane Truck 300 hp (diesel)	2
		1-10,000 lb Rough Terrain Fork Lift 200 hp (diesel)	5
		1-Truck, Semi, Tractor 350 hp (diesel)	1
Roads & Landing Work for 3 Pads (5 people)	2	2-1-Ton Crew Cab 4x4 300 hp (diesel)	2
	2	1-Road Grader 350 hp (diesel)	4
	2	1-Backhoe / Front Loader 350 hp (diesel)	6
	2	1-Drum Type Compactor 250 hp (diesel)	4
	2	1-Track Type Dozer 350 hp (diesel)	6
	2	1-Excavator 300 hp (diesel)	6
	2	1-Lowboy Truck / Trailer 500 hp (diesel)	2
Removal of 1 LST (8 people)	2	2-3/4 Ton Pickup 4x4 300hp (diesel)	6
	2	2-1-Ton Crew Cab Flat Bed 300 hp (diesel)	6
	2	1-Compressor Trailer 120 hp (diesel)	6
	2	1-80-Ton Rough Terrain Crane 350 hp (diesel)	6
Remove Foundations for 3 LSTs (9 people)	1	2-1 Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	2
	6	1-Backhow / Front Loader 200 hp (diesel)	8
	8	1-Auger Truck 500 hp (diesel)	8
	8	1-10-cubic yard Dump Truck 350 hp (diesel)	8
	2	1-Compressor Trailer 120 hp (diesel)	6
Steel Haul for 3 LSTs (4 people)	1	1-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	2
	1	1-10,000 lb Rough Terrain Fork Lift 200 hp (diesel)	8
	1	1-40-foot Flat Bed Truck / Trailer 350 hp (diesel)	6
Transfer Conductor for 0.5 Circuit Miles (16 people)	3	2-3/4 Ton Pickup 4x4 300 hp (diesel)	8
	3	2-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	8
	3	2-Wire Truck / Trailer 350 hp (diesel)	2
	5	1-Dump Truck (Trash) 350 hp (diesel)	2
	3	1-20,000 lb Rough Terrain Fork Lift 350 hp (diesel)	2
	3	1-22 Ton Manitex 350 hp (diesel)	8
	3	2-30 Ton Manitex 350 hp (diesel)	6
	3	1-Splicing Rig 350 hp (diesel)	2
	3	1-Slicing Lab 300 hp (diesel)	2
	3	1-Spacing Cart 10 hp (diesel)	8
	3	1-Static Truck / Tensioner 350 hp (diesel)	2
	3	1-3-Drum Straw Line Puller 300 hp (diesel)	4
	3	1-601k Puller 525 hp (diesel)	3
	3	1-Sag Cat with 2 winches 350 hp (diesel)	2
	3	1-580 Case Backhoe 120 hp (diesel)	2
	3	1-D8 Cat 300 hp (diesel)	3
	3	1-Lowboy Truck / Trailer 500 hp (diesel)	2

TABLE 2.7-7 (Continued)
EQUIPMENT AND WORKFORCE ESTIMATES FOR TRANSMISSION LINE STRUCTURE REMOVAL

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Restoration (7 people)	3	2-1 Ton Crew Cab 4x4 300 hp (diesel)	2
	1	1-Road Grader 350 hp (diesel)	6
	1	1-Backhoe / Front Loader 350 hp (diesel)	6
	1	1-Drum Type Compactor 250 hp (diesel)	6
	3	1-Track Type Dozer 350 hp (diesel)	6
	2	1-Lowboy Truck / Trailer 300 hp (diesel)	3

SOURCE: Appendix C, Table 6

Table 2.7-8, *Equipment and Workforce Estimates for Distribution Systems*, provides information about the number of people, types of equipment and duration of work required to provide 12 kV Hutt Station light and power.

TABLE 2.7-8
EQUIPMENT AND WORKFORCE ESTIMATES FOR DISTRIBUTION SYSTEMS

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Trenching, Structure Excavation (4 people[1])	1	1-1-Ton Crew Cab 300 hp (diesel)	2
	1	1-Backhoe / Front Loader 300 hp (diesel)	8
	1	1-Dump Truck 300 hp (diesel)	4
Overhead Line Work (4 people[2])	2	1-1-Ton Crew Cab 4x4 300 hp (diesel)	2
	2	1-55-foot Double Bucket Truck 350 hp (diesel)	8
Underground Cable Pulling and Make-up (4 people[3])	1	1-55-foot Double Bucket truck 350 hp (diesel)	8
	1	1-1-Ton Crew Cab 4x4 300 hp (diesel)	2
	1	1-Hydraulic Rewind Puller 300 hp (diesel)	6

NOTES:
1 Trenching and conduit installation is assumed to require one 4-man crew.
2 Overhead line work is assumed to require one 4-man crew.
3 Underground cable pulling and makeup are assumed to require one 4-man crew.

SOURCE: Appendix C, Table 7

Table 2.7-9, *Telecommunication System Equipment and Workforce Estimates for Victor to Kramer*, provides information about the number of people, types of equipment and duration of work required to install the various fiber optic cable routes for the Project's proposed telecommunication system. SCE did not provide detailed workforce and equipment requirements for the other fiber optic cable segments; however, it is reasonable to estimate the activity requirements for those other segments by scaling based on the ground disturbance for each segment in Table 2.4-1. On that basis, the requirements for the Kramer to Lockhart segment would be approximately 3 percent of the Victor to Kramer segment, Lockhart to Tortilla would be approximately 6 percent, and Tortilla to Coolwater would be approximately 2 percent.

TABLE 2.7-9
TELECOMMUNICATION SYSTEM EQUIPMENT AND WORKFORCE ESTIMATES FOR VICTOR TO KRAMER

Activity (Estimated Workforce)	Number of Work Days	Equipment [Quantity-Type (Fuel)]	Duration of Use (Hours / Day)
Survey for 34 Miles / interest Poles (one 4-person crew)	4	2-1/5 Ton Pickup 4x4 200 hp (gasoline)	8
Marshalling Yard (one 4-person crew)	Duration of the Project	1-1-ton Crew Cab 4x4 300 hp (diesel)	2
		1-30-Ton Crane Truck 300 hp (diesel)	2
		1-10,000 lb Rough Terrain Fork Lift 200 hp (diesel)	5
		1-4,000 Gallon Water Truck	8
		1-Truck, Semi, Tractor 350 hp (diesel)	1
34 Miles of Roads (one 5-person crew)	17	2-1-Ton Crew Cab 4x4 300 hp (diesel)	2
	17	1-Road Grader 350 hp (diesel)	4
	17	1-Backhoe / Front Loader 350 hp (diesel)	6
	17	1-Drum Type Compactor 250 hp (diesel)	4
	17	1-Track Type Dozer 350 hp (diesel)	6
	9	1-Excavator 300 hp (diesel)	6
	9	1-Lowboy Truck / Trailer 500 hp (diesel)	2
Install 5-foot Crossarm for 34 Miles, Approx. 900 Poles (two 4-person crews)	23	3-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	2
	23	2-Bucket Truck 300 hp (diesel)	5
Install 30 LWS Poles (one 10-person crew)	8	3-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	2
	8	1-Auger Truck 500 hp (diesel)	8
	18	1-Backhoe / Front Loader 200 hp (diesel)	8
Steel Haul for 30 LWS Poles (one 8-person crew)	3	1-3/4-Ton Pickup 4x4 300 hp (diesel)	5
	3	1-30-Ton Crane Truck 300 hp (diesel)	4
	3	2-40-Foot Flat Bed Truck / Trailer 350 hp (diesel)	8
Install Fiber Optic Cable for 34 Circuit Miles (two 4-person crews)	11	2-3/4 Ton Pickup 4x4 300 hp (diesel)	8
	11	4-1-Ton Crew Cab Flat Bed 4x4 300 hp (diesel)	8
	11	2-Bucket Truck 350 hp (diesel)	8
	3	1-Splicing Lab 300 hp (diesel)	2
	6	1-3-Drum Straw Line Puller / Tensioner 300 hp (diesel)	6
Restoration (one 7-person crew)	34	2-1 Ton Crew Cab 4x4 300 hp (diesel)	2
	34	1-Road Grader 350 hp (diesel)	6
	34	1-Water Truck 350 hp (diesel)	8
	34	1-Backhoe / Front Loader 350 hp (diesel)	6
	34	1-Drum Type Compactor 250 hp (diesel)	6
	34	1-Track Type Dozer 350 hp (diesel)	6
	34	1-Lowboy Truck / Trailer 300 hp (diesel)	3

SOURCE: Appendix C, Table 10

2.7.2 Lockhart Substation

2.7.2.1 Below-Grade Construction

After Abengoa completes grading of the substation site, SCE would install below-grade facilities. Below-grade facilities include a ground grid, underground conduit, trenches, and all required foundations. The design of the ground grid would be based on soil resistivity measurements collected during a geotechnical investigation prior to the construction.

2.7.2.2 Above-Grade Facilities

SCE would install above-grade substation facilities, including buses, circuit breakers, steel structures, and the MEER, after the below-grade structures are in place.

2.7.3 Transmission Lines and Related Structures

Construction activities would consist of the receiving and handling of construction materials, rehabilitation of existing and creation of new access roads for construction activities, site preparation, assembly and erection of structures, removal of existing structure(s), stringing of conductors, and site cleanup.

2.7.3.1 Transmission Line Access and Spur Roads

This portion of the Project would involve construction within existing and new ROWs. Existing public roads and existing transmission line roads would be used as much as possible during construction of the Project. However, the Project would require the construction and maintenance of new transmission line roads to access the new transmission line segments and structure locations. Transmission line roads are classified into two groups: access roads and spur roads. Access roads are through roads that run between tower sites along a ROW and serve as the main transportation route along line ROWs. By contrast, spur roads are roads that lead from access roads and terminate at one or more structure sites.

Rehabilitation work may be necessary in some locations along existing transmission line roads to accommodate Project-related construction activities. This work may include the re-grading and repair of existing access, spur roads and associated drainage improvements. Roads to be rehabilitated would be cleared of vegetation; blade-graded to remove potholes, ruts, and other surface irregularities; and recompacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. Rehabilitated roads would have a minimum drivable width of 14 feet with 2 feet of shoulder on each side (depending upon field conditions).

Similar to rehabilitation of existing roads, all new road alignments first would be cleared and grubbed of vegetation and blade-graded to remove potholes, ruts, and other surface irregularities; fill material would be deposited where necessary; and roads would be recompacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. New roads would have a minimum drivable width of 14 feet with 2 feet of shoulder on each side, but may be

wider by 2 to 4 feet depending on final engineering requirements and field conditions. New road gradients would be leveled so that any sustained grade would not exceed 12 percent. Drainage improvements (culverts, swales, etc.) would be installed where necessary to ensure adequate drainage of the road to reduce erosion and rutting. All curves would have a radius of curvature of not less than 50 feet measured at the center line of the usable road surface. New roads typically would have turnaround areas near the structure locations.

2.7.3.2 Construction of New 220 kV Transmission Structures

Proposed sites for the new 220 kV transmission structures first would be graded and/or cleared of vegetation as required to provide a reasonably level and vegetation-free surface for footing and structure construction. The temporary laydown area, approximately 200 feet by 200 feet (0.92 acre) that would be required for the assembly of the structures also would be cleared of vegetation and graded as necessary to provide a reasonably level and vegetation-free surface for the laydown, assembly, and erection of the structures.

Erection of a transmission structure would require an erection crane to be set up adjacent to and 60 feet from the centerline of the structure. A crane pad would be located within the laydown area used for structure assembly. If the existing terrain is not suitable to support crane activities, a temporary 50 feet by 50 feet (0.06 acre) crane pad would be constructed.

Transmission structures would require drilled, poured-in-place, concrete footings that would form the structure foundation. Actual footing diameters and depths for each of the structure foundations would depend on the soil conditions and topography at the site and would be determined during final engineering.

The foundation process starts with the excavation of the hole for the structure. The hole would be excavated using truck or track-mounted auger with various diameter augers to match the diameter requirements of the structure. The excavated material would be distributed at the structure site, used as fill for the new roads or substation site, or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an off-site disposal facility in accordance with all applicable laws.

Following excavation of the foundation footing for each structure, steel reinforced rebar cage(s) would be set in the excavated footing holes, anchor bolts and/or stub angles would be set in place, precision would be verified by a surveyor, and concrete would then be placed. The steel reinforced rebar cage(s) would be assembled off site and delivered to the structure location by flatbed truck. A typical transmission structure would require approximately 50 to 80 cubic yards of concrete delivered to the structure location depending upon the type of structure being constructed, soil conditions, and topography at each site. The transmission structure footings would project approximately 1 to 4 feet above the ground level.

During construction, existing commercial ready-mix concrete supply facilities would be used where feasible. If commercial ready-mix concrete supply facilities do not exist within the general area of need, a temporary concrete batch plant would be set up. If necessary, approximately two

acres of land would be sub-partitioned from the temporary equipment and material staging area within the Lockhart Substation site for a temporary concrete batch plant. Equipment would include a central mixer unit (drum type); three silos for injecting concrete additives, fly ash, aggregate, 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.

Transmission structure assembly would consist of hauling the structure components from the staging yard to their designated structure location using semi-trucks with 40-foot trailers and off loaded at site. Crews then would assemble portions of each structure on the ground at the structure location, while on the ground, the top section could be pre-configured with the necessary insulators and wire stringing hardware before being set in place. An 80-ton all-terrain or rough-terrain crane would be used to position the base section on top of previously prepared foundation. When the base section is secured, the remaining portions of the structure then would be placed upon the base section and bolted together.

After construction is completed, the transmission structure site would be graded such that water would run toward the direction of the natural drainage. In addition, drainage would be designed to prevent ponding and erosive water flows that could cause damage to the structure footing. The graded area would be compacted such that it would be capable of supporting heavy vehicles.

2.7.3.3 Removal and Replacement of Existing Coolwater-Kramer No. 1 220 kV Structure

SCE would remove an existing 220 kV transmission structure and associated hardware, including insulators, vibration dampeners, suspension clamps, ground wire clamps, shackles, links, nuts, bolts, washers, cotters pins, insulator weights, and bond wires. Existing access routes would be used to reach the structure site; however, as described in Section 2.7.3.1, some rehabilitation work on these routes may be necessary before removal activities begin.

In addition, grading may be necessary to establish a temporary laydown area approximately 150 feet by 150 feet (0.52 acre) adjacent to the existing structure for equipment and material staging during the structure removal. A crane truck or rough terrain crane would be used to support the structure during dismantle and removal. A crane pad would be located within the laydown area used for structure assembly. If the existing terrain is not suitable to support crane activities, a temporary 50 feet by 50 feet (0.06 acre) crane pad would be constructed. The existing structure footings would be removed to a depth of approximately 2 feet below ground level. Holes would be filled and compacted, and the area would be smoothed to match surrounding grade.

2.7.3.4 Temporary Bypass Facilities

It may be necessary for SCE temporarily to transfer the existing Coolwater-Kramer No 2 220 kV conductor to temporary structures during the removal and replacement of the existing Coolwater-Kramer No. 1 220 kV structure. Upon completion of the construction of the 220 kV replacement

structures and dismantling of the existing 220 kV structure to a level below the conductor attachment height, the existing conductor would be transferred over from the temporary structures and attached to the new 220 kV structures. The exact number of temporary transmission structures and the related ground disturbance would not be known until final engineering is performed.

2.7.3.5 Wire-Stringing of 220 kV Conductor

Wire-stringing would include all activities associated with the installation of conductors, including the installation of primary conductor and overhead ground wire (OHGW), vibration dampeners, weights, spacers, and suspension and dead-end hardware assemblies. Insulators and stringing sheaves (rollers or travelers) typically would be attached during the steel erection process. Wire pulls would include the length of any given continuous wire installation process between two selected points along the line. Wire pulls would be selected, where possible, based on availability of dead-end structures at the ends of each pull, geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment setups. In some cases, it may be preferable to select an equipment setup position between two suspension structures. Anchor rods then would be installed to provide dead-ending capability for wire sagging purposes, and also to provide a convenient splicing area.

A standard wire-stringing plan would include a sequence of events starting with the determination of wire pulls and wire pull equipment set-up positions. Circuit outages, pulling times, and safety protocols will be coordinated to ensure that safe and effective installation of wire is accomplished. To ensure the safety of workers and the public, safety devices such as traveling grounds, guard structures, and radio-equipped public safety roving vehicles and linemen would be in place prior to the initiation of wire-stringing activities.

Wire-stringing activities would be conducted in accordance with SCE specifications that are similar to process methods detailed in Institute of Electrical and Electronics Engineers Standard 524-2003, *Guide to the Installation of Overhead Transmission Line Conductors*. The following four steps describe the proposed wire installation activities:

- **Step 1: Sock Line, Threading:** Typically, a lightweight sock line would be passed from structure to structure, which would be threaded through the wire rollers in order to engage a camlock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for a conductor pull.

- **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 conductor using a special swivel joint to prevent damage to the wire 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.

- **Step 3: Splicing, Sagging, and Dead-ending:** After the conductor is pulled-in, the conductor would be sagged to proper tension and dead-ended to structures.

- **Step 4: Clipping-in, Spacers:** After the conductor is dead-ended, the conductors would be secured to all tangent structures; a process called "clipping in." Once this is complete, spacers, if applicable, would be attached between the bundled conductors of each phase to keep uniform separation between each conductor.

The dimensions of the area needed for the stringing setups associated with wire installation are variable and depend upon terrain. The preferred minimum area needed for tensioning equipment set-up sites would require approximately 150 feet by 500 feet (1.72 acres). The preferred minimum area needed for pulling equipment set-up sites would require approximately 150 feet by 300 feet (1.03 acres). Crews could work within slightly smaller areas when space is limited. Each stringing operation would include one puller positioned at one end and one tensioner and wire reel stand truck positioned at the other end.

Stringing equipment that cannot be positioned at either side of a dead-end transmission structure would require installation of temporary field snubs (i.e., anchoring and dead-end hardware) to sag conductor wire to the correct tension. The puller and tensioner set-up locations would require level areas to allow for maneuvering of the equipment. When possible, these locations would be located on existing level areas and existing roads to minimize the need for grading. The final number and locations of the puller and tensioner sites would be determined during detailed engineering for the Project based on the construction methods chosen by SCE or its contractor.

An overhead ground wire (OHGW) or optical ground wire (OPGW) for shielding would be installed on the transmission line and would be installed in the same manner as the conductor. The OHGW or OPGW typically would be installed in conjunction with the conductor, depending upon various factors including line direction, inclination, and accessibility.

2.7.4 Distribution System for Station Light and Power

A lay down area within the Lockhart Substation property or within AMSP site boundary would be required to store construction materials. One line truck and a companion vehicle with a 4-man crew would be used to perform the work each day. SCE anticipates working typical construction schedules; however, actual construction hours may vary. Land disturbance associated with distribution system-related construction activities would be entirely within the AMSP site and has been included in the calculation of the AMSP's disturbance area.

2.7.5 Telecommunication System

SCE would use the existing Victor, Roadway, Kramer, Tortilla, and Coolwater Substations as well as its existing Barstow Service Center and the proposed Lockhart Substation as marshalling yards to support the installation of the proposed telecommunication facilities. SCE or its contractor crews would use standard construction methods to install the fiber optic cable routes, and all applicable rules, regulations and standards would be complied with during construction.

Portions of the fiber optic cable would be installed on existing overhead distribution and transmission wood and light duty steel poles. In addition, portions of the cable would be installed

on new overhead structures and newly-constructed underground conduit system(s), as determined in final engineering. See Table 2.4-1, *Summary of Estimated Fiber Optic Cable Routes*.

As shown in Appendix C, Table 10 cable installation is expected to require a 4-person crew, 2 bucket trucks, 1 pickup, 2 cable dollies, a single-drum puller and a 2-axle trailer. For materials receipt and load-out, one 4-person crew, one 5-ton forklift and a pickup truck would be required. Cleanup also would require a 4-person crew as well as 2 bucket trucks and a pickup.

2.7.6 Staging and Marshalling Yards

As noted above, SCE would use the existing Victor, Roadway, Kramer, Tortilla, and Coolwater Substations as well as its existing Barstow Service Center and the proposed Lockhart Substation as marshalling yards to support the installation of the proposed telecommunication facilities. A marshalling yard would also be required for the construction of the transmission line loop-in segments and the gen-tie connection to Lockhart Substation.

As part of the AMSP, Abengoa would provide a temporary staging yard, approximately 0.5 to 1.5 acres, necessary to construct the Lockhart Substation. This area would be required for use as a temporary equipment and material staging area for short-term use within the AMSP property. Land disturbed at the temporary equipment and material staging area would be restored, to the extent possible, to preconstruction conditions following the completion of construction. Equipment and materials to be stored at the temporary equipment and material staging area could include:

- Construction trailer
- Construction equipment
- Conductor/wire reels
- Transmission structure components
- Overhead ground wire/Optical ground wire cable
- Hardware
- Insulators
- Consumables, such as fuel and joint compound
- Portable sanitation facilities
- Waste materials for salvaging, recycling, and/or disposal

Additional temporary areas may be required for crew “show up” yards and would be used for temporary parking.

2.7.7 Construction- and Post-Construction Cleanup

Following completion of construction activities, SCE would restore all areas that temporarily were disturbed by project activities to as close to preconstruction conditions as possible, or where applicable, to the conditions agreed upon between the landowner and SCE. Such areas would include, but not be limited to, the equipment and material staging yard, pull and tension sites, and structure laydown and assembly sites. Restoration may include grading, re-contouring and reseeding where appropriate. Any damage to existing roads as a result of SCE’s Project-related

construction activities would be repaired, to the extent possible, in accordance with local agency requirements once construction is completed. In addition, all construction materials and debris would be removed from the area and recycled or properly disposed of at an off-site disposal facility in accordance with all applicable laws. SCE would conduct a final inspection to ensure that cleanup activities were completed successfully.

2.7.8 Construction Equipment Personnel

The estimated elements, materials, number of personnel and equipment required for construction of the Lockhart Substation are summarized in Table 2.7-4 and include construction of the telecommunications room at Tortilla Substation. In addition to the information provided in Table 2.7-4, a temporary contractor office trailer and equipment trailer would be placed within the proposed substation construction area during the construction phase of the Lockhart Substation Project.

Construction would be performed by either SCE construction crews or its contractors. Contractor construction personnel would be managed by SCE construction management personnel. SCE anticipates a total of approximately 14 construction personnel working on any given day. Crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would be dependent upon County permitting, material availability, and construction scheduling. For example, electrical equipment (such as substation MEER, wiring, and circuit breaker) installation may occur concurrently with transmission line construction.

2.8 Project Operation and Maintenance

Details about the operation of the Abengoa Mojave Solar plant site are provided in DOE EA Section 2.1.1.3 (p. 2-17 et seq.). The solar project would employ approximately 63 full-time personnel, and 10 seasonal employees would be needed during peak operation months.

SCE would conduct operation, inspection, and maintenance activities at the Lockhart Substation and related Project facilities least once a year, in compliance with CPUC General Order No. 165. The frequency of inspection and maintenance activities would depend upon weather effects and any unique problems that may arise due to such variables as substantial storm damage or vandalism.

2.9 Applicant Proposed Measures

Measures proposed by SCE to reduce or avoid potential environmental impacts associated with the Project are set forth in Table 2.9-1, *Applicant Proposed Measures*.

TABLE 2.9-1
APPLICANT PROPOSED MEASURES

APM No.	APM Description
Air Resources	
AIR-1	Construction activities would be conducted in compliance with AQMD requirements, as applicable to the Project
Aesthetics and Visual Resources	
AES-1	LSTs and TSPs would be galvanized steel with a dulled grey finish that minimizes reflected light.
AES-2	Insulators that minimize reflection of light would be utilized.
AES-3	Substation equipment would have materials that minimize reflective light.
AES-4	If chain link fence is used, it would have a dulled-finish.
AES-5	The substation lighting would be designed to be manually operated for non-routine nighttime work.
Biological Resources	
BIO-1	Preconstruction biological clearance surveys would be conducted to identify special-status plants and wildlife.
BIO-2	SCE would prepare a Worker Environmental Awareness Program (WEAP). All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project.
BIO-3	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 (Avian Power Line Interaction Committee 2006).
Cultural Resources	
CR-1	A cultural resource inventory of the project area would be conducted for cultural resources prior to any disturbance. All surveys would be conducted and documented as per applicable laws, regulations, and guidelines.
CR-2	To the extent feasible, all ground-disturbing activities shall be sited to avoid or minimize impacts to cultural resources listed as, or potentially-eligible for listing as, unique archaeological sites, historical resources, or historic properties.
CR-3	A protective buffer zone would be established and maintained around each recorded archaeological site within or immediately adjacent to the ROW.
Paleontological Resources	
PALEO-1	A paleontologist would conduct a pre-construction field survey of the project area.
PALEO-2	Prior to construction, a certified paleontologist would supervise monitoring of construction excavations.
Geology and Soils	
GEO-1	Prior to final design of substation facilities, and transmission and, 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.
GEO-2	For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substations".
GEO-3	New access roads, where required, would be designed to minimize ground disturbance during grading.
GEO-4	Cut and fill slopes would be minimized by a combination of benching and following natural topography where feasible.
GEO-5	Any disturbed areas associated with temporary construction would be returned to preconstruction conditions (to the extent feasible) after the completion of project construction.

TABLE 2.9-1 (Continued)
APPLICANT PROPOSED MEASURES

APM No.	APM Description
Hazards And Hazardous Materials	
HAZ-1	A Phase I ESA would be performed at each new or expanded substation location and along newly acquired transmission subtransmission line ROWs.
HAZ-2	SCE would implement standard fire prevention and response practices for the construction activities.
HAZ-3	As applicable, SCE would follow fire codes per Cal Fire Power Line Fire Prevention Fire Guide requirements for vegetation clearance during construction of the project to reduce the fire hazard potential.
HAZ-4 HAZ-5	Hazardous materials and waste handling would be managed in accordance with the following SCE plans and programs: • Spill Prevention, Countermeasure, and Control Plan (SPCC Plan). In accordance with Title 40 of the CFR, Part 112, SCE would prepare a SPCC for proposed and/or expanded substations, as applicable. • Hazardous Materials Business Plans (HMBPs). Prior to operation of new or expanded substations, SCE would prepare or update and submit, in accordance with Chapter 6.95 of the CHSD, and Title 22 CCR, an HMBP, as applicable. • Storm Water Pollution Prevention Plan (SWPPP): A project-specific construction SWPPP would be prepared and implemented prior to the start of construction of the transmission line and substation. • Health and Safety Program: SCE would prepare and implement a health and safety program to address site-specific health and safety issues. • Hazardous Materials and Hazardous Waste Handling: A Project-specific hazardous materials management and hazardous waste management program would be developed prior to initiation of the project. Material Safety Data Sheets would be made available to all Project workers • Emergency Release Response Procedures: An Emergency Response Plan detailing responses to releases of hazardous materials would be developed prior to construction activities. All construction personnel, including environmental monitors, would be aware of state and federal emergency response reporting guidelines.
HAZ-5	Hazardous materials would be used or stored and disposed of in accordance with Federal, State, and Local regulations.
HAZ-6	The substation would be grounded to limit electric shock and surges that could ignite fires.
HAZ-7	All construction and demolition waste would be removed and transported to an appropriately permitted disposal facility.
Hydrology and Water Quality	
HYDRO-1	Construction equipment would be kept out of flowing stream channels as feasible.
HYDRO-2	Towers would be located to avoid active drainage channels, especially downstream of steep hill slope areas, to minimize the potential for damage.
Land Use	
LU-1	SCE shall provide 14 days of advance notice of the start of construction to property owners located within 300 feet of construction-related activities.
Noise	
NOISE-1	SCE would comply with local noise ordinances.
Transportation and Traffic	
TRANS-1	Traffic control services would be used for equipment, supply delivery, and conductor stringing, as applicable.
TRANS-2	Construction traffic would be scheduled for off-peak hours to the extent feasible and would not block emergency equipment routes.
TRANS-3	If work requires modifications or activities within local roadway and railroad ROWs, appropriate permits would be obtained prior to the commencement of construction activities.

2.10 Agency-Imposed Measures

It is expected that environmental protection measures, design features, and BMPs imposed by the CEC and DOE for the AMSP would be implemented as part of the Project. These measures are provided in IS/MND Appendix B, Table B-2, Agency-Imposed Measures for the Abengoa Mojave Solar Project.

2.11 Electric and Magnetic Fields Summary

2.11.1 Electric and Magnetic Fields

This IS/MND does not consider electric and magnetic fields (EMF) in the context of the CEQA analysis of potential environmental impacts because [1] there is no agreement among scientists that EMF creates a potential health risk, and [2] there are no defined or adopted CEQA standards for defining health risk from EMF. However, recognizing that there is a great deal of public interest and concern regarding potential health effects from human exposure to EMF from transmission lines, this document does provide information regarding EMF associated with electric utility facilities and human health and safety. Thus, the EMF information in this IS/MND is presented for the benefit of the public and decision makers.

Potential health effects from exposure to *electric fields* from transmission lines (i.e., the effect produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that surrounds it) typically do not present a human health risk since electric fields are effectively shielded by materials such as trees, walls, etc. Therefore, the majority of the following information related to EMF focuses primarily on exposure to *magnetic fields* (i.e., the invisible fields created by moving charges) from transmission lines. Additional information on electric and magnetic fields generated by transmission lines is presented in Appendix A.

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remain inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. Most recently the International Agency for Research on Cancer (IARC) and the California Department of Health Services (DHS) both classified EMF as a possible carcinogen.

Presently, there are no applicable federal, State or local regulations related to EMF levels from power lines or related facilities, such as substations. However, the CPUC has implemented a decision (D.06-01-042) requiring utilities to incorporate “low-cost” or “no-cost” measures for managing EMF from power lines up to approximately four percent of total project cost.

2.11.2 EMF and the Project

In accordance with “EMF Design Guidelines” filed with the CPUC in compliance with CPUC Decisions 93-11-013 and 06- 01-042, SCE would implement low- and no-cost measures for the proposed Project as described in SCE’s Field Management Plan (SCE, 2011; Appendix G).

2.12 Required Permits and Approvals

The CPUC is the CEQA Lead Agency for the Project. SCE would obtain permits, licenses or other approvals as needed from, and would participate in reviews and consultation as needed with, federal, State and local agencies, including those shown in Table 2.12-1, *Summary of Required Permits and Approvals*.

TABLE 2.12-1
SUMMARY OF REQUIRED PERMITS AND APPROVALS

Permit/Approval/Consultation	Agency	Jurisdiction/Purpose
Federal		
None required.		
State		
Permit to Construct	California Public Utilities Commission	Overall Project approval and California Environmental Quality Act (CEQA) review
National Pollutant Discharge Elimination System Construction Stormwater Permit	California Regional Water Quality Control Board (RWQCB)	Storm water discharges associated with construction activities disturbing more than 1 acre of land
Clean Water Act Section 401 Water Quality Certification (or waiver)	RWQCB	Certifies that Project is consistent with State water quality standards
Encroachment Permit	California Department of Transportation	Construction, operation, and maintenance within, under, or over state highway right-of-way.
Endangered Species Consultation	California Department of Fish and Game	Construction, operation, and maintenance that may affect a State-listed species or its habitat; incidental take authorization (if required)
Local		
Encroachment Permit (ministerial)		Construction, operation, and maintenance within, under, or over County road right-of-way
Grading Permit		Construction grading

References – Project Description

California Energy Commission, 2010, Testimony of Ajoy Guha, P. E. and Mark Hesters, Transmission System Engineering, http://www.energy.ca.gov/sitingcases/abengoa/documents/2010-07-06_staff_suppl_testimony.pdf (June 2010).

Southern California Edison (SCE), 2011. Application of Southern California Edison Company (U 338-E) for a Permit to Construct Electrical Facilities: Lockhart Substation Project. May 5, 2011.

CHAPTER 3
Environmental Checklist and Discussion

3.1 Aesthetics

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
1.	**AESTHETICS—Would the project:**				
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 corridor?	☐	☐	☒	☐
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

3.1.1 Environmental Setting

Visual or aesthetic resources generally are defined as both the natural and built features of the landscape that contribute to the public's experience and appreciation of the environment. Depending on the extent to which a project's presence would alter the perceived visual character and quality of the environment, a visual or aesthetic impact may occur.

The visual resource analysis for the AMSP, including the Lockhart Substation, gen-tie lines and distribution system for station light and power, was conducted by 3DScape in 2009 as part of the CEC's evaluation of the AMSP and, for the proposed fiber optic lines, by AECOM as part of the DOE's EA. The analyses and the methodologies used by each are summarized in the DOE's EA Section 3.2, *Visual Resources*. Briefly, baseline data were collected, photographs of existing landscape conditions and computer-generated visual simulations were reviewed, and judgments were made based on professional qualifications and experience with similar analyses. The components of landscape character are described, as are considerations relating to the analysis of potential impacts related to light and glare. For example, the analysis of potential light and glare impacts with regard to visual resources considers artificial sky glow (the brightening of the night sky attributable to human-created sources of light), glare (light that causes visual discomfort or disability or a loss of visual performance), spill light (light from a

lighting installation that falls outside of the boundaries of the property on which the installation is sited), and light trespass (spill light that because of quantitative, directional, or type of light causes annoyance, discomfort, or loss in visual performance and visibility) (DOE EA, pp. 3.2-2, 3.2-3). Regional visibility with a focus on newly-proposed elements also is discussed. The DOE provided additional analysis of potential aesthetic effects in EA Appendix H, *Visual Resource*. DOE EA Section 3.2 and Appendix H are incorporated by reference into this analysis.

The analysis in this document also is based on the CPUC's review of a variety of data, including project maps and drawings, aerial and ground level photographs of the project area, and other data in the record, including local planning documents. The study area for visual resources encompasses the landscapes directly affected by facilities proposed as part of the Project and the surrounding areas that would be within view of Project components. The aesthetics analysis focuses on travel route views, and views from parks and recreation areas. Visual resources consist of the landforms, vegetation, rock and water features, and cultural modifications that create the visual character and sensitivity of a landscape.

CEQA distinguishes between public and private views, and focuses on whether a project would affect the environment of persons in general rather than of particular individuals. Private views, such as from individual homes, generally are not analyzed under CEQA. Potential impacts on such individual views would not be considered to be environmentally significant. Accordingly, views from private residences are not discussed in this impact analysis. Nevertheless, for informational purposes, viewers in the area would include the six to eight widely-separated residences located between approximately 0.5 and 1.6 miles from the AMSP/Lockhart Substation site. These are the closest known residential properties in the vicinity of the Lockhart Substation site.

Existing Visual Quality of the Region

The existing visual quality of the affected environment for the proposed Lockhart Substation, gen-tie lines and distribution system for station light and power is described in Section VII(E) of the CEC's Commission Decision (p. 483 et seq.) and in Section 5.12 of the CEC's SSA Part A (p. 5.12-1 et seq.). It also is summarized in the DOE's EA Section 3.2, *Visual Resources* (p. 3.2-1 et seq.). The affected environment is described from key observation points along Harper Lake Road near Phoenix Road, Harper Lake Road south of Roy Road, Roy Road east of Edie Road, Edie Road south of Lockhart Ranch Road, Lockhart Ranch Road east of Edie Road, certain BLM "watchable wildlife areas," and Fossil Bed Road near Black Canyon Road. In the area of the Lockhart Substation, gen-tie lines and distribution system, viewer concern, visual quality and overall visual sensitivity are low (DOE EA § 3.2.2.1). In addition, existing fixed light sources are limited to nighttime security lighting at the existing solar facility, fixed light sources at the rural residences and small farms located within 1 mile of the Lockhart Substation site (primarily consisting of high-intensity "farm" lights mounted on moderately tall wooden poles) and transitory nighttime light and glare produced by headlights from moving vehicles. No public street lights exist in the vicinity of the proposed substation (DOE EA, p. 3.2-4).

The visual setting in the vicinity of the existing electric power line corridors within which Project-related power and fiber optic routes would travel is described in Section 3.12 of Appendix A of the CEC's June 2010 Supplemental Staff Assessment Part C (p. A-47 et seq.) and in the DOE's EA Section 3.2.2, *Telecommunication System* (p. 3.2-3 et seq.). The CPUC has reviewed evidence before the CEC and DOE; this analysis reflects the CPUC's independent conclusions. Briefly, the regional visual setting is characterized by north-south-trending mountain ranges separated by broad valleys; native low, shrubby Mojave creosote scrub vegetation and an absence of trees; and notable man-made features including several high-voltage electric power lines of various sizes and configurations, electric substations, highways, and sparse commercial, industrial and residential development.

3.1.2 Regulatory Setting

State

California Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The State regulations and guidelines governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. A highway may be designated as "scenic" depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon the travelers' enjoyment of the view.

California Public Utilities Commission

California Public Utilities Code Section 320 requires that all new or relocated electric and communication distribution facilities within 1,000 feet of an officially-designated scenic highway and visible from that highway be buried underground where feasible and not inconsistent with sound environmental planning. General Order 131-D defines distribution as "…a line designed to operate under 50kV".[1] The Project would not be within 1,000 feet of State Route 41 and the proposed subtransmission line would be 66 kV, which is over the 50 kV threshold for applicability of Section 320. Consequently, the requirements of Section 320 would not apply to the Project.

California Public Utilities Code Section 21658 prohibits structural hazards associated with utility poles and lines near airports. Should any pole, pole line, distribution or transmission tower, or tower line, or substation structure be located in the vicinity of an airport or exceed 200 feet in height, a Notice of Proposed Construction or Alteration (Form 7460-1) is required by the Federal Aviation Administration (FAA) in accordance with Federal Aviation Regulation, Part 77, *Objects Affecting Navigable Airspace*. The FAA process could include stipulations, such as obstruction marking and lighting, for projects where aviation safety could be affected (see Section 2.7, *Hazards and Hazardous Materials*).

[1] The CPUC has implemented Public Utilities Code Section 320 via Tariff Rule 20. While Tariff Rule 20 does not disallow the funding of undergrounding transmission lines, the specific mandate of Public Utilities Code Section 320 is limited to distribution lines (CPUC, D.85497.)

Local

San Bernardino County General Plan

The San Bernardino County Board of Supervisors adopted the General Plan in 2007. The General Plan is the fundamental policy document governing unincorporated, privately-owned lands in San Bernardino County. Elements of the General Plan address land use, circulation and infrastructure, housing, conservation, open space, noise, safety, and economic development. Of these, the Land Use Element, Circulation Element, and Open Space Element contain goals and policies regarding visual resources. Some of these goals and policies are summarized below:

Land Use Element

- *Desert Region Goal D/LU 2*: Guides future development within the region to ensure compatibility between uses and with the character and vision desired for the region.

- *Desert Region Goal D/LU 3*: Ensures that commercial and industrial development is compatible with the rural desert character and meets the needs of local residents.

Circulation Element

- *GOAL D/CI 2*: Ensures compatibility between infrastructure improvements and the natural environment.

- *Desert Region Goal D/CI 3*: Encourages property maintenance to enhance regional aesthetics, promotes water and soil conservation, recycling and proper solid waste disposal.

- *Countywide Policy CO 1.2*: establishes a buffer area between resource and developed areas to preserve natural resources; provides for continued County land use review for unincorporated areas within 1 mile of a State- or federally-designated scenic area, national forest, national monument, or similar area, to ensure that sufficiently low development densities and building controls are applied to protect the visual and natural qualities of such areas.

- *Desert Region Goal D/CO 1*: Preserves unique environmental features and resources of the Desert Region, including native wildlife, vegetation, water, and scenic vistas.

- *Desert Region Policy D/CO 1.2*: Requires land development practices to be compatible with the existing topography and scenic vistas, and to protect natural vegetation.

- *Desert Region Goal D/CO 3*: Preserves the dark night sky as a natural resource in Desert Region communities.

- *Desert Region Policy D/CO 3.1*: Protects the night sky by providing information about and enforcing existing ordinances and for design review of proposed exterior lighting.

- *Desert Region Policy D/CO 3.2*: Requires outdoor lighting to comply with the Night Sky Protection Ordinance and to be provided only as necessary to meet safety standards.

Open Space Element

- *Countywide Goal OS 5*: Calls for maintenance and enhancement of the visual character of scenic routes in the County.

- *Countywide Policy OS 5*.3: Encourages retention of the scenic character of visually important roadways throughout the County; defines "scenic route" as a roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County.

San Bernardino County Development Code

The County Development Code implements the San Bernardino General Plan by classifying and regulating the uses of land within unincorporated San Bernardino County by preserving and protecting the County's important agricultural, cultural, natural, open space and scenic resources, and by protecting and promoting the public health, safety, comfort, convenience, prosperity, and general welfare of residents and businesses in the County.

Countywide development standards set forth in Section 83.10.060, *Landscape Area Requirements*, relate to visual resources. They require landscaped setbacks, unused areas, and parking areas. They also establish minimum areas that qualify as "landscaped areas" for purposes of the ordinance.

The Project would be developed in the Desert Region of San Bernardino County. Accordingly, the infrastructure improvement standards that apply to this region generally also would apply to the Project site. Table 83-11 of the County Code identifies the infrastructure improvements to be required for all new non-residential development in the Desert Region. In addition, Code Section 83.07.040 encourages voluntary compliance with the County's glare and outdoor lighting requirements for facilities on lands owned, operated or controlled by the United States Government (County Code § 83.07.040(e)). Such requirements include shielding of new light sources in accordance with the County Code's Table 83-7, Shielding Requirements For Outdoor Lighting In the Mountain Region and Desert Region, to preclude light pollution or light trespass on adjacent property, other property within the line of sight (direct or reflected) of the light source and members of the public who may be traveling on adjacent roadways or rights-of-way (County Code § 83.07.040(a)(2)).

3.1.3 Applicant Proposed Measures

As identified in CEC SSA Part C Appendix A (p. A-12), SCE would implement the following Applicant Proposed Measures to avoid or reduce potential impacts related to aesthetics and visual resources:

AES-1: LSTs and TSPs would be galvanized steel with a dulled grey finish that minimizes reflected light.

AES-2: Insulators that minimize reflection of light would be utilized.

AES 3: Substation equipment would have materials that minimize reflective light.

AES 4: If chain link fence is used, it would have a dulled-finish.

AES 5: The substation lighting would be designed to be manually operated for non-routine nighttime work.

3.1.4 Environmental Impacts and Mitigation Measures

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 corridor?

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?

Lockhart Substation, Gen-Tie Lines and Distribution System

Environmental impacts of the proposed Lockhart Substation, gen-tie lines and distribution system for station light and power are analyzed in Section VII(E), *Visual Resources*, of the CEC's final Commission Decision (p. 483 et seq.) and in DOE EA Section 3.2.3.1.1, *AMSP and Lockhart Substation* (p. 3.2-13 et seq.). These portions of the CEC and DOE documents, which conclude that these components of the Project would have a less-than-significant impact related to visual resources, are incorporated by reference.

The rationale provided for concluding that visual impacts of the proposed Lockhart Substation, gen-tie lines and distribution system would be less than significant may be summarized as follows. Visual effects resulting from the development of the AMSP and Lockhart Substation would include changes to the visual character of the landscape by introducing new elements into the landscape that would alter the form, line, color, and texture that characterize the existing landscape. More specifically, the existing open views of fallow agricultural land would be modified to include the substation and related lines and systems, altering the existing visual character of the site as seen from the surrounding vicinity. However, this change would not substantially degrade the existing visual character or quality of the site or its surroundings. The Lockhart Substation structure would not exceed the heights of proposed AMSP facilities and the substation and interconnection elements are not located in an area considered to be visually sensitive. Further, the connection to the existing 220-kV transmission line would not result in a substantive visual change because existing towers would be replaced with similar structures and transmission lines would be consistent with the visual setting of the large east-west transmission corridor. Existing nighttime lighting levels and water vapor plumes at solar facilities just northwest of the AMSP are similar to what would be expected from future nighttime lighting and water vapor plumes at the proposed AMSP. While the existing visual character and quality of the site and its surroundings would be altered to accommodate the construction and operation of the AMSP (including the proposed substation, gen-tie lines and distribution system), these elements would be visually compatible with the adjacent uses and would not significantly impact an

existing visual resource. There are no identified indirect impacts to visual resources on the site with operation of the Lockhart Substation.

Based on this information and analysis, the CPUC concludes that the construction and operation of the Lockhart Substation, gen-tie lines and distribution system for station light and power would cause a less-than-significant impact related to visual resources.

Transmission Lines and Related Structures

Visual impacts of the proposed transmission lines are analyzed in the DOE's October 2010 EA (see, p. 3.2-14 et seq.). That analysis concludes that the proposed facilities "would not result in a substantive visual alteration," i.e., would result in a less-than-significant visual impact, because the proposed connection links to an existing, large east-west utility corridor that contains large lattice towers, wooden utility poles, and overhead transmission lines. The proposed transmission lines and related structures would be consistent with elements of the adjacent solar power-generating facility to the northwest, would be of comparable heights, and would not be located in an area considered to have sensitive visual features. Consequently, the CPUC concludes that the construction and operation of the transmission lines and related structures would cause a less-than-significant impact related to visual resources.

Telecommunications System

Environmental impacts of installing the telecommunications system would relate to stringing cable on existing transmission line poles and on seven replacement poles, constructing 30 new interset poles along the Kramer to Victor route, placing segments of cable in existing underground conduit, and placing cable in new underground conduit. The majority of these activities could cause only minor changes to the visual character of the landscape because new cable primarily would use existing transmission poles within existing electrical transmission line corridors or would be placed underground. The 30 new interset poles would, however, introduce new elements into the landscape in some areas, minimally altering the form, line, color, and texture that characterize the existing landscape.

Potential impacts relating to the installation of the proposed fiber optic cable routes is provided in the DOE's EA Section 3.2.3.1.2, *Telecommunications System* (p. 3.2-23 et seq.). That analysis concludes that none of these proposed fiber-optic lines would result in a significant change to the overall visual setting or character of the study area. None of the elements would affect a scenic vista, and none of the elements would substantially alter any scenic resources, including trees, rock outcroppings, historic buildings, or State scenic highways. This conclusion and the underlying rationale, summarized below, are incorporated by reference.

Lockhart-to-Tortilla

New fiber optic cable between the Lockhart and Tortilla substations primarily would be strung on existing transmission poles (three pole replacements and no new poles would be required). Limited underground cable would be installed along this route: 1,200 square feet, or 0.03 acres

(DOE EA Table 2-2, *Project Footprint/Disturbance Assumptions for the Fiber-Optic Corridors*). The existing transmission line corridor is within a rural, remote area of the desert with limited opportunities for views toward this corridor, other than Harper Lake Road, which is a rural north-south road. Underground cable would be installed beneath the dirt shoulder along Harper Lake Road (the proposed trench would be 3 feet wide by 400 feet long). This work would cause some minor short-term construction-related impacts associated with trenching, soils piles and construction equipment, and no long-term impact because the cable would be located underground, out of sight. An additional small segment of cable would be installed in existing underground conduit directly west of the Tortilla Substation, but would require no trenching or ground disturbance. Based on this information and analysis, the addition of new fiber optic cable between the Lockhart and Tortilla substations would cause a less-than-significant impact on visual resources.

Lockhart-to-Kramer

New fiber optic cable between the Lockhart and Kramer substations would be installed on 30 new poles within the AMSP site boundary. The analysis in the DOE's EA concludes that this work, including the APMs identified above, would not significantly alter the visual setting because the poles would blend in with the other existing visual elements. After transitioning from new poles to existing poles along Lockhart Road, the proposed fiber-optic cable would be strung on existing overhead lines all the way west to the Kramer Substation, except that three replacement poles would be required along Harper Lake Road, and one replacement pole would be required next to the Kramer Substation. Because the four replacement poles would be similar in scale and height to existing poles, any substantive change to the visual setting would be minimal. The cable would transition into existing underground conduit at the Kramer Substation, resulting in no visual change to the substation site. Accordingly, the addition of the new Lockhart-to- Kramer fiber optic route would cause a less-than-significant impact on visual resources.

Kramer-to-Victor

The installation of fiber optic cable in new and existing underground conduit would not alter the existing visual setting. Although 30 new monopoles are proposed to be installed within two different segments of this route, the poles would be located within the limits of existing utility corridors and would be shorter than and blend in with the utility structures already in place. The incorporation of the APMs identified above would further reduce visibility of the new poles. Consequently, the new Kramer-to-Victor fiber optic route would cause a less-than-significant impact on visual resources.

3.2 Agriculture and Forestry Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
2. AGRICULTURE AND FORESTRY RESOURCES In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. **Would the project:**				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526) or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☒	☐

3.2.1 Environmental Setting

Historically, agriculture has been an important part of San Bernardino County's economy. Despite the continued conversion of agricultural land to non-agricultural uses (such as residential and business development), agriculture is still an integral component of the County. The gross value of agricultural production in the year 2008 for the County totaled $547,433,900, a decrease of $24,734,300 from the previous year (County of San Bernardino, 2008). According to the Department of Agriculture/Weight and Measures, this decrease primarily was due to the substantial reduction in the unit price of milk (excess production) and total value of nursery products (slow down of construction industry). The overall loss of value was offset by the increased value of eggs and field crops. The top 10 agricultural commodities (gross value) produced in San Bernardino County include milk, eggs, cattle and calves, replacement heifers, tree/shrubs, alfalfa, bok choi, oranges, indoor decorative plants, and ground cover.

Agriculture has long played a major role in the region. The early ranchos were subdivided and the Homestead Act of 1862 brought more farming to the region. However, agriculture was

particularly challenging in the Mojave Desert, since the climate and geomorphology limited access to water. Regardless of these limitations, the region became a primary alfalfa producer. Early crops also included cashews. Both crops demanded an enormous amount of water and necessitated the drilling of deep wells. The Lockhart Substation site historically was used as the Lockhart Ranch complex. The property once served as an agricultural and cattle center and used water from ground wells. Past farming activities included flood irrigation and the pivot system of irrigation of quarter section areas. There are currently no ranching or residential activities on the AMSP property; however, one active pivot irrigation field is in use on the AMSP site. This crop circle is irrigated and producing alfalfa. The remainder of the site (including the Lockhart Substation Project site) is largely non-irrigated former agricultural land that has been grazed by cattle, disturbed, or is now fallow.

As described in Section 3.1.1 of the DOE's EA (p. 3.1-3 et seq.) and summarized below, the California Department of Conservation Division of Land Resource Protection operates the Farmland Mapping and Monitoring Program (FMMP) to maintain agricultural resource maps based on soil quality and land use that inventories, maps and monitors California farmland acreage. Under the FMMP mapping criteria, the majority of the AMSP site is designated as Grazing Land, Prime Farmland (71 acres), Farmland of Statewide Importance (57 acres), and Urban and Built-up Land (CEC SSA Part B, p. 5.5-7).

Other lands designated as Important Farmland are located in the area where a fiber-optic route is proposed approximately 10 to 12 miles southeast of the Lockhart Substation site near Barstow. These lands are classified as Prime, Unique, and Farmland of Statewide Importance, and also include some Williamson Act lands. Most of these agricultural lands are clustered in areas to the northwest of Barstow in the Mojave River floodplain. The AMSP site, including the proposed Lockhart Substation, gen-ties and distribution system, is not located in an area that is subject to a Williamson Act contract (CEC Commission Decision, p. 434).

TABLE 3.2-1
FARMLAND CONVERSION FROM 2006–2008 IN SAN BERNARDINO COUNTY

	Total Acres Inventoried		2004–2006 Acreage Changes		
Land Use Category	**2006**	**2008**	**Acres Lost**	**Acres Gained**	**Net Change**
Prime Farmland	17,046	14,089	3,085	128	-2,957
Farmland of Statewide Importance	7,938	6,747	1,362	171	-1,191
Unique Farmland	3,150	2,661	545	56	-489
Farmland of Local Importance	2,785	1,829	1,234	278	-956
Important Farmland Total	**30,919**	**25,326**	**6,226**	**633**	**-5,593**

SOURCE: Department of Conservation, 2010.

3.2.2 Regulatory Setting

Federal

Farmland Protection Policy Act of 1981

The Federal Farmland Protection Policy Act of 1981 (FPPA) (7 U.S.C. 4201 et seq.) requires federal agencies to identify and take into account the impacts of their actions on Prime or Unique Farmland in order to minimize unnecessary and irreversible conversion of farmland to nonagricultural uses, and to ensure that Federal programs are administered compatibly with State, local, and private laws, policies and programs to protect farmland (7 U.S.C. 4201(b)). Categories of "farmland" under the Act include Prime Farmland, Unique Farmland, and Farmland of Statewide or Local Importance.

As explained in Section 3.1.1 of the DOE's EA (p. 3.1-2 et seq.), the National Resource Conservation Service's (NRCS) Farmland Conversion Impact Rating system has been used to analyze potential impacts related to agriculture. The NRCS designates the proposed 1,765-acre AMSP site as Farmland of Statewide Importance (approximately 50 percent of the site, or 882.5 acres), Prime Farmland if Irrigated (approximately 40 percent of the site, or 706 acres), and Not Prime Farmland (approximately 10 percent, or 176.5 acres) (CEC SSA Part B, p. 5.5-7).

National Forest System Lands - U.S. Forest Service, Department of Agriculture

Under the authority of the Department of Agriculture, the U.S. Forest Service manages most of the federal land within the County's mountain regions, including the Angeles and San Bernardino National Forests along the southwestern boundary of the County. The San Bernardino National Forest consists of approximately 665,753 acres of some of the most urban-influenced lands in the National Forest system. Of this total acreage, more than 456,928 acres are located within San Bernardino County. In turn, the Angeles National Forest covers over 650,000 acres, of which approximately 10,352 acres are located within San Bernardino County (San Bernardino County General Plan, 2007).

State

Important Farmland

As explained in Section 3.1.1 of the DOE's EA (p. 3.1-3 et seq.), California Public Resources Code Section 21060.1 defines agricultural land using the definitions of the U.S. Department of Agriculture land inventory and monitoring criteria as modified for California. Prime Farmland, Farmland of Statewide Importance, and Unique Farmland are defined as Important Farmland in Appendix G of the State CEQA Guidelines. As explained in Section VII(A)(2)(a) of the CEC's Commission Decision (p. 437), the CEC applied the significance criteria set forth in CEQA Guidelines Appendix G, which focuses on the results of FMMP mapping, to analyze potential impacts related to agriculture. The CPUC also applies these significance criteria in this analysis.

Pursuant to Government Code Section 65567(b) and Public Resources Code Section 612, the California Department of Conservation Division of Land Resource Protection operates the FMMP. The FMMP continues earlier Important Farmland mapping efforts of the federal Natural Resources Conservation Service, which produced national agricultural resource maps based on soil quality and land use. The FMMP inventories, maps and monitors California farmland acreage based on a map series that identifies eight classifications, which are summarized in Section 3.1.1 of the DOE's EA (p. 3.1-4). It uses a minimum mapping unit size of 10 acres. The FMMP map for the AMSP/Lockhart Substation site is included in the DOE EA as Figures 3.1-2 and 3.1-3. The FMMP also produces a biennial report on the amount of land converted from agricultural to non-agricultural use. The FMMP is an informational service only and does not have regulatory jurisdiction over local land use decisions. For the purpose of this environmental analysis and consistency with the Farmland Policy Act of 1981, the term "Farmland" includes *Prime Farmland, Unique Farmland,* and *Farmland of Statewide Importance*.

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965 (Williamson Act) authorizes local governments to enter into contracts with private landowners to restrict specific parcels of land to agricultural or related open space use for a rolling 10-year period (Gov't Code § 51200 et seq.). In return, landowners' property taxes are assessed at a much lower rate than otherwise would apply because they are based upon farming and open space uses as opposed to full market value. Local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. Pursuant to Government Code Section 51238(a)(1), "the erection, construction or maintenance of…electric… facilities are hereby determined to be compatible uses within any agricultural preserve."

Forest Land - California Public Resource Code

The California Public Resources Code governs forestry, forests and forest resources, as well as range and forage lands, within the State. "Forest land" is defined by Public Resources Code Section 12220(g) as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." Relatedly, "timberland" is defined by Public Resources Code Section 4526 as, "land, other than land owned by the federal government..., which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees."

Timberlands - California Government Code

Chapter 6.7 of the California Government Code (§§ 51100-51155) regulates timberlands within the State. "Timberland production zone" is defined in Section 51104(g) as an area that has been zoned pursuant to Government Code Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses. In this context, "compatible uses" include any use that "does not significantly detract from the use of the

property for, or inhibit, growing and harvesting timber" (Gov't Code § 51104(h)). The erection, construction, alteration, and maintenance of electric transmission facilities are examples of compatible uses.

California Public Utilities Commission General Order No. 131-D

The CPUC has sole and exclusive jurisdiction over the siting and design of the Project and alternatives because it authorizes the construction, operation, and maintenance of investor-owned public utility facilities. Although such projects are exempt from local land use and zoning regulations and discretionary permitting (i.e., would require approval from a local decision-making body such as a planning commission or city council), General Order No. 131-D, Section XIV.B requires that in locating a project "the public utility shall consult with local agencies regarding land use matters." Project applicants remain subject to any required non-discretionary local permit.

Local

In light of General Order No. 131-D, the following information about local land use and zoning requirements is provided for informational purposes only. Section 3.1.1 of the DOE's EA (p. 3.1-5) reports, and DOE EA Figure S-1 shows, that the AMSP/Lockhart Substation site and most of the proposed telecommunications corridors are located within unincorporated San Bernardino County. Portions of the telecommunications line would pass through the cities of Adelanto, Victorville and Barstow.

San Bernardino County General Plan and Development Code

The San Bernardino County General Plan and Development Code designate the AMSP/Lockhart Substation site exclusively as RL, Rural Living. Although RL primarily is a residential zone, Section 3.1.1 of the DOE's EA (p. 3.1-6) states that agricultural uses are allowed, and electrical power generation is allowable with conditional use permit approval. See also, CEC SSA Part B, p. 5.5-7 (identifying the AMSP site as within the Rural Living residential land use zoning district, which "...provides sites for rural residential uses, incidental agricultural uses, and similar and compatible uses").

San Bernardino County General Plan goals and policies applicable to the Project site, including goals and policies related to agriculture, are set forth in Land Use Table 1 included in CEC SSA Part B (p. 5.5-2) and Appendix G of the DOE's EA concerning land use, and are not repeated here. See, for example, Conservation Element Policies CO 6.1, CO 6.3, and CO 6.4 (DOE EA Appendix G, p. 4).

Land Use Table 1 also summarizes applicable themes of Title 8 of the San Bernardino 2007 Development Code (CEC SSA Part B, p. 5.5-2). Chapter 82.03 of the San Bernardino County Code of 2007 provides the regulatory framework for agricultural and resource management land use zoning districts within the County. Chapter 82.07 describes and governs an additional agriculture (AA) overlay area within the County. This overlay zone "is intended to create, preserve, and improve areas for small-scale and medium-scale agricultural uses utilizing

productive agricultural lands for raising, some processing, and the sale of plant crops, animals, or their primary products. It is an overlay where agricultural uses exist compatibly with a variety of rural residential lifestyles" (County Code § 82.07.010). A second agriculture-related overlay – the Agricultural Preserve (AP) Overlay – is established in Chapter 82.08 of the County Code. This overlay zone identifies properties that are located within an established Williamson Act agricultural preserve, regardless of whether they presently are subject to a Williamson Act contract reached by the landowner and County Board of Supervisors.

The AMSP site is not subject to timberland production zoning (TPZ). It also is not subject to a Williamson Act contract (CEC SSA Part B, p. 5.5-7).

City of Adelanto General Plan/Zoning

Section 3.1.1 of the DOE's EA (p. 3.1-7) discusses the City of Adelanto's land use governing documents as they relate to the portion of the proposed fiber-optic route that would be strung within the City's jurisdiction on new and existing poles, and underground in three locations. All of the proposed fiber-optic line would be located within an existing utility corridor in a developed area, mostly paralleling U.S. Highway 395 and crossing a segment of undeveloped open space between U.S. Highway 395 and the Victor Substation. The fiber-optic line would be collocated in an existing utility corridor that would traverse multiple zoning classifications. The City's General Plan is silent regarding the collocation of utilities in the same corridor, or location of a new pole or trench in an existing utility corridor. Based on the discussion in the DOE's EA, no agriculture or forest land would be affected by the proposed fiber-optic line.

City of Barstow General Plan/Zoning

Section 3.1.1 of the DOE's EA (p. 3.1-7 et seq.) discusses the City of Barstow's land use governing documents as they relate to the portion of the proposed fiber-optic route that would be strung on existing poles within an existing utility corridor as the line enters the City of Barstow. The City of Barstow allows utility lines to be located within ROWs with CPUC approval.

City of Victorville General Plan/Zoning

Section 3.1.1 of the DOE's EA (p. 3.1-8) identifies the southern portion of the fiber-optic line and the Victor Substation as located within the City of Victorville's municipal limits, and summarizes provisions of the Victorville General Plan to the extent they relate to the proposed work. Because the proposed fiber-optic route would follow an existing utility corridor within the city limits, the DOE determined that the fiber-optic cable would not interfere with existing roads or utilities within the City.

3.2.3 Applicant Proposed Measures

No applicant proposed measures have been identified by SCE to reduce potential Project impacts related to agriculture and forestry.

3.2.4 Environmental Impacts and Mitigation Measures

Agriculture-related impacts of the proposed Lockhart Substation, gen-tie lines and distribution system for station light and power are analyzed in Section VII(A) *Land Use*, of the CEC's Commission Decision (p. 433 et seq.) and in DOE EA Section 3.1.4.1, *AMSP and Lockhart Substation* (p. 3.1-11 et seq.). These portions of the CEC and DOE documents, which conclude that these components of the Project would not result in a significant impact related agriculture resources, are incorporated by reference. The CPUC independently has reviewed these analyses and agrees with the conclusions reached. Other portions of the CEC and DOE analyses cited below also are incorporated by reference.

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Important Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use: *No Impact*

Relying on the FMMP mapping system, the CEC concluded that the AMSP site as a whole contains 71 acres of Prime Farmland and 57 acres of Farmland of Statewide Importance, and that these 128 acres consist of an irrigated alfalfa crop circle (active agriculture) located elsewhere on the AMSP site than where the Lockhart Substation would be located. See, CEC Commission Decision, page 435, identifying the crop circle on the AMSP site as the FMMP farmland, CEC SSA Part B, page 5.2-8 ("Active agriculture covers approximately 128 acres within the project vicinity. The current crop is alfalfa (Medicago sativa) and is irrigated with a center-point pivot system."), and CEC SSA Part B page p. 4.5-29 ("There is one remaining crop circle under cultivation on the project site and it is the only portion of the site designated as Prime Farmland and Farmland of Statewide Importance."). Evaluating the Lockhart Substation site as well as the remaining components of the Project, CEC SSA Part C Appendix A, Table 3, *Vegetation Communities and Acreage Occurring within the Project Area*, p. A 22, identified vegetation communities and cover types associated with the proposed Lockhart Substation and interconnection as consisting of 0 acres of active agriculture and 9.04 acres of fallow agriculture-ruderal (weedy).

The CEC determined that the conversion of these 128 acres would be a significant impact of the AMSP, and so imposed LAND-1 as a condition of certification and, thereby, required the AMSP owner to mitigate for the loss of 128 acres of Important Farmland as designated by the California Department of Farmland Mapping and Monitoring Program, at a one-to-one ratio (CEC Commission Decision, p. 443). The CEC concluded that this Condition of Certification would be required to lessen a significant impact of the AMSP on agriculture. The mitigation measure is within the responsibility and jurisdiction of the CEC and has been adopted by the CEC to mitigate the stated impact of the AMSP to a less-than-significant level. However, the conversion of 128 acres of Important Farmland (71 acres of Prime Farmland and 57 acres of Farmland of Statewide Importance) is not under the jurisdiction of the CPUC because it would not be caused by the Lockhart Substation Project.

Furthermore, areas of the utility corridor in proximity to lands designated as Prime Farmland would not cause impacts related to conversion of agricultural lands because improvements would remain within the existing corridors. Instead, the proposed fiber-optic line would not convert existing farmlands because the cable primarily would be strung on existing utility poles, or trenched for short spans.

Accordingly, construction, operation and maintenance of the Project would cause no impact related to criterion a).

b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract: *No Impact*

The portion of the AMSP site where the Lockhart Substation and related Project facilities would be developed is zoned for rural residential uses, not agricultural ones, and Project facilities to be developed beyond the AMSP boundaries would be constructed, operated and maintained within existing utility corridors. The AMPS/Lockhart Substation site is not subject to a Williamson Act contract. Some of the fiber-optic cable routes would cross lands subject to a Williamson Act contract; however, the proposed routes would not conflict with existing zoning for agricultural use or a Williamson Act contract because the cable primarily would be strung on existing utility poles, or trenched for short spans and because, as noted in Section 3.2.2, *Regulatory Setting*, electric transmission infrastructure is consistent with Williamson Act uses. Consequently, the Project would have no impact related to criterion b).

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)): *No Impact*

None of the Project components would be located on land zoned as forest land, timberland, or timberland production zone (TPZ). The portion of the AMSP site where the Lockhart Substation and related Project facilities would be developed is zoned for rural residential uses. The transmission and telecommunications components of the Project would be constructed or installed in existing utility corridors. No portion of Project area is used for timber production, or is forested. Furthermore, crops grown in the Project area are irrigated because of the arid climate. It is unlikely that the land comprising the Project site could support 10-percent native tree cover, under natural (i.e., non-irrigated) conditions. Therefore, the lands that would be affected by the Project do not meet the definition of "forest land." Consequently, the Project would not conflict with existing forest land, timberland or timberland production zoning, and would cause no impact related to criterion c).

d) Result in the loss of forest land or conversion of forest land to non-forest use. *No Impact*

The Project would not result in any loss or conversion of forest land. As discussed above, the Project facilities would be located primarily on fallow, weed-covered former agricultural land that has been out of production for several years, or else within existing utility corridors. This

land is not "forest land" as defined in Public Resources Code Section 12220(g). Accordingly, the Project would not result in the loss or conversion of forest land, and there would be no impact.

e) Involve other changes in the existing environment, which due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? *Less than Significant Impact*

The Project would be developed in the desert region of San Bernardino County. Although a significant portion of the land area within the County is part of the National Forest System, development of the Project would not affect these lands and would not change the existing environment in a way that could result in conversion of forest lands. Consequently, the Project would have no impact related to forest land or forest uses under criterion e).

Concerning potential agricultural conversion, the CEC concluded that impacts of the proposed Lockhart Substation, gen-tie lines and distribution system would be less than significant in part because "poor water quality at the site would be both physically and economically restrictive to most productive farming activities, and the adjudicated water rights are a physical restriction to agricultural production" (CEC SSA Part B, p. 5.5-9). The CPUC independently has reviewed the evidence before the CEC with respect to these components of the Project, and agrees with this conclusion.

Potential agriculture-related impacts of the proposed transmission lines are analyzed in Section 3.1.4.1 of the DOE's EA (see, e.g., pp. 3.1-11, 3.1-13). The DOE determined that Project transmission towers would be located near other, similar structures, would be no higher than existing facilities in the area, and would be located within existing transmission line corridors. Because they would be within (and consistent with) the existing utility corridor, the proposed transmission lines and related improvements would not cause a substantial impact related to agriculture and forestry resources. The CPUC independently has reviewed evidence before the DOE and has determined that the proposed transmission system would cause a less-than-significant impact related to the conversion of agricultural lands.

The DOE explained with respect to the proposed fiber-optic routes and agriculture and forestry resources that new right-of-way (ROW) acquisition for the telecommunications lines would not be necessary because the cables would be located within existing utility corridors. Consequently, there would be negligible impacts to existing land use along the corridor; current farming activities would likely continue within portions of the ROW. The CEC also considered potential impacts of the fiber-optic routes related to agricultural conversion in SSA Part C Appendix A. The analysis is summarized below.

Appendix A of Subpart C of the CEC's SSA, Table 3, *Vegetation Communities and Acreage Occurring within the Project Area* (p. A-22) identifies the vegetation communities and cover types associated with the 31-mile proposed route of the Lockhart-to-Tortilla fiber-optic cable as 39.18 acres in active agriculture and 45.25 acres of fallow agriculture-ruderal (weedy). This route would originate at the proposed Lockhart Substation within the AMSP site and head west, following the existing Kramer-Coolwater 220-kV utility corridor south of the AMSP. The

northern portion of the route east of the proposed Lockhart Substation and along Harper Lake Road "is bound mostly by open space and limited agriculture" (CEC SSA Part C Appendix A, p. A-47). The CEC describes the portion of this route along SR 58 as "flat terrain, abutted on both sides of road by open space, agriculture, and rural residential toward the east end of this segment" (CEC SSA Part C Appendix A, p. A-47). The portion of the alignment along Community Road is described as being "dominated by fallow and active agriculture for approximately 1.75 miles" (CEC SSA Part C Appendix A, p. A-23). However, all Project-related work would occur within the existing ROW, and so would not affect existing agricultural uses. Appendix A of Subpart C of the CEC's SSA, Table 3, *Vegetation Communities and Acreage Occurring within the Project Area* (p. A-22) identifies the vegetation communities and cover types associated with the Lockhart-to-Kramer fiber-optic route as 9.17 acres in active agriculture and 59.23 acres as fallow agriculture-ruderal (weedy). Installation of new cable in underground conduits and on overhead structures would not convert Important Farmland or other active agricultural uses to non-agricultural use. None of the vegetation communities and cover types associated with the Kramer-to-Victor fiber-optic route are agricultural (CEC SSA Part C Appendix A Table 3, p. A-22).

The CPUC independently has reviewed evidence before the CEC and DOE and has determined that the proposed fiber-optic routes would cause a less-than-significant impact related to the conversion of agricultural lands.

3.2.5 References

California Department of Conservation Division of Land Resource Protection Farmland Mapping and Monitoring Program (California Department of Conservation), Table A-28 San Bernardino County 2004-2006 Land Use Conversion. Available at: http://redirect.conservation.ca.gov/DLRP/fmmp/pubs/2004-2006/FCR/Appendices%202004-06%20FCR.pdf. Accessed May, 2011.

California Department of Forestry and Fire Protection Fire and Resource Assessment Program (FRAP), 2002. Timberland Site Class on Private Lands Zones for Timber Production. Available at: http://frap.cdf.ca.gov/publications/Timberland_Site_Class_on_Private_Lands_Zoned_for_Timber_Production.pdf. January, 2002.

County of San Bernardino, 2008. Crop and Livestock Report. Available at: http://www.sbcounty.gov/awm/docs/201090710_awm_crop_report_2008.pdf. (2008)

County of San Bernardino, 2007. County of San Bernardino 2007 General Plan (March 13, 2007).

County of San Bernardino Department of Agriculture/Weights and Measures, 2008. Available at: http://www.sbcounty.gov/awm/.

3.3 Air Quality

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
3.	**AIR QUALITY** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. **Would the project:**				
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b)	Violate any air quality standard or 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 project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

This section describes existing air quality conditions in the Project area, summarizes applicable regulations and evaluates potential Project-related impacts on regional and local air quality that would result from construction and operation of the Project. This section is based on the California Public Utility Commission's (CPUC) independent review and judgment of existing environmental analyses of the California Energy Commission (CEC) and Department of Energy (DOE) for the AMSP; documentation of air quality conditions in the region; and air quality regulations of the U.S. Environmental Protection Agency (USEPA), California Air Resources Board (CARB), Mojave Desert Air Quality Management District (MDAQMD), and local governments.

Air quality and related impacts are described and analyzed in Section V(B), *Air Quality* (p. 128 et seq.) of the CEC's Commission Decision; Section 5.1, *Air Quality*, of CEC SSA Part B (p. 5.1-1 et seq.); CEC Staff's Errata To The Supplemental Staff Assessment Part B - Air Quality Section (pp. 1-18); CEC SSA Part C Appendix A (see, e.g., p. A-16 et seq.); and in each of the DOE EA Sections related to *Air Quality*, including Section 3.3 (p. 3.3-1 et seq.), Section 4.5.3 (p. 4-6 et seq.), and Appendix I. Each of these sections is incorporated by reference into this analysis.

3.3.1 Environmental Setting

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and

dispersal of air pollutants, which affect air quality. The Project is located within the Mojave Desert Air Basin (MDAB), which falls under the jurisdiction of the MDAQMD.

Regional Topography, Meteorology, and Climate

Topography and meteorology greatly influence air quality. Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants. The Project would be developed in the MDAB, which is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that exist in this vast terrain rise from 1,000 to 4,000 feet above the valley floor.

Meteorological data collected at the Barstow-Daggett Airport are generally representative of the study area. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada to the north. Average maximum and minimum winter (i.e., January) temperatures are 61.7 ºF and 37.0 ºF, respectively, while average maximum and minimum summer (i.e., July) temperatures in Barstow are 105.6 ºF and 74.4 ºF, respectively. The month with the highest precipitation is usually February, and the mean annual precipitation is 3.27 inches (WWRC, 2010). The western Mojave Desert region experiences a large number of days each year with sunshine, generally more than 345 days per year. The region also traditionally experiences excellent visibility, i.e., greater than 10 miles or more, 95 percent of the time (DOE EA Table 3.3-5, p. 3.3-13).

The climatic pattern for the Project region is a typical desert climate within the Mediterranean climate classification. During the summer, the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. The MDAB typically receives between 3 and 7 inches of precipitation per year (from 16 to 30 days with at least 0.01 inch of precipitation). The MDAB is classified as a dry-hot desert climate (BWh), with portions classified as dry-very hot desert (BWhh), to indicate that at least 3 months have maximum average temperatures over 100.4 °F (DOE EA, p. 3.3-12).

Existing Air Quality

MDAQMD operates a regional monitoring network that measures the ambient concentrations of criteria pollutants. Existing levels of air quality in the study area can generally be inferred from ambient air quality measurements conducted by MDAQMD at its closest stations, the Barstow station and the Victorville – Park Avenue station. The Barstow monitoring station is approximately 14 miles east of the proposed Lockhart Substation site and the Victorville station is approximately 32 miles south of the Lockhart Substation site. The Barstow station monitors ozone, particulate matter equal to or less than 10 microns in diameter (PM10), and nitrogen dioxide (NO_2). The Victorville station monitors particulate matter, including particulate matter less than 2.5 microns in diameter (PM2.5) (CARB, 2010a).

Background ambient concentrations of pollutants are determined by pollutant emissions in a given area as well as wind patterns and meteorological conditions for that area. As a result, background concentrations can vary among different locations within an area. However, areas located close together and exposed to similar wind conditions can be expected to have similar background pollutant concentrations. Table 3.3-1, *Air Quality Data Summary (2007–2009) for the Study Area*, shows a three-year summary of monitoring data collected at the Barstow and Victorville monitoring stations. The ozone, PM10, NO_2, data are from the Barstow Station. The PM2.5 data are from the Victorville station (CARB, 2010b). The data are compared with the California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). As indicated in Table 3.3-1, the State one-hour ozone standard was exceeded each year between one and five times and the national and State eight-hour ozone standards were exceeded between five and 25 and between 18 and 46 times, respectively, during the three-year study period. The State 24-hour PM10 standard was exceeded each year between one and five times and the State annual average standard was exceeded in 2007 and 2008 (annual average data are not available for 2009). There was one exceedance of the PM10 24-hour national standard during 2007. The national 24-hour PM2.5 standard was not exceeded during the years with available data. There were no violations of NO_2 during the three-year study period. Summary descriptions of the criteria pollutants are provided below.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving volatile organic compounds (VOC) and oxides of nitrogen (NO_x). VOC and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of VOC and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds like ozone.

Particulate Matter

PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates can also damage materials and reduce visibility.

TABLE 3.3-1
AIR QUALITY DATA SUMMARY (2007–2009) FOR THE STUDY AREA

Pollutant	Standard	Monitoring Data by Year		
		2007	2008	2009
Ozone				
Highest 1 Hour Average (ppm)		0.099	0.104	0.095
Days over 1 Hour State Standard	0.09	2	5	1
Highest 8 Hour Average (ppm)		0.088	0.096	0.086
Days over 8 Hour National Standard	0.075	25	7	5
Days over 8 Hour State Standard	0.070	46	23	18
Particulate Matter (PM10):				
Highest 24 Hour Average (µg/m^3)		29.8	26.1	ND
Days over State Standard[a]	50	5	2	1
Days over National Standard[a]	150	1	0	0
Annual Average (µg/m^3)		29.8	26.1	ND
Exceed State Standard?	20	Yes	Yes	ND
Particulate Matter (PM2.5)				
Highest 24 Hour Average (µg/m^3)		28.0	17.0	20.0
Days over National Standard[a]	35	0	0	0
State Annual Average (µg/m^3)		9.7	ND	9.3
Exceed State Standard?	12	No	ND	No
Nitrogen Dioxide (NO_2)				
Highest 1 Hour Average (ppm)		0.073	0.081	0.060
Days over 1 Hour State Standard	0.18	0	0	0
Annual Average (ppm)		0.020	0.019	0.016
Exceed State Standard?	0.030	No	No	No

ppm = parts per million; µg/m^3 = micrograms per cubic meter; ND = No data available

[a] Measurements are usually collected every six days. Days over the standard represent the estimated number of days that the standard would have been exceeded if sampling was conducted every day.

SOURCE: CARB, 2010a and CARB, 2010b

Other Criteria Pollutants

Carbon monoxide (CO) is a non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Sulfur dioxide (SO_2) is produced through combustion of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (both

PM10 and PM2.5) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Lead has a range of adverse neurotoxin health effects, and formerly was released into the atmosphere primarily via leaded gasoline. The phase-out of leaded gasoline has resulted in decreasing levels of atmospheric lead.

Attainment Status

The MDAB is a nonattainment area for State and federal ozone, PM10, and State PM2.5 standards. Refer to Table 3.3-2, *MDAQMD Federal and state Attainment Status*, for the current attainment status of the MDAB.

TABLE 3.3-2
MDAQMD FEDERAL AND STATE ATTAINMENT STATUS

Pollutant	Federal	State
Ozone	Moderate Nonattainment	Moderate Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxides (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Inhalable Particulates (PM10)	Moderate Nonattainment	Nonattainment
Fine Particulates (PM2.5)	Attainment	Nonattainment

NOTES: Attainment = Attainment or Unclassified, where Unclassified is treated the same as Attainment for regulatory purposes.

SOURCE: CEC SSA, 2010, p. 5.1-6.

Sensitive Receptors

As explained in footnote 2 on page 7 of the CEC Commission Decision and page 3.3-13 of the DOE EA, sensitive receptors include those members of the population who are especially sensitive to air pollutant emissions and institutions with people who are particularly susceptible to illness, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise. The reasons for greater-than-average sensitivity include pre-existing health problems, proximity to emission sources, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, with associated greater exposure to ambient air quality. Recreational uses such as parks also are considered sensitive because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The area surrounding the AMSP/Lockhart Substation site is sparsely populated. The closest known residential properties include six to eight widely-separated residences located between

approximately 0.5 and 1.6 miles from the AMSP/Lockhart Substation site; there are no other sensitive receptors such as schools or medical facilities in the vicinity of the AMSP/Lockhart Substation site (DOE EA Section 3.3.4.1, p. 3.3-14).

The Lockhart to Tortilla line would be located partially within the AMSP boundary and along existing transmission line corridors all the way to the Tortilla Substation located in the City of Barstow (DOE EA Section 3.3.4.2, p. 3.3-14). In the developed areas within and surrounding Barstow, there are residential areas adjacent to this route, an elementary school 0.33 mile south of the route, and a convalescent hospital approximately 0.6 mile west of the route; however, no sensitive air quality receptors are identified directly adjacent to the proposed route.

The Lockhart to Kramer line would be located partially within the AMSP and along existing transmission line corridors all the way to the Kramer Substation (DOE EA Section 3.3.4.2, p. 3.3-14). Most of this utility corridor is in a remote desert area of San Bernardino County, with the exception of the far west end, which is located near sparse retail, commercial, and industrial uses in the community of Kramer Junction. No sensitive air quality receptors are located in proximity to this proposed route; the nearest sensitive receptor is the Boron Elementary School, which is located approximately 8.5 miles west of the proposed route.

The Kramer to Victor fiber optic cable would be located along U.S. Highway 395, partially within an undeveloped portion of San Bernardino County (DOE EA Section 3.3.4.2, p. 3.3-14). There are residential areas adjacent to this route, primarily in the southern one-third of the alignment as the corridor nears Adelanto and the Victor Substation. The proposed route is within 0.25 mile of the St. Mary Medical Center, which is the only sensitive receptor in the general vicinity of the proposed route.

3.3.2 Regulatory Setting

Air quality within the MDAB is addressed through the efforts of various federal, State, and local government agencies. These agencies work jointly and individually to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. Each of the laws, ordinances, regulations, and standards (LORS) applicable to the control of criteria pollutant emissions and mitigation of air quality impacts for the AMSP, including the Project, are summarized in CEC AFC Air Quality Table-1 (p. 5.1-2 et seq.). The applicable regulatory framework also is described in DOE EA Section 3.3.1 (p. 3.3-1 et seq.). Federal and State ambient air quality standards are summarized in DOE EA Table 3.3-1 (p. 3.3-2). General conformity *de minimis* levels are summarized in DOE EA Table 3.3-2 (p. 3.3-4). This data and other information are incorporated by reference, and summarized briefly below.

Federal Standards

- National Ambient Air Quality Standards as required by the Clean Air Act (CAA) (see DOE EA Table 3.3-1, *Federal and State Ambient Air Quality Standards*, p. 3.3-2)

- General Conformity as required by the 1990 Amendment to the CAA Section 176

- Maximum or Best Available Control Technology (MACT or BACT) for Hazardous Air Pollutants as regulated by the EPA

State Standards

- California Ambient Air Quality Standards
- CEC Certification Process
- State Regulations for Mobile Sources of Air Pollutants apply to mobile sources and, although not identified or analyzed in the CEC or DOE analyses, are directly relevant to the Project. On-road vehicles with a gross vehicular weight rating of 10,000 pounds or greater shall not idle for longer than five minutes at any location as required by Title 13 California Code of Regulations Section 2485. This restriction does not apply when vehicles remain motionless during traffic or when vehicles are queuing. Off-road equipment engines shall not idle for longer than five minutes per Section 2449(d)(3) of Title 13, Division 3, Chapter 9, Article 4.8 of the California Code of Regulations. Exceptions to this rule include the following: idling when queuing; idling to verify that the vehicle is in safe operating condition; idling for testing, servicing, repairing or diagnostic purposes; idling necessary to accomplish work for which the vehicle was designed (such as operating a crane); idling required to bring the machine to operating temperature as specified by the manufacturer; and idling necessary to ensure safe operation of the vehicle.

Regional Standards

- Applicable MDAQMD Rules and Regulations, criteria air pollutant significance thresholds, and health risk significance criterion

3.3.3 Applicant Proposed Measures

As identified in CEC SSA Part C Appendix A (p. A-12), SCE would implement the following Applicant Proposed Measure to avoid or reduce potential impacts related to air quality:

AIR-1: Construction activities would be conducted in compliance with AQMD requirements, as applicable to the Project.

3.3.4 Environmental Impacts and Mitigation Measures

Environmental impacts of the Project are analyzed in Section V(B), *Air Quality*, of the CEC's Commission Decision (p. 128 et seq.), in Section 3.1, *Air Quality*, of the CEC's SSA (p. A-16), and in the DOE EA Section 3.3, *Air Quality* (p. 3.3-1 et seq.). These portions of the CEC and DOE documents have been independently reviewed by the CPUC and are incorporated by reference.

a) Conflict with or obstruct implementation of the applicable air quality plan: *Less than Significant Impact*

According to the MDAQMD, a project could conflict with or delay implementation of an attainment or maintenance plan if it would not comply with all applicable MDAQMD rules and regulations, if it

would not comply with all proposed control measures that are not yet adopted from the applicable plan(s), and if it would not be consistent with the growth forecasts in the applicable plan(s) (MDAQMD, 2009). Consistency with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. The MDAQMD provides an example of a non-conforming project as one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area relative to the applicable land use plan (MDAQMD, 2009).

As stated in the CEC's Supplemental Staff Assessment (p. 5.1-32), the applicable air quality plans do not outline any new control measures that would be applicable to the AMSP's operating emission sources. Therefore, compliance with existing MDAQMD rules and regulations would ensure compliance with those air quality plans. In addition, the MDAQMD released its revised Final Determination of Compliance on July 1, 2010, stating that the AMSP would be expected to comply with applicable MDAQMD rules, which incorporate State and federal requirements.

It should be noted that operation of the Project would result in substantially less emissions than the AMSP. Project emission sources would be limited to a very small number of vehicle trips required to inspect and maintain the proposed substation, gen-tie lines, distribution system, and the transmission and telecommunications lines. Therefore, the Project would not conflict with or obstruct implementation of any MDAQMD air quality plan.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation: *Less than Significant Impact*

Construction

Construction activities that would be associated with the substation, gen-ties, distribution system, transmission, and telecommunications facilities would generate emissions of criteria pollutants, including PM10, PM2.5, and ozone precursors. Short-term construction emissions would include equipment and vehicle exhaust and fugitive dust from ground disturbance. Construction activities would include hauling of construction materials, rehabilitation of existing roads, construction of new access roads, site preparation, assembly of the substation, erection of structures, installation of other electrical infrastructure, conductor stringing, and site cleanup.

The MDAQMD recommends that a project be considered significant if it would generate total emissions (direct and indirect) in excess of its adopted significance thresholds and that in general, the comparison of emissions to the significance thresholds is sufficient to determine the significance related to a project's potential to violate any air quality standard or to substantially contribute to an existing or projected air quality violation (MDAQMD, 2009).

Emissions associated with construction of the Project, including the Lockhart Substation, gen-ties, distribution system, transmission lines, and telecommunication systems were estimated using the URBEMIS 2007 model, version 9.2.4 (DOE EA, p. 3.3-15). Details about the modeling assumptions are provided in DOE EA Appendix I, *Air Quality*. Estimated emissions

associated with construction of the Project are provided in Table 3.3-3, *Estimated Project-Related Construction Emissions*.

TABLE 3.3-3
ESTIMATED PROJECT-RELATED CONSTRUCTION EMISSIONS

	Air Pollutant Emissions (tons)					
Source	**VOCs**	**NO_x**	**CO**	**SO_x**	**PM10**	**PM2.5**
Lockhart Substation (including gen-ties and distribution system)	0.46	1.83	5.29	0.01	0.21	0.17
Transmission Lines	0.36	1.50	2.49	0.00	0.52	0.19
Telecommunication System	0.33	1.36	1.84	0.00	0.86	0.27
Project Emissions	***1.15***	***4.69***	***9.62***	***0.01***	***1.59***	***0.63***
MDAQMD Significance Thresholds	25.00	25.00	100.00	25.00	15.00	15.00

As described in Table 3.3-3, Project-related construction emissions of criteria pollutants would be well below the MDAQMD significance thresholds. Therefore, short-term construction impacts related to the potential for the Project to violate any air quality standard or to substantially contribute to an existing or projected air quality violation would be less than significant.

Operations

Operational emissions that would be associated with the Lockhart Substation (including gen-ties and distribution system), transmission lines, and fiber optic lines would be negligible, as the associated emissions would be limited to the periodic operation of emergency generators and occasional maintenance-related activities (see, DOE EA, pages 3.3-19 and 3.3-33). Project operational emissions would be substantially less than the Project construction emissions presented in Table 3.3-3. Therefore, long-term operational impacts related to the Project's potential to violate any air quality standard or to substantially contribute to an existing or projected air quality violation would be less than significant.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors): *Less than Significant Impact*

As shown above in Table 3.3-2, *MDAQMD Federal and State Attainment Status*, the MDAB is nonattainment of State and federal ozone and PM10 standards and State PM2.5 standards. Most sources emit ozone precursors (i.e., VOC and NO_x) and particulate matter in quantities that are too small to have a measurable effect on ambient pollutant concentrations by themselves; however, when they are considered in a cumulative sense these emissions can result in severe problems to the ambient air quality throughout the MDAB. In response to this issue, the MDAB has developed annual emissions thresholds of 25 tons for both VOC and NO_x and 15 tons for PM10 and PM2.5 to limit the individual contribution of discrete projects, thereby reducing the cumulative impacts of many smaller scale projects. As discussed previously, emissions during construction of the Project would not exceed the significance thresholds for VOC, NO_x, PM10, or

PM2.5, and would therefore not contribute to a cumulatively considerable net increase in regional ozone precursor or particulate matter emissions.

At a local scale, PM10 and PM2.5 also have the potential to cause significant impacts if several grading or earth moving projects are underway simultaneously at nearby sites. There are a number of projects that are proposed in the vicinity of the Project site, including the AMSP. It is anticipated that grading and earth moving activities associated with the AMSP would overlap with activities associated with construction of the Project. Construction emission concentrations that would be associated with the AMSP, which includes all emissions of the Project, were modeled to evaluate cumulative impacts in terms of compliance with the State and federal air quality standards (DOE EA, p. 3.3-16). The modeling analysis indicates that construction of the AMSP would create new exceedances or contribute to existing exceedances of 24-hour and annual PM10 and 24-hour PM2.5 standards, and that no other criteria pollutant standards would be exceeded.

The AMSP/Lockhart Substation site is located in an area with high PM10 background concentrations. Additionally, the worst-case predicted PM10 and PM2.5 impacts would occur at the fence line and would drop off quickly with distance from the fence line. Background levels of the nonattainment 24-hour and annual PM10 are already substantially above the State and national standards and constitute the predominant source of the calculated exceedances. The contribution from AMSP construction sources would be intermittent and temporary, and the AMSP incremental contribution to the total impact would be significantly lower than the background concentration itself and PM10 concentrations in the area would exceed the NAAQS even without these emissions. The PM10 background concentration is approximately three times the state 24-hour standard (DOE EA, Table 3.3-7, p. 3.3-17). With regard to PM2.5, the background concentration is below the federal 24-hour standard; however, with the AMSP emission concentrations, the standard would be exceeded (DOE EA, Table 3.3-7, p. 3.3-17).

It should be noted that the Project emissions make up approximately seven percent of the total AMSP mass emissions (DOE EA, Table 3.3-6, p. 3.3-16). Therefore, although the AMSP may result in cumulatively considerable impacts related to exceedances of PM10 and PM2.5 emissions standards, the incremental contribution of the Project would not be cumulatively considerable. Therefore, local emissions of criteria pollutants, including PM10 and PM2.5, would result in less-than-significant cumulative impacts.

d) Expose sensitive receptors to substantial pollutant concentrations: *Less than Significant Impact*

The Project would generate air pollutant emissions from short-term construction and long-term operations (see item b, discussion, above). While Project impacts described above are assessed relative to the actual masses of pollutants that would be emitted by the Project, impacts associated with the exposure of sensitive receptors to pollutant concentrations would be related to the concentration of pollutants from the Project that reach sensitive receptors. The health effects of emissions from both stationary sources and on-site mobile sources were analyzed for the AMSP

through the use of air dispersion models as part of the CEC's environmental analysis of the AMSP and also were relied upon by the DOE in the EA.

Construction of the AMSP, including the Project, is anticipated to take place over a period of 26 months. However, assessment of chronic (long-term) health effects assumes continuous exposure to toxic substances over a significantly longer time period, typically from 8 to 70 years. A health risk assessment was conducted for diesel particulate matter (DPM) from construction equipment emissions as part of the CEC AFC process. The modeling of worst-case construction emissions adjusted to a 26-month period (lifetime exposure adjustment factor of 0.0106) found that the cancer risk was estimated to be 2.54 in one million at the maximum impact receptor, below the level of significance (10 in one million). The chronic hazard index was found to be 0.055 at the maximum impact receptor, below the level of significance of 1.0. The acute hazard index was not reported since available data in support of a value were deemed insufficient (see, DOE EA, p. 3.3-26). The risk that would be associated with Project operations would be substantially less than those associated with construction of the AMSP. Thus, impacts related to the Project exposing sensitive receptors to pollutant concentrations would be less than significant.

e) Create objectionable odors affecting a substantial number of people: *Less than Significant Impact*

Diesel exhaust from construction activities or operation and maintenance vehicles could generate odors; however, any such odors would be temporary and, based on the number of employees and distance to sensitive receptors, would be unlikely to affect a substantial number of people. Operation of the Lockhart Substation, gen-ties, distribution system, transmission lines and related structures, and telecommunications infrastructure would not generate other odors. Odor-related impacts would be less than significant. See also, CEC Commission Decision pages 138 and 140, which determine that there is no evidence that construction or operation of the AMSP would cause objectionable odors that could affect a substantial number of people.

3.3.5 References

CARB, 2010a. iADAM Air Quality Data Statistics website. Available at: http://www.arb.ca.gov/adam/index.html. Accessed December 15, 2010.

CARB 2010b. Ambient Air Quality Standards website. Ambient Air Quality Standards chart, updated January 27, 2010. Available at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed December 15, 2010.

MDAQMD, 2009. MDAQMD California Environmental Quality Act and Federal Conformity Guidelines, February 2009.

Western Regional Climate Center (WRCC), 2010. Barstow-Daggett, California Monthly Climate Summary. Available at: http://www.wrcc.dri.edu/summary/dag.ca.html. Accessed December 15, 2010.

3.4 Biological Resources

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
4.	**BIOLOGICAL RESOURCES— Would the project:**				
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 California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

Information and analysis about biological resources are provided in CEC Commission Decision Section VI(A), *Biological Resources* (p. 229 et seq.); CEC SSA Part C Appendix A Section 3.2 (p. A-20 et seq.); CEC SSA Part B (p. 5.2-1 et seq.); and CEC Staff Assessment (p. 5.2-1 et seq.). Information and analysis about biological resources also are provided in DOE EA Section 3.8, *Biological Resources* (p. 3.8-1 et seq.) and Appendix M. The CPUC has independently reviewed these portions of the CEC and DOE analyses as well as the other portions of the analyses cited below, and incorporates them by reference. A summary of the information incorporated into this analysis is provided where it relates to the discussion.

3.4.1 Environmental Setting

The regional and local environmental setting is summarized from information provided in DOE EA Section 3.8.3, *Affected Environment* (pp. 3.8-5 et seq.); CEC Decision Section VI(A) Sections 1 through 3 (pp.229-243); and CEC SSA Part C, *Environmental Setting* (pp. A-21 through A-25). These sections have been reviewed independently by the CPUC, are incorporated by reference, and are summarized below.

The analysis in this IS/MND addresses existing land uses within the 1,765-acre privately-owned AMSP/Lockhart Substation site, as well as the interconnection to SCE's transmission system and the proposed fiber-optic telecommunication corridors. The study area also includes properties within 1 mile of the AMSP/Lockhart Substation site, and within 0.25 mile on both sides of the Project's linear features. These areas are referred to collectively in this IS/MND as the "study area." The terms "Project site" and Project area" are used interchangeably in this IS/MND section to describe lands within the immediate footprint of Project activities.

Regional Setting

The Project is proposed in the western Mojave Desert, within San Bernardino County and the cities of Barstow and Adelanto, California. The proposed Lockhart Substation, gen-ties and distribution system would be developed within the AMSP site. Proposed linear facilities would span approximately 85 miles, primarily within existing road and utility corridors. As explained in IS/MND Section 3.3, *Air Quality*, the area surrounding the proposed substation and related facilities is sparsely populated, and other residents live along the proposed Lockhart to Tortilla fiber-optic line within and surrounding the City of Barstow and along the proposed Kramer to Victor fiber-optic line as it nears the City of Adelanto and the Victor Substation. Sparse retail, commercial and industrial uses exist along the proposed Lockhart to Kramer fiber-optic line in the community of Kramer Junction. However, the Project area is more generally characterized by areas of active and fallow agriculture and important open spaces such as the Mohave ground squirrel conservation area, several desert wildlife management areas, and desert tortoise critical habitat.

Vegetation Communities

Eleven vegetation communities or land-cover types occur in the Project area. In order of greatest amount to least amount, these are: Mojave Creosote Bush Scrub, Desert Saltbush Scrub, Fallow Agriculture-Ruderal (weedy), Developed, Mojave Creosote Bush-Atriplex Scrub, Active Agriculture, Disturbed, Mojave Desert Wash- sandy areas, Tamarisk Scrub, Mojave River, and Joshua Tree Woodland. Of these vegetation communities, only Joshua Tree Woodland is protected as a Sensitive Natural Community by California Department of Fish and Game (CDFG). One acre of Joshua Tree Woodland occurs in the Project area, along the Kramer-to-Victoria fiber-optic route. Please refer to DOE EA Figure 3.8-1, which shows existing vegetation on the AMSP/Lockhart Substation site; DOE EA Figure 3.8-2, *Existing Vegetation-Lockhart to Tortilla*, DOE EA Figure 3.8-3, *Lockhart to Kramer*, and DOE EA Figure 3.8-4, Existing Vegetation – *Kramer to Victor*. Please also refer to DOE EA Table 3.8-1, *Vegetation Communities and Other Cover Types: Study Area and Distribution* (p. 3.8-11).

The proposed AMSP/Lockhart Substation site is primarily composed of fallow agricultural-ruderal areas and some patches of desert scrub dominated by saltbush. Several moderate to highly invasive weeds have wide distribution on the site, and include Russian thistle (*Salsola tragus*), herb Sophia (*Descurania sophia*), Saharan mustard (*Brassica tournefortii*), London rocket (*Sisymbrium irio*), tamarisk (*Tamarix ramosissima*), slender wild-oat (*Avena barbata*), red brome (*Bromus madritensis ssp. rubens*), cheatgrass (*Bromus tectorum*), and hare barley (*Hordeum*

murinum) (DOE EA, p. 3.8-10, citing California Invasive Plant Council 2006). Unlike the AMSP/Lockhart Substation site, the proposed telecommunication system corridors include white bursage scrub and Joshua tree woodlands, and cross over the Mojave River, a nonvegetated flood channel. Along these routes, vegetation communities include white bursage scrub, desert saltbush scrub, and fallow agricultural-ruderal (DOE EA, p. 3.8-12).

Wildlife

A total of 103 wildlife species were detected in the AMSP/Lockhart Substation study area during general reconnaissance and protocol wildlife surveys, including 2 butterfly species, 12 reptile species, 73 bird species, and 16 mammal species (DOE EA, p.3.8-12). Four of these species are listed as threatened or endangered under federal and/or state Endangered Species Acts (DOE EA, p. 3.8-9). Additionally, five California Species of Special Concern were identified in the AMSP/Lockhart Substation site (DOE EA, p. 3.8-15), along with numerous raptors (see, e.g., DOE EA, p. 3.8-23). Surveys detected a pair of golden eagles within the Black Mountain range just outside of the 10-mile survey radius (DOE EA, p. 3.8-13). Special-status wildlife species with potential to occur in the Project area are identified in DOE EA Table M-2 of Appendix M, *Biological Resources*, and in CEC Commission Decision Biological Resources Table 2 (CEC Commission Decision, pp. 235-238).

Four species listed under the federal and/or State Endangered Species Acts have been detected in the study area for the AMSP/Lockhart Substation site. These species include the federally- and State-listed Mojave Desert tortoise (*Gopherus agassizii*) (DOE EA, p. 3.8-15 et seq.; DOE EA Figure 3.8-6); and State-listed Mohave ground squirrel (*Spermophilus mohavensis*) (DOE EA, p. 3.8-21 et seq.), Swainson's hawk (*Buteo swainsoni*) (DOE EA, p. 3.8-24) and willow flycatcher (*Empidonax traillii*) (DOE EA, p. 3.8-24). Additionally, the federal and State delisted American peregrine falcon (*Falco peregrinus anatum*) was identified in the study area (DOE EA, p. 3.8-23 et seq.),

A detailed description of survey results for these species is included in DOE EA Appendix M. DOE EA Figures 3.8-6 through 3.8-10 provide maps of sensitive wildlife species identified in the AMSP/Lockhart Substation study area.

Surveys for eight species identified by CDFG as California Species of Special Concern also were conducted for the AMSP/Lockhart Substation site. These species included American white pelican (*Pelecanus erythrorhynchos*), northern harrier (*Circus cyaneus*), western snowy plover (non-coastal), short-eared owl (*Asio flammeus*), western burrowing owl (*Athene cunicularia hypugea*), loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Dendroica petechia*), LeConte's thrasher (*Toxostoma lecontei*) and American badger (*Taxidea taxus*). Of these species, the following were observed within the AMSP/Lockhart Substation site or within the 1-mile buffer: northern harrier; one burrowing owl in 2008; one transient short-eared owl in 2006; loggerhead shrike in 2006, 2007 and 2009; one migrant yellow warbler in 2007; LeConte's thrasher in 2007 and 2009; and one American badger den in 2006 (DOE EA, pp. 3.8-25 through 3.8-27). See also, DOE EA Figure 3.8-7, *Burrowing Owl – AMSP/Lockhart Substation Study Area*, and DOE EA Figure 3.8-8, *Other Sensitive Wildlife - AMSP/Lockhart Substation Study Area.*

A raptor assessment requested by CDFG (DOE EA, p.3.8-15) identified the following raptors using the Project area for breeding and/or foraging habitat: northern harrier, Cooper's hawk (*Accipiter cooperi*), merlin (*Falco columbarius*), prairie falcon (*Falco mexicanus*), short-eared owl, and loggerhead shrike.

General wildlife species expected to occur in the fiber-optic telecommunication system corridors are likely to be similar to the AMSP/Lockhart Substation study area (DOE EA, pp. 3.8-12, 3.8-27). The proposed fiber-optic telecommunication system corridors cross U.S. Fish and Wildlife Survey (USFWS) designated critical habitat for desert tortoise in the Fremont-Kramer critical habitat unit (CHU). The Lockhart to Tortilla fiber-optic segment crosses approximately 4.62 miles and the Lockhart to Kramer and Kramer to Victor fiber-optic segments cross 9.96 and 18.2 miles, respectively, of the Fremont-Kramer CHU (DOE EA, p. 3.8-28). In addition, the proposed fiber-optic telecommunication system corridors cross the Mohave Ground Squirrel Conservation Area. The Lockhart to Tortilla fiber-optic segment crosses approximately 11.38 miles of this area, and the Lockhart to Kramer and Kramer to Victor fiber-optic segments cross 12.1 and 17.5 miles, respectively (DOE EA, p. 3.8-28). Coordination among USFWS, BLM and DOE determined that golden eagle surveys are not required for the fiber-optic telecommunications corridors due to their location and the implementation of Avian Power Line Interaction Committee guidelines and other avian avoidance measures (DOE EA, p. 3.8-28). The CPUC agrees with this determination.

No wildlife corridors are documented within or near the AMSP/Lockhart Substation site (DOE EA, p. 3.8-12). The existing utility corridors where the fiber-optic cable would be strung include between one to three existing electric transmission lines that parallel portions of SR-58 and U.S. Highway 395. U.S. Highway 395 and SR-58 represent barriers for the movement of wildlife. However, there are several undercrossings beneath U.S. Highway 395 and SR-58 that would allow wildlife to move from either side (DOE EA, p. 3.8-13).

Plants

Seven special-status plants have the potential to occur in the Project area (DOE EA Appendix M, Table M-1). None of these are listed as threatened or endangered under federal and/or State Endangered Species Acts, but all are California Rare Plan Rank (CRPR)[1] 1 or 2 species: chaparral sand verbena (*Abronia villosa* var. *aurita*), desert cymopterus (*Cymopterus deserticola*), recurved larkspur (*Delphinum recurvatum*), Barstow woolly sunflower (*Eriophyllum mohavense*), sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*), Mojave sunflower (*Mimulus mohavensis*), and Utah glasswort (*Salicornia utahensis*). Botanical surveys in 2009 focused on specific portions of the AMSP/Lockhart Substation site (suitable to marginally suitable habitat) to verify the presence or absence of special-status plant species. No special-status plant species were observed during 2009 botanical surveys (DOE EA, p.3.8-13). DOE EA Figure 3.8-5 illustrates sensitive plant mapping at the AMSP/Lockhart Substation site.

[1] In March, 2010, the California Department of Fish and Game changed the name of "CNPS List" or "CNPS Ranks" to "California Rare Plant Rank" (or CRPR).

No sensitive plant species were detected within the AMSP/Lockhart Substation site (DOE EA, p. 3.8-13). Three special-status plant species were detected within the survey buffer during the focused rare plant surveys in 2008: one occurrence of Desert cymopterus from a sandy wash about 1,350 feet southeast of the intersection of Santa Fe Avenue and Harper Lake Road. Two CRPR List 4 species (Mojave fish-hook cactus (*Sclerocactus polyancistrus*) and Mojave spineflower)) were also observed outside the AMSP/Lockhart Substation site (DOE EA, p. 3.8-13).

Jurisdictional Wetlands and Waters

DOE EA Section 3.7.2, *Affected Environment,* describes the regional setting for wetlands under federal and State jurisdiction for all Project components (DOE EA, p. 3.7-3). See, e.g., DOE EA Section 3.7.2.4, *Waters of the U.S.* (p. 3.7-7 et seq.), and Section 3.7.2.5, *Waters of the State* (p. 3.7-8). The only wetland feature in the AMSP/Lockhart Substation study area is an artificially-maintained lacustrine marsh located at the southwestern edge of Harper Dry Lake less than 1 mile north of the proposed AMSP/Lockhart Substation site (the Harper Dry Lake Wetlands) (DOE EA, p. 3.7-4). The proposed fiber-optic routes would not cross wetland habitats (Id.).

No Waters of the U.S. are present anywhere on the ASMP/Lockhart Substation site: the USACE determined that the only potential waters of the U.S. within the site were isolated, and so non-jurisdictional (DOE EA, p. 3.7-7). Similarly, development of the Project within the AMSP footprint (including the Lockhart Substation) would not impact any topographic feature that could be considered a water of the State (DOE EA, p. 3.7-8). Within the total area of the fiber-optic/transmission line corridor, the extent and distribution of the collective area of potential jurisdictional waters of the U.S. and waters of the State is 20.44 acres; an additional 14.96 acres was determined to be State waters only (DOE EA, pp. 37-7 and 3.7-8).

3.4.2 Regulatory Setting

The following federal, state, and local regulations governing biological resources in the Project area are among those identified and described in DOE EA Section 3.8.1, *Regulatory Framework* (p. 3.8-1 et seq.); CEC Commission Decision Section VI(A)(9), *LORS Compliance* (p. 262 et seq.); and CEC SSA Part B Biological Resources Table 1, *Laws, Ordinances, Regulations, and Standards* (pp. 5.2-2 through 5.2-4). These sections were reviewed for accuracy and completeness, are incorporated by reference, and are summarized below.

Federal Regulations

Federal Endangered Species Act

The USFWS administers the Federal Endangered Species Act (16 U.S.C. 1531–1543) (FESA). Under FESA Section 4, the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered. Two federal agencies oversee FESA: the USFWS has jurisdiction over plants, wildlife, and resident fish, and the National Oceanic and Atmospheric Administration's Fisheries Service (NOAA Fisheries Service or NMFS) has jurisdiction over anadromous fish, marine fish and mammals. Section 4 requires USFWS and/or

NMFS to designate critical habitat for any species listed under FESA. Critical habitat designations indicate specific geographic areas that are determined to be essential for the conservation of a listed species and that may require special management and protection. Critical habitat may include areas that are not currently occupied by the species but that will be needed for its recovery.

FESA Section 7 requires all federal agencies to consult with USFWS and/or NMFS to ensure that the actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. Under FESA Section 7(b)(3), the appropriate wildlife agency provides a written statement setting forth the agency's opinion, and a summary of the information on which the opinion is based detailing how the proposed action affects the species or its critical habitat. If jeopardy or adverse modification is found, the agency suggests reasonable and prudent alternatives that can be taken in implementing the agency action. This written statement is called a Biological Opinion.

FESA Section 9 lists actions that are prohibited under the Act. The "take" of a listed species is prohibited. "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct of any listed species." Take that is incidental to an otherwise lawful activity may be allowed in either of two ways: Section 7 provides for the issuance of an incidental take statement for federal agency actions and, for non-federal actions, Section 10 provides for the incidental take of a listed species pursuant to an incidental take permit.

FESA Section 10 requires the issuance of an incidental take permit before any non-federal public or private action may be undertaken that would potentially result in the take of an endangered or threatened species. Section 10(a)(2)(A) requires an applicant for an incidental take permit to submit a habitat conservation plan that specifies, among other things, the impact that is likely to result from the taking and what steps the applicant will take to minimize and mitigate such impacts.

Migratory Bird Treaty Act

The USFWS administers the Migratory Bird Treaty Act (16 USC 703-712, Supp. I, 1989) (MBTA). Among other things, the MBTA makes it "unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill" migratory birds, bird parts, eggs, or nests, except in accordance with regulations prescribed by the Secretary of the Interior (50 CFR Part 21). The MBTA prohibits direct and indirect acts, though harassment and habitat modification are not included unless they result in direct loss of birds, eggs, or nests. The list of birds covered by MBTA essentially includes all native birds.

Bald and Golden Eagle Protection Act

The USFWS administers the Bald and Golden Eagle Protection Act (16 U.S.C. 668a-d) (BGEPA). Under BGEPA, it is illegal to import, export, take (which includes molest or disturb), sell, purchase, or barter any bald eagle or golden eagle or part thereof. The USFWS oversees enforcement of this act. The Secretary of the Interior is authorized to permit the take of golden eagle

nests that interfere with resource development or recovery operations subject to new regulations that became effective November 10, 2009 (50 CFR 22.26, 22.27). Although the permit program is under development, the regulations provide for individual and programmatic permits that are consistent with the goal of stabilizing or increasing the breeding populations.

Clean Water Act of 1972

The U.S. Army Corps of Engineers (USACE) administers Section 404 of the Clean Water Act of 1972 (33 U.S.C. 1251 et seq.), as amended (CWA). Section 404 regulates activities in wetlands and "other waters of the United States." Wetlands are a subset of "waters of the United States" that are defined in the Code of Federal Regulations as waters used for interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; interstate waters including wetlands; all other waters—such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds—which could affect interstate or foreign commerce; water impoundments; tributaries of waters; territorial seas; and adjacent wetlands.

California Desert Conservation Area (CDCA) Plan

This Plan establishes goals for protection and use of California's deserts, designates distinct multiple-use categories for areas covered under the Plan, and establishes a framework for managing resources within the various use categories. The Plan covers 25 million acres of southern California desert, and establishes Areas of Critical Environmental Concern (ACEC). The Project area is adjacent to the Harper Dry Lake ACEC.

West Mojave Plan

The West Mojave Plan (WMP) is an amendment to the CDCA Plan. Administered by the Bureau of Land Management, which oversees 10 million of the acres regulated under the CDCA Plan, the WMP provides resource management strategies for conservation of desert tortoise, Mohave ground squirrel, and more than 100 other sensitive plants and animals occurring throughout the western Mojave Desert. The WMP establishes a streamlined program for project applicants to comply with regulatory requirements relating to the presence of federal and state threatened and endangered species occurring in the WMP area.

State Regulations

California Environmental Quality Act

The California Environmental Quality Act is the regulatory framework by which California public agencies identify and mitigate significant environmental impacts. In addition to threatened and endangered species, a species not listed under the federal or State endangered species act may be considered rare if the species exists in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens. A species also may be considered rare if it is likely to become "threatened" as that term is used in the Federal Endangered Species Act (CEQA Guidelines Section 15380).

California Endangered Species Act

CESA (Fish and Game Code 2050 et seq.) generally parallels the main provisions of FESA. CDFG administers the listing of endangered and threatened species under CESA through Title 14, CCR Sections 670.2 and 670.5, and regulates these species under Fish and Game Code 2050 et seq. CDFG may allow take of such species through its issuance of permits pursuant to Fish and Game Code Section 2081, except for designated "Fully Protected" and certain other species. Unlike its federal counterpart, CESA adopts a narrower definition of "take," and CESA's protections apply to candidate species that have been petitioned for listing.

- *Fully Protected Species*. Collectively, Fish and Game Code sections 3511, 4700, 5050, and 5515 identify 37 fully protected species. These species may not be taken or possessed at any time and no licenses or permits may be issued for their take, except for necessary scientific research.

- *Migratory Nongame Birds*. Section 3513 prohibits any take or possession of birds that are designated by the MBTA as migratory nongame birds except as allowed by the rules and regulations promulgated pursuant to the MBTA.

- *Nesting Birds*. Section 3503.5 makes it unlawful to take, possess or destroy birds of prey in the orders Falconiformes (e.g., bald eagle, golden eagle, Swainson's hawk, American kestrel, peregrine falcon, prairie falcon) and Strigiformes (e.g., burrowing owl, short-eared owl), or to take, possess or destroy the nests or eggs of these birds. Disturbance that causes nest abandonment and/or reproductive failure is prohibited under the Fish and Game Code. This statute does not provide for the issuance of an incidental take permit.

- *State Species of Special Concern*. California designates State Species of Special Concern, which are species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as State-listed species, but may be added to official lists in the future. CDFG intends the Species of Special Concern list to be a management tool for consideration in future land use decisions.

Native Plants Protection Act

This Act is intended to preserve, protect, and enhance endangered or rare native plants in California. Vascular plants identified as rare or endangered by the CDFG and the California Native Plant Society (CNPS) (Skinner and Pavlik, 1994), but which may have no designated status or protection under federal or State endangered species legislation, are defined according to a California Rare Plant Rank as follows:

- *List 1A*: Plants presumed extinct
- *List 1B*: Plants rare, threatened, or endangered in California and elsewhere
- *List 2*: Plants rare, threatened, or endangered in California, but more numerous elsewhere
- *List 3*: Plants about which more information is needed (a review list)
- *List 4*: Plants of limited distribution (a watch list)

Consistent with CEQA Guidelines Section 15380, plants designated with a CRPR of 1A, 1B, or 2 are considered to meet the criteria of endangered, rare, or threatened, and so are analyzed as

"special-status species" in this document. Also pursuant to CEQA Guidelines Section 15380, CRPR 3 and 4 species and species deemed Locally Unusual and Significant (LU&S) may be analyzed under CEQA if there is sufficient information to assess potential impacts (CDFG, 2009).

California Desert Native Plants Act

This Act protects California desert native plants on public and private lands by prohibiting the harvest, transport, sale, or possession of specific native desert plants in certain counties. In locations where the Act applies, these activities require a permit from the applicable county's Agricultural Commissioner. California juniper (*Juniperus californicus*), creosote bush (*Larrea tridentata*), *Cholla* species, and plants in the *Agavaceae* and *Cactaceae* families are protected by the Desert Native Plants Act.

California Fish and Game Code Wetlands Regulations

CDFG regulates activities that would interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. The regulatory definition of a stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks, and supports wildlife, fish, or other aquatic life. These activities are regulated under California Fish and Game Code Section 1600 et seq. Requirements to protect the integrity of biological resources and water quality are often conditions of Streambed Alteration Agreements.

State and Regional Water Quality Control Boards

Responsibility for the protection of State waters resides with the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs), including the Lahontan Region RWQCB. Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code section 13050(e)). All waters of the United States that are within the borders of California also are "waters of the State." The Federal government, through the USACE, may have concurrent jurisdiction over such waters, but California still retains authority to regulate discharges. Any person discharging, or proposing to discharge, waste within any region that could affect "waters of the State" first must file a report of waste discharge with the appropriate RWQCB (Water Code section 13260).

Local Regulations

County of San Bernardino General Plan, Land Use/Conservation/Open Space Element

The San Bernardino County General Plan (2007) and its Land Use, Conservation, and Open Space Elements, implement goals, policies, and programs to maintain and enhance biological diversity and ecosystem functions throughout the County. Goals include clustering development to avoid impacts on biological resources, maintaining natural resources, and preserving open space corridors.

Plant Protection and Management under San Bernardino County Development Code Section 88.01 et seq.

The County ordinance provides regulations and guidelines for the management of plant resources, watersheds, and habitats in unincorporated areas of the County on both private and public land. The provisions apply to any encroachment within the protected zone of a regulated tree or plant, including grading activities, plant relocation, and plant removal. Protected plants include those listed in the Desert Native Plants Act, all native trees, palm trees, and all vegetation within 200 feet of a stream bank.

3.4.3 Applicant Proposed Measures

Applicant Proposed Measures (APMs) are identified in Appendix A of the CEC's Revised Staff Assessment Part C (p. A-13). SCE would implement the following three APMs to avoid or reduce potential impacts associated with biological resources.

> **BIO-1:** Preconstruction biological clearance surveys would be conducted to identify special-status plants and wildlife.
>
> **BIO-2:** SCE would prepare a Worker Environmental Awareness Program (WEAP). All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project.
>
> **BIO-3:** 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 (Avian Power Line Interaction Committee, 2006).

3.4.4 Environmental Impacts and Mitigation Measures

This impact analysis considers the potential impacts on biological resources associated with the construction, operation and maintenance of the Project. Impacts on biological resources occurring at the AMSP site (including the proposed substation, gen-ties, distribution system, and solar field related facilities of the AMSP) are evaluated in DOE EA Section 3.8.4, *Environmental Consequences [Biological Resources]* (p. 3.8-28 et seq.) and Section 3.7.3, *Environmental Consequences [Water Resources]* (p. 3.7-14 et seq.); in CEC Commission Decision Section VI(A) (p. 229 et seq.); and in Appendix A of CEC SSA Part C (p. A-20 et seq., *Biological Resources,* and p. A-40 et seq., *Soil and Water Resources*).

The Conditions of Certification identified in the CEC Commission Decision and the avoidance and minimization measures identified in DOE EA to avoid, reduce or compensate for Project impacts on biological resources, including jurisdictional waters, collectively are set forth in DOE EA Appendix S, *Environmental Protection Measures, Design Measures, and BMPs*. In addition to the APMs identified above in Section 3.4.3, each of the biological resources-related measures in DOE EA Appendix S (p. 16 et seq.) for which Southern California Edison is responsible is considered part of the Project and is incorporated by reference. These measures:

- Require the assignment of a designated, qualified biologist to the Project (BIO-1).

- Establish the duties of the Project biologist (BIO-2).

- Require the selection of qualified biological monitor(s) (BIO-3).

- Establish the authority of the Project biologist and biological monitor(s) to ensure conformance with the biological resources-related measures (BIO-4).

- Specify requirements for the development and implementation of a Worker Environmental Awareness Program (WEAP) to ensure that workers are informed about sensitive biological resources associated with the Project (BIO-5).

- Require the development and implementation of a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) (see, BIO-6 and BIO-21).

- Impose impact avoidance and minimization measures to address impacts associated with roads, transmission/pipeline alignments and related roads and staging areas, lighting, vehicle-related impacts to desert tortoise, wildlife pitfalls (such as trenches, bores, and other excavations), and hazardous materials spills; and to require construction monitoring and the reporting of wildlife injury and mortality (see BIO-7 and BIO-30).

- For birds, require pre-construction nest surveys and impact avoidance and minimization measures for migratory birds if construction activities will occur during nesting season (February 1 through August 1); and, at all times of the year, require the limitation of noise generating activities during early morning and evening to avoid impacts to birds protected under the Migratory Bird Treaty Act (see BIO-8 and BIO-28).

- For desert tortoise, require the examination of all desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, to assess occupancy of each burrow by desert tortoises, require any handling of desert tortoise to be in accordance with USFWS-approved protocol; and specify guidelines for temporary exclusion fencing. If desert tortoises are detected during clearance surveys within the project impact area, translocation requirements are specified. If any desert tortoise is handled or transported, specified reporting or other obligations would apply (see BIO-11, BIO-25, and BIO-31). A desert tortoise plan will involve the collection of specified data prior to any translocation, and tortoise health considerations will be assessed (see BIO-25 and BIO-31). Post-release monitoring is required (BIO-25, BIO-31). A host of measures intended to address impacts to desert tortoise specifically associated with the proposed fiber-optic work would be implemented, including pre-construction clearance surveys, vehicle use limitations during construction and operation, fencing, tortoise movement and translocation, adherence to a 15-miles per hour speed limit in the work area, time of work restrictions, and restoration of native vegetation and weed control in specified areas (BIO-25, BIO-31). Relating to the full mitigation for habitat loss and incidental take of desert tortoise, see BIO-15.

- To manage Project-related increases in ravens, require the design and implementation of a common raven monitoring, management, and control plan to manage construction sites and related facilities to control raven populations and to mitigate cumulative and indirect impacts to desert tortoise associated with regional increases in raven numbers associated with the Project (BIO-18).

- For Mohave ground squirrel, require clearance surveys and allow for passive relocation after the installation of the desert tortoise exclusion fence and immediately before any ground

disturbance, including along the alignment (see BIO-12, BIO-22, and BIO-26). Relating to the full mitigation for habitat loss and incidental take of Mohave ground squirrel, see BIO-15.

- For burrowing owl, require pre-construction surveys and nest avoidance within the Lockhart Substation site and a 160-foot buffer as well as passive relocation and related monitoring; for each individual owl or pair identified on the site during pre-construction surveys, the preservation and management of compensatory habitat is required in accordance with specified ratios and stated goals (BIO-13). To address potential impacts to burrowing owl along the fiber-optic alignments, a California Burrowing Owl Consortium (CBOC), with CDFG approval, protocol-level burrowing owl survey will be conducted to detect the presence of burrowing owls; if burrowing owls are found, mapping, avoidance to the maximum extent possible, and, if avoidance is not possible, passive relocation would occur as specified (see BIO-23 and BIO-27). Relating to full mitigation for habitat loss and incidental take of burrowing owl, see BIO-15.

- For American badger and desert kit fox, require pre-construction surveys (BIO-14).

- Conduct spring surveys for sensitive plant species within appropriate habitats before the commencement of ground disturbance activities. Such surveys will follow the rare plant and vegetation survey guidelines provided by CNPS (CNPS 2001a), CDFG (CDFG 2000), and the CEC Recommended Biological Resources Field Survey Guidelines for Large Solar Projects, Draft April 2, 2009 (CEC 2009) (see BIO-24 and BIO-29).

- Require tamarisk (exotic plant species) eradication, monitoring, and reporting (BIO-16).

Numerous biological resource studies have been performed at the proposed Lockhart Substation site and within a 1-mile survey area (see, e.g., DOE EA, p. 3.8-4). The survey area includes land adjacent to the proposed Lockhart Substation that would be affected by construction of transmission lines, generation tie-line connections, and the distribution line for station light and power. Reconnaissance surveys were conducted in 2006, followed by protocol-level biological surveys for plants and animals in the spring of 2007 and 2008; supplemental surveys were conducted in spring 2009. Botanical surveys were performed during spring and summer in 2007, 2008, and 2009 in accordance with established CNPS and CDFG survey methodology. Vegetation mapping and wildlife reconnaissance surveys were conducted in May and June 2007, 2008, and 2009. Protocol surveys were conducted for Mojave desert tortoise during 2007, 2008, and 2009. Protocol surveys were conducted for western burrowing owl during 2007 and 2008. Protocol surveys for Mohave ground squirrel were performed during 2007, and a habitat assessment was performed during 2008. Surveys for nesting golden eagle and Swainson's hawk were conducted in 2010. The CPUC has independently evaluated the results of these studies.

Along the three proposed telecommunications routes (the Lockhart to Tortilla, Lockhart to Kramer, and Kramer to Victor fiber-optic lines), reconnaissance surveys were conducted in April 2010 to identify dominant vegetation communities, observe habitat quality, and note developed areas. Desert tortoise, Mohave ground squirrel and western burrowing owl are presumed to occupy appropriate habitat located along the proposed fiber-optic routes (DOE EA, p. 3.8-12). Spring surveys will be conducted that follow established rare plant and vegetation survey guidelines.

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 California Department of Fish and Game or U.S. Fish and Wildlife Service: *Less than Significant with Mitigation Incorporated*

Wildlife

As described above, two federal- and/or State-listed wildlife species occur in the Project area: desert tortoise and Mohave ground squirrel. Other listed species (Swainson's hawk and willow flycatcher) were observed in the Project area, but resident status has not been documented. Swainson's hawk surveys performed in 2010 did not identify hawks within a 5-mile radius of the Project area. Willow flycatchers are believed to be transients due to a lack of suitable habitat in the Project area, and American peregrine falcon are thought to be transient due to a lack of documented nesting occurrences in the region. Nine California Species of Special Concern have the potential to occur in the Project area. Of those, the following seven species were observed: short-eared owl, western burrowing owl, northern harrier, yellow warbler, loggerhead shrike, LeConte's thrasher, and American badger. The Project area provides suitable nesting or denning, and/or foraging habitat for all of these species. The western snowy plover[2] was not observed during surveys and has a low probability of occurring in the Project area (DOE EA Appendix M, Table M-2). American white pelican remains were detected within 1 mile of the Project area, but roosting habitat is undocumented and nesting occurs outside of the region (DOE EA Appendix M, Table M-2). Locally-sensitive resident species observed in the Project area include desert kit fox.[3]

The three proposed fiber-optic routes have not been surveyed at a protocol-level for federal- and State-listed threatened and endangered species or California Species of Special Concern, but wildlife species potentially occurring along the proposed routes are similar to those described for the Lockhart Substation site. The CPUC has determined that all species appearing in Biological Resources Table 2, Special-status Species Potentially Occurring in AMS Project Area (CEC Commission Decision, p. 235) and DOE EA Appendix M Table M-2 have the potential to occur in these portions of the Project area. Desert tortoise, Mohave ground squirrel, and western burrowing owl are presumed present within the alignment of proposed telecommunications facilities.

The ensuing discussion follows a phylogenetic species order (reptile, bird, mammal) within a framework of hierarchical listing status (threatened or endangered, California Species of Special Concern, species protected under the Bald and Golden Eagle Protection Act and species of local concern). Federal- and state-listed threatened and endangered species are discussed first (desert tortoise, Swainson's hawk, and Mohave ground squirrel) followed by California Species of Special Concern (western burrowing owl and American badger). Species protected under the

2 The federal threatened status applies to coastal populations; inland populations are a California Species of Special Concern.

3 The Mojave Desert population of kit fox (*Vulpes macrotis*) is not listed under federal or state endangered species acts and is not a California Species of Special Concern. However, because it is protected under California Fish and Game Code Section 460 (mammal hunting regulations of furbearing mammals), the CPUC has elected to analyze potential impacts of the Project related to this population.

Bald and Golden Eagle Protection Act and species of local concern are discussed next (golden eagle and desert kit fox) followed by nesting birds with specific references to California Species of Special Concern (short-eared owl, northern harrier, yellow warbler, loggerhead shrike, and LeConte's thrasher).

Desert Tortoise

In the Mojave Desert, desert tortoise is commonly found in association with creosote bush, Joshua tree woodland, and saltbush scrub; the region encompassing the Project site has historically and recently supported moderate densities of desert tortoise (CEC Commission Decision, p.238). Protocol-level surveys were conducted in 2007, 2008, and 2009 between April and early June, documenting relatively high concentrations of desert tortoise immediately east and west of the Project area, i.e., in the area where the Lockhart Substation, gen-ties, distribution line, and fiber-optic routes would be constructed and operated. One tortoise was observed in the Project area in 2006. The majority of the Project area is disturbed and lacks suitable forage and burrow sites for desert tortoise, but transient individuals could originate from high-quality habitat surrounding the site and occur within portions of the site that support disturbed fallow saltbush scrub and desert wash scrub (CEC Commission Decision, p.247). The telecommunication system would be strung on existing poles within occupied desert tortoise habitat, and the desert tortoise is presumed present in suitable habitat along all routes. Direct, temporary impacts may occur to Project areas within designated critical habitat for desert tortoise that include 5.9 miles of the Lockhart-to-Tortilla route (Superior-Cronese critical habitat unit); and 13 miles of the Lockhart-to-Kramer route and 18.2 miles of the Kramer-Victor route (both within the Fremont-Kramer critical habitat unit). The direct, permanent Project impact to designated critical habitat would be about 60 square feet (0.001 acre) from the installation of 30 poles on the Kramer-to-Victor route (DOE EA, p.3.8-39).

The CEC Commission Decision identifies the following indirect impacts that the Project could have on desert tortoise (p.247). Desert tortoise in or near the Project area are susceptible to direct mortality, injury, or harassment resulting from encounters with construction vehicles or heavy equipment. Death or injury might also occur to tortoises that take shelter under parked vehicles when those vehicles are moved. They could also be crushed or entombed in their burrows during site grading and other ground disturbing activities. The tortoises' attraction to pooled water in the construction area (resulting from dust control activities) puts them at higher risk of injury or mortality from construction activities and from predators such as ravens and coyotes. Increased human activity in tortoise-occupied areas and excessive noise and vibration from heavy equipment operation may disrupt breeding and foraging behavior. The construction of new fiber-optic line poles would provide elevated perching sites that could enhance raven presence and, thereby, increase predation pressure on desert tortoise. Also, during heavy rain and flooding events, increased sediment loads could be deposited downstream of the Project site and impact desert tortoise burrows in downstream areas. Area grading activities could alter groundwater hydrology and associated vegetation communities that potentially support, or could support in the future, desert tortoise.

To address potential direct and indirect impacts on desert tortoise, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on desert tortoise. As summarized above and set forth in full in DOE EA Appendix S, the DOE identifies 16 general impact avoidance and minimization measures that would apply and 12 specific avoidance and minimization measures related to desert tortoise (DOE EA Appendix S, p. 16 et seq.). Specific avoidance and minimization measures that would apply desert tortoise include: fencing the Project site perimeter with temporary exclusion fencing, monitoring the integrity of the fence, installing permanent exclusion fencing in portions of the Project area, monitoring the integrity of the permanent fence, conducting clearance surveys within the project area after exclusion fencing is installed, installing security gates with minimal ground clearance, fencing water drainage channels, investigating all burrows with potential for housing desert tortoise, hand-excavating burrows, safely translocating any tortoises, collapsing or blocking empty burrows to prevent reoccupation, retaining an onsite biological monitor, collecting specific data on translocated tortoises, and mitigating for habitat impacts at ratios varying from 0.5:1 to 5:1 depending on the quality of affected habitat.

The type and quality of desert tortoise habitat in the Project area varies by location, and mitigation ratios vary accordingly. In the Project area, 429 acres of habitat would be adversely affected; however, due to varying quality of this habitat, the DOE determined that 118 acres of compensation lands would be required. Along the telecommunications system routes, 23 acres of habitat would be adversely affected; due to the higher habitat quality and present occupation by desert tortoise, the DOE determined that 88.6 acres of compensation lands would be required (see, DOE EA, p. 3.8-25 and DOE EA, p. 3.8-40).

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE general and desert tortoise-specific impact avoidance and minimization measures would ensure that the Project's impacts on desert tortoise would be less-than-significant.

Additional mitigation to reduce and minimize impacts on desert tortoise:
None required.

Swainson's Hawk

The Swainson's hawk breeds in North America and winters in South America. In California, members of this species are most abundant in the Central Valley where they forage in open grasslands, agricultural areas, sparse shrublands, and small open woodlands. Nesting occurs in scattered trees within grasslands, shrublands, and agricultural landscapes. Although Swainson's hawk has adapted to the conversion of natural habitat to farmland in the Central Valley, it does not rely exclusively on agricultural lands for foraging; in desert habitat, Swainson's hawk will prey on reptiles and small birds (CEC Commission Decision, p. 246). Suitable nesting habitat occurs in the Project area in large ornamental trees at occupied and abandoned residences (DOE EA Appendix M, *Special-Status Species Survey Results*). Suitable foraging habitat occurs in the Project area in active and fallow agricultural fields (Id.). Swainson's hawks were observed in the Project area in 2007 but not in 2010. Nesting in the Project area has not been documented (Id.).

Swainson's hawk surveys were performed in the Project area by raptor experts at Bloom Biological. Nest searches were performed by helicopter, car, and on foot, and were conducted in April and May 2010. No Swainson's hawk individuals or nests were observed within a 5-mile radius of the Project area. The CPUC has independently reviewed the conclusions of these surveys and determined them to be adequate to inform this analysis. DOE EA Section 3.8, *Biological Resources*, and Appendix M, *Biological Resources Technical Report*, identify suitable Swainson's hawk nesting and foraging habitat in the Project area. Though a nesting presence is not currently documented in the Project area, there is a potential for Swainson's hawk to nest in the Project area in the future.

If Swainson's hawks are identified in the Project area or within 0.5 mile of the Project area, a direct loss of foraging habitat in the form of active and fallow agricultural fields would result from Project construction. This loss would be a significant impact. The CEC Commission Decision found that, while the loss of foraging habitat for Swainson's hawk is an adverse impact, the impact is less than significant and does not require mitigation (p. 246). In addition to the loss of foraging habitat, the CEC Commission Decision identified additional construction and operational impacts: noise and light disturbance associated with construction activities, avian collision with Project buildings and transmission lines, and avian electrocution associated with transmission lines (pp. 251, 252, 254, 255).

To address potential impacts on Swainson's hawk, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on this species. As summarized above and set forth in full in DOE EA Appendix S, the DOE identifies 16 general impact avoidance and minimization measures and two specific avoidance and minimization measures that would address potential impacts on Swainson's hawk. The reader is referred to DOE EA Appendix S, p. S-20 to S-24 for a review of general impact avoidance and minimization measures. Measures specific to Swainson's hawk are re-stated here as follows. (1) Pre-construction surveys of the Project area and a surrounding 0.5-mile buffer would be conducted, per the recommended CDFG survey methodology for the species; (2) If active nesting is documented within a 0.5-mile radius of the Project area, the project owner will coordinate with CDFG to develop additional conservation measures, such as nest monitoring during construction and determining adequate mitigation for the loss of foraging habitat (DOE EA Appendix S, p. S-79).

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE general and Swainson's hawk-specific impact avoidance and minimization measures would reduce the Project's impacts on Swainson's hawk to a less-than-significant level.

Additional mitigation to reduce and minimize impacts on Swainson's hawk:
None required.

Mohave Ground Squirrel

The Mohave ground squirrel inhabits sandy or gravelly soils of Mojave desert scrub, alkali scrub, and Joshua tree woodlands. The Project area is not sited within the Mohave Ground Squirrel Conservation Area designated by the West Mojave Plan, but these lands surround the Project

area. Protocol surveys were conducted in the Project area in 2006 and 2007, and habitat assessment activities were conducted in 2008. Surveys were not required in 2009 (DOE EA, p. 3.8-21). The CPUC has independently reviewed the conclusions of these studies and has determined that they are adequate to inform this analysis. The Project area provides low-quality suitable habitat in areas of regenerating saltbush (DOE EA, p. 3.8-35). Though not identified as containing adequate vegetation to support a resident population of Mohave ground squirrels, a single individual was detected in 2007 and the area has adequate vegetation to support transient individuals, such as dispersing juveniles (DOE EA, p. 3.8-35).

The CPUC presumes that Mohave ground squirrel is present along the three proposed telecommunications system routes. Suitable habitat is present in these areas and there are documented occurrences within 0.5 mile.[4] The Mohave Ground Squirrel Conservation Area is traversed for 11.38 miles along the Lockhart-to-Tortilla route, for 12.1 miles along the Lockhart-to-Kramer route, and 17.52 miles along the Kramer-to-Victor route.

Mohave ground squirrels moving through the Project area or across access roads between patches of adjacent suitable habitat are susceptible to direct mortality, injury, or harassment during Project construction and operation resulting from encounters with construction vehicles, work vehicles, and heavy equipment. Mohave ground squirrels that might establish residency within the Project area, in patches of suitable habitat and in advance of construction activities, could be crushed or entombed in their burrows by site grading or other ground-disturbing activities. Mohave ground squirrels in or near the Project area may be disturbed or harassed by ground vibration and noise as well as human presence during construction. These disturbances could adversely affect breeding and/or foraging behavior. Additionally, construction of an impermeable fence around the site perimeter may lead to increased predation because escape routes could be blocked. In addition, transmission system installation would create increased perching opportunities for common raven, which could enhance raven presence and thereby increase predation pressure on Mohave ground squirrel. Sediment loads increased by Project activities could be deposited downstream of the Project site during heavy rain and flooding events and impact Mohave ground squirrel burrows in downstream areas. Area grading activities could alter groundwater hydrology and offsite vegetation communities that potentially support, or could support in the future, Mohave ground squirrel.

To address potential impacts on Mohave ground squirrel, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on this species. As summarized above and set forth in full in the DOE EA Appendix S, the DOE has identified 17 general impact avoidance and minimization measures that would apply to the Project and one multi-part specific mitigation measure that would apply to Mohave ground squirrel (DOE EA Appendix S, p. S-41). The reader is referred to DOE EA Appendix S, pp. 20 through 24 for a review of general impact avoidance and minimization measures. Loss of low-quality Mohave ground squirrel habitat would be mitigated for at a ratio of 0.5:1, and loss of higher-quality habitat would be mitigated for at a ratio of between 3:1 and 5:1.

[4] This conclusion is consistent with the DOE's determination (DOE EA, p. 3.8-41).

The type and quality of Mohave ground squirrel habitat in the Project area varies by location, and mitigation ratios vary accordingly. In the Project area, 430 acres of low-quality habitat would be adversely affected. Due to the low quality of this habitat, the DOE determined that approximately 214 acres of compensation lands would be required. Along the telecommunications system routes, nearly 18 acres of habitat would be adversely affected, but due to the higher habitat quality, the DOE has determined that 87 acres of compensation lands would be required at ratios varying from 3:1 to 5:1. See, e.g., DOE EA Table 3.8-4, p. 3.8-36, and DOE EA Table 3.8-6, p. 3.8-41.

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE general and Mohave ground squirrel-specific impact avoidance and minimization measures would ensure the Project's impacts on Mohave ground squirrel would be less-than-significant.

> **Additional mitigation to reduce and minimize impacts on Mohave ground squirrel:** None required.

Western Burrowing Owl

Western burrowing owls are year-round residents of grasslands, open scrub, prairie, and desert floor habitats, where they are strongly associated with the presence of ground squirrel burrows. Protocol-level Phase I burrowing owl surveys were performed in the Project area in 2006, followed by Phase II and III surveys in July and August 2008, and April and May 2009 (DOE EA, p. 3.8-25). Western burrowing owls are known to nest and forage in the Project area (CEC Commission Decision, p. 245) and were detected in the Project area in 2006, 2007, and 2008 (DOE EA Appendix M, Table M-2). The CPUC presumes that western burrowing owls are present along telecommunications system routes.

Potential impacts on western burrowing owl may be summarized as follows: Construction activities during the nesting season (February through September) could adversely affect breeding birds through direct take or indirectly through disruption or harassment, which could result in nest failure or abandonment. Construction impacts include displacement of individuals or pairs, increased predation risk, direct mortality from encounters with construction equipment, burrow/nest destruction during site clearing/grading, entombing burrowing owl adults/young/eggs, disruption, and harassment. Disruption and harassment may result in nest abandonment or otherwise-reduced reproductive success. In addition, Project construction would result in the loss of approximately 1,704 acres of suitable foraging habitat in the Project area (this acreage includes impacts from the overlapping AMSP project; loss of foraging habitat resulting from construction of the Lockhart Substation would be substantially less). Construction impacts to burrowing owl also could include displacement of individuals or pairs, increased predation risk, direct mortality from encounters with construction equipment, burrow/nest destruction during site clearing/grading, entombing burrowing owl adults, eggs or young, and disruption or harassment; disruption or harassment may result in nest abandonment or otherwise reduced reproductive success.

To address potential impacts on western burrowing owl, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on this species. As

summarized above and set forth in full in DOE EA Appendix S, the DOE identified 17 general impact avoidance and minimization measures that would apply to the Project and one multi-part specific mitigation measure that would apply to western burrowing owl (DOE EA Appendix S, p. S-41). The reader is referred to DOE EA Appendix S, pp. S-20 through S-24 for a review of general impact avoidance and minimization measures. At the present time, three western burrowing owls occupy the Project area and the assumption is that each owl is part of a mated pair, for a total of six owls in the Project area; the anticipated mitigation is therefore between 19.5 acres and 58.5 acres.[5] The telecommunication system routes have not been surveyed; however, the measures listed in DOE EA Appendix S would be implemented to avoid, reduce and mitigate impacts (DOE EA, p. 3.8-41).

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE general and western burrowing owl-specific impact avoidance and minimization measures would ensure that the Project's impacts on western burrowing owl would be less-than-significant.

Additional mitigation to reduce and minimize impacts on western burrowing owl:
None required.

American Badger

American badgers inhabit a diverse array of habitats with friable soils, including desert scrub, desert wash, open areas, grassland, and pinyon-juniper woodlands, among others. One American badger den was identified in the Project area in 2006; however, badger was not detected in the Project area during 2007/2008 surveys (DOE EA Appendix M). Neither badgers nor their dens were observed during reconnaissance surveys of the telecommunication system routes (DOE EA, 2010), but CEC SSA Part C Appendix A identifies the species as having a moderate-to-high potential to occur (Table 4, *Special-Status Species Potentially Occurring in the Project Area*, p. A-25). The CPUC has reviewed the conclusions of these studies and determined that they are adequate to inform this analysis.

Potential impacts on American badger include construction activities such as site grading and heavy equipment operation that kill or injure these species if they come into contact with construction equipment or if they are entombed in their dens. Construction activities could also result in disturbance or harassment of individuals.

To address potential impacts on American badger, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on this species. As summarized above and set forth in full in DOE EA Appendix S, the DOE identified 17 general impact avoidance and minimization measures that would apply to the Project as well as pre-construction surveys. The reader is referred to DOE EA Appendix S, pp. S-20 through S-24 for a review of general impact avoidance and minimization measures.

[5] This conclusion is consistent with the DOE's determination (DOE EA, p. 3.8-36).

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the three APMs, CEC Conditions of Certification, and DOE impact avoidance and minimization measures would reduce the Project's impacts on American badger to a less-than-significant level.

Additional mitigation to reduce and minimize impacts on American badger:
None required.

Golden Eagle

Golden eagles are year-round residents throughout most of their western United States range, requiring open terrain for foraging. Found in a variety of habitats, they prefer deserts, grasslands, savanna, and early successional stages of forest and shrub habitats. Golden eagles prefer to nest in rugged, open habitats with canyons and overhanging cliffs or outcrops. Raptor surveys in 2007 detected two foraging eagles near the Project area and two historic nests within eight miles (CEC Commission Decision, p.242). Pursuant to protocol surveys required for permits issued under the Bald and Golden Eagle Protection Act, a survey in April 2010 found two eagle nests approximately 10 miles north of the Project area, one active and one inactive (CEC Commission Decision, p.242). Two surveys in winter 2010 each identified a foraging pair of golden eagles within one mile of the Project area (DOE EA, p. 3.8-24). Foraging habitat and prey are present in the Project area, but preferred nesting habitat in the form of cliffs does not occur nearby; however, home ranges of 36 to 48 square miles have been recorded in California and the Project area could comprise part of a home range (DOE EA, p. 3.8-24). The CPUC independently reviewed the results of these studies and has determined that they are adequate to inform this analysis.

Potential impacts on golden eagle include the following: golden eagles are extremely susceptible to disturbance during the breeding season and adverse effects are possible from various human activities up to (and in some cases exceeding) one mile from a nest. The Project would result in loss of foraging habitat for golden eagles and significant impacts to golden eagle would occur if the indirect effects of a reduced prey base caused by development of the Project results in the loss of productivity or abandonment of nesting territories. Potential impacts on golden eagles also could relate to installation of the fiber-optic lines; however, the installation of these poles would have a negligible effect on foraging habitat because the new poles would be installed in existing ROW.

To address potential impacts on golden eagle, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on this species. As summarized above and set forth in full in DOE EA Appendix S, the DOE identified 17 general impact avoidance and minimization measures that would apply to the Project and one specific mitigation measure that would apply to golden eagle that Mojave Solar is responsible for implementing as part of the AMSP. The reader is referred to DOE EA, Appendix S, pp. S-20 through S-24 for a review of general impact avoidance and minimization measures. The specific mitigation measure that would apply to golden eagle is as follows: To protect golden eagles within a 10-mile radius of the AMSP site, Abengoa Mojave Solar (applicant for the AMSP) will provide funding in the amount of $60,000.00 to the USFWS, to be spent by the USFWS on monitoring and other actions

that the USFWS determines will be beneficial to golden eagles located in a 10-mile radius of the AMSP site (DOE EA, Appendix S, p. S-78).

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE general and golden eagle-specific impact avoidance and minimization measures would reduce the Project's impacts on golden eagle to a less-than-significant level.

Additional mitigation to reduce and minimize impacts on golden eagle:
None required.

Desert Kit Fox

Desert kit fox are inhabitants of the Mojave Desert, feeding on kangaroo rats (*Dipodomys* spp.) and other small mammals, and usually having several dens within their home range. The Mojave Desert population is neither a threatened or endangered species nor a California Species of Special Concern. However, the species is protected from hunting and trapping by State law and the CPUC has elected to analyze potential impacts to this species and potentially occupied desert kit fox habitat. Two kit fox dens were observed in the Project area during 2009 surveys, and desert kit fox scat and digs were observed earlier in 2006 along with a juvenile female that had been struck and killed by a car (DOE EA, pp. 3.8-25 through 3.8-26).

Potential impacts on desert kit fox include the following: construction activities, including site grading and heavy equipment operation, could kill or injure desert kit foxes from contact with construction equipment, or entomb them in their dens. Construction activities could also result in disturbance or harassment of individuals.

To address potential impacts on desert kit fox, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on this species. As summarized above and set forth in full in DOE EA Appendix S, the DOE identified 17 general impact avoidance and minimization measures that would apply to the Project. The reader is referred to DOE EA, Appendix S, pp. S-20 through S-24 for a review of general impact avoidance and minimization measures.

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE impact avoidance and minimization measures would reduce the Project's impacts on desert kit fox to a less-than-significant level.

Additional mitigation to reduce and minimize impacts on desert kit fox:
None required.

Nesting Birds

The majority of the Project area is devoid of trees but there are scattered tamarisk trees (an invasive species) along the western edge of Harper Lake and adjacent to agricultural fields. These trees provide suitable nesting habitat for a variety of birds. Suitable nesting habitat is also present

in the desert saltbush scrub and Mojave creosote bush scrub habitat (CEC Commission Decision, p. 245) that is found both in the Project area and along telecommunication system routes (CEC SSA Part C Appendix A, p. A-22). In addition to western burrowing owl (discussed separately above due to its burrowing behavior and direct association with ground activities), the following California Species of Special Concern are likely to breed in the Project area: northern harrier, short-eared owl, loggerhead shrike, LeConte's thrasher, and California horned lark (CEC Commission Decision, p. 245; DOE EA, pp. 3.8-26 through 3.8-27). In addition, nearly all common nesting birds are protected by the MBTA and their disturbance is prohibited.

Potential impacts on nesting birds include the following: construction activities during the nesting season (February through September) could adversely affect breeding birds through direct take or indirectly through disruption or harassment, which could result in nest failure or abandonment. Further, northern harrier, loggerhead shrikes, horned larks and LeConte's thrashers in the Project vicinity may be permanently and directly affected through the loss of breeding habitat, while peregrine falcon, Cooper's hawk, merlin, prairie falcon, and short-eared owl may be indirectly affected through the loss of foraging habitat.

To address potential impacts on nesting birds, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts. As summarized above and set forth in full in DOE EA Appendix S, the DOE identified 17 general impact avoidance and minimization measures that would apply to the Project and one specific mitigation measure that would apply to nesting birds. The reader is referred to DOE EA, Appendix S, pp. S-20 through S-24 for a review of general impact avoidance and minimization measures. The specific mitigation measure that would apply to nesting birds is as follows: if construction is scheduled to occur during the nesting season, a nesting bird survey (in addition to the western burrowing owl survey) will be conducted within permanent and temporary impact areas. If nesting birds are detected in these areas, CDFG will be consulted to establish a no-disturbance buffer, until the nest is no longer active as determined by a qualified biologist as determined through nest monitoring (DOE EA Appendix S, p. S-54).

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE EA avoidance and minimization measures would reduce the Project's impacts on nesting birds to a less-than-significant level.

Additional mitigation to reduce and minimize impacts on nesting birds:
None required.

Plants

The Project area traverses a variety of vegetation communities capable of supporting rare plants. While no federal- or state-listed plants were observed in the Project area during rare plant surveys conducted from 2007 through 2010, three California rare plant rank species were detected within the Project survey area during focused surveys in 2008: desert cymopterus, Mojave fish-hook cactus and Mojave spineflower. These occurrences are within the rare plant survey area, but are

beyond the Project footprint and would not be directly affected by the Project. The three proposed fiber-optic routes have not been surveyed for plants, but plant species potentially occurring along the proposed routes are expected to be similar to those described for the Lockhart Substation site[6] and surveys will be conducted before work begins. Thus, the CPUC has determined that all of the species appearing in Table M-1 of Appendix M of the DOE EA have the potential to occur in the Project area.

Potential impacts on rare plants include the following: plants adjacent to the Project area may be crushed or otherwise damaged by construction equipment and vehicle or foot traffic. The potential for these direct impacts to occur is increased if construction equipment or personnel inadvertently work outside of the Project boundary. Wind-blown dust from construction activities might indirectly affect rare plant populations adjacent to the Project area. Wind-borne transport of dust and sand can result in the degradation of soil and vegetation over a wide area and can result in impacts such as killing plants by burial and abrasion, interrupting natural processes of nutrient accumulation, and loss of soil resources. It is likely that negligible effects to desert cymopterus would occur during construction and operation of the interconnection between the Lockhart Substation and the existing Coolwater-Kramer 220-kV transmission line for the reasons explained in the DOE EA (p. 3.8-39). The CPUC has reviewed this rationale and agrees with the conclusion. Indirect impacts to special-status plants outside the Project area may arise from population fragmentation and the introduction of non-native weeds; population fragmentation could affect pollinator activity and gene flow; the introduction and establishment of invasive weeds within, or adjacent to, special-status populations can adversely affect native species by reducing growth and recruitment; in addition, runoff and sedimentation, erosion, fugitive dust, and unauthorized access by construction workers could cause indirect impacts; unauthorized access by construction workers and their vehicles could trample and destroy individuals outside of, but adjacent to, the construction area. While no federal- or state-listed plants occur along telecommunication system routes, and impacts due to construction and operation of the system would result in no impacts or impacts that are likely negligible, direct or indirect impacts along these routes are currently unknown because surveys are not completed.

To address potential impacts on rare plants, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts on plants. As summarized above and set forth in full in DOE EA Appendix S, the DOE identified 17 general impact avoidance and minimization measures and two specific measures that would apply to the Project.

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE impact avoidance and minimization measures would reduce the Project's impacts on rare plants. However, a potentially significant impact on rare plants could remain as a result of the proposed transmission and telecommunications work unless CDFG rare plant survey protocols are followed for those components of the Project. With the implementation of Mitigation Measure CPUC-BIO-1 presented below, Project impacts to rare plants would be reduced to a less-than-significant level.

6 This conclusion is consistent with the DOE's determination (DOE EA, p. 3.8-39).

Mitigation Measure CPUC-BIO-1: Floristic surveys shall be conducted along downstream upgrades in accordance with CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG, 2009). Rare plants encountered shall be subject to the following:

a. Incorporate site design modifications to minimize impacts to special-status plants by limiting the width of linear work areas and adjusting the location of staging areas, lay downs, spur roads and poles or towers as appropriate to avoid or minimize impacts to rare plant populations.

b. The Designated Biologist shall establish Environmentally Sensitive Areas around rare plant occurrences at a minimum of 20 feet from the uphill side of a rare plant occurrence and 10 feet from the downhill side. Equipment and vehicle maintenance areas, and wash areas, shall be located 100 feet from any occurrences.

c. Plant species shall be included in the Worker Environmental Awareness Program.

d. If California Rare Plant Rank 1 plants are detected in the Project disturbance area, the Project owner shall prepare and implement a Special-Status Plant Mitigation Plan, with a goal of retaining at least 75 percent of the local population of the affected species. Compensatory mitigation at a ratio of 3:1 shall be required for the portion that is not avoided. At a minimum, the Plan shall include a description and discussion of the species, a description of avoidance and minimization measures, and a compensation plan if total avoidance is not possible.

e. If California Rare Plant Rank 2 plants are detected in the Project disturbance area, the Project owner shall prepare and implement a Special-Status Plant Mitigation Plan, with a goal of retaining at least 75 percent of the local population of the affected species. Compensatory mitigation at a ratio of 2:1 shall be required for the portion that is not avoided. At a minimum, the Plan shall include a description and discussion of the species, a description of avoidance and minimization measures, and a compensation plan if total avoidance is not possible.

f. Where compensatory mitigation is required, it shall consist of acquisition of habitat supporting the target species, or restoration/enhancement of existing populations. The Project owner shall provide funding for the acquisition and/or restoration/enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. In the event that no opportunities for acquisition or restoration/enhancement exist, the Project owner can fund a species distribution study designed to promote the future preservation, protection, or recovery of the species.

g. If California Rare Plant Rank 3 plants are detected in the Project disturbance area, and the occurrence has local or regional significance, the occurrence shall be treated as a Rank 2 plant species, as above. A plant occurrence would be considered to have local or regional significance if: (1) it occurs at the outermost periphery of its range in California; (2) it occurs in an atypical habitat, region, or elevation for the taxon that suggests the occurrence may have genetic significance; or (3) it exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or subspecies.

h. For all rare plant impacts, seeds shall be collected from the affected plants onsite, prior to construction, to conserve germplasm and provide a seed source for restoration efforts. Seed shall be collected under the supervision or guidance of a

reputable seed storage facility, and costs associated with long-term storage shall be the responsibility of the Project owner.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service: *Less than Significant Impact*

Joshua tree woodland, a Sensitive Natural Community protected by CDFG, and riparian habitats occur in the Project area. One acre of Joshua tree woodland occurs along fiber-optic routes (DOE EA, p. 3.8-11), but this area would not be adversely affected by Project activities (DOE EA, Table 3.8-2, p. 3.8-30).

Riparian habitats in the Project area are defined as Tamarisk Scrub and palustrine, scrub/shrub, needle-leaved, evergreen, seasonally-flooded/saturated, mixosaline, and/or alkaline (CEC Commission Decision, p. 232). The Project area encompasses 21.8 acres of Tamarisk Scrub and 13.2 acres of Mojave Desert Wash Scrub (DOE EA, Table 3.8-1, p. 3.8-11), of which the Lockhart-to-Tortilla Substation fiber-optic line would traverse 11.3 acres of Mojave Desert Wash (sandy areas) and 3.07 acres of Mojave River (CEC SSA Part C Appendix A, p. A-22).

The Project would impact 1.47 acres of non-native Tamarisk Scrub habitat, which would not result in the loss of a regionally unique habitat type. The DOE EA identifies that Project area construction would impact 1.9 acres of Mojave Desert Wash Scrub and construction of linear facilities would impact 11.3 acres of Mojave Desert Wash Scrub (CEC Commission Decision, Table 3.8-1, p. 3.8-11), and Project area construction would impact 13.2 acres of Tamarisk Scrub while construction of linear facilities would impact 8.6 acres of Tamarisk Scrub (Id., p. 3.8-11).

To address potential impacts on riparian habitats, the CEC and DOE identified measures that the CPUC has determined would avoid or minimize impacts. As summarized above and set forth in full in DOE EA Appendix S, the DOE and CEC would impose BIO-1 through BIO-7 as well as BIO-16, the implementation of which also is expected to protect native riparian habitats such as Mojave Desert Wash Scrub. The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that implementation of the APMs, CEC Conditions of Certification, and DOE impact avoidance and minimization measures would reduce the Project's impacts on riparian habitats to a less than significant level.

Additional mitigation: None required.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means: *Less than Significant Impact*

In February 2010, the USACE made a determination that the Project area was not subject to USACE jurisdiction under Section 404 of the Clean Water Act and a Section 404 permit would not be required for construction of the proposed Lockhart Substation (DOE EA, p. 2-32).

Construction of the Project's linear features (such as the telecommunications system) could impact potentially jurisdictional waters. Along the fiber-optic routes, there are 20.44 acres of unvegetated wash potentially under the jurisdiction of USACE, and 10.08 acres of unvegetated wash and 4.88 acres of vegetated swale potentially under the jurisdiction of the RWQCB and CDFG (SCE, 2010, Map Sheet 2). Within these areas, Project impacts would be between 157 and 407 square feet, or less than 0.01 acre (SCE, 2010, p. 6).

Direct impacts to wetlands include the conversion of up to 0.28[7] acre of wetlands to developed land, resulting from the construction of Lockhart Substation and distribution/transmission poles.

To address potential impacts on wetlands, the CEC and DOE identified several measures that the CPUC has determined would avoid or minimize impacts: BIO-1 through BIO-7 and BIO-16 are summarized above and set forth in full in DOE EA Appendix S. For example, implementation of BIO-16 would mitigate for impacts on Waters of the State by removing invasive Tamarisk Scrub and implementing a five-year monitoring and reporting program to ensure complete eradication. The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis, concludes that with the implementation of these actions, construction, operation and maintenance of the Project would have a less-than-significant impact on jurisdictional waters.

Additional mitigation: None required.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites: *Less than Significant Impact*

Construction and operation of the Lockhart Substation, gen-ties, distribution system, transmission lines and related structures, and telecommunications system would not substantially interfere with the movement of native wildlife species, or their corridors or nursery sites because no wildlife corridors or nurseries are documented within or near the AMSP/Lockhart Substation site or along the proposed linear facilities, and because biological surveys of the area conducted annually from 2007 through 2009 indicate that there is a relatively low level of use by wildlife species.[8] An existing series of wire fences along portions of Harper Lake Road provide an existing barrier to wildlife movement (Commission Decision, p. 3.8-8). Further, the existing utility corridors where the fiber-optic cable would be strung parallel portions of SR-58 and U.S. Highway 395, which also provide existing barriers for wildlife movement. Linear facilities developed as part of the Project would not block any of the several undercrossings beneath U.S. Highway 395 and SR-58 that presently allow wildlife to move from either side.[9] Accordingly, the CPUC determines that the Project would not interfere substantially with the movement of any native species or with established wildlife corridors, and would have a less than significant impact related to impediments to the use of native wildlife nursery sites.

Additional mitigation: None required.

7 Approximately 0.27 acre would be directly affected during construction of the Lockhart Substation (CEC, 2010b {p. 5.2-35}) and up to 0.01 acre would be directly affected during construction of power poles (SCE, 2010 {p. 6}).
8 This conclusion is consistent with the CEC's determination (CEC Commission Decision, p. 3.8-8).
9 This conclusion is consistent with the DOE's determination (DOE EA, p. 3.8-13).

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance: *No Impact*

San Bernardino County Development Code Section 89.0101 et seq. provides for plant protection and management. If required under the ordinance, the Project owner would prepare a Plot Plan describing the removal of native plants in portions of the Project area that support native vegetation, submitted as part of a native tree/plant removal permit in conjunction with a development permit and/or the approval of a land use application (DOE EA, p.3.8-4). As a result, the CPUC determines that implementation of the Project would not conflict with any local policies or ordinances protecting biological resources, and no impact would result.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan: *Less than Significant Impact*

No Habitat Conservation Plan or Natural Community Conservation Plan has been adopted, the provisions of which could be affected by the Project. Further, no construction or operational impacts would occur to the area of Harper Dry Lake, located near the Lockhart Substation, that is designated as an Area of Critical Ecological Concern (ACEC) by BLM's California Desert Conservation Area Plan (DOE EA, p.3.8-10). Transmission lines and related structures, and the proposed telecommunications system would traverse small portions of the Superior-Cronese and Fremont-Kramer Desert Wildlife Management Areas established for the protection of desert tortoise, and would also traverse small portions of the Mohave Ground Squirrel Conservation Area. However, impacts to species and their habitats would be mitigated as discussed under criterion a), and so would comply with provisions of related plans adopted by the BLM to conserve the designated species and their habitat. Additionally, the implementation of CEC-BIO-20, provided in IS/MND Appendix B, *Agency-Imposed Measures for the Abengoa Mojave Solar Project*, would protect water resources at Harper Dry Lake by preventing Abengoa Mojave Solar from decommissioning the existing well until an alternate well is able to effectively convey a minimum of 75 acre feet per year to the Harper Dry Lake Marsh.

The CPUC has independently reviewed the analyses and rationale of the CEC and DOE and, on this basis and with the implementation of CEC Commission Decision BIO-20, concludes that the implementation of the Project would have a less than significant impact related to criterion f).

Additional mitigation: None required.

3.4.5 References

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C and Sacramento, CA.

California Department of Fish and Game (CDFG). 2011. Special Animals List. January, 2011.

California Department of Fish and Game (CDFG). 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. November 24, 2009.

California Department of Fish and Game (CDFG). 1995. Staff Report on Burrowing Owl Mitigation. October 17, 1995.

Southern California Edison (SCE). 2011. Jurisdictional Waters Report for the Abengoa – Lockhart Solar Project Telecommunication Fiber-Optic Cable Routes. January, 2011.

URS Corporation. 2007. County of San Bernardino 2007 General Plan. Prepared for the County of San Bernardino Land Use Services Division by URS Corporation. Adopted March 13, 2007.

U.S. Fish and Wildlife Service. 2009. Desert Tortoise Field Manual. Available online at http://www.fws.gov/ventura/speciesinfo/protocols_guidelines/. December, 2009.

3.5 Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
5. CULTURAL RESOURCES— Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

3.5.1 Environmental Setting

Cultural resources are defined as prehistoric-era and historic-era sites, structures, and districts, or any other physical evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious or any other reason. For the purposes of this analysis, cultural resources may be categorized into three groups: archaeological resources, built historic-era resources, and contemporary Native American resources.

Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Fossils are considered nonrenewable resources because the organisms they represent no longer exist. Once destroyed, a fossil can never be replaced (CEC Commission Decision, p. 422, fn 41).

The cultural resources setting is described in Section VI(C), *Cultural Resources* (p. 401 et seq.), and Section VI(D), *Geologic and Paleontological Resources* (p. 420 et seq.), of the CEC's Commission Decision; Section 5.3, *Cultural Resources*, of the CEC Staff Assessment (p. 5.3-1 et seq.); and in DOE EA Sections 3.6, *Paleontological Resources* (p. 3.6-1 et seq.), and Section 3.9, *Cultural Resources* (p. 3.9-1 et seq.). DOE EA Sections 3.6 and 3.9, CEC Staff Assessment Section 5.3, and CEC Commission Decision Sections VI(C) and VI(D) are incorporated by reference into this analysis.

Cultural Setting

The cultural setting for the Project area is described in the CEC's Commission Decision in Section VI(C), *Cultural Resources* (p. 401 et seq.), and Section VI(D), *Geologic and Paleontological Resources* (p. 420 et seq.); in CEC Staff Assessment Section 5.3, *Cultural*

Resources (p. 5.3-1 et seq.); and in DOE EA Sections 3.6, *Paleontological Resources* (p. 3.6-1 et seq.), and Section 3.9, *Cultural Resources* (p. 3.9-1 et seq.). It is summarized here.

The Project area's human history dates to 12,000 years before present. Early human settlement focused around now-dry pluvial lakes. Ethnographically, the Project area was inhabited primarily by the Serrano and Vanyume, as well as the Mojave, the Chemehuevi/Southern Paiute, and possibly the Desert Kawaiisu. The region's first European visitors were Pedro Fages and his troops in 1772 and Father Francisco Garces in 1776. Jedediah Smith, an American fur trader, crossed the Mojave Desert in 1826, when the region was Mexican territory. During this time, the rancho industry, which included cattle grazing and the production of hides, was the primary economic and social focus of the region. The gold rush of the mid-19th century caused a population boom in California. In addition, Homestead Act of 1862 brought agriculture to the area, although extensive irrigation was required to farm the arid Mojave Desert. The establishment of railroads and wagon roads (later automobile roads) enabled further settlement.

Methodology

The cultural resources analysis for the Project was conducted by AECOM and SWCA as part of the DOE's EA. The analyses and methodologies used by each are set forth in DOE EA Section 3.9, *Cultural Resources*, and Section 3.6, *Paleontological Resources*. The CPUC independently has reviewed the evidence before the DOE and agrees with the conclusions reached. Data and information provided in the DOE EA is summarized below.

A Phase I archaeological study and built environment survey were conducted for the Project in 2009 (DOE EA Section 3.9). Records searches at the San Bernardino Archaeological Information Center and Edwards Air Force Base, which included a review of data on archaeological site records; archaeological, historical, and environmental literature; records and maps of previous surveys; and the National Register of Historic Places (National Register) and California Register of Historical Resources (California Register), and local listings, were performed for the Project area and a 1-mile radius. Pedestrian archaeological surveys of the Project area were undertaken in 2009 and 2010 (DOE EA Section 3.9)

A Sacred Lands File search from the NAHC and contact with local Native American groups and interested parties also were conducted. Two responses were received: one from the Kern Valley Indian Council, the other from a representative affiliated with the Tebatulabal, Kawaiisu, Koso, and Yokut tribes. However, the results of these efforts did not identify any sacred resources or areas of concern (CEC SA, p.5.3-15; CEC Commission Decision, p. 405).

As a result of archival research and pedestrian surveys, 88 cultural resources were recorded within the Project area. Eleven of the resources are prehistoric in age, seven are multi-component (both prehistoric and historic-era), and the remaining 70 are historic in age. An additional 125 isolated artifacts were recorded during survey; however, isolated artifacts are not considered eligible for listing in the California Register or the National Register and are not considered historical resources under CEQA. Thus, isolated artifacts are not considered further in this analysis.

A historic-era built environment study was conducted for the Project. As a result, one built historic–era resource was recorded within the proposed Lockhart Substation site; it is discussed below. In addition, 100 built historic-era resources were identified near the proposed telecommunications system paths; however, because none would be affected by the Project, none were formally recorded or evaluated for significance (DOE EA Section 3.9).

A geoarchaeological study of the AMSP site was conducted by SWCA in 2009 (CEC SA). The study consisted of a review of geologic maps and data for the AMSP site as well as field investigations consisting of the excavation of trenches within the AMSP solar plant boundaries to evaluate the potential for buried archaeological deposits. Study results indicated that a potential for buried resources exists within the AMSP site.

A paleontological study was conducted for the Project by SWCA in 2009 and 2010 (DOE EA, p. 3.6-1). This study included a records search at the San Bernardino County Museum, a review of literature and geologic maps, and a pedestrian paleontological survey of the Project area. As a result of the study, two paleontologically sensitive formations (older Quaternary alluvium and younger Quaternary alluvium at depth) were identified within the Project area. Eighteen previously recorded vertebrate fossil localities were identified within the Lockhart Substation site.

3.5.2 Regulatory Setting

The cultural resources Federal and State regulatory setting for the Project area is described in the CEC Commission Decision in Section VI(C), *Cultural Resources* (p. 401 et seq.), and Section VI(D), *Geologic and Paleontological Resources* (p. 420 et seq.); in CEC Staff Assessment Section 5.3, *Cultural Resources* (p. 5.3-1 et seq.); and in DOE EA Sections 3.6, *Paleontological Resources* (p. 3.6-1 et seq.), and Section 3.9, *Cultural Resources* (p. 3.9-1 et seq.). It is incorporated by reference and summarized below.

Federal Regulations

National Historic Preservation Act Section 106

Cultural resources are protected through the National Historic Preservation Act of 1966, as amended (16 USC 470f) (NHPA), and its implementing regulations, Protection of Historic Properties (36 CFR Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979. Prior to implementing an "undertaking" (e.g., granting a federal approval), NHPA Section 106 requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect a property listed in or eligible for listing in the National Register of Historic Places. As indicated in NHPA Section 101(d)(6)(A), properties of traditional religious and cultural importance to a tribe are eligible for inclusion in the National Register. Under the NHPA, a find is considered significant if it meets the National Register listing criteria set forth in Title 36 of the Code of Federal regulations, Section 60.4.

State Regulations

CEQA requires lead agencies to determine if a proposed project would have a significant effect on archaeological resources, either as historical resources or unique archaeological resources (see, e.g., Public Resources Code (PRC) Section 21084.1). The CEQA Guidelines define a historical resource as: (1) a resource in the California Register of Historical Resources; (2) a resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); or (3) any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archaeological site is a historical resource, the provisions of CEQA Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archaeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of CEQA Section 21083, regarding unique archaeological resources. A unique archaeological resource is "an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the specified criteria, i.e., it:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person [CEQA Section 21083.2 (g)].

The CEQA Guidelines note that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

Other State Laws

Several sections of the PRC protect paleontological resources. Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontologic feature on public lands (lands under State, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted permission.

Section 7050.5 of the Health and Safety Code protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery. Section 5097.98 of the PRC (and reiterated in CEQA Guidelines Section 15064.5(e)) also states that the following steps should be taken in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery:

1. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

    a. The coroner of the county in which the remains are discovered must be contacted to determine that no investigation of the cause of death is required, and

    b. If the coroner determines the remains to be Native American:

        i. The coroner shall contact the Native American Heritage Commission within 24 hours.

        ii. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descended from the deceased Native American.

        iii. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or

2. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.

    a. The Native American Heritage Commission is unable to identify a most likely descendent or the most likely descendent failed to make a recommendation within 48 hours after being notified by the commission.

    b. The descendant identified fails to make a recommendation; or

    c. The landowner or his authorized representative rejects the recommendation of the descendant, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

Local Regulations

San Bernardino County General Plan

The Conservation Element of the San Bernardino County General Plan (2007) governs the natural and cultural resources of the County and includes several goals and policies related to the protection of such resources. Briefly, County policies require the identification of archaeological and historic-era built environment resources through systematic studies and require the County to consult with Native American tribes and take their concerns into account.

3.5.3 Applicant Proposed Measures

As identified in CEC SSA Part C Appendix A (p. A-13), SCE would implement the following Applicant Proposed Measures to avoid or reduce potential impacts related to cultural and paleontological resources:

> **CR-1:** A cultural resource inventory of the project area would be conducted for cultural resources prior to any disturbance. All surveys would be conducted and documented as per applicable laws, regulations, and guidelines.

CR-2: To the extent feasible, all ground-disturbing activities shall be sited to avoid or minimize impacts to cultural resources listed as, or potentially-eligible for listing as, unique archaeological sites, historical resources, or historic properties.

CR-3: A protective buffer zone would be established and maintained around each recorded archaeological site within or immediately adjacent to the ROW.

PALEO-1: A paleontologist would conduct a pre-construction field survey of the project area.

PALEO-2: Prior to construction, a certified paleontologist would supervise monitoring of construction excavations.

3.5.4 Environmental Impacts and Mitigation Measures

Lockhart Substation, Gen-Tie Lines and Distribution System

Environmental impacts of the proposed Lockhart Substation, gen-ties and distribution system for cultural resources are analyzed in CEC Commission Decision Section VI(C), *Cultural Resources* (p. 401 et seq.), and Section VI(D), *Geologic and Paleontological Resources* (p. 420 et seq.); the CEC Staff Assessment Section 5.3, *Cultural Resources* (p. 5.3-1 et seq.); and DOE EA Sections 3.6, *Paleontological Resources* (p. 3.6-1 et seq.) and 3.9, *Cultural Resources* (p. 3.9-1 et seq.). These parts of the CEC and DOE analyses are incorporated by reference and summarized below.

Historical Resources

The potential for impacts to cultural resources depends upon whether such resources are present and whether they would be encountered during development, construction, operation and maintenance activities (CEC Commission Decision, p. 401 et seq.). Cultural resources exist in the general AMSP area (CEC Commission Decision, p. 408), and one built historic-era resource, a mid-20th century concrete block residential/storage structure designated P-36-021011, was recorded within the Lockhart Substation site. The structure was evaluated and determined not eligible for listing in the National Register or California Register (DOE EA, Section 3.9; CEC Commission Decision, p.405, *Cultural Resources Table 1*). Because no known historical resource (as defined in CEQA Guidelines Section 15064.5) exists within the footprint of the Project substation, gen-ties and distribution system, these aspects of the Project would not cause a substantial adverse change in the significance of such a resource.

However, it is possible that currently unknown archaeological resources, some of which may qualify as historical resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during Project implementation. Based on a geoarchaeological study conducted by SWCA in 2009, the potential for the discovery of buried archaeological deposits is moderate to high across the whole of the AMSP/Lockhart Substation site (CEC Commission Decision, pp. 406, 408, Appendix B-3). The CPUC independently reviewed the study prepared by SWCA in 2009 and agrees with this conclusion. Construction, operation and maintenance activities could involve surface and subsurface ground disturbance. Direct impacts to archaeological resources could result from the immediate disturbance of archeological deposits, whether from

vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Indirect impacts to archaeological resources could result from increased erosion due to site clearance and preparation, or from inadvertent damage or vandalism to exposed resources (CEC Commission Decision, p. 406). Operation and maintenance activities requiring excavation to access subsurface improvements could impact previously unknown subsurface archaeological resources.

SCE and the CEC both proposed procedures for identifying, evaluating and addressing impacts to newly discovered historical resources that are intended to reduce any such impacts to a less-than-significant level. The CPUC independently has reviewed Applicant Proposed Measures CR-1, CR-2 and CR-3 (see Section 3.5.3, *Applicant Proposed Measures*, above) and mitigation measures CUL-1 through CUL-7 imposed by the CEC and find that with these measures implemented as part of the Project, the Project would have a less than significant impact related to CEQA Guidelines Appendix G cultural resources criterion a).

Unique Archaeological Resources

No known unique archaeological resources or other cultural resources are located within the Lockhart substation site. However, as discussed above, it is possible that currently unknown archaeological resources, some of which may qualify as unique archaeological resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during Project implementation.

SCE and the CEC both proposed procedures for identifying, evaluating and addressing impacts to newly discovered archaeological resources that are intended to reduce any such impacts to a less-than-significant level. The CPUC independently has reviewed Applicant Proposed Measures CR-1, CR-2 and CR-3 (see Section 3.5.3, *Applicant Proposed Measures*, above) and mitigation measures CUL-1 through CUL-7 imposed by the CEC and find that with these measures implemented as part of the Project, the Project would have a less than significant impact related to CEQA Guidelines Appendix G cultural resources criterion b).

Paleontological Resources

There are no known paleontological resources on the project site (CEC Commission Decision, p. 424). Because the upper 1 to 2 feet of the surface of the AMSP site is disturbed, the material within that depth is unlikely to contain significant paleontological resources within their natural context and has a negligible paleontological sensitivity rating (CEC Commission Decision, pp. 422-24). However, at depths of 2 feet below the surface, grading, excavation for foundations and utility trenching that penetrates underlying undisturbed soils holds a high potential for exposure of paleontological resources, until determined otherwise (Id.).

Two paleontologically sensitive geologic formations (older Quaternary Alluvium and younger Quaternary Alluvium at depth) underlie portions of the Lockhart Substation project area. Eighteen possible vertebrate fossil localities have been identified within the AMSP site, in the vicinity of the Lockhart Substation site, at depths of 3-14 feet below ground surface. Based on these finds, the paleontological resource sensitivity of undisturbed Quaternary alluvium and

lacustrine sediments varies from low at shallow depths to very high at greater depths (CEC Commission Decision, p. 423). Consequently, deeper construction, operation and maintenance-related ground disturbance activities that penetrate such soils could result in the destruction of surface or subsurface paleontological resources via breakage and crushing, which would cause potential significant impacts to subsurface paleontological resources.

To address this potentially significant impact, the Applicant volunteered to implement APMs PALEO-1, requiring a paleontologist to conduct a pre-construction field survey of the Project area, and PALEO-2, requiring a certified paleontologist to supervise pre-construction monitoring of construction excavations. In addition, the CEC imposed mitigation measures PAL-1 through PAL-7 as Conditions of Certification (see IS/MND Appendix B, Table B-2, *Agency-Imposed Measures for the Abengoa Mojave Solar Project*). The CPUC independently has reviewed these mitigation measures and determined that, with their implementation as part of the Project, the Project would have a less-than-significant impact related to paleontological resources pursuant to CEQA Guidelines Appendix G cultural resources criterion c).

Human Remains

Ground disturbance associated with construction, operation and maintenance of the Lockhart Substation, gen-ties and distribution system inadvertently could disturb previously unknown buried human remains. If human remains were encountered unexpectedly during excavation, grading or other ground-disturbing activities, Health and Safety Code Section 7050.5 would preclude further disturbance until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. Consequently, Project impacts to human remains related to CEQA Guidelines Appendix G cultural resources criterion d) would be less than significant.

Transmission Lines and Related Structures

The proposed transmission lines and related structures would be located within the AMSP site and cultural resources survey buffer area. Environmental impacts of the proposed transmission lines and related structures related to cultural resources are analyzed in CEC Commission Decision Section VI(C), *Cultural Resources* (p. 401 et seq.), and Section VI(D), *Geologic and Paleontological Resources* (p. 420 et seq.); CEC Staff Assessment Section 5.3, *Cultural Resources* (p. 5.3-1 et seq.); and in DOE EA Sections 3.6, *Paleontological Resources* (p. 3.6-1 et seq.), and Section 3.9, *Cultural Resources* (p. 3.9-1 et seq.). The CPUC has independently reviewed these portions of the CEC and DOE documents. Because these components of the Project would be constructed, operated and maintained within the same area as was analyzed above in the context of the substation, gen-ties and distribution system, the same rationale and the same conclusions apply: The Project's transmission lines and related structures, like the substation, gen-ties and distribution system, would cause a less-than-significant impact related to CEQA Guidelines Appendix G cultural resources criteria a), b), c), and d).

No resources eligible for the National Register or California Register are located within the Project area for the transmission lines and related structures. Therefore, there would be no impact

to known historical resources related to these components. However, it is possible that currently unknown archaeological resources, some of which may qualify as historical resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during project implementation. SCE and the CEC both proposed procedures for identifying, evaluating and addressing impacts to newly discovered archaeological resources that are intended to reduce any such impacts to a less-than-significant level. The CPUC independently has reviewed Applicant Proposed Measures CR-1, CR-2 and CR-3 (see Section 3.5.3, *Applicant Proposed Measures*, above) and mitigation measures CUL-1 through CUL-7 imposed by the CEC and find that the transmission lines and related structures would cause a less-than-significant impact to historical resources as long as the applicant implements the APMs and mitigation measures imposed in the CEC Commission Decision (pp. 409-419) as Conditions of Certification.

No unique archaeological resources are known to be located within the Project area. However, as discussed above, it is possible that currently unknown archaeological resources, some of which may qualify as unique archaeological resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during project implementation. The CPUC has determined that the transmission lines and related structures would cause a less-than-significant impact to unique archaeological resources as long as the applicant implements the APMs and mitigation measures imposed in the CEC Commission Decision (pp. 409-419) as Conditions of Certification.

Two paleontologically sensitive geologic formations (older Quaternary Alluvium and younger Quaternary Alluvium at depth) underlie portions of the Project area. Eighteen possible vertebrate fossil localities have been identified within the AMSP site at depths of 3-14 feet below ground surface (DOE EA, p.3.6-5). Paleontological resources could be impacted as a result of excavation related to the construction of the transmission lines and related structures. The CPUC has concluded that as long as the applicant implements the APMs and mitigation measures imposed in the CEC Commission Decision as Conditions of Certification (pp. 425-432) (see above), there would be no adverse affect to paleontological resources.

Ground disturbance associated with construction of the transmission lines and related structures could also inadvertently disturb previously unknown buried human remains. If human remains were encountered unexpectedly during construction excavation and grading activities, State Health and Safety Code Section 7050.5, which requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98, would be followed. Therefore, impacts to human remains would be less than significant.

Telecommunications System

Environmental impacts of the proposed telecommunications system for cultural resources are analyzed in DOE EA Sections 3.6, *Paleontological Resources* (p. 3.6-1 et seq.), and Section 3.9, *Cultural Resources* (p. 3.9-1 et seq.). The CPUC has independently reviewed these portions of the DOE EA.

Kramer-to-Victor

Cultural resource-related impacts associated with the proposed Kramer-to-Victor telecommunication line are analyzed in DOE EA Section 3.9.

Historical Resources

Thirty-four cultural resources have been recorded within the Kramer-to-Victor telecommunications line. Of these, one resource, CA-SBR-10316H, a historic-era transmission line, has been determined eligible for listing in the National Register. Approximately 34 miles of CA-SBR-10316H are located within the Project area; however, this segment was replaced in 1989 with steel towers, which compromised the resource's integrity. Therefore, the segment of CA-SBR-10316H within the Project area is considered a non-contributing element to the significance of the resource (DOE EA Section 3.9). No other known historical resources are located within this telecommunication path. However, it is possible that currently unknown archaeological resources, some of which may qualify as historical resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during project implementation. The CPUC has concluded that there would be a less than significant impact to historical resources from the construction of the Kramer-to-Victor path of the telecommunication system as long as the applicant implements (as part of the Project) the APMs set forth in Section 3.5.3 and mitigation measures imposed by the DOE, referred to here as CUL-8 and CUL-9 (DOE EA, Section 3.9).

Unique Archaeological Resources

No known unique archaeological resources or other cultural resources are located in the Kramer-to-Victor right-of-way. Although there is some potential for buried archaeological deposits to occur within the Kramer-to-Victor line, the CPUC has concluded that there would be no significant impact to unique archaeological resources as long as the applicant implements (as part of the Project) the APMs set forth in Section 3.5.3 and mitigation measures imposed by the DOE, referred to here as CUL-8 and CUL-9 (DOE EA, Section 3.9).

Paleontological Resources

Two paleontologically sensitive geologic formations (older Quaternary Alluvium and younger Quaternary Alluvium at depth) underlie portions of the Kramer-to-Victor line. Although most of the proposed telecommunications work would consist of stringing wire onto existing poles, pole replacement and trenching for underground conduits would be required in some places. As noted above, excavation at depths of greater than 3 feet could cause an impact to paleontological resources. The CPUC has concluded that there would be no significant impact to paleontological resources as long as the applicant implements the APMs set forth in Section 3.5.3 and mitigation measures imposed by the DOE and referred to here as PAL-8 through PAL-13 (DOE EA, p. 3.6-8 through 3.6-9).

Human Remains

Ground disturbance associated with the construction of the Kramer-to-Victor line inadvertently could disturb previously unknown buried human remains. If human remains were encountered during construction excavation and grading activities, State Health and Safety Code Section

7050.5 would preclude any further disturbance until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. Therefore, impacts to human remains related to the construction, operation and maintenance of the Kramer-to-Victor route would be less than significant.

Lockhart-to-Kramer

Cultural resources impacts associated with the proposed Lockhart-to-Kramer telecommunication line would be less than significant (see, DOE EA Section 3.9).Twelve cultural resources have been recorded within the Lockhart-to-Kramer telecommunications corridor. Of these, one historic-era resource, CA-SBR-6693H (a section of the Atchison, Topeka & Santa Fe Railroad), has been determined eligible for listing in the National Register. One 250-foot segment of the railroad is located within the Lockhart-to-Kramer corridor, and appears to be used regularly and maintained. This resource has been determined eligible for listing in the National Register (DOE EA Section 3.9). As part of the Project, fiber-optic cable would be installed on existing transmission line structures that span CA-SBR-6693H. Therefore, there would be no impact to known historical resources as a result of this portion of the Project.

However, it is possible that currently unknown archaeological resources, some of which may qualify as historical resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during project implementation. The CPUC has concluded that there would be a less than significant impact to historical resources from the construction of the Kramer-to-Victor path of the telecommunication system as long as the applicant implements (as part of the Project) the APMs set forth in Section 3.5.3 and mitigation measures imposed by the DOE, referred to here as CUL-8 and CUL-9 (DOE EA, Section 3.9).

No known unique archaeological resources or other cultural resources exist within the Lockhart-to-Kramer fiber-optic corridor. As discussed above, the DOE indicated that there is some potential for buried archaeological deposits to occur within this area (DOE EA, Section 3.9). The CPUC has determined that there would be no significant impact to unique archaeological resources along this route as long as the applicant implements the APMs and mitigation measures set forth above.

Two paleontologically sensitive geologic formations (older Quaternary Alluvium and younger Quaternary Alluvium at depth) underlie portions of the Lockhart-to-Kramer fiber-optic corridor (DOE EA, p. 3.6-6). Although most work related to the proposed telecommunications system would consist of stringing wire onto existing poles, pole replacement and trenching for underground conduits would be required in some places (DOE EA, p.3.6-10). Therefore, the proposed work could cause a significant impact to paleontological resources. The CPUC has concluded that as long as the applicant implements the APMs set forth in Section 3.5.3 and mitigation measures imposed by the DOE and referred to here as PAL-8 through PAL-13 (DOE EA, p.3.6-8 through 3.6-9).

Ground disturbance associated with the construction of the Lockhart-to-Kramer fiber-optic route inadvertently could disturb previously unknown buried human remains. If human remains were

encountered unexpectedly during construction excavation and grading activities, Health and Safety Code Section 7050.5would be followed. Thus, impacts to human remains related to the Lockhart-to-Kramer telecommunication line would be less than significant.

Lockhart-to-Tortilla

Cultural resources impacts associated with the proposed Lockhart-to-Tortilla telecommunication line would be less than significant. Forty cultural resources have been recorded within the Kramer-to-Victor telecommunications corridor (DOE EA Section 3.9). Of these, three historic-era resources, CA-SBR-6693H and CA-SBR-6793H (two sections of the Atchison, Topeka & Santa Fe Railroad), and CA-SBR-2910H (National Trails Highway), have been determined eligible for listing in the National Register. The Lockhart-to-Tortilla path crosses each of these resources. As part of the Project, fiber-optic cable would be installed on existing transmission line structures that span CA-SBR-6693H, CA-SBR-6793H, and CA-SBR-2910H. Therefore, there would be no impact to known historical resources as a result of this portion of the Project.

However, it is possible that currently unknown archaeological resources, some of which may qualify as historical resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during project implementation. The CPUC has concluded that there would be a less than significant impact to historical resources from the construction of the Kramer-to-Victor path of the telecommunication system as long as the applicant implements (as part of the Project) the APMs set forth in Section 3.5.3 and mitigation measures imposed by the DOE, referred to here as CUL-8 and CUL-9 (DOE EA, Section 3.9).

No known unique archaeological or other cultural resources are located in the Lockhart-to-Tortilla telecommunications corridor. As discussed above, the DOE indicated that there is some potential for buried archaeological deposits to occur within this area (DOE EA Section 3.9). The CPUC has concluded that as long as the applicant implements the APMs and mitigation measures summarized above, there would be no significant impact to unique archaeological resources related to the proposed Lockhart-to-Tortilla telecommunication line.

Two paleontologically sensitive geologic formations (older Quaternary Alluvium and younger Quaternary Alluvium at depth) underlie portions of the Lockhart-to-Tortilla corridor (DOE EA, p. 3.6-6). Although most work related to the proposed telecommunications system would consist of stringing wire onto existing poles, pole replacement and trenching for underground conduits would be required in some places (DOE EA, p.3.6-10). Therefore, the proposed work could cause a significant impact to paleontological resources. The CPUC has concluded that as long as the applicant implements the APMs set forth in Section 3.5.3 and mitigation measures imposed by the DOE and referred to here as PAL-8 through PAL-13 (DOE EA, p.3.6-8 through 3.6-9).

Ground disturbance associated with the construction of the Lockhart-to-Tortilla fiber-optic corridor inadvertently could disturb previously unknown buried human remains. If human remains were encountered during construction excavation and grading activities, State Health and Safety Code Section 7050.5 would be followed. Therefore, impacts to human remains related to this route would be less than significant.

Lockhart Substation to AMSP Alpha and Beta Switchyards

The CEC Commission Decision considered potential impacts to cultural resources of constructing, operating and maintaining the telecommunications link between the Lockhart Substation and the AMSP Alpha and Beta Switchyards. The proposed telecommunications line between the Lockhart Substation and the AMSP Alpha and Beta switchyards would be located within the AMSP site. For the reasons discussed below, cultural resources impacts associated with this telecommunication link would be less than significant.

No resources eligible for the National Register or California Register are located within the work area for these proposed transmission lines and related structures. Therefore, there would be no impact to known historical resources related to these components. However, it is possible that currently unknown archaeological resources, some of which may qualify as historical resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during project implementation. A geoarchaeological study conducted for the AMSP site was conducted by SWCA in 2009, which concluded that a potential for buried resources exists within the AMSP site. The CPUC has independently reviewed the study and, on this basis, has concluded that Lockhart Substation to AMSP Alpha and Beta Switchyards would cause a less-than-significant impact to historical resources as long as the applicant implements the APMs and mitigation measures imposed in the CEC Commission Decision (pp. 409-419) as Conditions of Certification.

No unique archaeological resources are known to be located within the Project area. However, as discussed above, it is possible that currently unknown archaeological resources, some of which may qualify as unique archaeological resources pursuant to CEQA Guidelines Section 15064.5, may be encountered during project implementation.

SCE and the CEC both proposed procedures for identifying, evaluating and addressing impacts to newly discovered archaeological resources that are intended to reduce any such impacts to a less-than-significant level. The CPUC independently has reviewed Applicant Proposed Measures CR-1, CR-2 and CR-3 (see Section 3.5.3, *Applicant Proposed Measures*, above) and mitigation measures CUL-1 through CUL-7 imposed by the CEC and find that there would be no significant impact to unique archaeological resources related to this portion of the Project as long as the applicant implements the APMs and mitigation measures set forth above, which were imposed in the CEC Commission Decision as Conditions of Certification (pp. 409-419).

Two paleontologically sensitive geologic formations (older Quaternary Alluvium and younger Quaternary Alluvium at depth) underlie portions of the AMSP boundary. Eighteen possible vertebrate fossil localities have been identified within the AMSP site at depths of 3-14 feet below ground surface (CEC Commission Decision, p. 3.6-5). Paleontological resources could be impacted as a result of excavation related to the construction of the transmission lines and related structures. The CPUC has concluded that as long as the applicant implements the APMs and mitigation measures set forth above and imposed in the CEC Commission Decision as Conditions of Certification (pp. 425-432), there would be no adverse affect to paleontological resources.

Ground disturbance associated with the construction of the Lockhart Substation to AMSP Alpha and Beta Switchyards inadvertently could disturb previously unknown buried human remains. If human remains were encountered during construction excavation and grading activities, State Health and Safety Code Section 7050.5 would be followed. Therefore, impacts to human remains would be less than significant.

3.5.5 References

County of San Bernardino, 2007. County of San Bernardino 2007 General Plan. March, 2007.

3.6 Geology, Soils, and Seismicity

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
6. GEOLOGY, SOILS, AND SEISMICITY— Would the project:				
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, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the 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 on- or off-site 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) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

3.6.1 Environmental Setting

The following discussion addresses the geologic, seismic, and soils setting for the region as well as the Project site, covering both the AMSP/Lockhart Substation site and the proposed fiber-optic telecommunications study area. In this section, information is presented to support an assessment of the potential impacts of geologic hazards on the Project as well as the Project's potential impacts on geologic resources (e.g., soils).

The geology, soils, and seismicity analysis for the Project is described in Department of Energy (DOE) EA Section 3.5 (p. 3.5-1 et seq.) and Appendix K, as well as in the following California Energy Commission (CEC) analyses: CEC Commission Decision Section VI(B) *Soil and Water Resources* (p. 306 et seq.) and Section VI(D), *Geologic and Paleontological Resources* (p. 420 et seq.); CEC Staff Assessment Section 6.2, *Geology and Paleontology* (p. 6.2-1 et seq.); and CEC SSA Part C Appendix A Section 3.4, *Geology and Paleontology* (p. A-31 et seq.). These sections

and other portions of the DOE and CEC analyses cited below are incorporated by reference into this analysis. A summary of the local geology and geologic and seismic hazards is provided here.

Local Geology

The Project is located in the central Mojave Desert, which is part of the greater Mojave Desert Geomorphic Province. The Mojave Desert is one of 11 geomorphic provinces recognized in California. Each province displays unique, defining features based on geology, faults, topographic relief, and climate. The Mojave Desert Province is characterized by broad alluvial basins of Cenozoic sedimentary and volcanic materials overlying older plutonic and metamorphic rocks. This province lies between the northeast-trending Garlock Fault on the north and the northwest-trending San Andreas Fault on the south. Several smaller northwest-trending faults are present within the province, including the Lenwood-Lockhart-Old Woman Springs Fault, located approximately 0.5 mile southwest of the AMSP/Lockhart Substation site. The AMSP/Lockhart Substation site and interconnection are located in the alluvial-filled basin of the Harper Valley. The ground surface in this region generally slopes gently downward in a northeast direction. Surface water in Harper Valley drains to Harper Lake; however, Harper Lake is generally a dry lake bed. At the solar plant site, surface drainage is by sheetflow runoff toward Harper Lake to the northeast (DOE EA Section 3.5.2, p. 3.5-1 et seq.).

Soils

Soil resources for the Project site are described in detail in DOE EA Section 3.5.2 (pp. 3.5-6 to 3.5-8) and Appendix K, as well as in CEC Staff Assessment Section 6.2, *Geology and Paleontology* (p. 6.2-4 to 6.2-5). Soils in the Mojave Desert are shallow, deep, or very deep and are well drained to excessively drained. The surface layer ranges from sand to clay loam. Sandy surface layers are highly susceptible to blowing, shallow soil depth, and low available water capacity and have a hazard of erosion due to slopes and insufficient plant cover. The surface material over the entire Project site is unconsolidated, undissected alluvial sediments of Holocene age, which consist of loose to slightly indurated beds of gravel, sand and silt. Because most of the proposed site was once tilled for agricultural purposes, the upper 1 to 2 feet of the surface is disturbed.

The northeasterly portion of the AMSP/Lockhart Substation site is located near the southwest portion of the dry Harper Lake, which is underlain by Holocene-age lake bed deposits. Based on a geotechnical subsurface exploration, the lake bed deposits generally consist of damp to saturated, loose to medium dense silt and sand, and soft to firm clay (DOE EA Appendix K). Also, based on the geotechnical exploration, remaining portions of the site are underlain by thin surficial deposits, such as alluvial soils which are, in turn, underlain by older alluvial deposits at shallow depths. The older alluvial deposits were reported as generally consisting of damp to saturated, loose to very dense, silty and clayey fine to coarse sand with occasional layers of gravel, silt and clay, and wet hard, fine sandy and silty clay. Some layers of caliche consisting of strongly cemented layers of sand and silt were also reported.

The remaining majority of the AMSP/Lockhart Substation site is underlain by Cajon sand and Cajon loamy sand with Kimberlina loamy fine sand and the Norob-Halloran complex covering smaller portions of the site. The parent material for the on-site soils is alluvium, mostly derived from granitic rock sources. The dominant soil types on the site are classified as "somewhat excessively drained" (DOE EA, p. 3.5-6). In the absence of irrigation, soils on the AMSP/Lockhart Substation site are classified as having a very severe limitation that make them unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland or wildlife habitat. Irrigated, most of these soils are classified as having a severe limitation that restricts the choice of plants or requires very careful management or both, with the hazard of erosion being a central issue.

Faults and Seismicity

Faults relevant to the Project and local seismicity are summarized here and are described in detail in DOE EA Section 3.5.2 (pp. 3.5-3 to 3.5-4) and in DOE EA Appendix K; as well as CEC Commission Decision Section VI(D), *Geologic and Paleontological Resources,* subsection 2 (p. 421 et seq.), and CEC Staff Assessment Section 6.2, *Geology and Paleontology* (pp. 6.2-9 to 6.2-11). The AMSP/Lockhart Substation site, interconnection, and telecommunications system are located in seismically active Southern California, a region that experiences numerous earthquakes. Also, a portion of the AMSP/Lockhart Substation site is located within a State of California Alquist-Priolo Earthquake Fault Zone (AP Zone). The active Lenwood-Lockhart-Old Woman Springs Fault is located approximately 2,300 feet southwest of the AMSP/Lockhart Substation site. DOE EA Table 3.5-1 (p. 3.5-3) and CEC Staff Assessment (p. 6.2-10), Geology and Paleontology Table 2 list selected principal known active faults within a radius of approximately 60 miles from the AMSP/Lockhart Substation site, the approximate fault-to-site distances, the assigned maximum moment magnitude earthquake, the estimated peak site acceleration, as well as the fault type and class (relating to potential earthquake magnitude).

Since an AP Zone had been mapped on the AMSP/Lockhart Substation site, a geologic evaluation was conducted to ascertain the actual presence and location of the fault trace so that appropriate setbacks could be established for human occupancy structures. Human occupancy structures are defined as any structures that are used or intended to be used for supporting or sheltering any use or occupancy that is expected to have a human occupancy rate of more than 2,000 person-hours per year. The AP Zone mapping of the trace of the unnamed fault was based on aligned tonal lineaments, a subtle scarp in Holocene alluvium, and the linear western shoreline of Harper Lake. These physiographic features are suggestive of faulting but not conclusive. To physically assess the mapped presence of the fault, an exploratory trench was excavated across the AP Zone (DOE EA Appendix K). After detailed geologic logging of the trench walls, it was concluded that there was no evidence for the presence of active faulting within the AP Zone where the AMSP and Lockhart Substation and interconnection are located (DOE EA Appendix K). A site-specific geologic study was not prepared for the proposed fiber-optic telecommunications system; no human occupancy structures are proposed for that element of the Project (DOE EA, p. 3.5-4).

Geologic and Seismic Hazards

Seismic hazards related to earthquakes and ground shaking include ground rupture, slope stability, liquefaction, and subsidence. Geologic and seismic hazards relating to the Project site are discussed in detail in DOE EA Section 3.5.2 (p. 3.5-1 et seq.) and in CEC Staff Assessment Section 6.2 (p. 6.2-8 et seq.).

Seismic Ground Shaking

Southern California is an actively seismic area and, therefore, the Project region is subjected to ground shaking from movement along one or more active faults over time. According to a probabilistic seismic hazard model for California, peak horizontal ground accelerations having a 10 percent probability of exceedance within 50 years can be estimated to be approximately 0.3 g (30 percent of gravity), which is considered a low to moderate probability when compared to some of the more seismically active areas of California (DOE EA, p. 3.5-4). Historical earthquakes of magnitude 6.0 or greater with epicenters within approximately 60 miles of the study area are shown in Table 3.5-2 of DOE EA Section 3.5.2 (p. 3.5-5). Other notable earthquakes that occurred in the Mojave Desert, but with epicenters more than 100 km from the AMSP/Lockhart Substation site, include the Landers Earthquake in 1992 with a magnitude of 7.3 and the Hector Mine Earthquake in 1999 with a magnitude of 7.1.

Liquefaction

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay contents of less than approximately 35 percent and nonplastic silts located below the water table undergo rapid loss of shear strength when subjected to strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to a rapid rise in pore water pressure (i.e., pressure of groundwater held within rock gaps) and causes the soil to behave as a fluid for a short period of time. Liquefaction is generally known to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. The potential for liquefaction of strata deeper than approximately 50 feet below the ground surface is considered negligible due to the increased confining pressure and because geologic strata at this depth are generally too compact to liquefy.

Liquefaction hazards relevant to the Project are summarized here and described in detail in DOE EA Section 3.5.2 (p. 3.5-5) and Appendix K; as well as in CEC Staff Assessment Section 6.2 (p. 6.2-12). As part of the geotechnical subsurface evaluation for the AMSP/Lockhart Substation site, an analysis was made of the liquefaction potential of the subsurface soils at the proposed Alpha and Beta power blocks where perched groundwater was encountered with an assumed depth of 27 feet (DOE EA, Appendix K). The liquefaction analysis indicated that minor zones within the medium-dense granular soil layers occurring below the assumed groundwater level, and up to a depth of 37 feet below the ground surface, are susceptible to liquefaction.

Lateral Spreading

Lateral spreading potential on the proposed AMSP/Lockhart Substation site was addressed in a geotechnical report (DOE EA Appendix K) and described in CEC Staff Assessment Section 6.2 (p. 6.2-12). Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope, such as a nearby steep hillside or deeply eroded stream bank. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. The site may be subject to minor liquefaction-induced settlement.

Dynamic Compaction

Dynamic Compaction potential on the AMSP/Lockhart Substation site was addressed in a geotechnical report prepared for the AMSP (DOE EA Appendix K) and described in CEC Staff Assessment Section 6.2 (p. 6.2-12). Dynamic compaction of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume, as the soil grains tend to rearrange into a more dense state (an increase is soil density). The decrease in volume can result in settlement of overlying structural improvements. The site specific geotechnical evaluation indicates there would be a potential for minor and localized dynamic compaction resulting from liquefaction during an earthquake (DOE EA Appendix K).

Erosion

Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice and by downward or downslope movement in response to gravity. While runoff and erosion behavior can be estimated from mapped soil series, the actual susceptibility to erosion may vary based on site-specific conditions, and how storm water runoff is managed. The possibility of substantial and accelerated erosion is discussed in detail in DOE EA Section 3.5.2 (p. 3.5-5) and Appendix K. Due to generally flat terrain, the AMSP/Lockhart Substation site is not prone to significant erosion from water; however, the soils in this part of the Mojave Desert are classified as being highly susceptible to wind erosion (DOE EA, p. 3.5-5).

Foundation and Underground Utility Constraints

Problematic soils, such as those that are expansive or corrosive, can damage structures and buried utilities and increase maintenance requirements. Various soil constraints are addressed below.

Expansive Soils

Expansive soils are characterized by their ability to undergo significant volume change (i.e., to shrink and swell) due to variations in moisture content. Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater.[1] Expansive soils are typically very fine grained and have a high to very high percentage of clay. Expansion and

[1] Perched groundwater is a local saturated zone above the water table that typically exists above an impervious layer (such as clay) of limited extent.

contraction of expansive soils in response to changes in moisture content can lead to differential and cyclical movements that can cause damage and/or distress to structures and equipment. Due to the predominately granular nature of the older alluvial deposits that underlie the majority of the AMSP/Lockhart Substation site, the potential for significant amounts of expansive soils is considered very low (DOE EA, p.3.5-8; CEC Staff Assessment, p. 6.2-13).

Collapsible Soils

Soil collapse, or hydro-consolidation, occurs when soils undergo a rearrangement of their grains and a loss of cementation, resulting in substantial and rapid settlement under relatively low loads. This phenomenon typically occurs in recently deposited Holocene soils in a dry or semiarid environment, including eolian (wind blown) sands and alluvial fan and mudflow sediments deposited during flash floods. The combination of weight from a building or other structure, and an increase in surface water infiltration (such as from irrigation or a rise in the groundwater table) can initiate settlement and cause structural foundations and walls to crack. Based on the geotechnical subsurface evaluation performed for the AMSP/Lockhart Substation site, except for minor areas in the vicinity of Harper Lake, most of the site is underlain by "older alluvium." Older alluvium consists of alluvial deposits that are older than recently deposited Holocene alluvium and as such are more consolidated and less prone to soil collapse (DOE EA, p. 3.5-8; CEC Staff Assessment, p. 6.2-13). Additionally, collapsible soils were not encountered in the geotechnical design evaluation performed for the Project (DOE EA Appendix K).

Subsidence

Subsidence hazards are described in detail in CEC Staff Assessment Section 6.2 (p. 6.2-13). Regional ground subsidence is typically caused by petroleum or ground water withdrawal that increases the effective unit weight of the soil profile, which in turn increases the effective stress on the deeper soils. This results in consolidation or settlement of the underlying soils. No petroleum or natural gas withdrawals are taking place in the proposed site vicinity. It is not known if historic regional subsidence due to ground water withdrawal for irrigation occurred in the proposed site area. However, ground water overdraft for crop irrigation ended in 1996, and water levels within the primary aquifer beneath the site have begun to rise. Local subsidence or settlement may occur when areas containing compressible soils are subjected to foundation or fill loads. The AMSP/Lockhart Substation site-specific geotechnical evaluation (DOE EA Appendix K) considers the alluvial deposits at the surface which underlie the proposed AMSP site to be "generally compressible."

3.6.2 Regulatory Setting

Some of the applicable federal, State and local laws, ordinances, standards, and policies are described in the CEC Staff Assessment (p. 5.9-3 et seq.). Others are summarized below.

Federal

Occupational Safety and Health Administration (OSHA) Regulations

Excavation and trenching are among the most hazardous construction operations. The Occupational Safety and Health Administration's (OSHA) Excavation and Trenching standard, Title 29 of the Code of Federal Regulations (CFR), Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

State

Alquist-Priolo Earthquake Fault Zoning Act

Surface rupture is the most easily-avoided seismic hazard. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this Act, the State geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults and published maps showing these zones. Within these zones, buildings for human occupancy cannot be constructed across the surface trace of active faults. Each earthquake fault zone extends approximately 200 to 500 feet on either side of the mapped fault trace, because many active faults are complex and consist of more than one branch. There is the potential for ground surface rupture along any of the branches. The Proposed Project crosses a mapped fault zone for an unnamed fault.

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under State law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2007 CBC is based on the 2006 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments which are based on the American Society of Civil Engineers (ASCE) Minimum Design Standards 7-05. ASCE 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (such as wind loads) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy

categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E/F (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

Seismic Hazards Mapping Act

The State Department of Conservation, California Geological Survey (CGS), provides guidance with regard to seismic hazards. Under the CGS Seismic Hazards Mapping Act, seismic hazard zones are to be identified and mapped to assist local governments for planning and development purposes. The intent of the Act is to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other types of ground failure, and other hazards caused by earthquakes. CGS Special Publication 117 Guidelines for Evaluating and Mitigating Seismic Hazards in California, provides guidance for evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations (CGS, 2008). This Act would not apply to the Project because seismic hazard zones have not yet been established in San Bernardino County in the vicinity of the Project. The development of seismic hazard zones is prioritized for areas of greatest risk and population density.

Local

The AMSP/Lockhart Substation site and most of the fiber -optic routes are located in unincorporated areas of San Bernardino County. Portions of the proposed fiber-optic line also pass through the cities of Adelanto, Victorville and Barstow (DOE EA, p 3.1-7 et seq.)

San Bernardino County General Plan and Development Code

The following General Plan goals and policies relate to geologic and seismic hazards as well as soil resources present on the Project site:

> ***Safety Element Goal S.4*:** The County will minimize damage due to wind and water erosion where possible.
>
> > *Policy S 4.2*: Apply the provisions of the Revised Erosion and Sediment Control Ordinance countywide.
> >
> > *Policy S 4.3*: Tailor grading, land clearance, and grazing to prevent unnatural erosion in erosion susceptible areas.
> >
> > *Policy S 4.5*: Restrict use of off-road vehicles in areas susceptible to erosion.
>
> ***Safety Element Goal S.7*:** The County will minimize exposure to hazards and structural damage from geologic and seismic conditions.
>
> > *Policy S 7.1*: Strive to mitigate the risks from geologic hazards through a combination of engineering, construction, land use, and development standards.
> >
> > *Policy S 7.4*: Designate areas identified by the Alquist-Priolo Earthquake Fault Zoning Act (Public Resource Code, Division 2, Chapter 7.5) on the Hazard Overlay

Maps to protect occupants and structures from high level of risk caused by ground rupture during earthquake.

Policy S 7.5: Minimize damage cause by liquefaction, which can cause devastating structural damage and a high potential for saturation exists when the groundwater level is within the upper 50 feet of alluvial material.

City of Adelanto General Plan/Zoning

The following General Plan goal and policies relate to geologic and seismic hazards as well as soil resources present on the Project site:

***Goal – Safety 2*:** To minimize potential hazards to public health, safety, and the well being of the community resulting from natural or man-made hazards.

Policy – Safety 1.2: The City will ensure that all appropriate construction and safety standards are incorporated into all new developments.

Policy – Safety 1.10: Any development which is proposed in the Mojave Corridor (an area susceptible to liquefaction) will be required to complete a site specific geologic study.

Policy – Safety 1.11: The City will require all proposed developments to submit a soils and geologic report prepared by a certified geologist which will include mitigation if any geologic hazards are identified.

City of Barstow General Plan/Zoning

The following General Plan goals and policies relate to geologic and seismic hazards as well as soil resources present on the Project site:

***Goal III.1*:** Carefully evaluate and regulate development in areas subject to natural or man-made hazards.

Policy III.1.1: The City shall require detailed expert study and evaluation of all potentially hazardous areas within a possible development area, as well as for all areas which could impact a development prior to development. The cost of such studies shall be born by those proposing the subject development.

Policy III.1.7: During permit processing of new construction projects, the Planning Department will provide special consideration to the construction, design and location of critical facilities and the construction and design of buildings in areas subject to intense ground motion and liquefaction.

***Goal III.2*:** Work to ameliorate problems related to windblown sand, as well as water and related soil erosion.

Policy III.2.1: The City, in conjunction with the County Planning Department and Flood Control District, shall undertake the necessary steps to reduce damage caused by blow-sand in the Mojave River area.

Policy III.2.2: Within the designated blow-sand hazard area, the City and the County shall adopt and enforce ordinances regulating such activities as off-road vehicle use, land use and earth movement, and encroachment on the natural habitat.

Policy III.2.3: Any use within a designated blow-sand area shall be not be allowed without non-conforming or special use permits being considered and adopted by the City or County after full concurrence by the Mojave Desert Resource Conservation District. Such permits shall include consideration of erosion control measures described in the October 1973 Blow-Sand Report.

City of Victorville General Plan/Zoning

The following General Plan objective and policy relate to geologic and seismic hazards as well as soil resources present on the Project site:

***Objective #1.2*:** Identify and mitigate geologic hazards in the land use and development project planning process.

Policy 1.2.1: Require an adequate assessment of site specific geologic hazards and required mitigation measures prior to granting discretionary approval for a land use plan, development project or public infrastructure plan or project.

3.6.3 Applicant Proposed Measures

As identified in Appendix A of the CEC's June 2010 Revised Staff Assessment Part C (p. A-13 to A-14), Southern California Edison (SCE) would implement the following five Applicant Proposed Measures to avoid or reduce potential impacts related to geology, soils, and seismicity:

GEO-1: Prior to final design, investigations would be conducted to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering practices.

GEO-2: For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substations."

GEO-3: New access roads, where required, would be designed to minimize ground disturbance during grading.

GEO-4: Cut and fill slopes would be minimized by a combination of benching and following natural topography where feasible.

GEO-5: Any disturbed areas associated with temporary construction would be returned to preconstruction conditions (to the extent feasible) after the completion of project construction.

3.6.4 Environmental Impacts and Mitigation Measures

Impacts relating to the construction, operation, and maintenance of the Lockhart substation, gen-ties, distribution system, transmission and telecommunications facilities in regard to geology, soils and seismicity have been assessed previously in CEC and DOE documents including the following: DOE EA Section 3.5.3.1 (p. 3.5-8 et seq.) and Appendix K; CEC Commission Decision Section VI(D)(2) (p. 421 et seq.); CEC SSA Part C Appendix A (p. A-31 et seq.); and CEC Staff Assessment Section 6.2 (p. 6.2-6 et seq.). In each case, it is expected that environmental protection measures, design measures, and Best Management Practices (BMPs) imposed by the CEC as Conditions of Certification for the AMSP and by the DOE would occur as part of the AMSP, and so are not identified as mitigation measures for this Project. These measures are provided in the DOE EA as Appendix S.

a.i) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault: *Less than Significant Impact*

An Alquist-Priolo Earthquake Fault Zone is delineated in the northeastern part of the AMSP property. However, AP Zone designations do not apply to structures that are not proposed for human occupancy. Because none of the Project structures are proposed for human occupancy, the AP Zone does not apply to the Project. The Lenwood-Lockhart-Old Woman Springs Fault is located near the proposed AMSP/Lockhart Substation site, and so there is a moderate probability of damage from surface fault rupture on that fault as well as for lurching or cracking of the ground surface as a result earthquake shaking (DOE EA, p. 3.5-8). Routine operation and maintenance-phase inspections of the Lockhart Substation could expose people or structures to adverse effects associated with the rupture of a known earthquake fault. However, the AMSP, Lockhart Substation and other Project components would be designed and constructed to meet International Building Code/California Building Code requirements for industrial facilities and would adhere to sound professional practices and appropriate regulatory requirements related to geologic hazards (DOE EA, pp. 3.5-8, 3.5-9). For these reasons, the Project is not expected to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, and so a less-than-significant impact would result related to criterion a.i).

a.ii) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking: *Less than Significant Impact*

Southern California is an actively seismic area: the region is subject to strong ground shaking from movement along one or more of the region's active faults over time. However, the AMSP, Lockhart Substation and other Project components would be designed and constructed to meet International Building Code/California Building Code requirements for industrial facilities and would adhere to sound professional practices and appropriate regulatory requirements related to geologic hazards (DOE EA, pp. 3.5-8, 3.5-9; CEC SSA Part C Appendix A, p. A-31 et seq).

Further, additional facility design requirements would be implemented as a result of Conditions of Certification imposed by the CEC during the licensing process (see, e.g., GEN-1 and GEN-5, which are set forth in DOE EA Appendix S). Proper design in accordance with applicable requirements presented in the CEC and DOE analyses as well as the site-specific, design-level geotechnical evaluation would mitigate seismic hazards related to strong ground shaking to a less-than-significant level, in accordance with the current standards of practice.

a.iii) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction: *Less than Significant Impact*

The exposure of people and structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, is addressed in response to criteria a.i) and a.ii). This section focuses on liquefaction-related risks.

A site specific geotechnical evaluation indicated that potentially liquefiable sandy beds are present in areas of the subsurface where perched ground water is present (CEC Staff Assessment, p. 6.2-12). Therefore, there would be a potential for liquefaction-induced settlement beneath the Project site (potentially affecting all facilities) during strong seismic events, although the effects would be minor and localized. Measures to mitigate potential catastrophic damage due to liquefaction are presented in the site specific geotechnical evaluation (see DOE EA Appendix K). Liquefaction potential on the proposed Project site also is addressed in the CEC's Conditions of Certification (see GEN-1 and GEN-5, set forth in DOE EA Appendix S). Proper design in accordance with these requirements would mitigate seismic-related ground failure, including liquefaction, to a less-than-significant level.

a.iv) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides: *Less than Significant Impact*

The Project site is not considered to be within an area with the potential for permanent ground displacement due to earthquake-induced landslides because surface topography at and near the various Project elements is relatively flat, with the exception of where new poles may be installed near Kramer Hills (DOE EA, p. 3.5-4). Further, based on the topography, there are no indications of active or ancient landslides on the site, including in the Kramer Hills area that would be affected by the Project. Due to the low site gradient and the absence of topographically high ground in the site vicinity, the potential for landslide impacts to the Project are considered to be negligible (CEC Commission Decision, p. 424, Finding 5; CEC Staff Assessment, p. 6.2-13). Therefore, impacts related to landslides would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil: *Less than Significant Impact*

The soils on the Project site have a moderate to high hazard for wind erosion. The runoff designations for the soils affected during site grading are low to negligible for the dominant soil types on the AMSP/Lockhart Substation site and negligible to moderate for the other soil types. A

majority of the telecommunications system improvements consist of stringing fiber-optic cable on existing transmission line poles with limited trenching and installation of new or replacement poles in a few areas. Any construction impacts would be short-term. Examination of the soil series present in areas where poles would be installed or where the limited trenching would occur reveals that soils in these areas consist of sand and sandy loams with characteristics like those present on the Lockhart Substation site. Construction activities associated with trenching and pole installation would be localized and short term given the minimal excavation proposed. Trenches excavated for Project components would be approximately 15 inches wide and 36 inches deep and stockpiled soils would be replaced back into the trench on the same day as cable installation. Grading is not proposed for the cable-pulling activities.

Given the climatic conditions of the desert with particularly low rainfall amounts, implementation of BMPs, including temporary erosion control such as crushed rock, silt fences, and fiber rolls during construction, would limit the potential for soil loss from water erosion. See also, GEN-5 and CIVIL-1 in DOE EA Appendix S). For these reasons, and consistent with the discussion and analysis in DOE EA Section 3.5.3.1.1 (p. 3.5-8 et seq.), Project impacts relating to soil erosion or loss of top soil would be less than significant.

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 on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse: *Less than Significant Impact*

The Project would be designed and constructed to meet International Building Code/California Building Code requirements for industrial facilities and would adhere to sound professional practices and appropriate regulatory requirements related to geologic hazards (e.g., grading, slope stability). Further, the geotechnical design report prepared in 2009 (DOE EA Appendix K) addresses geotechnical issues to assist in the design and construction of the Project. Proper design in accordance with requirements presented in the site-specific, design-level geotechnical evaluation, would adequately mitigate geologic hazards to the current standards of practice. The site-specific geotechnical evaluation considers the alluvial deposits at the surface which underlie the Project site to be “generally compressible.” However, the relative density of the granular soils determined from hollow-stem auger borings indicates the materials are generally medium-dense to very dense, which would be unlikely to experience unusual levels of settlement from foundation loading. No petroleum or natural gas withdrawals are taking place in the proposed site vicinity. Ground water extraction for day-to-day site operation of the AMSP would be low and unlikely to cause localized subsidence; no extraction would be required for operation and maintenance of the Project. Therefore, significant impacts relating to subsidence resulting from petroleum, natural gas, or ground water extraction would be unlikely.

The potential for lateral spreading during seismic events would be negligible due to the low relief and very shallow slopes at the Project site surface. The site-specific geotechnical evaluation indicates there would be a potential for minor and localized dynamic compaction resulting from liquefaction during an earthquake (DOE EA Appendix K). However, as described in CEC Staff

Assessment (p. 6.2-12), dynamic compaction in dry granular soils is not indicated to be a design consideration for the Project.

For these reasons, the Project would have a less-than-significant impact relating to the construction of facilities on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site 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: *Less than Significant Impact*

The geotechnical evaluation indicates near-surface soils at the proposed site are composed of granular soils, with a low content of non-plastic fines, which are not considered to be expansive (DOE EA Appendix K). Therefore, Project impacts relating to hazards involving expansive soils are less than significant.

Ground shaking, liquefaction and soil erosion represent the main geologic hazards for the Project. As discussed above, these potential hazards would be mitigated effectively through proper facility design by incorporating recommendations contained in the geotechnical evaluation completed for the Project (DOE EA Appendix K), the AMPs identified in Section 3.6.3, and the mitigation measures and other requirements imposed by the CEC and DOE that are set forth in detail in DOE EA Appendix S. As so designed, the Project would cause a less-than-significant impact related to criterion d).

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater: *No Impact*

A septic system and on-site leach field would be used to dispose of sanitary wastewater associated with the AMSP, and the appropriate permit would be required from San Bernardino for this purpose (CEC Commission Decision, p. 2; DOE EA, p. 2-32). However, no septic tank or alternative wastewater disposal system is proposed as part of this Project. Therefore, criterion e) is not applicable to the Project, and no impact would result with respect to criterion e).

3.7 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
7. HAZARDS AND HAZARDOUS MATERIALS Would the project:				
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 which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
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 or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

3.7.1 Environmental Setting

Materials and waste may be considered hazardous if they are poisonous (toxic), can be ignited by open flame (ignitable), corrode other materials (corrosive), or react violently, explode, or generate vapors when mixed with water (reactive). The term "hazardous material" is defined in California Health and Safety Code Section 25501(o) as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment. In some cases, past industrial or commercial uses on a site can result in spills or leaks of hazardous materials and petroleum to the ground, thus resulting in soil and groundwater contamination. Federal and State laws require that soils having concentrations of contaminants such as lead, gasoline, or industrial solvents that are higher than certain acceptable levels must be handled and disposed as hazardous waste during excavation, transportation, and

disposal. The California Code of Regulations (CCR), Title 22, Section 66261.20-24 contains technical descriptions of characteristics that would cause soil to be classified as a hazardous waste. The use of hazardous materials and disposal of hazardous wastes are subject to numerous laws and regulations at all levels of government.

In addition to toxic substances, the California Public Utilities Commission (CPUC) generally provides information about electric and magnetic fields (EMF) in its environmental documents, including this IS/MND, to inform the public and decision makers; however, it does not consider EMF, in the context of CEQA, to be an environmental issue because there is no agreement among scientists that EMF creates a potential health risk and because CEQA does not define or adopt standards for defining any potential risk from EMF. The CPUC has implemented Decision D.06-01-042 requiring utilities to incorporate "low-cost" or "no-cost" measures for managing EMF from power lines up to approximately four percent of total project cost. Using the four percent benchmark, Southern California Edison (SCE) has incorporated low-cost and no-cost measures to reduce magnetic field levels along the proposed subtransmission lines. For informational purposes, additional information about EMF generated by the Project is provided as Appendix G to SCE's Application, which has been reproduced in this IS/MND in Appendix A, *Electric Magnetic Fields*.

Existing Environment

The AMSP/Lockhart Substation site, gen-ties, transmission lines, distribution system, and most of the fiber-optic routes are located in unincorporated San Bernardino County. The fiber-optic cable routes also would be partially within the cities of Barstow, Victorville, and Adelanto. Portions of the Project would be located within or adjacent to land designated as open space, agriculture, or rural residential. The Lockhart Substation site was previously used for agricultural operations and cattle ranching. Previous ancillary support uses at the site included residences for the agricultural operations staff, storage buildings for farm equipment, an aircraft hangar, and various fuel tanks for farm equipment and ranch operations. The fiber-optic lines would be routed mostly through undeveloped desert land and some developed areas with relatively few activities that could generate hazardous wastes or contaminated areas.

Phase 1 Site Assessment

A Phase I site assessment was conducted for the AMSP/Lockhart Substation site, which included interviews with regulatory agencies concerning the property, and checks of standard State and federal databases (e.g., CERCLA, etc.). The results of the Phase I site assessment are summarized in DOE EA Section 3.12, *Public Health and Safety* (see p. 3.12-5 et seq. and Appendix P). The CPUC independently reviewed the assessment, the results of which indicate that above ground and below ground fuel storage tanks previously had been removed from the Lockhart Substation site and that there may be some related minor surface ground staining at the site. No recorded spills were identified and no areas of serious environmental concern were noted on-site or on adjacent properties.

Wood Treatment Products

Any existing distribution line wood poles that would be removed or replaced under the proposed Project have likely been treated with chemicals that may include pentachlorophenol, creosote, and chromated copper arsenate. These treatment chemicals are used in pressure treated wood to protect wood from rotting due to insects and microbial agents. These chemicals, for certain uses and quantities, can be considered to be hazardous materials, which require specific handling procedures prescribed by State and federal regulations. These chemicals are typically applied to utility wood poles by the manufacturer at their facility and are left to set and dry prior to installation and/or use of the poles. Additionally, the base of some of the treated wood poles may be wrapped with copper naphthenate paper, also known as CuNap wrap.[1] This paper has been accepted as a wood preservative for several decades and has been employed in non-pressure treatments of wood and other products. Copper naphthenate is a common preservative and its use has increased recently in response to environmental concerns associated with other wood treatment products.

Schools

There are no schools within 0.25 mile of the AMSP/Lockhart Substation site. Three schools are within 0.25 mile of the proposed fiber-optic corridors. Barstow High School is located at 430 First Street in the City of Barstow, approximately 700 feet from the proposed fiber-optic line between the proposed Lockhart Substation and the Tortilla Substation (BUSD, 2010). Silverado High School is located at 14048 Cobalt Road in the City of Victorville, approximately 800 feet from the proposed fiber-optic line between the Kramer Substation and the Victor Substation (VVUHSD, 2010). Silver Valley Academy is located at 33525 Ponnay in the community of Daggett, approximately 900 feet from the proposed fiber-optic line between the Tortilla Substation and the Cool Water Substation (SVUSD, 2010). No other school sites are located or proposed within 0.25 mile of any component of the proposed Project.

Airports

At a distance of 26 miles, the Southern California Logistics Airport (SCLA), formerly George Air Force Base, is the closest airport to the Lockhart Substation site and proposed transmission line locations. However, a portion of the proposed fiber-optic line between the Kramer Substation and the Victor Substation would be located within 2 miles of the SLCA. In addition, a portion of the proposed fiber-optic line between the Kramer Substation and the Victor Substation would be located within 2 miles of the Sun Hill Ranch Airport. The Sun Hill Ranch Airport is a privately owned and operated airport on 215 acres of land. It has dirt runways, and use is minimal.

Wildland Fire Conditions

The Project would not be located in an area conducive to wildland fires due to the lack of large quantities of vegetation. Although vegetation in the Project area is sparse, it tends to be dry and represents a moderate fire hazard.

[1] CuNap wrap is a self contained delivery system for copper napthenate, the internationally recognized wood preservative that fights the damaging effects of moisture, decay, and insect attack.

3.7.2 Regulatory Setting

Environmental impacts of hazards and hazardous materials associated with the proposed Project are analyzed in Department of Energy (DOE) EA Section 3.12, *Public Health and Safety* (p. 3.12-1 et seq.). This portion of the DOE document, which describes the federal and State regulations applicable to the AMSP, is incorporated by reference. The regulations identified in the DOE EA applicable to the Project are as follows:

- Occupational Safety and Health Administration;
- Resource Conservation and Recovery Act; and
- Comprehensive Environmental Response, Compensation, and Liability Act.

Other regulations not listed in the DOE EA document but applicable to the proposed Project are described below.

Federal

Oil Pollution Prevention Rule

The U.S. Environmental Protection Agency (USEPA)'s Oil Pollution Prevention Rule became effective January 10, 1974. It was published under the authority of Section 311(j)(1)(C) of the Federal Water Pollution Control Act (Clean Water Act). The regulation is at Title 40, Code of Federal Regulations, Part 112. The prevention rule was revised on July 17, 2002. Facilities subject to the rule must prepare and implement a plan to prevent any discharge of oil into or upon navigable waters of the U.S. or ad-joining shorelines. The plan is called a Spill Prevention, Control, and Countermeasure (SPCC) Plan.

Toxic Substance Control Act

The Toxic Substances Control Act (TSCA) of 1976 was enacted by Congress to give the USEPA the ability to track the 75,000 industrial chemicals currently produced or imported into the United States. The USEPA repeatedly screens these chemicals and can require reporting or testing of those that may pose an environmental or human-health hazard. The USEPA can ban the manufacture and import of those chemicals that pose an unreasonable risk.

State

California Code of Regulations

The California Code of Regulations (CCR), Title 22, Section 66261.20-24, contains technical descriptions of characteristics that would classify waste material, including soil, as hazardous waste. When excavated, soils with concentrations of contaminants higher than certain acceptable levels must be handled and disposed as hazardous waste.

State Water Resources Control Board

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) administer the requirements of the Clean Water Act that regulate pollutant discharges into waterways of the U.S. The Lahontan RWQCB (LRWQCB) enforces site cleanup regulations for discharges that have resulted in contamination of groundwater in the Project area.

California Hazardous Materials Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act) requires that businesses that store hazardous materials on-site prepare a business plan and submit it to local health and fire departments. The business plan must include details of the facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course.

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration (Cal OSHA) regulates worker safety in the State similar to the federal OSHA. Cal OSHA has developed worker safety regulations for the safe abatement of lead-based paint and primers (Lead in Construction Standard, 8 CCR 1532.1).

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program

In January 1996, the California Environmental Protection Agency (Cal EPA) adopted regulations which implemented a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The program has six elements, including: (1) hazardous waste generators and hazardous waste on-site treatment; (2) underground storage tanks (USTs); (3) aboveground storage tanks (ASTs); (4) hazardous materials release response plans and inventories; (5) risk management and prevention programs; and (6) Unified Fire Code hazardous materials management plans and inventories. The plan is implemented at the local level and the agency responsible for implementation of the Unified Program is called the Certified Unified Program Agency (CUPA). In San Bernardino County, the San Bernardino County Fire Department Hazardous Materials is the designated CUPA.

Department of Toxic Substance Control

The Department of Toxic Substance Control (DTSC) is responsible for regulating the use, storage, transport, and disposal of hazardous substances in the State. DTSC maintains a Hazardous Waste and Substances Site List for site cleanup. This list is commonly referred to as the Cortese List. Government Code section 65962.5 requires the Cal EPA to update the Cortese List at least annually. DTSC is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List.

Hazardous Waste Management and Handling

Under the Resource Conservation and Recovery Act (RCRA), individual states may implement their own hazardous waste programs in lieu of RCRA as long as the state program is at least as stringent as federal RCRA requirements. The USEPA must approve state programs intended to implement federal regulations. In California, Cal EPA and DTSC, a department within Cal EPA, regulate the generation, transport, treatment, storage, and disposal of hazardous waste. The USEPA approved California's RCRA program, called the Hazardous Waste Control Law (HWCL), in 1992. DTSC has primary hazardous material regulatory responsibility, but can delegate enforcement responsibilities to local jurisdictions that enter into agreements with DTSC for the generation, transport, and disposal of hazardous materials under the authority of the HWCL.

The hazardous waste regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe the management of hazardous wastes; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous wastes that cannot be disposed of in ordinary landfills. Hazardous waste manifests must be retained by the generator for a minimum of three years. Hazardous waste manifests provide a description of the waste, its intended destination, and regulatory information about the waste. A copy of each manifest must be filed with the State. The generator must match copies of hazardous waste manifests with receipts from treatment, storage, and disposal facilities.

Contaminated soils and other hazardous materials removed from a site during construction or remediation may need to be handled as hazardous wastes.

Hazardous Materials Transportation

The State of California has adopted U.S. Department of Transportation (USDOT) regulations for the intrastate movement of hazardous materials; State regulations are contained in 26 CCR. In addition, the State of California regulates the transportation of hazardous waste originating in the State and passing through the State (26 CCR). Both regulatory programs apply in California.

The two State agencies with primary responsibility for enforcing federal and State regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol (CHP) and the California Department of Transportation (Caltrans). The CHP enforces hazardous materials and hazardous waste labeling and packing regulations to prevent leakage and spills of material in transit and to provide detailed information to cleanup crews in the event of an accident. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are the responsibility of the CHP, which conducts regular inspections of licensed transporters to assure regulatory compliance. Caltrans has emergency chemical spill identification teams at as many as 72 locations throughout the State that can respond quickly in the event of a spill.

Common carriers are licensed by the CHP, pursuant to California Vehicle Code Section 32000. This section requires the licensing of every motor (common) carrier who transports, for a fee, in excess of 500 pounds of hazardous materials at one time, and every carrier, if not for hire, who carries more than 1,000 pounds of hazardous material of the type requiring placards.

Every hazardous waste package type used by a hazardous materials shipper must undergo tests that imitate some of the possible rigors of travel. Every package is not put through every test. However, most packages must be able to be kept under running water for a time without leaking, dropped fully loaded onto a concrete floor, compressed from both sides for a period of time, subjected to low and high pressure, and frozen and heated alternately.

Hazardous Materials Emergency Response

Pursuant to the Emergency Services Act, California has developed an Emergency Response Plan to coordinate emergency services provided by federal, State, and local governmental agencies and private persons. The San Bernardino County Fire Department contains an Office of Emergency Services. The Office of Emergency Services (County OES) is a Division of the San Bernardino County Fire Department. County OES is responsible for disaster planning and emergency management coordination throughout the San Bernardino County Operational Area (OA) by functioning as the Lead Agency for the OA. County OES serves a County population of over 1.8 million and over 20,100 square miles. While County OES does not directly manage field operations, as does an Incident Command Post (ICP), it ensures coordination of disaster response and recovery efforts through day-to-day program management and during a disaster/emergency (SBFD, 2011).

The San Bernardino County Fire Department also contains a Hazardous Materials Division. The purpose of the Hazardous Materials Division is to protect 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 Division accomplishes this through inspection, emergency response, site remediation, and hazardous waste management services.

California Public Utilities Code

California Public Utilities Code Section 21658 prohibits structural hazards associated with utility poles and lines near airports. Should a power line be located in the vicinity of an airport or exceed 200 feet in height, a Notice of Proposed Construction or Alteration (Form 7460-1) is required by the Federal Aviation Administration (FAA) in accordance with Federal Aviation Regulation, Part 77 (Objects Affecting Navigable Airspace).

California Health and Safety Code

Chapter 6.95 of the California Health and Safety Code requires the establishment of minimum statewide standards for business and area plans relating to the handling and release or threatened release of hazardous materials.

3.7.3 Applicant Proposed Measures

As identified in CEC SSA Part C Appendix A (p. A-14 to A-15), SCE would implement the following Applicant Proposed Measures to avoid or reduce potential impacts related to hazardous materials:

HAZ-1: A Phase I Environmental Site Assessment (ESA) would be performed at each new or expanded substation location and along newly acquired transmission subtransmission line rights-of-way (ROWs).

HAZ-2: SCE would implement standard fire prevention and response practices for the construction activities.

HAZ-3: As applicable, SCE would follow fire codes per Cal Fire Power Line Fire Prevention Fire Guide requirements for vegetation clearance during construction of the project to reduce the fire hazard potential.

HAZ-4: Hazardous materials and waste handling would be managed in accordance with the following SCE plans and programs:

- *Spill Prevention, Countermeasure, and Control Plan (SPCC Plan*). In accordance with Title 40 of the CFR, Part 112, SCE would prepare a SPCC for proposed and/or expanded substations, as applicable.
- *Hazardous Materials Business Plans (HMBPs)*. Prior to operation of new or expanded substations, SCE would prepare or update and submit, in accordance with Chapter 6.95 of the California Health and Safety Code, and Title 22 CCR, an HMBP, as applicable.
- *Storm Water Pollution Prevention Plan (SWPPP)*: A project-specific construction SWPPP would be prepared and implemented prior to the start of construction of the transmission line and substation.
- *Health and Safety Program*: SCE would prepare and implement a health and safety program to address site-specific health and safety issues.
- *Hazardous Materials and Hazardous Waste Handling*: A Project-specific hazardous materials management and hazardous waste management program would be developed prior to initiation of the project. Material Safety Data Sheets would be made available to all Project workers.
- *Emergency Release Response Procedures*: An Emergency Response Plan detailing responses to releases of hazardous materials would be developed prior to construction activities. All construction personnel, including environmental monitors, would be aware of State and federal emergency response reporting guidelines.

HAZ-5: Hazardous materials would be used or stored and disposed of in accordance with federal, State, and local regulations.

HAZ-6: The substation would be grounded to limit electric shock and surges that could ignite fires.

HAZ-7: All construction and demolition waste would be removed and transported to an appropriately permitted disposal facility.

3.7.4 Environmental Impacts and Mitigation Measures

Hazardous material-related impacts of the proposed Lockhart Substation, gen-tie lines and distribution system for station light and power are analyzed in Section V(E), *Hazardous Materials Management,* of the CEC's Commission Decision (p. 193 et seq.) and in DOE EA Section 3.12.4.1.1, *AMSP/Lockhart Substation* (p. 3.12-7 et seq.). These portions of the CEC and DOE documents are incorporated by reference. It is expected that environmental protection measures, design measures, and BMPs volunteered as Applicant Proposed Measures for the Project and imposed by the CEC and DOE for the AMSP would be implemented as part of the Project, and so are not identified as mitigation measures in this IS/MND. APMs relating to hazards and hazardous materials are identified in Section 3.7.3, and the CEC and DOE measures are set forth in full in IS/MND Appendix B, Table B-2, *Agency-Imposed Measures for the Abengoa Mojave Solar Project*.

Hazardous material impacts of the proposed transmission lines are analyzed in the CEC's SSA Part C, Appendix A, Transmission System Engineering Downstream Upgrades Congestion Management/Telecommunication System Impact Analysis, Section 3.10, *Waste Management and Hazardous Materials,* (p. A-44 et seq.) and in DOE EA Section 3.12.4.1.2, *Telecommunication Lines* (p. 3.12-7 et seq.). The CEC analysis concluded that the proposed facilities and upgrades comply with all applicable laws, ordinances, regulations and standards regulating the management of hazardous wastes during construction and operation, and that the site would be managed such that contaminants would not pose a significant risk to humans or to the environment. Hazardous material impacts related to the proposed telecommunication routes are analyzed in the CEC SSA Part C Appendix A Section 3.10, *Waste Management and Hazardous Materials* (p. A-44 et seq.) and in DOE EA Section 3.12.4.1.2, *Telecommunication Lines* (p. 3.12-7 et seq.).

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *Less than Significant Impact*

Construction and operation of these interconnect facilities would generate limited amounts of certain hazardous and solid wastes. No acutely hazardous materials would be used or stored on-site during construction. Hazardous waste management plans would be in place to ensure that wastes would be managed and disposed of in accordance with all applicable regulations under RCRA and equivalent California statutes so the potential for public exposure would be minimal. Compliance with applicable laws relating to hazardous materials use, storage, and disposal would be followed. APMs and mitigation measures imposed as Conditions of Certification, including a Safety Management Program, would be implemented (CEC Commission Decision, p. 196). Consequently, the Project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This impact would be less than significant.

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. *Less than Significant Impact*

The Project would include many safety features designed to prevent and minimize impacts from the use and accidental release of hazardous materials. Areas at the substation that would be subject to potential leaks of hazardous materials would be paved and bermed. Incompatible materials would be stored in separate containment areas. Risks associated with transportation of hazardous materials and accidental releases are considered insignificant based, in part, on the Conditions of Certification that would be implemented as part of the Project (CEC Commission Decision, pp.196-197; 200-203), which include specific construction requirements to avoid or mitigate potential impacts resulting from improper waste or hazardous materials management and potential spills and leaks.

There may be some existing contamination at the Lockhart Substation site. Pursuant to CEC Conditions of Certification, if visual contamination indicators are observed during construction, the contractor would be required to stop work until the material is properly characterized and appropriate measures are taken to protect human health and the environment. A Professional Engineer or Professional Geologist shall inspect the site, determine what is required to characterize the nature and extent of contamination, and provide a report to the CPUC and DTSC with findings and recommended actions.

Conditions of Certification also require that hazardous waste handling incorporate the following: properly store, package, and label all hazardous waste; use only approved transporters; prepare hazardous waste manifests; keep detailed records; and appropriately train employees to comply with State and federal hazardous waste management requirements. Hazardous wastes that would be stored on-site would have to comply with accumulation time limits and be properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. Consequently, construction, operation and maintenance of the Project would have a less-than-significant impact related to criterion b).

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. *Less than Significant Impact*

Two schools are within 0.25 mile of the proposed fiber-optic routes: Barstow High School is located approximately 700 feet from the proposed Lockhart-Tortilla fiber-optic line, and Silverado High School is located approximately 800 feet from the proposed Kramer-Victor line. However, operations of the fiber-optic lines would emit no hazardous emissions and would require no handling of hazardous or acutely hazardous materials. Construction activities that would be associated with the fiber-optic lines would result in limited air pollutant emissions; however, activities would be linear in nature, and actual activities in the vicinity of the schools would be limited to several weeks. Given the distance of the schools from the proposed fiber-optic lines and the relatively short duration of construction activities in the vicinity of the schools, impacts to schools would be less than significant.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment. *Less than Significant Impact*

Phase I Assessments were conducted for the Lockhart Substation site, the gen-tie locations, transmission line routes, and distribution systems (see, DOE EA Section 3.12, *Public Health and Safety* (p. 3.12-5 et seq.)). There is possibly some minor surface ground staining at the Lockhart Substation site. However, no recorded spills were identified and no areas of serious environmental concern were noted on-site or on adjacent properties. Construction of the fiber-optic lines and related facilities would not require substantial excavation or other ground disturbance activities that could lead to a significant release of hazardous materials, if any are present. Therefore, it is unlikely that the Project would create a significant hazard to the public or the environment. Impacts would be less than significant.

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 or public use airport, would the project result in a safety hazard for people residing or working in the project area. *Less than Significant Impact*

The Southern California Logistics Airport (SCLA) is the closest airport to the Lockhart Substation site at a distance of approximately 26 miles. Project facilities on the AMSP site would cause no impact on SLCA or other the regional airports (CEC AFC, p. 5-10-18). A portion of the proposed Kramer-Victor fiber-optic line would be located approximately 1.25 miles from of the SLCA. The majority of the proposed line would be installed on existing power poles and all new poles would be installed no closer than 1.8 miles from the airport and would be located within existing utility ROWs. In addition, the new poles would be limited to a height of up to 50 feet. Projects that include relatively tall structures, such as the new fiber-optic support poles, within a 20,000-foot (3.79 miles) horizontal distance of an airport are required to notify the Federal Aviation Administration (FAA) of the project through a "Notice of Proposed Construction or Alteration" (Form 7640) prior to the commencement of construction activities to avoid any potential issues related to aviation safety. FAA notification of the Project would ensure that potential aviation safety-related impacts associated with the impact would be less than significant.

California Senate Bill (SB) 1462, adopted in 2005, requires the military to be notified of any land use proposal located within 1,000 feet of a military installation, within special use airspace, or beneath a low level flight path. To aid in the implementation of SB 1462, the California Office of Planning and Research drafted the R-2508 Joint Land Use Study to address land use issues for the R-2508 military range complex (R-2508 Complex). This 20,000-square-mile range complex encompasses large portions of San Bernardino County as well as Inyo, Kern and Tulare counties, and includes Edwards Air Force Base, China Lake Naval Aviation Weapons Station, and the Army's Fort Irwin National Training Center. The AMSP/Lockhart Substation site is located within the southern boundary of the "special use airspace" beneath a "low level flight path" as shown in DOE EA Figure 3.1-4. The AMSP and Lockhart Substation would not conflict with the R-2508 Joint Land Use Study related to military airspace restrictions (DOE EA, p. 3.1-20). Proposed development of the AMSP site was reviewed by NAVAIR Ranges and the U.S. Navy,

and determined unlikely to create conflicts with the military use of the airspace. Consequently, the Project would not result in a significant safety hazard related to the R-2508 Complex for people residing or working in the Project area. This impact would be less than significant.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area. *No Impact*

A portion of the proposed Kramer-Victor fiber-optic line would be located within as close as 1.2 miles to the privately owned and operated Sun Hill Ranch Airport. However, this portion of the fiber-optic line would be installed on existing poles so there would be no change that could result in an aviation safety hazard. The closest part of the line where new poles up to 50 feet tall would be required would be at a distance of approximately 5 miles from the airport. Given the distance from the new poles to the Sun Hill Ranch Airport, the Project would not cause an aviation safety hazard.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. *No Impact*

No applicable emergency response or emergency evacuation plans have been adopted for the Project area. Consequently, no impact would occur.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. *Less than Significant Impact*

The Project would not be located in an area conducive to wildland fires due to the lack of wildlands with large quantities of vegetation. However, heat or sparks from construction vehicles or equipment have the potential to ignite dry desert vegetation and cause a fire. During construction, SCE has committed to implementing APM HAZ-2, which requires the implementation of standard fire prevention and response practices for Project construction activities. Implementation of APM HAZ-2 would ensure that construction-related fire hazards would be reduced to a level that would be less than significant.

During operations, the Project could increase the risk of fires in the area because induced current on the new transmission lines could result in sparks that could reach vegetation along the transmission line corridors that could result in fire. However, the risk of ignitions and the risk of damage from a Project-related ignition are low. In addition, SCE would be required to implement State vegetation clearing requirements, including CPUC General Order 95, Public Resources Code Section 4293. Also, pursuant APM HAZ-3, SCE would follow fire codes per Cal Fire Power Line Fire Prevention Fire Guide requirements for vegetation clearance during construction of the Project to reduce the fire hazard potential. Consequently, implementation of the Project would not result in a significant risk of loss, injury, or death involving wildland fires; therefore, operational impacts would be less than significant.

3.7.5 References

Barstow Unified School District (BUSD), 2010. Schools. Available at: http://www.barstow.k12.ca.us/index.cfm?fuseaction=schools. Accessed December 8, 2010.

San Bernardino Fire Department (SBFD), 2011. Office of Emergency Services. Available at: http://www.sbcfire.org/oes/index.asp. Accessed January 24, 2011.

Silver Valley Unified School District (SVUSD), 2010. Schools. Available at: http://www.silvervalley.k12.ca.us/index.cfm?fuseaction=schools. Accessed December 8, 2010.

Victor Valley Union High School District (VVUHSD), 2010. Silverado High School. Available at: http://www.vvuhsd.org/page.cfm?p=2870. Accessed December 8, 2010.

3.8 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
8.	**GREENHOUSE GAS EMISSIONS** Would the project:				
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b)	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☒	☐	☐

3.8.1 Environmental Setting

Gases that trap heat in the atmosphere are called greenhouse gases (GHGs). The major concern with GHGs is that increases in their concentrations are causing global climate change. Global climate change is a change in the average weather on Earth that can be measured by wind patterns, storms, precipitation, and temperature. Although there is disagreement as to the rate of global climate change and the extent of the impacts attributable to human activities, most in the scientific community agree that there is a direct link between increased emissions of GHGs and long term global temperature increases. What GHGs have in common is that they allow sunlight to enter the atmosphere, but trap a portion of the outward-bound infrared radiation, which warms the air and water. The process is similar to the effect greenhouses have in raising the internal temperature, hence the name GHGs. Both natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere regulates the earth's temperature; however, emissions from human activities such as fossil fuel-based electricity production and the use of motor vehicles have elevated the concentration of GHGs in the atmosphere. It is generally believed that this elevation in the concentration of GHGs is contributing to global climate change.

The principal GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Because the different GHGs have different warming potential and CO_2 is the most common reference gas for climate change, GHG emissions are often quantified and reported as CO_2 equivalents (CO_2e). For example, SF_6 is a GHG commonly used in the utility industry as an insulating gas in circuit breakers and other electronic equipment. SF_6, while comprising a small fraction of the total GHGs emitted annually world-wide, is a much more potent GHG with 23,900 times the global warming potential as CO_2. Therefore, an emission of one metric ton of SF_6 could be reported as an emission of 23,900 metric tons CO_2e. Large emission sources are reported in million metric tons of CO_2e. (A metric ton is 1,000 kilograms; it is equal to approximately 1.1 U.S. tons and approximately 2,204.6 pounds.)

The potential impacts of Project-related GHG emissions are by nature global and cumulative. Some of the potential effects in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and

more drought years (CARB, 2009). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2001):

a) Higher maximum temperatures and more hot days over nearly all land areas;
b) Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
c) Reduced diurnal temperature range over most land areas;
d) Increase of heat index over land areas; and
e) More intense precipitation events.

Also, there are many secondary effects that are projected to result from climate change, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

The California Air Resources Board (CARB) estimated that in 2006, California produced 484 million gross metric tons of CO_2e emissions (CARB, 2009). CARB found that transportation was the source of 38 percent of the State's GHG emissions, followed by electricity generation at 22 percent, and industrial sources at 21 percent.

3.8.2 Regulatory Setting

Federal and State laws regulating GHG emissions are described in Section V(A), *Greenhouse Gas Emissions*, of the CEC Commission Decision (p. 112 et seq.) and DOE EA Section 3.3.3, *Greenhouse Gases and Global Climate Change* (p. 3.3-8 et seq.). These portions of the agencies' analyses are incorporated by reference. Regulations applicable to the Project are:

- Energy Policy Act;
- California Global Warming Solutions Act of 2006 (Assembly Bill 32);
- Renewable Portfolio Standard;
- Emissions Performance Standard; and
- Loading Order.

Other regulations applicable to the Project are described below.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, the Governor issued Executive Order S-3-05, which set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;

- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

Climate Change Scoping Plan

In December 2008, CARB approved the AB 32 Scoping Plan outlining the State's strategy to achieve the 2020 GHG emissions limit (CARB, 2009). This Scoping Plan, developed by CARB in coordination with the Climate Action Team (CAT), proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health. The measures in the Scoping Plan are anticipated to be in place by 2012. The Scoping Plan list of 39 Recommended Actions is presented in Table 3.8-1, *Recommended Actions of Climate Change Scoping Plan*.

In addition, the Scoping Plan identified challenges to meeting future electrical demand, including building transmission lines for renewables and modernizing electricity infrastructure. It states:

> Population growth in hot areas and the need to reach remote renewable generation regions both require adding electricity transmission capability. Without new transmission lines, a 33 percent target for the Renewable Portfolio Standard (RPS) is unlikely to be met. Equally important to building transmission is modernizing the transmission and electricity distribution system. Advanced control, communications, and metering technologies, as well as improvements in control of both conventional and renewable generation, can create a more reliable, resilient grid. (CARB, 2009)

CEQA Guidelines

The CEQA Guidelines have required environmental analyses of projects subject to CEQA to analyze and mitigate for impacts related to GHG emissions since March 18, 2010. CEQA Guidelines Section 15064.1 addresses the potential significance of GHG emissions by calling for a "good-faith effort" to "describe, calculate or estimate" GHG emissions. Section 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." CEQA Guidelines Section 15064(h)(3) states that a project may be found to have a less-than-significant impact related to GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions. Importantly, however, the CEQA Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

Mojave Desert Air Quality Management District

As described in Section 3.3, *Air Quality*, the Mojave Desert Air Quality Management District (MDAQMD) is the agency responsible for protecting public health and welfare through the administration of federal and State air quality laws and policies. The MDAQMD has not formally set significance thresholds for GHG emissions (De Salvio, 2011).

TABLE 3.8-1
RECOMMENDED ACTIONS OF CLIMATE CHANGE SCOPING PLAN

ID #	Sector	Strategy Name
T-1	Transportation	Pavley I and II – Light-Duty Vehicle GHG Standards
T-2	Transportation	Low Carbon Fuel Standard (Discrete Earl Action)
T-3	Transportation	Regional Transportation-Related GHG Targets
T-4	Transportation	Vehicle Efficiency Measures
T-5	Transportation	Ship Electrification at Ports (Discrete Early Action)
T-6	Transportation	Goods-movement Efficiency Measures
T-7	Transportation	Heavy Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)
T-8	Transportation	Medium and Heavy-Duty Vehicle Hybridization
T-9	Transportation	High Speed Rail
E-1	Electricity and Natural Gas	Increased Utility Energy efficiency programs ; More stringent Building and Appliance Standards
E-2	Electricity and Natural Gas	Increase Combined Heat and Power Use by 30,000 GWh
E-3	Electricity and Natural Gas	Renewables Portfolio Standard
E-4	Electricity and Natural Gas	Million Solar Roofs
CR-1	Electricity and Natural Gas	Energy Efficiency
CR-2	Electricity and Natural Gas	Solar Water Heating
GB-1	Green Buildings	Green Buildings
W-1	Water	Water Use Efficiency
W-2	Water	Water Recycling
W-3	Water	Water System Energy Efficiency
W-4	Water	Reuse Urban Runoff
W-5	Water	Increase Renewable Energy Production
W-6	Water	Public Goods Charge (Water)
I-1	Industry	Energy Efficiency and Co-benefits Audits for Large Industrial Sources
I-2	Industry	Oil and Gas Extraction GHG Emission Reduction
I-3	Industry	GHG Leak Reduction from Oil and Gas Transmission
I-4	Industry	Refinery Flare Recovery Process Improvements
I-5	Industry	Removal of Methane Exemption from Existing Refinery Regulations
RW-1	Recycling and Waste Management	Landfill Methane Control (Discrete Early Action)
RW-2	Recycling and Waste Management	Additional Reductions in Landfill Methane – Capture Improvements
RW-3	Recycling and Waste Management	High Recycling/Zero Waste
F-1	Forestry	Sustainable Forest Target
H-1	High Global Warming Potential Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)
H-2	High Global Warming Potential Gases	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)
H-3	High Global Warming Potential Gases	Reduction in Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)
H-4	High Global Warming Potential Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)
H-5	High Global Warming Potential Gases	High GWP Reductions from Mobile Sources
H-6	High Global Warming Potential Gases	High GWP Reductions from Stationary Sources
H-7	High Global Warming Potential Gases	Mitigation Fee on High GWP Gases
A-1	Agriculture	Methane Capture at Large Dairies

SOURCE: CARB, 2009.

3.8.3 Applicant Proposed Measures

No Applicant Proposed Measures have been identified by Southern California Edison (SCE) related to GHG emissions.

3.8.4 Environmental Impacts and Mitigation Measures

Impacts of the Project are analyzed in Section V(A), *Greenhouse Gas Emissions*, of the CEC's Commission Decision (p. 112 et seq.), and in DOE EA Section 3.3.3, *Greenhouse Gases and Global Climate Change* (p. 3.3-8 et seq.) and Appendix I. These portions of the CEC and DOE analyses are incorporated by reference.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? *Less than Significant Impact*

The MDAQMD currently does not have adopted GHG thresholds of significance for CEQA review projects. Therefore, as the lead agency for this project, the CPUC has elected to use an approach to the determination of significance of GHG emissions based on the GHG significance threshold adopted by the South Coast Air Quality Management District (SCAQMD) of 10,000 metric tons CO_2e per year for stationary sources.

Construction

As shown in Table 3.8-2, *Construction-Related Greenhouse Gas Emissions*, construction of the Project would generate an annual average of approximately 1,950 metric tons CO_2e during the 26-month construction period, which would be well below the significance threshold of 10,000 metric tons per year (see also, DOE EA Table 3.3-4, *Summary of Annual Operational and Construction-Related Emissions of Greenhouse Gases (Carbon Dioxide Equivalent)*, p. 3.3-11, and DOE EA Appendix I). Therefore, short-term construction related impacts from the Project would be less than significant.

TABLE 3.8-2
CONSTRUCTION-RELATED GREENHOUSE GAS EMISSIONS

Source	Estimated Annual Average Emissions (metric tons CO_2e per year)
Lockhart Substation (including gen-ties and distribution system)	952
Transmission Lines	555
Telecommunication System	443
Total Construction Emissions:	***1,950***
Significance Threshold:	***10,000***

SOURCE: DOE EA Table 3.3-4, p. 3.3-11.

Operations

Operation and maintenance of the Project is expected to cause negligible (i.e., approximately 200 pounds per year) direct GHG emissions associated with emergency generator testing and use, leakage from SF_6-containing circuit breakers, and occasional exhaust emissions from maintenance vehicles and equipment. That would be well below the significance criterion of 10,000 metric tons per year (see DOE EA Appendix I, Greenhouse Gas Table 3, *Estimated AMS Potential Operating Greenhouse Gas Emissions*, p. 5.1-73). It should also be noted that the Project would link the AMSP to the grid, which would reduce the need for electricity from conventional generation facilities and avoid annual emissions of GHGs associated with traditional fossil fuel-fired facilities (DOE EA Summary, p. xviii). The CPUC concludes that operation and maintenance of the Project would cause a less-than-significant impact related to GHG emissions.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? *Less than Significant with Mitigation Incorporated*

The Project could conflict with certain GHG reduction goals set forth in AB 32, including the 39 Recommended Actions identified by CARB in its Climate Change Scoping Plan. Table 3.8-1 presents the 39 Recommended Actions identified to date by CARB in its Climate Change Scoping Plan. Of the 39 measures identified, those that would be considered to be applicable to the Project would primarily be those actions related to the Renewables Portfolio Standard (RPS) and high global warming potential gases. Consistency of the Project with these measures has been evaluated by each source-type measure below.

Scoping Plan Measure E-3: Renewables Portfolio Standard. The RPS promotes multiple objectives, including diversifying the electricity supply. Increasing the RPS to 33 percent is designed to accelerate the transformation of the electricity sector, including investment in the transmission infrastructure and system changes to allow integration of large quantities of intermittent wind and solar generation. The Project would add renewable solar-generated energy to the electricity supply; therefore, the Project would be consistent with this recommended action as well as with the legislation signed by the Governor in April requiring a State-wide renewable energy level of 33 percent by 2020.

Scoping Plan Measure H-6: High Global Warming Potential Gas Reductions from Stationary Sources – SF_6 Leak Reduction and Recycling in Electrical Applications. This measure will reduce emissions of SF_6 within the electric utility sector and at particle accelerators by requiring the use of best achievable control technology for the detection and repair of leaks and the recycling of SF_6. On February 9, 2011, the State of California Office of Administrative Law (OAL) approved 9 of the 10 proposed sections for the SF_6 regulation. The approved regulations establish maximum annual SF_6 emission rates for gas insulated switchgear, starting in 2012 at 10 percent of the owners' total equipment capacity averaged over 2011. The emission rates will steadily decline by one percent per year until 2020, at which time the maximum annual SF_6 emission rate would be set at one percent. The OAL disapproved proposed regulation section 95356 because it failed to meet the clarity standard pursuant to Government Code section 11349.1. The primary

component of Section 95356 of the proposed regulation would require gas insulated switchgear owners to annually report their SF_6 emissions and emission rate to CARB.

Utilities and other affected entities would comply by using leak detection and repair (LDAR) abatement equipment to reduce system leakage. The proposed performance standard would mandate and enhance current voluntary federal SF_6 recycling standards. The proposed Lockhart Substation would include installation of new circuit breakers that would contain SF_6. Pursuant to Mitigation Measure CPUC-GHG-1 (see below), SCE would be required to install circuit breakers with low SF_6 leak rates and monitor SF_6-containing circuit breakers consistent with the intent of Scoping Plan Measure H-6. Implementation of Mitigation Measure CPUC-GHG-1 would ensure that the Project would not conflict with the intent of Measure H-6.

> **Mitigation Measure CPUC-GHG-1: Low SF_6 Leak Rate Circuit Breakers and Monitoring.** The Applicant shall ensure that the new circuit breakers installed at the Lockhart Substation have guaranteed SF_6 leak rates of 0.5 percent by volume or less. The Applicant shall provide CPUC with documentation of compliance, such as specification sheets, prior to installation of the circuit breakers. In addition, the Applicant shall annually monitor the SF_6-containing circuit breakers at the substation for the detection and repair of leaks. The Applicant shall annually report its Lockhart Substation-related SF_6 emissions to the CPUC until a regulation is approved by the OAL that approves a regulation requiring annual reporting of SF_6 emissions to CARB.

Significance after Mitigation: Less than Significant.

3.8.5 References

CARB, 2009. *California Greenhouse Gas Inventory for 2000-2006 – Summary by IPCC Category*. Available at: (http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_ipcc_00-08_sum_2010-05-12.pdf). Last updated Friday May 12, 2010. Accessed December 15, 2010.

De Salvio, 2011. Mojave Desert Air Quality Management District. Personal communication with Alan De Salvio. January 24, 2011.

Intergovernmental Panel on Climate Change (IPCC), 2001. *Climate Change 2001: Working Group I: The Scientific Basis*, Section F.5, Table 4; http://www.grida.no/climate/ipcc%5Ftar/wg1/032.htm#f5, accessed December 15, 2010.

3.9 Hydrology and Water Quality

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
9. HYDROLOGY AND WATER QUALITY— Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

3.9.1 Environmental Setting

Information and analysis about hydrology and water quality are provided in California Energy Commission (CEC) Commission Decision Section VI(B), *Soil and Water Resources* (p. 306 et seq.), CEC SSA Part C Appendix A Section 3.8 (p. A-40 et seq.), CEC SSA Part B (p. 5.9 et seq.), and CEC Staff Assessment (p. 5.9-1 et seq.). Information and analysis about hydrology and water quality also are provided in Department of Energy (DOE) EA Section 3.7, Water Resources (p. 3.7-1) and Appendix E. These sections and others cited below have been independently

reviewed by the CPUC and are incorporated by reference. Specifically, the regional and local environmental setting related to hydrology and water quality is described in DOE EA Section 3.7.2, *Affected Environment* (p. 3.7-3 et seq.) and in the Hydrology Study prepared for the Mojave Solar Project by Merrell-Johnson Engineering, Inc., which is included in the DOE EA in Appendix E. Resources addressed include surface waters, wetlands, floodplains, jurisdictional waters of the United States, Waters of the State, and groundwater.

Surface Water Hydrology and Regional Drainage

The reader is referred to DOE EA Section 3.7.2.1 (p. 3.7-3 et seq). The reader also is referred to the CEC Commission Decision (p. 308) relating to the absence of surface waters within the AMSP site boundary, and to page 309 and following relating to stormwater runoff, drainage and wastewater management for the AMSP.

Wetlands

The reader is referred to DOE EA Section 3.7.2.2 (p. 3.7-4 et seq.). The reader also is referred to the CEC Commission Decision (p. 308) and CEC SSA Part B (p. 5.9-10) relating to the closest surface water feature to the AMSP site – an artificially-maintained marsh known as the Harper Dry Lake Wetlands located about 1 mile north of the AMSP site. The proposed fiber-optic routes will not cross wetland habitats (DOE EA, p. 3.7-4).

Floodplains

The reader is referred to DOE EA Section 3.7.2.3 (p. 3.7-7) and to CEC SSA Part C Appendix A (p. A-40). (DOE EA, Section 3.7.2.3, p. 3.7-4 et seq.). The AMSP/Lockhart Substation site is not located within a designated 100-year floodplain. One segment of the proposed Lockhart-Tortilla fiber-optic route would cross a Federal Emergency Management Agency (FEMA)-designated 100-year floodplain: this segment would cross over the Mojave River, which falls within a 100-year flood zone (see DOE EA Appendix E Figure E-1). The southern portion of the Kramer-Victor fiber-optic route traverses near but not within the limits of another 100-year flood plain (see DOE EA Appendix E Figure E-2).

Waters of the United States

The reader is referred to DOE EA Section 3.7.2.4 (p. 3.7-7 et seq.). The United States Army Corps of Engineers (USACE) has determined that there are no waters of the U.S. present on the AMSP/Lockhart Substation site (DOE EA, p. 3.7-7). Regarding the proposed fiber-optic routes, a wetlands delineation prepared by AECOM ecologists identified the collective area of potential jurisdictional waters of the U.S. (as well as state waters) as 20.44 acres. This represents the total area within the fiber-optic/transmission line corridor. An official determination of absence or presence (including final acreages) of jurisdictional waters of the U.S. will be based on the USACE/USEPA jurisdictional determination process (DOE EA, p. 3.7-7 et seq.).

Waters of the State

The reader is referred to DOE EA Section 3.7.2.5 (p. 3.7-8) and CEC SSA Part C Appendix A (p. A-40). The AMSP/Lockhart Substation site does not include any features that could be considered to be Waters of the State (DOE EA, p. 3.7-8). By contrast, the collective area of potential jurisdictional waters of the State is 35.4 acres (subsumed within that acreage value is 20.44 acres of waters of the U.S.), including the total area within the fiber-optic and transmission line corridor. An official determination of absence or presence (including final acreages) of jurisdictional waters of the State will be based on the CDFG Streambed Alteration Application review process (DOE EA, p. 3.7-8).

Groundwater

The reader is referred to DOE EA Section 3.7.2.6, p. 3.7-8 et seq.; and DOE EA Figure 3.7-1, *Harper Valley Groundwater Basin*, Figure 3.7-3, *Groundwater Flow (2004)*, Figure 3.7-4, *Groundwater Flow (2008)*, and Figure 3.7-6, *Groundwater Quality*). The reader also is referred to the CEC Commission Decision (p. 307 et seq.) concerning the groundwater basin, supply, historical consumption, depth to aquifer, and other details. See also, CEC SSA Part B (p. 5.9-7 et seq.) relating to the Harper Valley Groundwater Basin and groundwater consumption and recharge. Groundwater rights and allocations are not a CEQA issue, but are described for the AMSP in the CEC Commission Decision (p. 311 et seq.).

3.9.2 Regulatory Setting

The regulatory framework governing hydrology and water quality is described in DOE EA Section 3.7.1 and Appendix E. It also is described in the CEC Staff Assessment on page 5.9-3 and following and in Soil & Water Table 1 (p. 5.9-4 et seq.) and in CEC SSA Part B (p. 5.9-3 et seq.). These sections identify the federal, State and County of San Bernardino laws, ordinances, regulations and standards applicable to resources including surface water, wetlands, floodplains, waters of the United States, waters of the State, and groundwater. These descriptions of the regulatory framework are incorporated by reference.

Other provisions of local law, including General Plan and Municipal Code provisions of the cities of Adelanto, Barstow and Victorville, also would apply to the segments of the Project that would be developed within those jurisdictions. Applicable provisions of these local laws are summarized below.

City of Adelanto

Relevant City of Adelanto 1994 General Plan policies include:

> *WQ 1.3*: The City will cooperate with all federal, State and County agencies, as well as local jurisdictions regarding the maintenance and improvement of both the quantity and the quality regional water resources.

> *WQ 1.4*: The City will follow guidelines established by the State Water Quality Control Board, Lohantan Region regarding water quality issues, especially as they relate to the implementation of sewage systems and facilities.
>
> *WQ 1.6*: Require all new industrial developments to provide a comprehensive storm water runoff plan (NPDES) which increase potential contamination of drainageways and the ground water resources.

The City of Adelanto has an Erosion and Sediment Control Ordinance. Chapter 17.93 of the Adelanto Municipal Code states that no land clearing or grading shall occur unless it is in compliance with an approved Soil Erosion and Sediment Control Plan and/or Permit. A Soil Erosion and Sediment Control Plan shall be submitted and approved prior to the issuance of building permits, soil erosion and sediment control permits, grading permits or any other permit where erosion can reasonably be expected to occur. Additionally, construction runoff shall be properly controlled to prevent erosion. Erosion control and surface flow containment facilities shall be constructed and maintained to prevent discharge of sediment into surface waters or storm drainage systems.

City of Barstow

Relevant policies of the City of Barstow's 1997 General Plan include:

> *Policy II.1.2*: The City shall encourage all special districts, as well as county, State and Federal agencies to protect the remaining natural watershed (including but not limited to, drainage beds and water recharge areas) by ensuring maximum recovery of natural groundwater supplies and plant and animal communities by recharging the Mojave River by whatever means available.
>
> *Policy III.1.5*: All relevant policies and procedures shall be strictly enforced by the City in flood hazard areas which are identified by the Federal Emergency Management Agency.

The City of Barstow has a Floodplain Management Ordinance. Chapter 15.16 of the City of Barstow Code of Ordinances states that non-residential structures constructed in special flood hazard areas are required to be anchored, built using methods and practices that minimize flood damage, and to have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy. Additionally, structures built below the base flood elevation must be elevated or built with flood resistant materials and be flood-proofed.

City of Victorville

Applicable policies and implementation measures of the City of Victorville Development Department Planning Division's General Plan 2030 include the following:

> *Resources Policy 1.3.1*: Require new development and major redevelopment projects public and private, to prepare and implement water quality management plans that incorporate a variety of structural and nonstructural best management practices to minimize, control and filter construction site runoff and various forms of developed site urban runoff, prior to discharge to receiving waters.

Resources Policy 3.1.1: Prohibit development within flood hazard areas adjacent to the Mojave River.

Safety Policy 1.1.2: Develop and maintain strategies to restrict development in areas susceptible to flooding hazards.

Implementation Measure 1.1.2.1: Apply zoning regulations in those areas designated as Flood Plain which contain use restrictions such as prohibition of residential development and other improvements, or structures or developments which would obstruct the natural flow of floodwaters or endanger life or property.

Implementation Measure 1.1.2.2: Prohibit improvements, structures, or developments within the 100-year flood plain which would obstruct the natural flow of floodwaters or which would endanger life or property.

3.9.3 Applicant Proposed Measures

As identified in the CEC's SSA Part C Appendix A (pp. A-14, A-15), Southern California Edison (SCE) would implement the following Applicant Proposed Measures to avoid or reduce potential impacts related to hydrology and water quality:

HYDRO-1: Construction equipment would be kept out of flowing stream channels as feasible.

HYDRO-2L: Towers would be located to avoid active drainage channels, especially downstream of steep hill slope areas, to minimize the potential for damage.

3.9.4 Environmental Impacts and Mitigation Measures

Potential impacts relating to hydrology and water quality associated with the construction, operation, and maintenance of the AMSP and Project are analyzed in Section VI(B) *Soil and Water Resources* (p.306 et seq.), of the CEC's Commission Decision; the CEC Staff Assessment Section 5.9 (p. 5.9-13 to 5.9-78), and CEC SSA Part C Appendix A Section 3.8, *Soil and Water Resources* (p. A-40 et seq.). They also are analyzed in DOE EA Section 3.7.3, *Environmental Consequences* (p. 3.7-14 et seq.; see also, DOE EA Appendix E). Short- and long-term impacts relating to the construction and operation of the Lockhart substation, gen-ties, distribution system, transmission and telecommunications facilities in regards to hydrology and water quality have been assessed previously in CEC and DOE documents. In each case, it is assumed that environmental protection measures, design measures, and Best Management Practices (BMPs) imposed by the CEC as Conditions of Certification for the AMSP and by the DOE would occur as part of the Project, and so are not identified as mitigation measures for this Project. These measures are provided in IS/MND Appendix B, Table B-2, *Agency-Imposed Measures for the Abengoa Mojave Solar Project*.

a) Violate any water quality standards or waste discharge requirements? *Less than Significant Impact*

The AMSP would be subject to the SWPPP, construction storm water permit, and industrial stormwater permit issued by the Lahontan RWQCB and also would comply with the Lahontan RWQCB Waste Discharge Requirements for storm water management system on the Lockhart Substation site (DOE EA, p. 3.7-26). Compliance with the terms and conditions associated with these approvals, including standard BMPs, would assure no violation of any water quality standards or waste discharge requirements on the AMSP/Lockhart Substation site.

A separate SWPPP (discharge of storm water), Notice of Intent for construction storm water permit, and Waste Discharge Requirements may be required for the proposed fiber-optic communication system (DOE EA, p. 2-31). Short-term construction activities associated with the trenching would be localized and short term given the minimal excavation proposed and limited distance for trenches. Trenches would be approximately 15 inches wide and 36 inches deep and stockpiled soils would be replaced back into the trench on the same day as cable installation. Debris and runoff from these activities are not anticipated. Typical BMPs (as required by the SWPPP) would be implemented should construction occur during inclement weather, such as placing tarps over temporary stockpiles. Examples of such BMPs are detailed in CEC SSA Part C Appendix A (pp. A-41 to A-43). The CPUC assumes that SCE would comply with all requirements of applicable law, including those related to water quality standards and waste discharge requirements. Such compliance would result in a less-than-significant impact with respect to criterion a).

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? *Less than Significant Impact*

Groundwater-related impacts of the AMSP are analyzed in DOE EA Section 3.7.3.1.6 (p. 3.7.21 et seq.) and in the CEC's Commission Decision (p. 315 et seq.). Groundwater from three wells would supply AMSP/Lockhart Substation site needs, including for grading and dust suppression. Most other water would be trucked in from off-site. Construction phase water usage of the AMSP is estimated to be between 59,800 and 1,766,050 gallons per day (gpd).

As explained in the CEC Commission Decision (p. 316), all use of wells within a groundwater basin contributes toward a lowering of water levels at other well locations. The overlap of drawdown among two or more wells is called "well interference," and is considered significant when it changes conditions in and around an existing well to the point that it affects well yield. Reductions in well yield can occur as the static or pumping water level drops below the top of the well screen or the water production capacity decreases as a result of incrusting deposits clogging the well screen openings and water-bearing formation around the well screen. A loss of yield is appreciable if the well becomes incapable of meeting 1) maximum daily demand, 2) dry-season demand, or 3) annual demand. Maximum estimated hydraulic interference at positions off the

AMSP/Substation site and at a radial distance of 0.5 mile from the production wells is 5 feet (DOE EA, p. 3.7-22). This interference to potential off-site wells located as close as 0.5 mile from the AMSP supply wells is insignificant. (This conclusion is consistent with the determination reached by the DOE and the CEWC (see DOE EA, p. 3.7-22 and CEC Commission Decision, p. 317). The CEC imposed mitigation measures as Conditions of Certification to ensure that the AMSP's water use is consistent with the volume of groundwater use analyzed and that that AMSP-related pumping would not have significant adverse impacts on aquifer storage volumes or other groundwater users (CEC Commission Decision, pp. 317-18). Based on modeling of use during the operation and maintenance phase, groundwater pumping could be as high as 6,235 AF/y and not cause a simulated long-term net decline in zone storage. This volume is approximately 30 percent greater than the AMSP's proposed maximum groundwater use (CEC Commission Decision, p. 318). Construction, operation and maintenance of Project components on the AMSP/Lockhart Substation site would have a less-than-significant impact with respect to criterion b).

No groundwater sources would be affected by the construction, operation or maintenance of the proposed linear facilities, which would be installed primarily on existing poles in the utility right - of-way. Installation, operation and maintenance of new poles within the right-of-way neither would require the use of groundwater nor interfere substantially with groundwater recharge. See generally, DOE EA, p. 3.7-26. Consequently, construction, operation and maintenance of the linear facilities would have no impact related to criterion b).

c) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, in a manner that would result in substantial erosion or siltation on- or off-site? *Less than Significant Impact*

Construction, operation and maintenance of the AMSP would result in temporary and permanent changes to storm water drainage patterns at the AMSP site (CEC Commission Decision, p. 321). However, as discussed above in the context of criterion a), these potential impacts would be avoided or reduced to a less-than-significant level through the implementation of BMPs, a SWPPP, and compliance with all applicable erosion and storm water management requirements. No alteration of the course of a stream would occur, since there are no streams on the AMSP/Lockhart Substation site and because the linear facilities would span, and not require work in any stream or river. New or replacement poles for stringing the fiber-optic cable are proposed to be installed in areas with identified drainages. This also is true for the areas where trenching is proposed to install the cable in underground conduit. As with the existing transmission line poles between Lockhart Substation and the other affected substations, the fiber-optic cable would span known drainages, resulting in no direct impact to water resources. The existing transmission line spans the Mojave River and there would be no construction activities or additional impacts within the floodplain associated with the telecommunication system. Accordingly, substantial erosion or siltation is not expected to occur on- or off-site as a result of the Project. Accordingly, any impacts related to criterion c) would be less than significant.

d) Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river or, by other means, substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site? *Less than Significant Impact*

As noted above, construction, operation and maintenance of the AMSP would result in temporary and permanent changes to storm water drainage patterns at the AMSP site (CEC Commission Decision, p. 321). However, AMSP/Lockhart Substation site is not located within a designated 100-year floodplain and no construction is proposed in low-lying areas (DOE EA Section 3.7.3.1.3, p. 3.7-19). Concerning the proposed linear facilities, the existing transmission line along the Lockhart to Tortilla route spans the Mojave River 100-year floodplain where the route nears the City of Barstow. According to SCE, no surface disturbance activities (such as grading or excavation) would occur related to stringing the fiber-optic line on the existing transmission structures. Crews would access the existing transmission structures by foot or by using existing dirt access roads. No new poles would be constructed within the floodplain. There are no known floodplains associated with the ephemeral drainages that would be crossed by the fiber-optic line (DOE EA Section 3.7.3.1.3, p. 3.7-19). Given the topography of the area and the nature of the Project, construction, operation and maintenance activities would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. Consequently, a less-than-significant impact would result related to criterion d).

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? *Less than Significant Impact*

The AMSP/Lockhart Substation site is located in the arid Mojave Desert (average annual rainfall in the site vicinity is reported as less than seven inches). The existing topographic conditions of the site have an average slope of one percent (DOE EA, p. 2-14), and the runoff designations for the dominant soil types on the site soils that would be affected during site grading are low to negligible (DOE EA, p. 3.5-9). Water would be used during grading, both in the site preparation and to suppress dust; water would be applied for these purposes at a rate to minimize and control runoff (DOE EA, p. 3.5-10). The property's existing condition creates sheet drainage/runoff during infrequent large precipitation events. However, the preliminary draft Drainage, Erosion, and Sediment Control Plan provided in DOE EA Appendix E includes a comprehensive system of management controls, including site-specific BMPs, that would minimize storm water contact with contaminants and thus minimize pollutants in storm water (DOE EA, pp. 2-15, 3.5-10). The AMSP and the Lockhart Substation design would capture any site runoff in drainage channels on the site perimeter and allow this water to percolate into the groundwater table or be released in the eastern portion of the site near Harper Dry Lake (DOE EA, p. 3.1-22).

Grading is not proposed for the cable-pulling activities and no impacts to existing drainages, or surface or subsurface water sources are anticipated during the construction phase for the fiber-optic routes. Where new poles would be installed to string the fiber-optic cable and where trenching is proposed to install the cable in underground conduit, related construction activities would be localized and short term given the minimal excavation proposed. Trenches would be approximately 15 inches wide and 36 inches deep, and stockpiled soils would be replaced back

into the trench on the same day as cable installation. Debris and runoff from these activities are not anticipated (DOE EA, p. 3.5-11). Consequently, construction, operation and maintenance of the Project would not exceed the capacity of the stormwater drainage systems or provide substantial additional sources of polluted runoff. A less-than-significant impact related to criterion e) would result.

f) Otherwise substantially degrade water quality? *No Impact*

Potential water quality concerns for the Project are discussed under criteria a, c and d. No other water quality impacts of the Project are reasonably foreseeable. Consequently, there would be no impact related to criterion f).

g) Would the project place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map? *No Impact*

The Project would not involve the construction of housing, and so could not place housing within a 100-year flood hazard area. Consequently, no impact related to criterion g) would occur.

h) Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows? *No Impact*

The Project is not proposed within a 100-year or 500-year flood plain as mapped by FEMA. Consequently, no impact related to criterion h) would occur.

i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? *No Impact*

The Project would not be located within a dam inundation zone (San Bernardino County, 2011). Consequently, the Project would not expose people or structures to a significant risk of loss, injury or death involving flooding in the event of a dam or levee failure and no impact related to criterion i) would occur.

j) Would the project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow? *No Impact*

No large water bodies are located close to the Project site, and seiche or tsunami would not affect the area. In addition, the Project would be located on relatively flat ground, and so slope stability concerns, such as the potential for mudflow, are not considered a potential hazard. No impact related to criterion j) would result.

3.9.5 References

Lohantan Region Water Quality Control Board (LRWQCB), 2005. *Water Quality Control Plan for the Lahontan Region - North and South Basins*, plan effective March 31, 1995, amendments effective August 1995 through December 2005.

San Bernardino County. 2011. Hazard Overlay Maps. Available at: http://www1.sbcounty.gov/landuseservices/General%20Plan%20Update/Mapping/2-Hazard%20Overlays%20Maps/EHFHB.pdf. Accessed February 18, 2011.

3.10 Land Use and Planning

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
10.	**LAND USE AND PLANNING— Would the project:**				
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 (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

3.10.1 Environmental Setting

Considerations related to Land Use and Planning are described and analyzed in CEC Commission Decision Section VII(A) (p. 433 et seq.); CEC SSA Part B (p. 5.5-1 et seq.); Appendix A of CEC SSA Part C (p. A-33 et seq.); and CEC Staff Assessment, p. 5.5-1 et seq. Considerations related to Land Use and Planning also are described and analyzed in DOE EA Section 3.1 (p. 3.1-1 et seq.) and Appendix G. These sections are incorporated by reference.

Existing land uses in the Project area are described in the DOE EA, beginning on page 3.1-16. The AMSP/Lockhart Substation site and much of the surrounding study area, is on private, previously-disturbed fallow agricultural lands in unincorporated San Bernardino County (see also, DOE EA, p. 359). Harper Dry Lake (located approximately 1,000 feet northeast of the AMPS/Lockhart Substation site) and other BLM-administered lands surround the site. Rural residences and farms are sparsely located along Harper Lake Road south of Lockhart Road. The proposed Lockhart Substation would be located immediately south of an existing solar thermal power plant known as the Harper Lake Solar Electric Generating Station (SEGS VIII and IX) and referred to as SEGS. The structures that once comprised the town of Lockhart are now abandoned, collapsed, or in disrepair and no community facilities such as schools, stores, or recreational facilities remain. With the exception of Harper Lake Road, the roads in the vicinity of the proposed Lockhart Substation are unimproved dirt roads.

The Lockhart-to-Tortilla fiber-optic line falls within the limits of unincorporated San Bernardino County, as well as a portion of the City of Barstow for the southern portion of the route nearing the Tortilla Substation. The proposed overhead fiber-optic line between the Lockhart Substation and Harper Lake Road follows an existing utility corridor for 33-kV and 220-kV lines. Existing land uses along this stretch are similar to those described previously for the substation site: primarily open space, agriculture, and rural residential. Existing land uses adjacent to the remainder of the route include residential, retail, open space, industrial, Prime Farmland, and agriculture. The proposed fiber-optic line would be strung on existing transmission line poles

except that three poles would be replaced and limited underground conduit would be installed. The majority of the route is adjacent to open space or agricultural land uses. Residential, retail, commercial, and industrial land uses are found primarily within the limits of the City of Barstow and mostly to the south of Main Street. Some residential uses can be found scattered along State Route (SR) 58, Summerset Road, Community Road, and Lenwood Road to the north of Main Street. Residential land uses are predominant along I Street and Bonanza Road near the Tortilla Substation.

Existing land uses along the Lockhart to Kramer Substation fiber-optic line include mostly open space with limited agriculture and scattered rural residential uses. The entire route is either located within the limits of the AMSP/Lockhart Substation site or within existing utility easements. The majority of this route follows the existing Lockhart 33-kV and Coolwater–Kramer 220-kV transmission line corridors through undeveloped desert open space. As the route nears U.S. Highway 395, a mix of retail, commercial, and limited residential uses exist along the highway corridor. The intersection of SR-58 and U.S. Highway 395 includes service stations, restaurants, and other retail to serve motorists using these transportation corridors. Approximately 10 to 15 new poles would be constructed along this line within the limits of Edwards Air Force Base near U.S. Highway 395. The fiber-optic route would enter the Kramer Substation, an existing utility infrastructure feature that blends with the urban land uses at the crossroads of U.S. Highway 395 and SR-58.

Existing land use along a majority of the Kramer-to-Victor Substation fiber-optic route consists of open space and U.S. Highway 395, marked only by the presence of the three existing electric transmission line corridors, within which the fiber-optic cable is proposed. These corridors are situated in and adjacent to open space consisting of desert habitat and rolling terrain to the west. Open space abuts the highway and the cable corridor for more than half of this route's distance. As the route nears the southern half, the open space gives way to more urban land uses, including residential, retail, commercial, and light industrial. The proposed cable route passes through mixed land uses and some open space before it crosses Palmdale Road and enters the Victor Substation.

3.10.2 Regulatory Setting

The Lockhart Substation and interconnection facilities are located in an unincorporated area of San Bernardino County. The proposed fiber-optic routes are primarily within unincorporated San Bernardino County and partially within the cities of Barstow, Victorville, and Adelanto. In addition to the County and cities, the Project study area passes through or adjacent to lands under the jurisdiction of Edwards Air Force Base and the U.S. Department of the Interior, Bureau of Land Management (BLM) (DOE EA, p. 3.1.2). The reader is referred to DOE EA Figure 3.1-1, *Land Use* (p. 3.1-3), which shows existing residential uses, San Bernardino County General Plan designations, and BLM-administered lands.

Federal

Bureau of Land Management

Approximately 17 miles of the 85-mile proposed fiber-optic telecommunication network, including portions of all three of the fiber-optic routes, would cross BLM-administered public lands (DOE EA Summary, p. xv; DOE EA, p. 3.1-2). BLM lands are managed pursuant to the California Desert Conservation Area (CDCA) Plan of 1980 and various amendments to it, including the West Mojave Plan (WEMO Plan) of 2006. The CDCA Plan designates the Harper Dry Lake as an Area of Critical Environmental Concern (ACEC). The ACEC was established to protect the remnant marshes and endemic plants in this area, as well as the migratory and resident bird species that use this area. The CDCA Plan, WEMO Plan and ACEC are described in DOE EA Section 3.1.1 (p. 3.1-4).

U.S. Fish and Wildlife

The Endangered Species Act of 1973 (FESA) recognizes that endangered and threatened species of wildlife and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people. Among the purposes of this law are "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved [and] to provide a program for the conservation of such … species." Habitat Conservation Plans (HCPs) are planning documents required as part of an application for an incidental take permit. They describe the anticipated effects of the proposed taking, how such effects would be minimized or mitigated, and how the HCP would be funded (USFWS, 2009).

State

California Public Utilities Commission General Order No. 131-D

The CPUC has exclusive jurisdiction over the siting and design (including authorization of the construction, operation and maintenance) of investor-owned public utility facilities. Such projects are exempt from local land use and zoning regulations and discretionary permitting (i.e., they would not require discretionary approval from a local decision-making body such as a planning commission, county board of supervisors or city council). General Order No. 131-D, Section XIV.B requires that in locating a project "the public utility shall consult with local agencies regarding land use matters." The Applicant would be required to obtain any required non-discretionary local permit.

Natural Community Conservation Planning (NCCP) Program

The NCCP program of the California Department of Fish and Game takes an ecosystem approach to planning for the protection and perpetuation of biological diversity. The primary objective of the program is to conserve natural communities at the ecosystem level while accommodating compatible land use.

California Government Code Sections 65352, 65940 and 65944 (SB 1462)

Senate Bill 1462, passed in 2005, created a local notification process to inform the United States military of certain local land use proposals, in an effort to prevent land use conflicts between local communities and military installations and training activities. As adopted, the bill amended Government Code sections 65352, 65940 and 65944. Among other things, the law requires local governments to notify branches of the military when any development project is proposed within 1,000 feet of a military installation, within special use airspace, or beneath a low level flight path. SB 1462 is described in the DOE EA on page 3.1-7. The reader is referred to DOE EA Figure 3.1-4, *Joint Service Restricted R-2508 Complex*, which shows special use airspace and military operations areas relative to the Project area.

Local

San Bernardino County

The Lockhart Substation site and most of the fiber-optic corridors are located within unincorporated San Bernardino County. Portions of the proposed fiber-optic line pass through the city limits of Adelanto, Victorville and Barstow. The County has adopted a "one-map approach" for both the General Plan land use designations and zoning classifications. The one-map approach ensures land use consistency between the County's General Plan and its zoning code. San Bernardino County General Plan and County Code requirements related to land use and planning are described in the DOE EA on page 3.1-7 and following.

The land use and zoning designation of the AMSP/Lockhart Substation site is Rural Living (RL). Other land use designations apply to various segments of the proposed fiber-optic routes. To see where the various designations apply, the reader is referred to DOE EA Figure 3.1-1, *Land Use* (p. 3.1-3); Figures 3.1-5, *Planned Land Use – Lockhart to Tortilla* (p. 3.1-12); Figure 3.1-6, *Planned Land Use – Lockhart to Kramer* (p. 3.1-13); and Figure 3.1-7, *Planned Land Use – Kramer to Victor* (p. 3.1-14).

City of Adelanto

Within the City of Adelanto, the proposed fiber-optic line would be strung on existing poles, new poles, and installed underground in three locations. All of the proposed fiber-optic line would be located within an existing utility corridor in a developed area, mostly paralleling U.S. Highway 395 and crossing a segment of undeveloped open space between U.S. Highway 395 and the Victor Substation. The fiber-optic line would be co-located in an existing utility corridor that would traverse several zoning classifications from low-density residential to commercial, community facility, and light industrial. The City's General Plan and zoning requirements are described in the DOE EA on page 3.1-15.

City of Barstow

The fiber-optic line would be strung on existing poles within an existing utility corridor as the line enters the City of Barstow. The City's General Plan and zoning provisions are described in the DOE EA on page 3.1-16.

City of Victorville

The southern portion of the fiber-optic line and the Victor Substation are located in the City of Victorville. The City's General Plan and zoning provisions are described in the DOE EA on page 3.1-16.

3.10.3 Applicant Proposed Measures

As identified in CEC SSA Part C Appendix A (p. A-12), Southern California Edison (SCE) would implement the following Applicant Proposed Measure to avoid or reduce potential impacts related to land use and planning:

> **LU-1:** SCE shall provide 14 days of advance notice of the start of construction to property owners located within 300 feet of construction-related activities.

3.10.4 Environmental Impacts and Mitigation Measures

Environmental impacts of the proposed Lockhart Substation, gen-tie lines and distribution system for station light and power are analyzed in Section VII(A), *Land Use*, of the CEC Commission Decision (p. 433 et seq.) and in DOE EA Section 3.1.4, *Environmental Consequences* (p. 3.1-20 et seq.). See, for example, DOE EA Section 3.1.4.1.2, *Telecommunications System* (p. 3.1-22 et seq.), which analyzes in detail whether the proposed fiber-optic routes would cause a significant impact related to land use, and concludes that they would not. These and other sections of the CEC and DOE documents cited below are incorporated by reference.

a) Physically divide an established community: *No Impact*

The AMSP site is located in a rural area of unincorporated San Bernardino County. No established communities exist within the AMSP site, where the substation, gen-tie lines, distribution system and portions of the telecommunications and fiber-optic routes would be installed. Access to the privately-owned 1,765-acre property would be through the existing SR-58 and Harper Lake Road. No existing roadways or pathways would be removed from service as a result of the Project (CEC Commission Decision, p. 438 and Finding 4, p. 443; CEC Staff Assessment, p. 5.5-9). The proposed transmission line segment on the AMSP site would connect to the Applicant's existing Kramer-Cool Water 230-kV transmission line adjacent to the southern border of site, and so would not require the acquisition of any new right-of-way (CEC SSA Part B, p. 5.5-10).

Ten scattered rural residences and farms are located within a 1-mile radius of the AMSP site. However, the residences are not located within any established residential community or development (CEC Staff Assessment, p. 5.5-9). Further, the portions of the transmission and telecommunications infrastructure that would be constructed, operated and maintained beyond the AMSP boundary would use existing utility corridors through mostly rural and undeveloped areas. In locations where the lines would traverse developed areas, they would be strung on a combination of existing poles and new poles in established utility corridors. Development of the proposed system would not involve changing any existing or planned land use in the County or in the cities of Barstow, Adelanto, or Victorville (CEC SSA Part C Appendix A, p. A-34).

Consequently, the Project would not physically divide any established community, and so no impact would result with respect to this criterion a).

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect: *No Impact*

Pursuant to CPUC General Order No. 131-D, the CPUC has sole and exclusive jurisdiction over the siting and design of the Project, which means that the Project is exempt from local land use and zoning regulations and otherwise applicable discretionary permitting requirements.

Nonetheless, the CEC determined through compliance with the measures imposed as part of the licensing process that the AMSP (including the Lockhart Substation, gen-ties and distribution system) would be consistent with local planning and zoning requirements (CEC Commission Decision, p. 438 et seq.; see also, CEC SSA Part B, p. 5.5-10 et seq., including Land Use Table 2, which evaluates compliance of the AMSP with local land use laws, ordinances, regulations and standards). All Project activities would be within the AMSP site boundary and existing, off-AMSP site utility corridors. Although some farmed land would be removed from production elsewhere on the AMSP site, no agricultural or other existing land uses would be affected by the construction, operation or maintenance of the Project. The Project also would not change or interfere with existing or potential land uses elsewhere within the AMSP site boundary or within existing utility corridors, where the proposed fiber-optic cables would be installed.

San Bernardino County General Plan policies encourage the retention of existing native vegetation for new development projects to help conserve water, retain soil in place, and reduce air pollutants; however, some native vegetation would be removed during Project construction. The CEC Commission Decision granting the license to the AMSP project applicant (i.e., the permit for the AMSP) resolved any inconsistencies that otherwise could have occurred within the AMSP site with respect to San Bernardino County's General Plan goals and policies regarding vegetation clearing and retention of native vegetation and soils. No land use conflict remains.

The interconnection elements of the Project extend south of the AMSP onto BLM-administered lands and land designated by the County for resource conservation. However, the facilities would not be located within an area defined in the WEMO Plan as sensitive, and the improvements would be within and consistent with the existing utility corridor structures, line, and improvements.

The portions of the fiber-optic lines within the cities of Barstow, Adelanto and Victorville, and the proposed interconnection to the Kramer Substation would be constructed in areas with urban land uses including residential, commercial, and industrial development. Construction of the fiber-optic lines would utilize SCE's existing Victor, Roadway, Kramer, Tortilla, and Coolwater substations, as well as SCE's Barstow Service Center. The portion of the proposed fiber-optic line, including the construction of approximately 10 to 15 new poles within the limits of Edwards Air Force Base near U.S. Highway 395, would not conflict with base operations, since the poles

would be located within existing transmission line corridors and new poles would be dwarfed by the existing 500-kV and 220-kV towers along this route (DOE EA, p. 3.1-22). Because the proposed system would be located entirely within existing and established rights-of-way, it would not cause a land use or planning conflict.

Accordingly, the Project is compatible and consistent with applicable land use policies, plans, and regulations of an agency with jurisdiction over the project (DOE EA Summary, p. xix), and so no impact would result with respect to criterion b).

c) Conflict with any applicable habitat conservation plan or natural community conservation plan: *No Impact*

The AMSP site is not subject to a Habitat Conservation Plan or Natural Community Conservation Plan (CEC Commission Decision, p. 438). In addition, the proposed fiber-optic lines would not conflict with any applicable HCP or NCCP because the cable would be strung primarily on existing utility poles, or trenched for short spans (DOE EA Section 3.1.4.1.2, p. 3.1-22). Consequently, the Project would not conflict with any applicable HCP or NCCP, and so no impact would result with respect to this criterion c).

3.10.5 References

San Bernardino County, 2007. County of San Bernardino 2007 General Plan. March, 2007.

United States Fish and Wildlife Service, 2009. *Habitat Conservation Plans Under the Endangered Species Act* (July 2009).

3.11 Mineral Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
11. MINERAL RESOURCES—Would the project:				
a) 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?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒

3.11.1 Environmental Setting

Mineral resources include oil, natural gas, and metallic and non-metallic deposits. The mineral resources in San Bernardino County include extensive deposits of sand and aggregates, boron, rare earths, and salt (San Bernardino County, 2007). These deposits are an important part of the economic well-being of the County and industries outside of the County.

Mineral/Rock Resources

San Bernardino County is one of the largest mining counties in the State (State Mining and Geology Board, 2010). Its mines currently produce sand, gravel, limestone, dimension stone, cinders, fill dirt, decomposed granite, shale, clay, iron ore, rare earth elements, salt and saline compounds, borates, talc, zeolites, sericite, feldspar, gold, and silver. Of the 91 mines within the County's jurisdiction, 60 currently are active (State Mining and Geology Board, 2010).

The Surface Mining and Reclamation Act of 1975 (SMARA) requires the State Geologist to classify mineral lands in order to help identify and protect mineral resources in areas subject to urban expansion or other irreversible land use threats incompatible with mining that would preclude mineral extraction. SMARA classification activities result in the mapping of all mineral commodities within a jurisdictional area, such as a county or subset of a county, based on the California Mineral Land Classification System. Based on these classifications, the State Mining and Geology Board can designate mineral-bearing areas of statewide or regional significance (State Mining and Geology Board, 2011).

No mineral resources have been mapped near the proposed substation site. However, sand, gravel and stone deposits are extracted in the Barstow area near the proposed fiber-optic telecommunications routes. Three mineral classifications have been classified and mapped in the Barstow area: Mineral Land Classification of Concrete Aggregate Resources in the Barstow-Victorville Area, San Bernardino County, California, 1992 (Open File Report [OFR] 92-06); Mineral Land Classification of a Part of Southwestern San Bernardino County in the Barstow-Victorville Area, California, 1994 (OFR 94-04); and Mineral Land Classification of a Part of Southwestern San Bernardino County in the Barstow-Newberry Springs Area, California. Bezore,

S.P., 1997 (OFR 97-16) (State Mining and Geology Board, 2010). Although these mineral resources are mapped, no mining operations are active in this area.

Geothermal Resources

The Project area is located in San Bernardino County and is not the site of geothermal resources (California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, 2001). Geothermal fields are more typical of mountainous areas with present or former volcanic activity. The closest geothermal resource to the proposed Project is in Randsburg, California, approximately 26 miles from the proposed Lockhart-to-Kramer fiber-optic route (CEC, 2005).

Oil and Gas

According to information provided by the United States Bureau of Land Management (BLM), numerous petroleum test wells have been drilled in the West Mojave Desert since 1900. All have been abandoned (City of Victorville, 2008). Therefore, there are no known oil or gas resources on or adjacent to the proposed Project (California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, 2001).

3.11.2 Regulatory Setting

State Regulations

Surface Mining and Reclamation Act of 1975

The State regulates mining and mined lands pursuant to the Surface Mining and Reclamation Act of 1975, as amended (SMARA, Pub. Res. Code § 2710 et seq.) and its implementing regulations (14 Cal. Code Regs. § 3500et seq.). In adopting SMARA, the Legislature intended to limit new development in areas with significant mineral deposits and prevent or minimize adverse environmental effects; reclaim mined lands to a usable condition that is adaptable to alternative uses; and encourage the production and conservation of minerals while giving consideration to values relating to recreation, watershed, wildlife, range and forage, and aesthetic enjoyment (Pub. Res. Code § 2712). SMARA calls for the State geologist to classify the lands within California based on mineral resource availability. SMARA states that the extraction of minerals is essential to the continued economic well-being of the State and to the needs of society, and that reclamation of mined lands is necessary to prevent or minimize adverse effects on the environment and to protect the public health and safety. SMARA does not govern subsurface mining activities.

Local Regulations

County of San Bernardino

The County of San Bernardino General Plan (2007) recognizes the importance of mineral resources and has developed policies to protect the current and future extraction of mineral resources that are important to the County's economy while minimizing impact of this use on the public and the environment. The County has not incorporated the State Mineral Resource Zones

(MRZ) or resource sector classifications into its General Plan, because the 2008 update of MRZ and resource sector classifications were not available at the time that the General Plan was adopted in 2007. The County intends to incorporate these classifications when the General Plan is updated to protect the access and economic use of these resources (San Bernardino County, 2007).

The San Bernardino County Code of Ordinances contains a Mineral Resources (MR) Overlay Zone (County Code Ch. 82.17) that recognizes the value of mineral resources to the economic well being of the County and the needs of the society. This chapter explains that Mineral Resource Overlays are created to protect these resources for present and future extractions. Since mineral extraction must take place on the physical site where the minerals naturally occur, special controls are needed to minimize conflicts with other land uses. A Mineral Resources Overlay functions as a "holding district" since the land will be redesignated and reclaimed for other land uses when mining operations cease. Location requirements, application requirements, and development standards for these overlays are described in the Ordinance.

City of Adelanto

The Conservation and Open Space Element of the City of Adelanto's General Plan recognizes that many portions of the City have the potential for mineral resource extraction, particularly sand and gravel, but also a slight chance of oil and gas reserves. Various among the General Plan's goals, policies and implementation strategies are intended to limit development in areas where the potential for mineral resource extraction exists. See, for example, Conservation/Open Space Element Implementation Strategy NR 1.1.1, which affirms the City's commitment to identifying, conserving and protecting natural resources in the planning area that may have substantial value to residents (City of Adelanto, 1994).

Chapter 17.83 of the Adelanto Municipal Code contains the City's Surface Mining and Land Reclamation Ordinance, the intent of which is to create and maintain an effective and comprehensive surface mining and reclamation policy. The Ordinance does not apply to operations that the City determines to be of an infrequent nature and that involve only minor surface disturbance (Adelanto Municipal Code § 17.83.020(B)(7)).

City of Victorville

The Victorville General Plan's Resources Element addresses mineral resources in the City. Naturally occurring mineral resources within the Victorville Planning Area include sand, gravel or stone deposits that are suitable as sources of concrete aggregate. These resources are located primarily along the Mojave River. The Division of Mines and Geology has classified the naturally occurring sand, gravel or stone deposits in the area as follows:

> *MRZ-2a*: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. Areas classified as MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information.

Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified as MRZ-2b contain discovered mineral deposits that are significant inferred resources as determined by their lateral extension from proven deposits or their similarity to proven deposits. Further exploration work could result in upgrading these areas to MRZ-2a.

MRZ-3a: Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration work within these areas could result in the reclassification of specific localities into MRZ-2A or MRZ-2b categories.

3.11.3 Applicant Proposed Measures

SCE proposed no Applicant Proposed Measures to avoid or reduce Project-related impacts to mineral resources.

3.11.4 Environmental Impacts and Mitigation Measures

a) 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: *No Impact*

Most of San Bernardino County contains known mineral resources that would be of value to the region and the residents of the State. No known mineral resources have been identified within or adjacent to the proposed location of the substation, gen-ties and distribution system or elsewhere on the AMSP site and no economically viable mineral deposits are known to be present there (CEC Commission Decision, pp. 422, 424). Portions of the cities of Adelanto and Victorville have been classified as an area containing known mineral occurrences of undetermined mineral resource significance (MRZ-3a) based on the sand and stone deposits that have been identified there. However, there is no evidence of existing or potential mineralogical resources along the proposed linear alignments for this Project (CEC Commission Decision, p. 424). Consequently, the Project would have no impact with respect to criterion a).

b) 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: *No Impact*

The Project would not 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 because none of the land within the Project footprint has been delineated in this way. Consequently, the Project would have no impact with respect to criterion b).

3.11.5 References

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San Bernardino County Land Use Services Division (San Bernardino), 2007. *County of San Bernardino 2007 General Plan*. Available at: http://www.sbcounty.gov/ehlus/Depts/Planning/documents/FINALGeneralPlanText3-1-07_w_Images.pdf. Accessed March 31, 2011.

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3.12 Noise

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
12.	**NOISE—Would the project:**				
a)	Result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b)	Result in exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c)	Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d)	Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e)	For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☒	☐
f)	For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

3.12.1 Environmental Setting

Data and analysis relating to noise and vibration are provided in CEC Commission Decision Section VII(D) (p. 467 et seq.), CEC SSA Part A Section 5.6 (p. 5.6-1 et seq.), and in Appendix A of CEC SSA Part C Section 3.6 (p. A-35 et seq.). Data and analysis relating to noise and vibration also is provided in DOE EA Section 3.4, (p. 3.1-1 et seq.) and Appendix J. These sections are incorporated by reference.

Noise Background

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise can be defined as unwanted sound. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. Sound pressure level is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). When all the audible frequencies

of a sound are measured, a sound spectrum is plotted consisting of a range of frequency spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA).

Noise Exposure and Community Noise

An individual's noise exposure is a measure of the noise experienced by the individual over a period of time. A noise level is a measure of noise at a given instant in time. However, noise levels rarely persist consistently over a long period of time. In fact, community noise varies continuously with time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. Background noise levels change throughout a typical day, but do so gradually, corresponding with the addition and subtraction of distant noise sources and atmospheric conditions. The addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) makes community noise constantly variable throughout a day.

These successive additions of sound to the community noise environment vary the community noise level from instant to instant requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The equivalent sound level is used to describe noise over a specified period of time, in terms of a single numerical value. The L_{eq} is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max}: The instantaneous maximum noise level measured during the measurement period of interest.

L_{dn}: The energy average of the A-weighted sound levels occurring during a 24-hour period, and which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10 p.m. and seven a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- subjective effects of annoyance, nuisance, dissatisfaction;

- interference with activities such as speech, sleep, learning; and
- physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers at industrial plants often experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individuals past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way the new noise compares to the existing noise levels that one has adapted, which is referred to as the "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 0 dBA cannot be perceived;

- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response;

- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected; and

- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. The combined dBA sound level is derived by converting the two dBA levels into units of micro Pascals (µPa), combining the µPa levels, and then converting back to dBA.

Noise Attenuation

Sound level naturally decreases as one moves further away from the source. This basic attenuation rate is referred to as the geometric spreading loss. The basic rate of geometric spreading loss depends on whether a given noise source can be characterized as a point source or a line source. Point sources of noise, including stationary mobile sources such as idling vehicles or onsite construction equipment, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source. In many cases, noise attenuation from a point source increases by 1.5 dB from 6.0 dBA to 7.5 dBA for each doubling of distance due to ground absorption and reflective wave canceling (Caltrans, 1998). These factors collectively are referred to as excess ground attenuation. The basic geometric spreading loss rate is used where the ground surface between a noise source and a receiver

is reflective, such as parking lots or a smooth body of water. The excess ground attenuation rate (7.5 dBA per doubling of distance) is used where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees.

Widely distributed noises such as a street with moving vehicles (a "line" source) typically would attenuate at a lower rate of approximately 3 dBA for each doubling of distance between the source and the receiver. If the ground surface between source and receiver is absorptive rather than reflective, the nominal rate increases by 1.5 dBA to 4.5 dBA for each doubling of distance (Caltrans, 1998). Atmospheric effects, such as wind and temperature gradients, also can influence noise attenuation rates from both line and point sources of noise. However, unlike ground attenuation, atmospheric effects are constantly changing and difficult to predict.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the affect of vibration on the human body. The RMS amplitude is the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA, 2006). Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

Existing Ambient Noise Environment

The affected environment includes the vicinity around the Lockhart Substation and interconnection; and the areas along the proposed fiber-optic telecommunication lines. The locations of each of these components are shown in DOE EA Figure S-1, *Regional Vicinity Map* (p. xvi).

The area surrounding the Lockhart Substation site, including the interconnection location immediately to the south, is sparsely populated with six to eight widely separated residences located between approximately 0.5 and 1.6 miles from the site. These are the closest known residential properties. No other noise-sensitive receptors (such as schools, places of worship, or medical facilities) are located in the vicinity of the Lockhart Substation site.

The measurement locations during noise monitoring in May 2009 were chosen as they represented the nearest sensitive receptors to the proposed Lockhart Substation. Long-term noise measurements indicated a very quiet environment with few significant noise sources. The major consistent noise source in the area during the measurements was noted to be from wind effects and wind interaction with structures. Other noted noise sources included aircraft flyovers, mostly military jets, occasional sonic booms, sporadic dog barking and bird chirping, and localized events such as a lawn sprinkler or a flag flapping. Very few cars or trucks were noted on local roadways.

In the absence of the wind-induced noise, there were essentially no other significant noise sources when typical daytime activities ceased, e.g., sporadic traffic or residential air conditioners. Low noise levels in the noise environment surrounding the Lockhart Substation site are evidenced by the minimum noise levels measurement, which measured at or below 20 dBA during the late-night hours (DOE EA, p. 3.4-6).

As with the long-term measurements, the lack of roadway, railway, industrial, or even farming sources results in a quiet noise environment. Daytime noise levels were typically in the upper-40s to mid-50s dBA and were dominated by wind-induced noise. At night, the short-term measurements also demonstrated the quiet characteristics of the area with L_{eq} values in the low 20s and minimum levels in the high-teens dBA. There were no discernable noise sources at night as the SR-58 traffic and the existing SEGS plant were not audible (DOE EA, p. 3.4-6). Table 3.12-1 summarizes the ambient noise measurements near the proposed Lockhart Substation site.

TABLE 3.12-1
SUMMARY OF MEASURED NOISE LEVELS

	Measured Noise Levels, dBA	
Measurement Sites	**Average During Daytime Hours L_{eq}**	**Nighttime Hours L_{90}**
LT-1, Residence at 15563 Edie Road	49	21
LT-2, Residence at 41234 Harper Lake Road	42	27
ST-1, Residence at 15635 Lockhart Road	47	21
ST-2, Residence at 15654 Roy Road	46	21

SOURCE: CEC Commission Decision, Noise Table 1 (p. 468)

Sensitive Receptors

As described above, the area surrounding the Lockhart Substation site, including the interconnection location immediately to the south, is sparsely populated with six to eight widely separated residences. These closest known residential properties are shown in DOE EA Figure 3.4-1, *Noise Measurement Locations* (p. 3.4-7). No other noise-sensitive receptors are found in the vicinity of the Lockhart Substation site. The ambient noise measurements described above were completed near four of these sensitive receptors:

- Location LT-1 – Near a residence at 15563 Edie Road; north side of the dirt driveway; 25+ hour monitoring location.
- Location LT-2 – Near a residence at 41234 Harper Lake Road; north property/fence line; 25+ hour monitoring location.
- Location ST-1 – Near a residence at 15635 Lockhart Road; in adjacent dirt road near abandoned trailer; 15-minute samples at several times during survey period.
- Location ST-2 – Near a residence at 15654 Roy Road; represents three to four homes in cluster; 15-minute samples at several times during survey period.

Additional sensitive receptors are located in the vicinity of the proposed fiber-optic routes. The Lockhart-to-Tortilla line would be located partially within the AMSP boundary and within existing transmission line corridors all the way to the existing Tortilla Substation in the City of Barstow (DOE EA, p. 3.4-8). In the developed areas within and surrounding Barstow, there are residential areas adjacent to this route, an elementary school 0.33 mile south of the route, and a convalescent hospital approximately 0.6 mile west of the route; however, no sensitive receptors are identified directly on or adjacent to the proposed route.

The Lockhart-to-Kramer line would be located partially within the AMSP site, as well as within existing transmission line corridors all the way to Kramer Substation. Most of this utility corridor is in a remote desert area of San Bernardino County, with the exception of the far west end, which is located near sparse retail, commercial, and industrial uses in the community of Kramer Junction (DOE EA, p. 3.4-8). No sensitive receptors are located in proximity to this proposed route; the nearest sensitive receptor is the Boron Elementary School, which is located approximately 8.5 miles west of the proposed route.

The Kramer-to-Lockhart line would be located along Highway 395, partially within an undeveloped portion of San Bernardino County (DOE EA, p. 3.4-9). There are residential areas adjacent to this route, primarily in the southern one-third of the alignment as the corridor nears the City of Adelanto and the Victor Substation. The proposed route is within 0.25 mile of the St. Mary Medical Center; this is the only potentially sensitive receptor proximate to the proposed route.

3.12.2 Regulatory Setting

Federal, State, and local agencies regulate different aspects of environmental noise. Federal and State agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise in the Project area involves implementation of general plan goals and policies that identify general standards intended to guide and influence development plans and the provisions of local noise ordinances of affected jurisdictions. Applicable laws and regulations are described in DOE EA Section 3.4.1, *Methodology* (p. 3.4-2 et seq.).

Occupational Safety and Health Regulations

The Occupational Safety and Health Administration limits the noise exposure level of workers to 90 dBA, over a time-weighted average 8-hour work shift to protect hearing (29 CFR 1910.95). If workers are exposed to a time-weighted average 8-hour period above 85 dBA (i.e., the OSHA Action Level), then the regulations call for a worker hearing protection program.

The California Department of Industrial Relations, Division of Occupational Safety and Health, enforces California OSHA (Cal/OSHA) regulations (8 CCR 5095, et seq.). These State worker protection regulations are the same as the federal OSHA regulations described above. OHSA and Cal/OSHA regulations would be applicable to construction workers building the Project.

County of San Bernardino Noise Standards

Local regulation of noise in the Project area involves implementation of general plan policies that identify general standards intended to guide and influence development plans. Local regulations described in the CEC and DOE analyses referred to above include the following:

- Noise standards established in San Bernardino County Code Section 83.01.080
- Vibration standards established in the San Bernardino County Code

Regulations not identified in the CEC or DOE analyses that are applicable to the Project fiber-optic routes are described below.

City of Victorville

Chapter 13.01 of the Victorville Municipal Code, *Noise Control*, establishes criteria and standards for the regulation of noise levels within city limits to protect people from excessive levels of noise from sources including, but not limited to; persons, animals, or fowl; automobiles, motorcycles, engines, machines, or other mechanical devices; loudspeakers, musical instruments, radios, televisions, phonographs, or other amplifying devices. The Ordinance includes standards for the measurement of noise to ensure that they do not disturb and interfere with the peace, comfort or repose of the residents of the neighborhood from which the noise is emitted. However, the construction, operation, maintenance and repair of essential public works services and facilities, including utilities subject to the regulatory jurisdiction of the California Public Utilities Commission, are exempt from the Ordinance (City of Victorville Municipal Code § 13.01.060(2).

3.12.3 Applicant Proposed Measures

As identified in Appendix A of CEC SSA Part C (p. A-12), SCE would implement the following Applicant Proposed Measure to avoid or reduce potential impacts related to noise:

NOISE-1: SCE would comply with local noise ordinances

3.12.4 Environmental Impacts and Mitigation Measures

Environmental impacts of the Project are analyzed in CEC Commission Decision Section VII(D), *Noise and Vibration* (p. 467 et seq.), Appendix A of CEC SSA Part C in Section 3.6, *Noise and Vibration* (p. A-35), and DOE EA Section 3.4, *Noise* (p. 3.4-1 et seq.). These sections of the CEC and DOE analyses are incorporated by reference. It is expected that environmental protection measures, design measures, the Applicant Proposed Measure for the Project, and the BMPs imposed by the CEC and DOE for the AMSP would be implemented as part of the Project, and so are not identified as mitigation measures in this IS/MND. These measures are provided in IS/MND Appendix B, Table B-2, Agency-Imposed Measures for the Abengoa Mojave Solar Project.

a) Result in exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? *No Impact*

As part of the Project, the Applicant would comply with local noise ordinances (see APM NOISE-1, IS/MND Section 3.12.3). Therefore, Project-related noise levels would not exceed local agencies' noise standards, and so no impact would result with respect to criterion a).

b) Result in exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels? *No Impact*

Section VII(D) of the CEC Commission Decision (p. 467 et seq.) evaluates vibration-related impacts of the AMSP. In that discussion, the CEC states, "vibration may be produced as a result of construction activities such as blasting or pile driving." However, the "Applicant does not anticipate pile driving during project construction" (CEC Commission Decision, p. 469). Operation and maintenance activities also are not expected to generate vibration. Accordingly, the Project would cause no impact related to criterion b).

c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? *Less than Significant Impact*

The substation, gen-ties and distribution system would generate noise primarily from facility site construction; only minor noise would be generated by post-construction operation and maintenance activities. The Lockhart Substation site, proposed gen-ties, and distribution system would be located within the limits of the AMSP boundary, which is located in a remote area approximately 5.5 miles northeast of the intersection of SR-58 and Harper Lake Road in San Bernardino County. There are no noise-sensitive receptors located in proximity to these facilities (CEC SSA Part C Appendix A, p. A-35), and so none would be affected by permanent Project-related operation noise in this area. Project noise caused by the operation of the substation, gen-tie lines, and distribution system would not be anticipated to be substantial. Even with very low late-night ambient environments around the AMSP/Lockhart Substation site, future noise increases attributed to the AMSP and the Lockhart Substation would be less than 5 dB at the nearest residential locations because of minimal nighttime noise sources and the distance between the site and residential locations. Noise associated with operation and maintenance of the new transmission lines would be expected to be minimal and comparable to noise levels associated with existing lines within the utility corridor. The proposed fiber-optic lines would not represent substantial new noise sources and thus would not result in an adverse impact on the existing or future noise environment. Operation noise impacts would be caused by few routine maintenance trips and are expected to be negligible. The only other component of the telecommunication system that would be anticipated to generate noise would be the telecommunications room at the Tortilla Substation. The noise source associated with the telecommunications room would likely be an exterior wall-mounted air conditioning unit. These units typically generate maximum noise levels of approximately 85 dBA at 3 feet. The nearest receptor to the Tortilla Substation is the Veterans Home of California, at 100 E. Veterans Parkway, located approximately 1,100 feet to the northeast. At this distance, noise levels associated with an air conditioner would attenuate to 33 dBA or less. Additionally, the telecommunications room would be designed to orient the air

conditioning unit toward other equipment within the substation to shield surrounding properties. See CEC SSA Part C Appendix A Section 3.6, *Noise and Vibration* (p. A-35) and DOE EA Section 3.4.3.1.2, *Telecommunications System* (p. 3.4-17 et seq.).

d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? *Less than Significant Impact*

Construction of the Project would result in temporary increases in ambient noise levels in the Project vicinity above levels existing without the Project as a result of vehicle and equipment use. Construction activities for Project facilities on the AMSP site would include site grading, facility installation, paving, and landscaping.

Preparing the footings for construction of the new 220-kV transmission structures would utilize the temporary concrete batch plant proposed as part of the AMSP. If a separate concrete batch plant is located at the substation site, its installation and operation would generate temporary, short-term noise. Concrete batch plant operations generate noise levels in the range of mid-70 dBA at 100 yards, depending on design specifications of the plant. However, due to the remote location of the substation site, the concrete batch plant's construction and operation would not result in noise impacts to sensitive receptors. In addition, the batch plant's operation would be limited to weekday, daytime operation per the County Noise Ordinance. Trucks that would transport materials to the batch plant (e.g., aggregate) would generate additional noise, which could be of concern depending on the truck route. However, noise associated with the batch plant and related truck traffic for purposes of developing the transmission lines would not be located in proximity to noise-sensitive receptors.

Construction noise from the telecommunication systems would be associated with stringing cable on existing poles, trenching, and new pole construction. The Lockhart to Tortilla fiber-optic line would include approximately 31 miles of new fiber-optic cable to be installed aboveground on both existing and new poles, except for approximately 1,900 feet of cable that would be installed in both a new underground conduit along Harper Lake Road and an existing underground conduit near the Tortilla Substation. The overhead cable would require the construction of approximately 55 new poles between the Lockhart Substation and Harper Lake Road. Construction noise from stringing cable on existing poles would be less than the noise from trenching and new pole construction. Typical construction equipment for the Project is estimated to generate maximum noise levels of short duration not to exceed 90 dBA at 50 feet, or average levels of approximately 80 dBA L_{eq} at 50 feet. Although construction activities associated with the proposed Lockhart to Tortilla fiber-optic line would not be expected to violate any existing standards or regulations, construction activities would generate temporary short-term noise levels that could be a nuisance to the receptors nearest the route; however, due to the linear nature of construction activities and the associated limited duration of noise exposure to sensitive receptors, short-term impacts would not be considered significant.

The Lockhart-to-Kramer line would include approximately 18 miles of new fiber-optic cable to be installed above ground on existing and new poles, except for approximately 3,100 feet of cable

that would be installed in an underground conduit. The overhead cable at this location would require the construction of approximately 30 new poles. The majority of this line would involve stringing cable on existing overhead utility poles, limiting the construction noise impacts to stringing equipment. The majority of this alignment is within existing utility rights-of-way in remote areas away from noise sensitive receptors. Ground-disturbing activities including new trenching for underground cable and excavation for the footings of new poles would generate typical construction noise levels. The stringing and installation of fiber-optic cable on existing poles would generate lower noise levels associated with equipment and installation vehicles compared to the installation of the underground cable. Due to the long distance to the closest sensitive receptors, noise exposure at those receptors would be anticipated to be minimal. Impacts would be less than significant.

The Kramer-to-Victor fiber-optic would include approximately 36 miles of new fiber-optic cable to be installed above ground on existing and new poles, except for approximately 2,300 feet of cable that would be installed in an underground conduit within Bellflower Street and underground conduits within the Victor and Kramer substations. The overhead cable would require the construction of approximately 30 new poles along existing utility rights-of-way and along existing roadways. Construction activities for trenching for the underground cable in Bellflower Street would result in typical construction noise; however, the addition of equipment for pavement cutting could elevate noise levels by 5 to 10 dBA L_{eq} compared to other construction equipment that would be required. The stringing and installation of fiber-optic cable on existing poles would generate fairly low noise levels, as noted above. Due to the linear nature of construction activities and the associated limited duration of noise exposure to sensitive receptors, short-term impacts would not be considered significant.

Therefore, Project-related noise increases above ambient levels would be less than significant.

e) For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the project expose people residing or working in the area to excessive noise levels? *Less than Significant Impact*

The proposed substation site is not located within an airport land use plan area or within 2 miles of an airport. See, for example, the CEC Staff Assessment's discussion on pages 5.10-5 and 5.10-14, explaining that there are no airports or runways within 20,000 feet (approximately 3.7 miles) of the AMSP site boundary. The nearest airports to that boundary are Edwards Air Force Base (approximately 12 miles southwest of the AMSP site); Barstow-Daggett Airport (32 miles southeast of the AMSP site); and Southern California Logistics Airport, formerly known as George Air Force Base (27 miles south of the AMSP site) (DOE EA, pp. 104, 447).

A portion of the proposed fiber-optic line between the Kramer Substation and the Victor Substation would be located within 2 miles of the Southern California Logistics Airport and Sun Hill Ranch Airport, which is private. However, the Project would not involve the development of noise-sensitive land uses that would be exposed to excessive aircraft noise. Workers that would construct the Project would be exposed to periodic short-term aircraft overflight noise

associated with these airports; however, the average construction activity noise levels that the workers would be exposed to would be far greater than the average overflight noise levels. Therefore, the Project would cause a less than significant impact related to criterion e).

f) For a project located in the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? *Less than Significant Impact*

The closest private airport/airstrip to the proposed substation site is the Barstow Service heliport (2 miles from proposed Lockhart Substation); the next closest is the Barstow community center heliport 1.8 (2.3 miles from the substation). The closest private airport/airstrip to any of the fiber-optic routes is the Sun Hill Ranch Airport, located approximately 1 mile from the proposed Kramer-to-Victor fiber-optic line. The Depue airport is located approximately 1.4 miles from the closest fiber-optic line; and Southern California logistics airport and the IPP Adelanto heliport each is located approximately 1.9 miles from the closest fiber-optic route. However, the Project would not expose people residing or working in the project area to excessive noise levels because it would not involve the development of noise-sensitive land uses that would be exposed to excessive aircraft noise. Workers that would construct the Project would be exposed to periodic short-term aircraft overflight noise associated with this private airport; however, the average construction activity noise levels that the workers would be exposed to would be far greater than the average overflight noise levels. Therefore, the Project would cause a less than significant impact related to criterion f).

3.12.5 References

California Department of Transportation (Caltrans), 1998, *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects*, October 1998.

Federal Transit Authority (FTA), 2006. *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06. May 2006.

3.13 Population and Housing

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
13. POPULATION AND HOUSING— Would the project:				
a) 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) Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 Environmental Setting

The Project would be constructed, operated and maintained primarily in a rural, unincorporated area of San Bernardino County, generally north of the cities of Victorville and Adelanto and northwest of the City of Barstow. The proposed fiber-optic telecommunication lines would be partially within the cities of Barstow, Victorville and Adelanto (see, Figure 2-1, *Project Location and Vicinity Map*). The closest community to the proposed Lockhart Substation site is Barstow. According to the Electric Power Research Institute report entitled *Socioeconomic Impacts of Power Plants*, construction workers will commute as much as 2 hours to construction sites from their homes, rather than relocate (DOE EA Section 3.10.3.1, p. 3.10-7). Portions of San Bernardino, Los Angeles and Kern counties fall within this range, as do the various cities within these counties identified below.

Population

The population in the Project areas is described in DOE EA Section 3.10.2.1 (p. 3.10-1 et seq.). Population estimates and future population projections for the local and regional areas are summarized in Table 3.13-1. Employment data based on California Employment Development Department (EDD) information from 2009 for these areas is provided in Table 3.13-2.

TABLE 3.13-1
ESTIMATED POPULATION GROWTH, 2000 - 2030

County	2000	2010	% Change 2000 – 2010	2020	% Change 2010 – 2020	2030	% Change 2020 – 2030
San Bernardino	1,721,942	2,177,596	2.9%	2,582,777	1.6%	2,957,744	1.3%
Los Angeles	9,578,960	10,514,663	0.7%	11,214,237	0.7%	11,920,289	0.6%
Kern	665,519	871,728	3.3	1,086,113	2.5%	1,352,627	3.4%

SOURCE: DOE EA, p. 3.10-2, Table 3.10-1.

TABLE 3.13-2
EMPLOYMENT DATA – SAN BERNARDINO, LOS ANGELES AND KERN COUNTIES

	San Bernardino	Los Angeles	Kern
Employment in the Natural Resources, Mining, and Construction Industry Group (% of total employment)	43,500 (6.5%)	162,000 (3.9%)	28,200 (9.9%)
Employment in the Transportation, Warehousing, and Utilities Industry Group (% of total employment)	43,500 (6.5%)	162,000 (3.9%)	28,200 (9.9%)
Unemployment rate (all industry groups)	12.4%	10.7%	14.8%

SOURCE: DOE EA, pp. 3.10-5 and 3.10-6, Tables 3.10-4 and 3.10-5

Further, as of 2006, there were relatively high numbers of generalized workers in San Bernardino County, including construction workers (116,810), construction laborers (27,930), and carpenters (28,850). Los Angeles County had a lot of construction workers (143,280) and metal workers (54,990), and Kern County had 19,190 construction workers in 2006. Tables O-2 through O-4 of DOE EA Appendix O identify the skilled workers by craft for San Bernardino, Los Angeles and Kern counties (DOE EA, p. 3.10-6). For the Riverside-San Bernardino Metropolitan Statistical Area, the unemployment rate was 15 percent in March 2010, which was among the highest projections for any metropolitan area in the State (DOE EA, p. 3.10-7, citing a report prepared by IHS Global Insight for the United States Conference of Mayors in 2009).

Housing

Housing in the Project areas is described in DOE EA Section 3.10.2.2 (p. 3.10-3 et seq.). Housing characteristics in San Bernardino County and Project-area communities are provided in Table 3.13-3. As shown in Table 3.13-3, residential vacancy rates within a 2-hour commute distance of the Project site range from 2.6 percent in the City of Glendale to 17.1 percent in the City of Barstow. In addition to permanent housing, there is ample temporary housing in the vicinity of the Project: there are about 1,400 hotel and motel rooms and suites among 19 different establishments in the Barstow area and extensive additional capacity in the communities within 2 hours of the Project site, as well as recreational vehicle and mobile home sites (DOE EA, p. 3.10-4).

3.13.2 Regulatory Setting

CEQA Guidelines Section 15126.2 requires a discussion of the ways in which a project could directly or indirectly foster economic development or population growth, and how that growth would, in turn, affect the surrounding environment.

County General Plans

The Housing Element of the San Bernardino County General Plan promotes the development of a wide variety of housing to meet the needs of all economic segments of the community

TABLE 3.13-3
HOUSING CHARACTERISTICS, 2008

Jurisdiction	Households	Single-family	Multi-family	Vacancy
San Bernardino County	2,055,766	483,766	129,035	11.6%
Apple Valley	69,729	20,107	3,775	8.4%
Barstow	23,641	5,905	2,970	17.1%
Colton	51,654	10,256	5,180	7.4%
Fontana	187,939	40,975	7,684	5.3%
Hesperia	87,489	24,085	3,146	6.5%
Highland	52,263	13,055	2,727	9.3%
Redlands	69,841	18,154	7,646	4.8%
Rialto	98,963	19,600	5,451	5.3%
San Bernardino	198,562	42,002	20,119	11.0%
Victorville	102,637	28,156	4,929	7.7%
Yucaipa	51,491	13,553	1,636	5.7%
Los Angeles County	10,363,850	1,643,878	1,459,215	4.2%
Glendale	204,293	29,928	44,774	2.6%
Lancaster	137,332	34,906	10,569	8.4%
Los Angeles	3,959,760	619,158	771,063	4.6%
Palmdale	147,803	36,785	6,340	7.6%
Pasadena	144,608	30,157	27,044	4.2%
Santa Clarita	175,652	43,097	13,377	3.2%
Kern County	817,517	194,896	48,165	9.8%
Bakersfield	324,905	84,417	27,051 5	5%

SOURCE: DOE EA, p. 3.10-4, Table 3.10-3, *Study Area Housing Characteristics, 2008*

(San Bernardino County, 2007). The General Plan analyzes existing and projected housing needs and establishes goals, policies and implementing strategies for the preservation, improvement and development of housing within the County. The Housing Elements of the Los Angeles County General Plan and Kern County General Plan are substantially similar to the San Bernardino County General Plan in this regard (Los Angeles County, 2008; Kern County, 2002).

City General Plans

This section focuses on the three cities closest to the Project site: Barstow, Victorville and Adelanto.

The goals and policies of the 2006-2014 Housing Element Update of the City of Barstow address the City's identified housing needs (City of Barstow, 2006, p. 82 et seq.). Although none of the policies directly relate to the proposed Project, the goals that they serve to implement are as follows:

> *Goal 1:* Provide a range of housing by location, type and price to meet the growth needs of the City.
>
> *Goal2:* Conserve and improve the condition of the City's existing housing stock.
>
> *Goal 3:* Preserve and enhance the quality of residential neighborhoods in Barstow and ensure that new housing is sensitive to the existing natural and build environment.
>
> *Goal 4:* Promote equal opportunity for all residents to reside in the housing of their choice.

The City of Victorville General Plan Housing Element Update 2000 revised the City's prior Housing Element for consistency with the City's then-current vision of its housing needs and objectives (City of Victorville, 2000). Although none of the policies directly relate to the Project, Victorville population and housing-related goals are as follows:

> *Goal 1:* Encourage the provision of a wide range of housing by location, type of unit, and price to meet the existing and future housing needs in Victorville.
>
> *Goal 2:* Promote housing opportunities for all persons regardless of race, religion, sex, marital status, ancestry, national origin, or color.
>
> *Goal 3:* Encourage the maintenance and preservation of the existing housing stock.
>
> *Goal 4:* Encourage the proper utilization of the undeveloped residential areas of the City.
>
> *Goal 5:* Encourage changes in State housing law to accurately reflect community housing needs.

The Housing Element of the City of Adelanto's General Plan identifies and analyzes existing and projected housing needs and establishes goals, policies and implementing strategies for the preservation, improvement and development of housing within the City (City of Adelanto, 2010). Of the five goals established in the Housing Element (p. 94), none directly relate to the Project:

> *Goal H.1*: Conserve, preserve, and improve the condition of the existing affordable housing stock.
>
> *Goal H.2*: Assist in the development of affordable housing.
>
> *Goal H.3*: Address and where appropriate, and legally possible, remove governmental constraints to housing development.
>
> *Goal H.4*: Promote equal housing opportunity.
>
> *Goal H.5*: Provide adequate sites to achieve housing variety and meet the 2008-2014 Regional Housing Needs Allocation (RHNA).

3.13.3 Applicant Proposed Measures

No Applicant Proposed Measures have been identified to reduce potential population and housing-related impacts associated with the Project.

3.13.4 Environmental Impacts and Mitigation Measures

a) 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): *Less than Significant Impact*

Environmental impacts of the proposed substation, gen-ties and distribution system are analyzed in CEC Commission Decision Section VII(C), *Socioeconomics and Environmental Justice* (p. 457 et seq.) and in DOE EA Section 3.10, *Socioeconomics* (p. 3.10-1 et seq.).

Environmental impacts of the proposed transmission lines and related structures are analyzed in CEC SSA Part C Appendix A, Section 3.7, *Socioeconomics* p. A-39 et seq.) and DOE EA Section 3.10, *Socioeconomics* (p. 3.10-1 et seq.). The CPUC has independently reviewed the information before the CEC and DOE and draws its own conclusions in this analysis.

As shown in Table 3.13-1, the population of San Bernardino County is expected to grow approximately 1.6 percent per year between 2010 and 2020, and 1.3 percent per year between 2020 and 2030 (see also, DOE EA 3.10.2.1, p. 3.10-2). The Project does not propose to develop new homes or construct new businesses and so would not directly induce population growth.

However, indirect inducement of population growth could result from construction, operation and maintenance of the Project. SCE estimates a total of 133 workers would be required to construct the Project over the course of approximately 26 months (DOE EA Section 3.10.3.1, p. 3.10-7). Based on the unemployment rate noted in Table 3.13-2, it is expected that existing unemployed workers would fill Project-related job openings, and that no new workers would be induced to move into the area because of the Project. Accordingly, the number of temporary construction workers required for construction of the Project would not induce substantial population growth in the Project area. No permanent employees would be required to operate and maintain the proposed substation, gen-ties and distribution system. Consequently, no impact related to CEQA Guidelines Appendix G population and housing criterion a) would result from the Project's labor demand.

Once operational, the Project would enable the distribution of solar-generated electricity from the AMSP to SCE's existing Coolwater-Kramer No.1 220 kilovolt (kV) transmission line in an amount sufficient to power approximately 70,000 California homes (DOE EA, p. xvii), but this does not mean that the Project would indirectly induce substantial population growth in the Project area through the extension of existing infrastructure. This Project is not expected or designed to increase electrical capacity in the region, but rather would accommodate a solar project and ensure ongoing reliability is not affected by the solar farm. Growth in the Project area is planned and regulated by applicable local planning policies and zoning ordinances and would not be affected by the Project. Therefore, implementation of the Project would result in a less-than-significant indirect impact on population growth associated with extension of existing infrastructure under CEQA Guidelines Appendix G population and housing criterion a).

b) Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere: *No Impact*

No housing units exist on any portion of the Project site, including the proposed Lockhart Substation location on the AMSP site or within the existing utility rights-of-way where the fiber optic cable segments would be installed. Therefore, no existing housing would be displaced by the development of the Project, and no impact would result with respect to the construction of replacement housing under criterion b).

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere: *No Impact*

Further, because no one currently lives within the Project footprint, development of the Project would not displace substantial numbers of people, thereby requiring the construction of replacement housing. Consequently, construction, operation and maintenance of the Project would cause no impact related to criterion c).

3.13.5 References

City of Adelanto, 2010. *2008-2014 Housing Element*. Available at: http://www.ci.adelanto.ca.us/vertical/Sites/%7bb5d4a1fe-8a01-4bef-b964-5a44b9339c72%7d/uploads/%7b080858d8-cee8-43cd-a39e-cf70c2799b23%7d.pdf. Accessed March 2010.

City of Barstow, 2006. *2006-2014 Housing Element Update of the City of Barstow*. Available at: http://www.barstowca.org/site/images/pdf/Planning_HousingElementUpdate.pdf. Accessed March 31, 2011.

City of Victorville, 2000. *City of Victorville General Plan Housing Update 2000*. Available at: http://ci.victorville.ca.us/uploadedFiles/AboutVictorville/housing_element.pdf. Accessed March 31, 2011.

Kern County, 2002. *Kern County General Plan Housing Element 2002-2007*. Chapter2, *Housing Needs Assessment*, is available at: http://www.co.kern.ca.us/planning/pdfs/he/HESection2.pdf; Chapter 3, *Housing Constraints*, is available at: http://www.co.kern.ca.us/planning/pdfs/he/HESection3.pdf; Chapter 6, *Housing Plan*, is available at: http://www.co.kern.ca.us/planning/pdfs/he/HESection6.pdf. Accessed March 31, 2011.

Los Angeles County, Department of Regional Planning, 2008. *Los Angeles County Department of Regional Planning Housing Element 2008.* August 5, 2008.

San Bernardino County, 2007. County of San Bernardino 2007 General Plan. June, 2007.

3.14 Public Services

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
14. PUBLIC SERVICES— Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☒	☐
iv) Other public facilities?	☐	☐	☒	☐

3.14.1 Environmental Setting

Fire Protection

The portion of northwest San Bernardino County in which the Project would take place is categorized as having a Local Responsibility Area Moderate and Other Moderate fire risk (FRAP, 2007). The San Bernardino County Fire Department responds to a 17,500 square mile region including unincorporated areas of San Bernardino County and more than 60 communities (SBCFD, 2010). The Fire Department consists of five divisions. Among them, the North Desert Division serves Adelanto, Hesperia and several other cities and communities (SBCFD, 2011a). Among this Division's 20 fire stations, Hinkley Station 56 is located approximately 14 miles from the AMSP site and approximately 0.5 miles north of the proposed Lockhart-Tortilla fiber-optic route, and is the closest station to the Project. Station 56 is staffed on an on-call basis with paid-call firefighters who live in the local community (SBCFD, 2011b). Response times from this station are expected to range from 15 minutes to no response if they are unavailable (CEC Commission Decision, p. 175-186). Two other stations are nearby. Adelanto Station 321 is on Hardy Avenue, just east of the proposed Kramer-Victor fiber-optic route, and Adelanto Station 322 is on Rancho Road, approximately 2 miles west of that same route. At each of these stations, one Captain, one Firefighter Paramedic and one Limited Term Firefighter are on duty each day (SBCFD, 2011d and 2011e).

As a whole, the North Desert Division has the following equipment and apparatus at its disposal: 23 fire engines, one ladder truck, nine brush engines, nine brush patrols, 18 ambulances, three squads, seven water tenders, one hazardous materials response vehicle, three "rescues," and one snow cat (SBCFD, 2011c). Response times from the various stations in the North Desert Division would vary based in part on whether they are staffed with paid on-call firefighters or full-time personnel. All personnel at the SBCFD North Desert Division are trained as Emergency

Medical Technicians (EMT) Level-1 and as first responders to hazardous materials incidents. The large majority of personnel are also trained paramedics (CEC Supplemental Staff Assessment Part C, Appendix A, p. A-46).

Emergency call statistics from 2009 and 2010 for the North Desert Division are provided in Table 3.14-1.

Table 3.14-1
SAN BERNARDINO COUNTY FIRE DEPARTMENT -NORTH DESERT DIVISION
EMERGENCY CALL STATISTICS 2009 AND 2010

	Structure Fires	Brush/Veg Fires	Other Fires	Rescues	Medical Calls	Traffic Accidents	Other Incidents
2009	123	141	435	42	12,548	1,523	4,791
2010	109	117	356	56	12,885	1,515	5,354

NOTES: 2009 Totals = 19,603; 2010 Totals = 20,392

SOURCE: SBCFD, 2011c

The Barstow Fire Protection District has been in existence since 1926 providing services to the City of Barstow and the surrounding unincorporated areas that are within the district boundaries. The District was self governed for 84 years, becoming a subsidiary district of the City of Barstow in November of 2010. Barstow Fire Protection District Fire Station 361 is located at 861 Barstow Road, approximately 1.5 miles west of the proposed Lockhart-Tortilla fiber-optics line. Fire Station 363 is located at 2600 West Main Street.

Police Protection

The San Bernardino County Sheriff's Office is the primary law enforcement agency for San Bernardino County. The Central Station, which was established in 1853, serves unincorporated San Bernardino and other areas. There are 10 County Sheriff Patrol Stations, including one in Barstow. Fourteen cities within San Bernardino County, including Adelanto and Victorville, contract with the County Sheriff's Department for law enforcement services. The Department provides full service law enforcement, traffic services, investigations, and a wide variety of safety services to all contract cities. Each district has at least one deputy sheriff on duty at all times to serve the communities. The nearest station to the proposed Project in Barstow is located at 225 East Mountain View Street, approximately one mile from the proposed fiber-optics line between the proposed Lockhart Substation and the Tortilla Substation. The nearest station to the proposed Project in Adelanto is located at 11613 Bartlett Avenue, less than 1 mile from the proposed fiber-optics line between the Kramer Substation and the Victor Substation (San Bernardino County, 2010c).

Schools

There are three school districts and one university in the vicinity of the Project. The Barstow Unified School District serves the cities of Barstow and Hinkley. This District maintains seven elementary schools, one elementary/middle school, one junior high school, one high school, one

continuation high school, an independent study program, and an adult school (Barstow Unified School District, 2010a). The District operates Alternative Education Programs that serve approximately 300 students providing an alternative setting for students to achieve the content standards and graduate from the district (Barstow Unified School District, 2010b). Within the Barstow Unified School District, three schools are located within 2 miles of the proposed Lockhart-Tortilla fiber-optic route: Hinkley Elementary School (37600 Hinkley Road), Central High School (405 North Second Avenue) and Barstow High School (430 First Street).

The Adelanto School District serves the cities of Adelanto and Victorville. It consists of 10 elementary schools and two junior high schools (Adelanto School District, 2010). Four of these schools are located within 2 miles of the proposed Kramer-Victor fiber-optic route: Desert Trails Elementary School (14350 Bellflower Street), Donald Bradach Elementary School (15550 Bellflower Street), Victoria Magathan School (11411 Holly Lane), and Westside Park School (18270 Casaba Road).

The Victor Valley Union High School District administers three high schools, three middle schools, and one university preparatory school (Victory Valley Union H.S. District, 2010). Of these schools, one (Silverado High School, at 14048 Cobalt Road) is located within 2 miles of the Kramer-Victor fiber optic route.

Other Public Facilities

Medical Facilities

Saint John of God Health Care Services provides substance abuse services, and is located less than 1 mile east of the Victor Substation. Hope Health Care is located less than 1 mile west of the proposed Kramer-Victor fiber-optic route.

Public Libraries

The Barstow Branch Public Library is located at 304 East Buena Vista, approximately 1.5 miles east of the proposed fiber-optics line between the proposed Lockhart Substation and the Tortilla Substation (San Bernardino County, 2010a). The Alendanto Branch Public Library is located at 11497 Bartlett Avenue, less than 1 mile west of the proposed Kramer-Victor fiber-optic route (San Bernardino County, 2010b).

3.14.2 Regulatory Setting

Federal

The Uniform Fire Code (UFC) provides minimum standards to safeguard public life, health, property and welfare. It was enacted by the International Conference of Building Officials in 1927. Revised editions of this code are published approximately every three years. It is a model code, which means that its provisions are not mandatory, but may be adopted by local jurisdictions.

The International Building Code (IBC) is a newer national code. It first was produced in 2000 by the International Code Council (ICC) and combines the three model building codes published by Building Officials Code Administrators, International Conference of Building Officials and Southern Building Code Congress International. Like the UFC, the provisions of the IBC are not mandatory unless adopted by an applicable local jurisdiction.

The Fire Code of the National Fire Protection Association (NFPA) contains 130 codes and standards that address the full range of fire protection and life safety issues. Compliance is not required nation-wide, but its provisions would govern in jurisdictions that have adopted it. Part II of the Code provides general standards relating to fire protection systems; safeguards during building construction, alteration, and demolition operations; and combustible waste and refuse. Part VI relates to hazardous materials, including flammable and combustible liquids and liquefied petroleum gases and liquefied natural gases.

No provisions of federal law apply to the Project with respect to acceptable service ratios, response times, or other performance objectives associated with fire protection, police protection, schools or other public facilities.

State

The California Fire Code is part of the California Code of Regulations, title 24, part 9, the *California Building Standards Code*. It contains fire protection and suppression requirements based on the 2006 International Fire Code (CEC Commission Decision, p. 179; DOE EA, p. 7-5). California Labor Code section 7803 requires an employer to provide its employees with fire extinguishers. No provisions of State law apply to the Project with respect to acceptable service ratios, response times, or other performance objectives associated with fire protection, police protection, schools or other public facilities.

Local

County of San Bernardino General Plan

The Circulation and Infrastructure Element of the San Bernardino County General Plan addresses the availability of public services (San Bernardino County, 2007). See, for example:

> *Circulation and Infrastructure Policy CI 9.1:* Control the timing and intensity of future development and ensure that future development is contingent on the provision of infrastructure facilities and public services.
>
> *Circulation and Infrastructure Goal D/CI 4:* Ensure that public services are delivered and maintained at acceptable levels, even in the more rural areas of the desert.

Barstow General Plan

The Barstow General Plan contains policies pertaining to public services, including:

Policy I.1.5: New development is required to provide innovative approaches to defray public service costs and to pay its own way without creating a burden on existing public services.

Policy I.1.8: Coordinate the planning and siting of schools, recreation facilities, child care centers, libraries and other public facilities to serve projected future residents.

Victorville General Plan

The Land Use Element of the Victorville General Plan provides for 1,230 acres of public facilities and institutional uses, including infrastructure services, within the City. See, for example, Goal 3, related to ensuring the provision of adequate City services and infrastructure, and Objective 3.1, concerning the adequacy of public services. However, none of the goals or policies pertaining to public services relate directly to the Project.

Adelanto General Plan

The Land Use Element of the Adelanto General Plan contains goals and policies pertaining to public services within City limits. See, for example, Goal OPC 2, the implementation of which would provide residents with quality public facilities commensurate with projected growth; Policy OPC 2.1, concerning public service upgrades; and Policy OPC 2.2, concerning the adequacy of emergency services, libraries, schools, and other public services within the City. None of the goals or policies pertaining to public services relate directly to the Project.

3.14.3 Applicant Proposed Measures

No Applicant Proposed Measures have been identified to address public service-related impacts associated with the Project.

3.14.4 Environmental Impacts and Mitigation Measures

Lockhart Substation, Gen-Tie Lines and Distribution System

Environmental impacts of the proposed substation, gen-ties and distribution system are analyzed in CEC Commission Decision Section V(D) Worker Safety/Fire Protection, VII (A) Land Use, and VII(C) Socioeconomics and Environmental Justice; and in DOE EA Section 2, Proposed Action and Alternatives, and Section 3.1.3.1, AMSP and Lockhart Substation (p. 3.1-9 et seq.). The CPUC has independently reviewed these analyses and concluded that these components of the Project would have a less-than-significant impact related to fire protection and police services, and no impact related to schools and other public facilities.

Increases in long-term demand for fire and police protection services typically are associated with substantial increases in population. As discussed in Section 3.13, Population and Housing, the Project's temporary, construction-related labor demand would not result in substantial population growth. As discussed in Section 3.13, Population and Housing, construction activities for the Project are expected to last approximately 26 months and require approximately 133 workers.

Because the proposed substation would be unstaffed, operation and maintenance activities would not contribute to a population increase.

Construction activities would affect the temporary demand for fire protection services if they resulted in fires from electrical sparks; the combustion of fuel oil, hydraulic fluid, mineral oil, insulating fluid or flammable liquids; explosions; and/or heated equipment. However, a temporary construction-related demand on fire or police protection services would not be significant enough to require the construction of new fire facilities or the modification of existing facilities (CEC Commission Decision, p. 457 et seq.). Accordingly, short-term impacts related to fire protection would be insignificant. The insignificant construction-related increase in the demand for fire services would be reduced further by implementation of the Construction Fire Prevention Plan required by CEC Commission Decision for the AMSP as Condition of Certification WORKER SAFETY-1, which would include all areas of the AMSP site, including the substation, gen-ties and distribution system proposed as part of this Project (CEC Commission Decision, p. 178). Consequently, construction, operation and maintenance of the proposed substation, gen-ties and distribution system would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, and so would have a less-than-significant impact with respect to CEQA Guidelines Appendix G public services criterion a)(i).

Construction activities would affect the existing demand for police protection services if, for example, they generated a need for increased monitoring in the form of police response to potential trespassing, theft of construction equipment and/or vandalism. Additionally, Project construction could require temporary partial closure of adjacent roadways from time to time that would need to be coordinated with local police (see Section 3.16, Traffic and Transportation, for further discussion of potential impacts related to road closures and potential impacts to public roadways and associated emergency access). However, temporary construction-related demands on police protection services would not be significant enough to require the construction of new or modification of existing facilities (CEC Commission Decision, p. 457 et seq.). Accordingly, short-term impacts related to police protection would be insignificant. This insignificant construction-related increase would be further reduced by the presence of the perimeter walls, fences and a locked metal gate that would secure the AMSP site as a whole because these elements would limit public access. Consequently, construction, operation and maintenance of the proposed substation, gen-ties and distribution system would not result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, and so would have a less-than-significant impact with respect to CEQA Guidelines Appendix G public services criterion a)(ii).

Increases in long-term demand for schools, medical facilities, public libraries, post offices, or other government facilities typically are associated with substantial increases in population. For the reasons noted above, any Project-induced population increase would be temporary, insignificant and would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities in the affected communities (see also, CEC Commission Decision, p. 459). Consequently, the proposed substation, gen-ties and

distribution system would not result in substantial adverse physical impacts associated with the provision of new or physically altered schools and other government facilities, and so would have a less-than-significant impact with respect to CEQA Guidelines Appendix G public services criteria a)(iii) and a)(iv).

Transmission Lines and Related Structures

Increases in long-term demand for public services typically are associated with substantial increases in population. For the reasons stated above, construction, operation and maintenance of the proposed transmission lines and related structures would not induce a substantial increase in the population of the area affected by the Project. Consequently, development of these components of the Project would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire or police facilities, schools, medical facilities, public libraries, post offices or other government facilities, and so would have a less-than-significant impact with respect to CEQA Guidelines Appendix G public services criteria a)(i) through a(iv).

Telecommunications System

Increases in long-term demand for public services typically are associated with substantial increases in population. For the reasons stated above, construction, operation and maintenance of the proposed telecommunications system would not induce a substantial increase in the population of the area affected by the Project. Consequently, development of the fiber optic links among various existing substations in the region would not result in substantial adverse physical impacts associated with the provision of new or physically altered fire or police facilities, schools, medical facilities, public libraries, post offices or other government facilities, and so would have a less-than-significant impact with respect to CEQA Guidelines Appendix G public services criteria a)(i) through a(iv).

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3.15 Recreation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
15. RECREATION—Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.15.1 Environmental Setting

National parks, forests and other public lands in the County of San Bernardino are administered by multiple federal agencies, including the National Park Service (NPS), U.S. Forest Service (USFS) and U.S. Department of Interior Bureau of Land Management (BLM). NPS manages Joshua Tree National Park and Mojave National Preserve within the Desert Region of San Bernardino County. Joshua Tree offers backpacking, hiking, horseback riding, biking and mountain biking, birding, mountain climbing, camping, stargazing and wildflower viewing (NPS, 2006). Mojave National Preserve features hunting, fishing and trapping as well as camping, backpacking, hiking, horseback riding, and wildflower viewing (NPS, 2011). National forest system lands within the County include the Angeles and San Bernardino National Forests (San Bernardino County, 2011, p. VI-3 et seq.). The BLM administers approximately 47 percent of the land within the County (San Bernardino, 2011, p. VI-3). Recreational opportunities on BLM-administered lands range from low-intensity uses such as hiking to higher intensity uses such as off-highway vehicle use.

Four State park and recreation areas are located in the County: Chino Hills State Park, Providence Mountains State Recreation Area, Silverwood Lake State Recreation Area, and Wildwood Canyon (CSP, 2009). Chino Hills is a 14,102-acre park managed as open space habitat. Recreational opportunities at Chino Hills include camping, walking, picnicking, horseback riding, bicycle riding, and wildlife and native plant viewing (CPS, 2011a). Providence Mountains offers dramatic views of the surrounding Mojave Desert as well as Mitchell Caverns Natural Preserve. Recreational opportunities at Providence Mountains include self-guided walks along the Mary Beale Nature Trail and cavern tours at El Pakiva and Tecopa Caverns. Providence Mountains will be closed for repairs until October 2011 (CPS, 2011b). Silverwood Lake features the highest reservoir in the State Water Project. Recreational opportunities at and around the lake include hiking, picnicking, camping, swimming, boating, water-skiing, fishing and bird watching. A portion of the Pacific Crest Trail passes through the Silverwood Lake State Recreation Area (CPS, 2011c). The Wildwood Canyon property is a recent addition to the State park system. Planning, facility development and staffing are necessary before the area could be available for public use (CPS, 2011d).

The County of San Bernardino Department of Regional Parks administers a multitude of regional and local parks and recreational amenities in the County. Such facilities include the Santa Ana River Trail and Parkway, which is a regional trail system that offers hiking, biking, horseback riding, running, and bird-watching; the 885-acre Yucaipa Regional Park, which features camping, fishing, swimming, and boating; Prado Regional Park, which offers fishing, boating, hiking, archery, sports fields, camping, and a golf course; Mojave River Forks Regional Park, which offers camping, equestrian camping, hiking and trails with direct access to the Pacific Crest Trail; the Mojave Narrows, which offers fishing, boating, camping, hiking, and horseback riding on 840 acres along the ancient riverbed of the Mojave River; Glen Helen Regional Park, featuring fishing, picnicking, camping, swimming, pedal-boating, hiking, and volleyball courts; Moabi Regional Park on the banks of the Colorado River in Needles; Lake Gregory Regional Park in Crestline; and others.

Other regional recreational opportunities in the area include Desert Christ Park and Moonridge Animal Park. Desert Christ Park is a 3.5-acre sculpture garden in Yucca Valley. Park sculptures include the Twelve Apostles; Martha; Mary; angels; and a 15-foot-tall, 3-ton statue of Jesus (DCP, 2011a). Each was created by Antone Martin, who began sculpting the figures during the height of the Cold War atomic bomb scare of the mid-1940s, hoping that the sculptures would inspire global peace (DCP, 2011b). The Moonridge Animal Park is a zoo in Big Bear Lake.

Local parks and other recreational facilities are located within 2 miles of the various proposed fiber-optic telecommunications lines. Barstow-area parks within 2 miles of the proposed Lockhart-Tortilla line include: Foglesong Park at 300 S. Avenue G in Barstow (offering baseball fields and the Eda Henderson Pool) (Barstow, 2010a); H Street Soccer Fields; Barstow Heights Park (hiking, etc.); Daha Park (tennis, picnic areas and a general recreation area); and Sun Valley Country Club (public golf course). Adelanto-area parks provide general recreational opportunities within 2 miles of the proposed Kramer-to-Victor fiber-optic cable route and include: Howard Loy Park, Adelanto Park, High Desert Mavericks Stadium, and Race Town Motorcycle Park.

3.15.2 Regulatory Setting

Federal

The NPS-administered Joshua Tree National Park and Mojave National Preserve are governed by the California Desert Protection Act of 1994 (16 U.S.C. 410aaa et seq.). This law established the Joshua Tree National Park and a Joshua Tree National Park Advisory Commission to advise on the development and implementation of a comprehensive management plan for the park.

The USFS-administered Angeles and San Bernardino National Forests are governed by the National Forest Management Act of 1976 (16 U.S.C. 1600-1614), which is the primary statute governing the administration of national forests. This Act requires the Secretary of Agriculture to assess forest lands, develop a management program based on principles of multiple-use and sustained-yield, and implement a resource management plan for each unit of the National Forest System.

BLM's authority is set forth in the Federal Land Policy and Management Act of 1976 (Pub. Law 94–579), which provides for the management, protection, development, and enhancement of public lands; the California Desert Conservation Area Plan of 1980, as amended, which is a comprehensive, long-range Resource Management Plan for the BLM-administered California Desert lands, including those near the Project; and other policies and guidance.

State

The California Department of Parks and Recreation's administration of the State parks system is governed by provisions of the California Public Resources Code. For example, Public Resources Code Section 541 charges the Department to "[m]ake studies and surveys and long range plans of recreational facilities and programs necessary to meet recreation needs throughout the state, and participate with other federal, state, and local governmental agencies in advance planning with respect to the development and coordination of recreational facilities and programs." San Bernardino County area State parks are managed pursuant to the Department's Strategic Plan: *The Seventh Generation—The Strategic Vision of California State Parks* (CPS, 2001).

Local

County of San Bernardino

The County of San Bernardino serves County residents and attracts people from other areas as they pursue a wide variety of recreational activities: hiking, camping, off-highway vehicle traveling, fishing, horseback riding, star-gazing, winter sports, youth athletics, performing arts, and other entertainment (San Bernardino, 2007, p. I-11). Several General Plan goals and policies relate to parks recreation throughout the County. See, for example:

> *Land Use Policy M/LU 2.6:* Ensure that commercial recreation and tourist facilities be located, designed and controlled to protect the residential recreation character of the area.
>
> *Conservation Policy CO 2.2:* Provide a balanced approach to resource protection and recreational use of the natural environment.
>
> *Open Space Goal OS-1*: The County will provide plentiful open spaces, local parks, and a wide variety of recreational amenities for all residents.

Barstow General Plan

The Recreation and Open Space Element of the Barstow General Plan (1997) details policies and measures for the preservation of open space, for the management of outdoor recreation, and for recreational facilities and programs within the planning area. The policy most relevant to the Project is as follows:

> *Policy V.1.2:* Work with utility companies owning large "cross-town" easements to ensure that these areas remain as open space for recreation, circulation, etc.

Adelanto General Plan

The primary goal of the Recreation Element of the Adelanto General Plan (1994) is to provide a system of the public park and recreation facilities which serve the citizens of Adelanto. General Plan goals, policies and implementation strategies related to parks and recreation do not pertain directly to the Project, but include the following examples:

> *Rec 2:* Continue to utilize a number of strategies in financing future park activities and development.
>
> *Rec 1.2.1:* Develop plan for utilization of flood control right-of-ways for passive recreational uses and trail systems.

3.15.3 Applicant Proposed Measures

No Applicant Proposed Measures have been identified to reduce recreation impacts associated with the Project.

3.15.4 Environmental Impacts and Mitigation Measures

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated: *No Impact*

Environmental impacts of the Project are analyzed in CEC Commission Decision Section VII(A), *Land Use* (p. 433 et seq.) and Section VII(C), *Socioeconomics and Environmental Justice* (p. 457 et seq.). Potential impacts related to park and recreational resources also are analyzed in DOE EA Land Use Section 3.1.3.1, *AMSP and Lockhart Substation* (p. 3.1-1 et seq.), and Geology, Soils, and Seismicity Section 3.5.3.1, *AMSP and Lockhart Substation* (p. 3.5-6 et seq.).

No recreational or unique geologic resources, features or opportunities (such as rock or mineral collecting, surface hydrothermal features, or surface expression of geologic features unique enough to generate recreational interests of the general public, including natural bridges, caves, waterfalls, etc.) are located on or adjacent to the Project site (DOE EA, p. 3.5-5). Similarly, there are no federal, State, regional or local recreation areas are on or adjacent to the site (Id.). See also, CEC Commission Decision, p. 441. Although no recreation resources have been identified within any of the proposed fiber-optic cable routes (DOE EA, pp. 3.1-9 to 3.1-10), some regional or local park or other recreational resources are located nearby.

Construction assumptions, including personnel, are included in DOE EA Appendix F Tables 1 and 2. As discussed in Section 3.12, *Population and Housing*, approximately 14 crew members per day would be required to construct the Project. Project construction workers are anticipated to be part of the existing labor force in the area, and would not be expected to relocate in order to work on the Project. Project components would be constructed on a rolling basis, with the entire construction period lasting approximately 26 months. Consequently, construction of the Project would not result in a temporary or permanent increase in population, and so would not generate a demand for the construction of new parks or other recreational resources. Operation and

maintenance of the Project's substation, gen-ties and distribution system would not require fulltime employment. These components of the Project would require periodic maintenance, but such maintenance is expected to be fairly minimal (DOE EA Section 2.1.2.1, p. 2-11; DOE EA Section 2.1.2.3, p. 2-16).

For these reasons, construction, operation and maintenance of the Project would not result in substantial physical deterioration of existing parks or other recreation facilities. Therefore, these aspects of the Project would have no impact with respect to CEQA Guidelines Appendix G recreation criterion a).

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment: *No Impact*

The Project does not include the development of new or expansion of existing parks or other recreational facilities, the construction of which could have an adverse physical effect on the environment. Therefore, the Project would have no impact with respect to CEQA Guidelines Appendix G recreation criterion b).

3.15.5 References

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3.16 Transportation and Traffic

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
16. TRANSPORTATION AND TRAFFIC— Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) 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?	☐	☐	☒	☐
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

3.16.1 Environmental Setting

Information and analysis about traffic and transportation are provided in CEC Commission Decision Section VII(B) (p 446 et seq.), CEC SSA Part C Appendix A Section 3.9 (p. A-43 et seq.), CEC SSA Part A (p. 5.10 et seq.), and CEC Staff Assessment (p. 5.10 et seq.). Information and analysis about traffic and transportation also are provided in DOE EA Section 3.13 (p. 3.13-1 et seq.) and Appendix Q. These sections are incorporated by reference and summarized below.

Road Network

The environmental setting for the AMSP/Lockhart Substation site is described in DOE EA Section 3.13.2.1 (p. 3.13-1) and in the CEC Commission Decision on page 446 and following. The regional and local setting related to traffic and transportation includes a few main highways and interstates and a number of smaller arterials, collector streets, residential streets, and dirt roads. The reader is referred to DOE EA Figure 3.13-1, *Regional Transportation Network* (p. 3.13-2), which shows Interstate 15 (I-15), U.S. Highway 395, State Route 58 (SR-58), and other major roads in the Project area, and also to Figure 3.13-2, *Local Transportation Network*

(DOE EA, p. 3.13-4), which shows the local transportation network, including Harper Lake Road, Lockhart Road, Lockhart Ranch Road, and others. Truck routes, existing roadway operations (including intersections and existing levels of service), and existing ramp junction operations are described. See, e.g., DOE EA Table 3.13-1, *Roadway Level of Service: Existing Conditions* (p. 3.13-6). Heavy haul routes are shown on DOE EA Appendix Q, Figure Q-1.

The environmental setting for the proposed fiber-optic routes is described in DOE EA Section 3.13.2.2 (p. 3.13-8 et seq.). For example, the Lockhart-to-Tortilla Substation fiber-optic route would follow Summerset Road, Community Road, Lenwood Road, Sun Valley Road, I Street, and Siderite Road; the Lockhart-to-Kramer route would follow along Lockhart Road, Harper Lake Road, and a dirt utility road, and would cross U.S. Highway 395 and SR-58 at the very western end of the route; and the Kramer-to-Victor route would follow U.S. Highway 395, unimproved roads and, as the route nears Victorville and Adelanto, local streets (DOE EA, p. 3.13-8).

Public Transit

The AMSP/Lockhart Substation area is not served by public transit (CEC Commission Decision, p. 447). Barstow Area Transit provides transit service in the Barstow area, but there are no regularly scheduled lines near the AMSP/Lockhart Substation site.

Bicycle and Pedestrian Transportation

There are no bicycle facilities (such as on-street lanes or off-street paths) adjacent to the AMSP/Lockhart Substation site or along SR-58 near Harper Lake Road. Bicycle activity in the vicinity is minimal-to-none. As described in the CEC Commission Decision (p. 447), the June 2001 County of San Bernardino Non-Motorized Transportation Plan Update identifies planned bicycle facilities in the County. Although Class II on-street bike lanes are indicated in the Non-Motorized Transportation Plan as a priority for Main Street adjacent to the park-and-ride site for the AMSP, no bicycle facilities are planned adjacent to the AMSP/Lockhart Substation site. Bicycle routes are located near the existing telecommunications right-of-way, within which the fiber-optic cables would be installed.

There are no pedestrian facilities (such as sidewalks and walkways) adjacent to the AMSP/Lockhart Substation site. Pedestrian activity in the vicinity of the site is minimal-to-none (CEC Commission Decision, p. 447). Pedestrian routes are located near the existing telecommunications right-of-way, within which the fiber-optic cables would be installed.

Airports

As described in the CEC Commission Decision (p. 447) and DOE EA pages 104 and 447, the nearest airport facilities to the Project are:

1. Barstow-Daggett Airport (32 miles southeast of the AMSP/Lockhart Substation site). Built in 1933 as a CAA Beacon Site, this airport is the oldest of San Bernardino County's

airports. It has been owned at different times by the U.S. Marine Corps and the U.S Army, as well as the CAA;

2. Southern California Logistics Airport (SCLA) (27 miles south of the AMSP/Lockhart Substation site). The airport consists of two intercontinental runways (a 15,050-foot x 150-foot runway and a 9,100-foot x 150-foot runway), parking for 500 aircraft, as well as hangers and warehouses.

3. Edwards Air Force Base (12 miles southwest of the AMSP/Lockhart Substation site and 1.9 miles from the proposed Kramer-to-Victor fiber-optic cable route).

4. Barstow Community Hospital Heliport (a publicly-owned, private use heliport in Barstow, approximately 2.3 miles from the AMSP/Lockhart Substation site and 1.8 miles from the nearest fiber-optic cable route);

5. Barstow Service heliport (2 miles from the AMSP/Lockhart Substation site). This heliport is privately-owned by Southern California Edison Company; it has one runway;

6. IPP Adelanto heliport (a private use heliport in Adelanto, approximately 1.9 miles from the nearest cable route);

7. Depue airport (a privately-owned airport with two runways, approximately 1.4 miles from the nearest cable route); and

8. Sun Hill Ranch Airport (a privately-owned airport with two dirt runways, approximately 1 mile from the proposed Kramer-to-Victor fiber-optic route).

Rail Service

A freight railroad line travels east-west approximately 4.5 miles south of the AMSP/Lockhart Substation site; this line is used on a daily basis (CEC Commission Decision, p. 447). The two, at-grade railroad crossings that exist in the AMSP/Lockhart Substation area are shown on DOE EA Figure 3.13-1, *Regional Transportation Network* (p. 3.13-2). One crossing is located on U.S. Highway 395; the other is located on SR-58 (DOE EA, p. 3.13-12). No alteration of at-grade crossings is proposed.

3.16.2 Regulatory Setting

Federal, State and local laws, ordinances, regulations and standards related to traffic and transportation are described in the CEC Staff Assessment beginning on page 5.10.1; they also are listed in Traffic and Transportation Table 1 (CEC Staff Assessment, p. 5.10-2). Additional State and local regulations are described in this section.

California Streets and Highways Code Section 2105

State Proposition 111, passed by voters in 1990, established a requirement that every county with an urbanized area of at least 50,000 people prepare and biennially update a Congestion Management Program (CMP). CMPs monitor performance of the region's roadway transportation system,

develop programs to address near- and long-term congestion, and integrate transportation and land use planning. Graphic Information System (GIS) data for the San Bernardino County CMP is available online from San Bernardino Associated Governments (SANBAG) (http://maps.sanbag.ca.gov/website/cmp_data.htm).

City of Victorville General Plan and Municipal Code

The City of Victorville General Plan and Municipal Code requires that all City intersections operate at LOS D or better, and that high LOS-functioning intersections be maintained. However, in designated "high activity areas," LOS E is acceptable. If a development project outside of a designated "high activity area" would worsen an intersection peak hour LOS to E or worse, it is considered a significant impact requiring mitigation pursuant to City of Victorville General Plan Policy 1.1.2. None of the provisions of the City of Adelanto General Plan directly pertain to the Project.

3.16.3 Applicant Proposed Measures

As identified in CEC SSA Part C Appendix A (p. A-12), SCE would implement the following three Applicant Proposed Measures to avoid or reduce potential impacts related to transportation- and traffic-related resources:

> **TRANS-1:** Traffic control services would be used for equipment delivery, supply delivery, and conductor stringing, as applicable.
>
> **TRANS-2:** Construction traffic would be scheduled for off-peak hours to the extent feasible and would not block emergency equipment routes.
>
> **TRANS-3:** If work requires modifications or activities within local roadway and railroad ROWs, appropriate permits would be obtained prior to the commencement of construction activities.

3.16.4 Environmental Impacts and Mitigation Measures

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit: *Less than Significant Impact*

Traffic would be generated during construction as a result of required deliveries of materials and equipment to the proposed substation site, staging areas, and pole sites. Construction would be performed by either SCE construction crews or its contractors. SCE anticipates a total of approximately 14 commuting construction personnel working on a given day. These personnel would travel to and from the various construction sites each day. SCE also anticipates that crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would be dependent upon County permitting, material availability, and

construction scheduling. For example, electrical equipment (such as substation MEER, wiring, and circuit breaker) installation may occur concurrently with transmission line construction.

Construction of the linear facilities would involve a 12-person construction crew and approximately 7 small- to medium-size trucks (with some pulling trailers). Assuming all personnel commuted to and from the construction area in their own vehicles, this would equate to 24 trips per day. In the context of the expected trip generation from the AMSP (see indented paragraph, below), the addition of 24 trips per day would be imperceptible on study area roads. Construction-generated traffic would be temporary (i.e., approximately 26 to 31 months for the entire AMSP) and, therefore, would not result in long-term degradation in performance of any of the roadways in the vicinity of the Project components. In addition, not all construction-related trips would be assigned to the same construction location (e.g., crews would be assigned to different sections of the transmission lines); these Project-generated trips would be dispersed throughout the study area and would occur at varying times throughout the workday. Therefore, the Project would not result in substantial traffic congestion and would not add a substantial number of trips to the roadways in the vicinity of the proposed Project components.

The CEC's analysis of construction-related traffic trips associated with the AMSP as a whole indicate that the AMSP's peak construction increase in traffic would result in a noticeable change compared to existing conditions. As explained on page 449 of the CEC Commission Decision:

> The peak construction increase in traffic.… would likely increase from existing daily traffic volume of 250 vehicles to 1,700 vehicles during the construction year. Nevertheless, the total 'with project' traffic volume would be relatively low and roadway segments would remain within the LOS thresholds already identified by the local jurisdictions. Because all nearby roadway segments and intersections are expected to operate at LOS D or better conditions, impacts from AMS-related construction traffic are less than significant.

See also, page 3.13-10 of the DOE EA, which concludes that "all of the roadway segments are expected to operate at acceptable LOS" during near-term base plus project construction conditions. Peak construction (year 2012) intersection performance at the intersections analyzed is summarized in CEC Commission Decision Traffic and Transportation Table 2 (p. 450). In addition, the DOE conducted an Intersection Lane Vehicle analysis for the SR-58 ramp junctions, which concluded that both of the signalized freeway ramp junctions (i.e., Main Street/SR-58 Northbound and Southbound Ramps) were "under capacity" under the near-term base plus project construction conditions (DOE EA, p. 3.13-11 et seq.). The CPUC independently has reviewed information before the CEC and DOE and concludes that, considering that the overall traffic increase associated with the AMSP at the peak of construction would have a less than significant impact on the operation of area intersections and roadway segments, the incremental increase in traffic associated with the Project also would be less than significant.

Once constructed, operation of the Project would require periodic routine maintenance trips, inspection, and vegetation management activities. Traffic associated with maintenance trips would be negligible (DOE EA, p. 3.13-9). Construction and maintenance activities would not generate a worsening of the LOS levels or any other standard used to gauge performance of the

roadways in the proposed Project area; therefore, the proposed Project would not result in a measurable increase in traffic in the project area. A less-than-significant impact would occur related to operations.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways: *Less than Significant Impact*

San Bernardino County Congestion Management Plan monitors performance of the region's roadway transportation system, develops programs to address near- and long-term congestion, and integrates transportation and land use planning. The construction and operation of the proposed Project would not conflict with the San Bernardino CMP and applicable standards: Construction and maintenance activities would not worsen the LOS levels or any other standard used to gauge performance of the roadways in the proposed Project area; therefore, the Project would not conflict with the CMP, and a less-than-significant impact would result related to criterion b).

c) 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: *Less than Significant Impact*

The Project does not involve the use of air traffic, and so would have no impact relating to an increase in traffic levels. Similarly, the Project would not cause a change in air traffic patterns related to the Barstow-Daggett Airport, which is 32 miles southeast of the Lockhart Substation site, or SCLA, which is located 26 miles south of the Lockhart Substation site, or any of the other airports located near the fiber-optic cable routes. Based on these distances, notification of airports is not required by the FAA in connection with this Project (CEC Staff Assessment, p. 5.10-5).

The AMSP site is within the R-2525 military restricted airspace. However, the proposed development of the AMSP site was reviewed by the Department of the Navy and determined to be unlikely to create conflicts with the military use of the airspace because AMSP and Project components would be located near other, similar structures and would not include transmission towers higher than the existing facilities in the area (DOE EA, p. 3.1-20). Approximately 10 to 15 new poles are proposed to be constructed within the existing transmission line corridor along the fiber-optic line within the limits of Edwards Air Force Base near U.S. Highway 395. As indicated by the military's determination, the proposed poles would be dwarfed by the existing 500-kV and 220-kV towers along this route (DOE EA, p. 3.1-22). Accordingly, construction, operation and maintenance of the Project would not be expected to result in a change in air traffic patterns within or beyond the R-2525 military restricted airspace, and a less-than-significant impact would occur with respect to criterion c).

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). *Less than Significant Impact*

The Project would not alter the configuration (alignment) of area roadways, introduce curves, or add intersections or other design features that could increase hazards due to design features. As discussed in Section 3.10, *Land Use and Planning*, the Project would be compatible with existing designated uses of the Project area, including the existing solar thermal power plant known as the Harper Lake Solar Electric Generating Station, open space, rural residential, industrial, and utility right-of-way. Therefore, the Project would not substantially increase traffic hazards due to incompatible uses, and so a less-than-significant impact would result with respect to criterion d).

e) Result in inadequate emergency access: *Less Than Significant Impact*

Approximately 14 construction personnel would be arriving at the Lockhart Substation site on a given day, which would result in a negligible impact on traffic flow during construction, and so would not cause a commute-related traffic stoppage that could result in inadequate emergency access. Similarly, materials delivery truck traffic also would not result in traffic stoppage that could cause inadequate emergency access because deliveries would be made sporadically throughout the construction phase, thereby reducing the maximum number of trucks that could arrive simultaneously.

During operation and maintenance of the Lockhart Substation and other Project facilities within the AMSP site, emergency access would be provided via eight gated access roads equipped with either manual locks or key cards. These access roads would provide two entrance points into each of the four gated sections of the AMSP site (CEC Commission Decision, p. 179). This design would provide adequate emergency access to these portions of the Project. Emergency access to the linear facilities would be provided by existing surface streets or access roads constructed for the purpose of accessing poles and lines within the existing utility right-of-way.

Further, emergency vehicles could access the site directly from SR-58 from either the east or the west and would not be barred from access due to a Project-related traffic accident or slow-down on a surrounding roadway (CEC Commission Decision, p. 451). Consequently, regional access to and around the Project area would be adequate for emergency vehicles, and so the Project would have a less-than-significant impact related to criterion e).

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities: *No Impact*

The Project would not conflict with adopted policies, plans or programs supporting alternative transportation because it would not cause an increase in long-term use of traditional modes of transportation or increased demand on public transit, bicycle or pedestrian facilities. Further, the Project would not decrease the performance or safety of the trunk line of the Burlington Northern Santa Fe, which parallels SR-58 near the Project and connects to the main yard in Barstow. The implementation of Condition of Certification imposed by the CEC as part of the licensing process

and so deemed to be part of the Project would provide enhanced traffic control during construction for the at-grade railroad crossing near the site (CEC Commission Decision, p. 451). Accordingly, additional Project traffic would not significantly affect the railroad crossing. Consequently, the Project would have no impact related to criterion f).

3.16.5 References

San Bernardino County, 2007. County of San Bernardino 2007 General Plan. June, 2007.

3.17 Utilities and Service Systems

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
17. UTILITIES AND SERVICE SYSTEMS—Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒
c) 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?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, State, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

3.17.1 Environmental Setting

Water and Wastewater Service

As explained in IS/MND Section 3.2, *Agriculture and Forestry*, the Lockhart Substation site historically was used as the Lockhart Ranch complex. The property once served as an agricultural and cattle center and used water from ground wells. Past activities included flood irrigation and the pivot system of irrigation of quarter section areas. One active pivot irrigation field (crop circle) on the AMSP site (but not the Lockhart Substation site) is producing alfalfa. Remnant irrigation equipment and both active and inactive water wells are present. There is no sanitary sewer connection to the site (CEC Commission Decision, p. 311).

Solid Waste and Recycling Service

Non-hazardous wastes would be recycled to the maximum extent possible in conformance with associated regulatory standards, including AB 939, which requires local jurisdictions to divert waste from landfill disposal by 50 percent through recycling, material recovery or other means. Private haulers licensed in San Bernardino County provide solid waste and disposal services to unincorporated areas of the County. Haulers licensed in Barstow, Victorville, and Adelanto

provide solid waste and disposal services to areas within the respective cities. Solid waste generated within the study area, if not taken offsite, primarily would be disposed of in one or more of the five currently permitted Class III landfills in San Bernardino County. These landfills have a combined remaining capacity of over 126 million cubic yards (with estimated closure dates extending to 2042).

Electricity and Natural Gas

Southern California Edison (SCE) provides electricity in the Project area. Southwest Gas Corporation provides natural gas. An existing Southwest Gas Corporation-owned pipeline is located adjacent to the AMSP Alpha power unit under Harper Lake Road, but does not cross the Lockhart Substation site (CEC Staff Assessment, pp. 5.1-11, 5.2-6).

3.17.2 Regulatory Setting

State

Protection of Underground Infrastructure

California Government Code Section 4216.2 requires excavators, including utility operators, to contact a regional notification center at least two working days before beginning excavation work. The notification center for southern California is Underground Service Alert. Any utility provider seeking to begin an excavation project must call Underground Service Alert's toll-free hotline. In turn, Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the excavation. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of excavation. The excavator is required to probe and expose the underground facilities by hand prior to using power equipment.

California Integrated Waste Management Act of 1989 (AB 939)

The Integrated Waste Management Act of 1989 (Pub. Res. Code § 40000 et seq.) required cities and counties to reduce the amount of waste being disposed to landfills by meeting solid waste diversion goals of 25 percent by 1995 and 50 percent by 2000. Unincorporated San Bernardino County had a diversion rate in 2005, 2006 and 2007 of 49 percent (CalRecycle, 2011; San Bernardino County, 2007).

Regional

Lahontan Regional Water Quality Control Board

The Lahontan Regional Water Quality Control Board (LWQCB) is responsible for the protection of water quality and beneficial uses of waters extending from the Oregon border to the northern Mojave Desert to all of California east of the Sierra Nevada crest. The board was appointed by the Governor of California to preserve, enhance, and restore the quality of the State's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations. Most of the waters of the North Lahontan Basin drain into closed basins which were previously part

of Lake Lahontan. Waters of the South Lahontan Basin also drain into closed basin remnants of prehistoric lakes. Water quality standards and control measures for surface and ground waters of the Lahontan Region are contained in the Water Quality Control Plan for the Lahontan Region (Basin Plan). The Basin Plan designates beneficial uses for water bodies and establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. Water quality control measures include Total Maximum Daily Loads (TMDLs), which are often, but not always, adopted as Basin Plan amendments.

State water quality standards also include a non-degradation policy as set forth in State Water Resource Control Board (SWRCB) Resolution No. 68-16, *Statement of Policy with respect to Maintaining High Quality of Waters in California*, and SWRCB Resolution No. 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. The anti-degradation policy protects the quality of waters of the State that are better than the quality established by adopted policies by requiring that the quality of such waters be maintained to the maximum extent possible.

Local

San Bernardino Countywide Integrated Waste Management Plan

California counties are required by the Integrated Waste Management Act to implement a Countywide Integrated Waste Management Plan (CIWMP), which is a guidance document for attaining the reduction mandate. The CIWMP consists of a Countywide Siting Element (CSE) and a Countywide Summary Plan, as well as a Source Reduction and Recycling Element, a Household Hazardous Waste Element, and a Non-Disposal Facility Element. Individual jurisdictions in the County are responsible for their own integrated solid waste management planning, implementation, monitoring, public information, budgeting and enforcement (San Bernardino County, 2007). The objectives of the CSE are:

- Divert 50 percent of all solid waste on and after January 1, 2000, through source reduction, recycling, and composting activities
- Develop reduction, recovery, and reuse goals for recyclable materials and focus programs on materials that make up a large portion of the waste stream
- Coordinate or combine similar programs in neighboring jurisdictions to achieve economies of scale and potentially reduce costs to ratepayers
- Enhance waste collection service by including recycling programs
- Eliminate ordinances and other barriers that discourage recycling and composting
- Explore incentives to encourage source reduction and recycling

Although its customers divert solid waste through curbside recycling, the unincorporated areas of the County achieved a reported diversion rate of 49 percent in 2007. Therefore, the County implemented its Comprehensive Disposal Site Diversion Program at County facilities to improve diversion by addressing self-hauled residential and commercial waste (San Bernardino County, 2007).

City of Victorville Municipal Code

Chapter 6.36 of the City of Victorville's Municipal Code, *Garbage Regulations*, declares that the City of Victorville shall provide for solid waste handling services including, but not limited to, the collection, transfer and disposal of solid waste (including industrial waste) within the City. The City also may provide for recycling and solid waste processing services, including the recycling of solid waste from any or all premises within the City.

Sewers are discussed in Victorville Municipal Code Chapter 10.01, *Sewer Rate Enabling*, and Chapter 10.04, *Sewer Connections*. Chapter 10.01 discusses the establishment of fees, the unit user fee, the units of service, the change in facility usage, and the classification of connection types. Chapter 10.04 states that all new buildings being constructed be connected to the proper public sewer in accordance with the provisions of this section, and no such building shall become occupied or used until the provisions of this chapter have been complied with. Individual private sewage disposal systems are considered appropriate for rural subdivisions provided there is adequate depth to groundwater and acceptable soil permeability.

Chapter 10.10, *Electric Service*, explains that the furnishing of electric utility services to the customers of the city's municipal utility shall be subject to the Victorville Municipal Utilities Services Electric Service Rules, Regulations and Rate Schedules. A current copy of the electric service rules, regulations and rates shall be retained at City Hall by the City Clerk and/or the Public Works Department, and is available for public inspection upon request.

City of Barstow Municipal Code

Chapter 6.20 of the City of Barstow's Municipal Code, *Solid Waste and Recyclables Collection Services*, covers many aspects of the collection service's rules and regulations. Article VIII of this chapter, *Commercial/Industrial Collection*, discusses ordinances related to disposal and status of solid waste; frequency of collection; care, maintenance, placement, and type of containers necessary; separation of garbage; and wood waste.

Title 13 of the Barstow Municipal Code, *Public Services*, contains ordinances pertaining to water and sewer systems. The purpose of this chapter is to provide for the maximum beneficial public use of the City's wastewater collection and treatment facilities through adequate regulation and permit requirements governing wastewater discharge; and to provide guidelines for complying with requirements placed upon the City by other regulatory agencies.

City of Adelanto Municipal Code

Chapter 8.01 of the City of Adelanto's Municipal Code, *Collection of Solid Waste*, discusses the manner in which waste shall be collected within the City. Sections in this chapter include: Authority to Grant Franchises; Subscription to Collection Service or Self-Hauling; Public Nuisance; Containers; Frequency of Collection; Unlawful and Prohibited Acts; Use of Containers for Solid Waste Generated During Construction and Demolition; Self Haulers; Placement of Rates on Tax Rolls; and Violations.

3.17.3 Applicant Proposed Measures

SCE has not proposed any measures to avoid or reduce potential impacts related to utilities and service systems that could result from construction, operation and maintenance of the Project.

3.17.4 Environmental Impacts and Mitigation Measures

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board: *No Impact*

The Project would cause no impact to wastewater. Portable toilets would be utilized only during construction, which would be limited to an approximately 10-month timeframe. Waste in the portable toilets would be disposed of according to regulations. No sanitation-related wastewater facilities are proposed for use during the operation and maintenance phase of the Project.[1]

It is anticipated that construction water used for dust control would be brought in on water trucks. The demand and use of such water would be temporary (approximately 10 months) and, given the arid climate, would not generate wastewater that would require treatment or disposal. Therefore, the Project would not exceed wastewater treatment requirements of the Lahontan Regional Water Quality Control Board, and no impact would occur. See also, criterion e), below.

b) 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: *No Impact*

The Project would not require or result in the construction or expansion of new water or wastewater treatment facilities. As discussed above, construction-related water demand and use would be temporary (approximately 10 months) and would not generate wastewater that would require treatment or disposal. Municipal water is not currently available at much of the Project site, and is not proposed for use for the Project. As such, operation and maintenance of the Project would not use any water, and so would not require or result in the construction of new or expanded water or wastewater treatment plant facilities. Consequently, no impact would occur. See also, criteria d) and e), below.

c) 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: *No Impact*

The Project would not require or result in the construction or expansion of new storm water drainage facilities. Although the Mojave Desert has a typical desert climate, including low annual

[1] As discussed in the CEC Commission Decision (p. 311), the CEC analyzed potential impacts of the sanitary wastes expected to be generated during operation of the AMSP as a whole in connection with the use of sinks, toilets and other sanitary facilities. AMSP-related sanitary wastewater would be processed through a septic system and discharged to a leach field; solids periodically would be removed by a professional service. This septic system and leachfield are not a part of the Lockhart Substation Project.

precipitation,[2] over 70 percent of the precipitation occurs between December and March (CEC Commission Decision, p. 357).

The Lockhart Substation, gen-ties and distribution system would be constructed within the boundaries of the AMSP. All stormwater runoff generated on the AMSP site would be contained on site and is expected to percolate or evaporate (CEC Commission Decision, p. 309). The civil engineer for the ASMP would design or be responsible for the design of all plans, calculations and specifications for all work on the AMSP site, including plans for grading, site preparation, excavation, compaction, erosion and sedimentation control structures, drainage facilities, culverts, and site access roads (CEC Commission Decision, Condition of Certification GEN-5(A)(2), p. 66).

The CPUC independently has reviewed the CEC's consideration of stormwater runoff and drainage on the AMSP site and agrees that the AMSP applicant's implementation of the mitigation measures imposed as CEC Conditions of Certification SOIL&WATER-1, -2, and -3 would reduce potential impacts of the AMSP (including the Project substation, gen-ties and distribution system) related to new or expanded stormwater drainage facilities to a less-than-significant level. SOIL&WATER-1 requires the AMSP owner to have an approved site specific Drainage, Erosion, and Sediment Control Plan (DESCP) that ensures protection of water quality and soil resources; SOIL&WATER-2 requires the project owner to comply with Waste Discharge Requirements; and SOIL&WATER-3 requires routine maintenance of the AMSP-related storm water channels. These mitigation measures are required by the CEC to address impacts of a scale associated with the approximately 1,765-acre AMSP site, including approximately 81 acres related to drainage improvements (CEC Commission Decision, pp. 1, 2). By comparison, this Project's substation site would be smaller than 6 acres (approximately 450 by 542 feet) and would require no separate facilities or related plans for stormwater drainage purposes.

Approximately 30 new wood or light weight steel (LWS) poles would be required within the AMSP property between the Lockhart Substation and Lockhart Road to the north to install the Kramer-to-Lockhart fiber-optic cable route (DOE EA Appendix L, p. 10) and 30 new LWS interest poles would be required to install the Victor-to-Kramer route. For LWS poles, the average depth would be 12 feet deep, 2.5 feet diameter; the quantity of earth removed for the pole base would be 2.2 cubic yards, with a surface area of 4.9 square feet (DOE EA Appendix XX, Table 11, p. 35 et seq.). The DOE's analysis assumes that new poles would permanently disturb 5 square feet per pole, with a cumulative total of less than 0.5 acre of disturbance (roughly 157 square feet) (DOE EA, p. xxi et seq.). The CPUC independently has reviewed the information and agrees with this approach. The locations of the new poles for the Victor-to-Kramer fiber-optic cable route are shown on DOE EA Figure 2-13, *Fiber Optic Line-Kramer to Victor Substation*, p. 2-28. The disturbance area around the new poles would be graded so that water would run toward the direction of the natural drainage without ponding or causing erosive water flows that could cause damage to the structure footings during the operation and maintenance phase of the Project. The graded area would be compacted such that it would be

[2] The City of Barstow, located approximately 20 miles southeast of the Project site, has a total average annual precipitation of less than 6 inches (CEC Commission Decision, p. 357).

capable of supporting heavy vehicles. These activities would increase the amount of impervious surface in the Project area cumulatively by less than 0.5 acre, and would not create a substantial amount of additional runoff water during construction, operation or maintenance. For these reasons, the Project would not require or result in the construction of a new or expanded storm water drainage facility. Consequently, there would be no impact associated with the construction of such a facility.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed: *No Impact*

No new or expanded entitlements are needed. Operation of the Project would not require the use of water. The primary use of water during construction would be for dust suppression measures on access roads, and SCE and its contractors would have water tanks and/or water trucks sited/available in the Project area for dust control. The water that would be required during construction of the transmission line would be trucked in from off-site. Water used during the construction period would be available from existing municipal water sources and would not require local water providers to obtain additional water entitlements. No impact would occur.

e) Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments: *No Impact*

As described under criterion d), the primary use of water during Project construction would be for dust suppression. Disposal would not be required because the water used during dust suppression activities would be minimal and consequently this water would evaporate or percolate into the ground. In addition, construction crews would use portable sanitation facilities (portable toilets), generating relatively small volumes of wastewater for a limited time during the construction phase. Sanitation waste would be disposed of according to sanitation waste management practices. No other sources of wastewater are anticipated during Project-related construction activities. Operation of the Project would not require the use of water. Because the evaporation or percolation of construction water would not affect the capacity of wastewater treatment facilities to serve the Project, no impact would occur.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs: *Less than Significant Impact*

Operation of the Project would not generate solid waste and so would have no effect on existing landfill capacities.

Construction of the Project would have a less-than-significant impact to area landfills. Construction activities would generate various waste materials, including wood, soil, vegetation, insulators, vibration dampeners, suspension clamps, ground wire clamps, shackles, links, nuts, bolts, washers, cotters pins, insulator weights, and bond wires. The Project would require the removal and disposal of an existing 220 kV transmission structure and associated hardware. Also, to support the loop-in, one existing double-circuit transmission structure may need to be removed.

The exact number of towers to be removed would be determined during detailed engineering. In addition, SCE would replace one and remove one existing pole approximately 40 feet north of the proposed Lockhart Substation. All construction materials and debris would be removed from the area and recycled or properly disposed of at an off-site disposal facility in accordance with all applicable laws. SCE would conduct a final inspection to ensure that cleanup activities were completed successfully.

Soil excavated for the Project either would be used as fill or would be disposed of off-site at an appropriately licensed waste facility. Other miscellaneous non-hazardous construction materials that could not be reused or recycled would be disposed of at municipal county landfills. Solid waste generated within the study area primarily would be disposed of in one or more of the five currently permitted Class III landfills in San Bernardino County, which have a combined remaining capacity of over 126 million cubic yards (with estimated closure dates extending to 2042) (CEC Commission Decision, p. 219).

Any hazardous material would be recycled, treated and/or disposed of in accordance with federal, State and local laws. Impacts related to the removal and disposal of treated wood and construction materials would be less than significant (see Section 4.7, *Hazards and Hazardous Materials*, for additional information). Because San Bernardino landfills have sufficient capacity to accept SCE's construction waste, impacts would be less than significant.

g) Comply with federal, State, and local statutes and regulations related to solid waste: *No Impact*

SCE would comply with statutes and regulations related to solid waste applicable to the Project. As discussed above, the Project would generate some waste during construction. All construction materials and debris would be removed from the area and recycled or properly disposed of at an off-site disposal facility in accordance with applicable laws. SCE would conduct a final inspection to ensure that cleanup activities are successfully completed. As discussed above, landfills within the Project area have sufficient capacity to accept anticipated Project waste. No impact would result.

3.17.5 References

CalEPA, 2010. Lahontan Regional Water Quality Control Board. Available at: http://www.swrcb.ca.gov/rwqcb6/. Accessed December 10, 2010.

California Department of Resources Recycling and Recovery (CalRecycle), 2011. Jurisdiction Diversion/Disposal Rate Summary for San Bernardino-Unincorporated. Available at: http://www.calrecycle.ca.gov/lgcentral/tools/mars/DrmcMain.asp?VW=In. Accessed March 30, 2011.

CEC, 2010. California Energy Commission. Abengoa Mojave Solar Project. Commission Decision. September, 2010.

San Bernardino County, 2007. County of San Bernardino 2007 General Plan. June, 2007.

3.18 Mandatory Findings of Significance

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
18.	**MANDATORY FINDINGS OF SIGNIFICANCE**				
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b)	Does the project have impacts that are individually limited, but cumulative considerable? ("Cumulative considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

3.18.1 Mandatory Findings of Significance Discussion

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory: *Less than Significant with Mitigation Incorporated*

Although the Project could degrade the quality of the environment, it does not have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory. As discussed in IS/MND Section 3.4, *Biological Resources,* and Section 3.7, *Greenhouse Gas Emissions,* the Project would result in potentially significant impacts that would have the potential to degrade the quality of the environment. However, adoption and implementation of mitigation measures would reduce these individual impacts to levels that would be less than significant.

As described in *Biological Resources,* the Project could have a substantial adverse effect, either directly or through habitat modifications, on a variety of vegetation communities capable of supporting rare plants. Implementation of **Mitigation Measure CPUC-BIO-1** would reduce these individual impacts to levels that would be less than significant by requiring floristic surveys to determine presence. If present, avoidance and minimization measures could include site design

modification, buffer zones, preparation and implementation of a Special-Status Plant Mitigation Plan, compensatory mitigation, collection of seeds, and worker environmental awareness planning.

As described in *Greenhouse Gas Emissions*, the Project could conflict with the intent of an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Specifically, the Project could conflict with the intent of a recommend action by CARB in its Climate Action Plan to reduce GHGs as set forth in AB 32: *H-6: High Global Warming Potential Gas Reductions from Stationary Sources – SF_6 Leak Reduction and Recycling in Electrical Applications*. Implementation of **Mitigation Measure CPUC-GHG-1** would ensure that the Project would not conflict with the intent of Measure H-6.

b) Does the project have impacts that are individually limited, but cumulative considerable: *Less than Significant Impact*

The Project does not have impacts that are individually limited but cumulatively considerable. CEQA Guidelines Section 15130 requires a discussion of the cumulative impacts of a project when the project's incremental contribution to a significant cumulative effect is "cumulatively considerable," meaning that the project's incremental effects are considerable when viewed in connection with the effects of past, current, and reasonably foreseeable probable future projects. An incremental, project-specific contribution to a cumulative impact is less than cumulatively considerable, if, for example, the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-specific impacts and should be guided by the standards of practicality and reasonableness.

As described throughout this IS/MND, the CEC and DOE analyzed impacts of the AMSP, including the Lockhart Substation Project components, collectively, as the totality of the action in their respective environmental documents. However, the fiber optic telecommunications links to various substations in San Bernardino County were considered in the CEC's CEQA-equivalent document only at a screening level. In order for the CPUC to approve SCE's application for a permit to construct, a full environmental review of impacts related to the construction and operation of the fiber-optic routes had to be performed. This IS/MND performs that review and includes all of SCE's actions within the larger context of the whole of the action as defined by the CEC. This document incorporates by reference the CEC's and DOE's environmental review of the AMSP/Lockhart Substation Project, and, to the extent the impacts from the AMSP affect the impacts from SCE actions they are discussed as cumulative impacts below. This focused IS/MND approach to the analysis of direct, indirect and cumulative impacts is performed in lieu of a supplement to the CEC document, which would have an even narrower focus, and instead of an MND or EIR on the whole of the action, which already has been studied in the CEC's CEQA-equivalent document and, under NEPA, by the DOE in its EA. As it relates to cumulative impacts, the approach taken in this Section 3.17.1(b) is not precedential.

Projects evaluated as part of the cumulative scenario are identified in DOE EA Table 4-1, *Cumulative Project List* (p. 4-2), which is reproduced here as Table 5-1, *Cumulative Scenario*, and shown in DOE EA Figure 4-1, *Cumulative Projects* (p. 4-4). Projects excluded from the

TABLE 5-1
CUMULATIVE SCENARIO

	Project Name	Description of Project	Size/Location	Status
A	Barstow Sanitary Landfill	284-acre expansion of existing landfill	284 acres in BLM's California Desert Conservation Area (CDCA), 3 miles south of Barstow, east of Highway 247	Sept. 2009 FEIR
B	Kramer Junction Solar Project	20-megawatt (MW) PV solar field	191 acres near the intersection of SR-58 and Highway 395	April 2010 MND
C	Daggett Ridge Wind Farm	33 turbines on approximately 1,957 acres; project would generate about 82.5 MW	1,577 acres of BLM-administered and 380 acres of private land south of Hwy 40 and east of Hwy 247 in the community of Daggett	November 2009 EIS/EIR
D	Granite Mountain Wind Energy Project	28 turbines on approximately 2,750 acres; project would generate about 84 MW	2,080 acres of BLM and 670 acres of private land northwest of Lucerne Valley	April 2010 NOA Draft EIS/EIR
E	Lightsource Renewable Solar Project	40-MW solar photovoltaic project	350 acres southwest of SCE's existing Kramer Substation and north of Edwards Air Force Base	March 2010 NOA
F	Hawes Composting Facility (Nursery Products LLC)	Composting of green waste and biosolids to produce agricultural compost	80 acres west of Hinkley and south of SR-58	November 2009 FEIR
G	SR-58 Upgrade	Caltrans proposes to upgrade and realign 10 miles of two-lane highway to four-lane divided freeway/ expressway: Hidden River Road to Lenwood	West of Hinkley along SR-58	EIS initiated in 2007. Draft remains in progress and not available. Public scoping comments summary is available
H	Hacienda at Fairview	A mixed-use project (residential, commercial, and open space land uses), which generally consists of using a variety of resources (i.e., labor, materials, necessary tools, equipment) to install and construct the community components (i.e., houses, roads, storm drain, utility services, sewage, etc.)	Northeast of the town of Apple Valley in Fairfield Valley; two parcels 440 acres and 1,115 acres	Draft EIR 2009
I	Silverlakes Parkway & Clipper Lane LLC	Planned development of 1,228 residential units and an 8-acre park on 262 acres of land	On the east side of Monterey Road between Horseshoe Road and Lakeview Road in the community of Helendale	Initial Study 2007; assumed to be on hold
J	Tortilla-Coolwater Fiber-Optic Line	Approximately 10 miles of new fiber-optic line placed on existing transmission poles	Similar in nature to the Project's fiber-optic communications cable	Initial Study issued Dec. 2006; NOP issued Jan., 2007. Environmental study under way, and BLM's SF-299 permitting process is in progress

SOURCE: DOE EA, Table 4-1: Cumulative Project List

cumulative scenario are identified and the rationale for exclusion provided in DOE EA Section 4.3, *Projects Excluded from the Cumulative Effects Analysis* (p. 4-3). The CPUC independently reviewed the cumulative projects list, which reflects relevant past and present actions in the AMSP/Lockhart Substation and telecommunication system vicinity, as well as reasonably foreseeable actions in the area of consideration based on information from local planning agencies and the availability of documentation for future projects (see, DOE EA Section 4.2, p. 4-1 et seq., and Section 4.4, *Reasonably Foreseeable Future Actions Included in the Cumulative Effects Analysis*, p. 4-3).

The Project would have no impact on Land Use and Planning, Mineral Resources, or Recreation; consequently, the Project could not have a cumulatively considerable contribution with respect to these resources. The IS/MND identifies no significant unavoidable impacts. For resource areas or issues where the Project could result in a less-than-significant impact, cumulative impacts are analyzed in this section.

Aesthetics

The geographic scope of the cumulative effects analysis for visual resources consists of locations from which a viewer could see the Project along with views of other projects (where visual impacts could be additive). This geographic scope of cumulative impacts analysis was established based on the natural boundaries of the affected resource (i.e., potential shared viewsheds), and not on jurisdictional boundaries. Potential cumulative effects on visual resources could occur during the Project's proposed 24-month construction period (e.g., from cumulative construction disturbances), and during the projected 30 to 40 year lifespan of the Project (e.g., Project-related landscape contrast). Cumulative effects related to the Project are analyzed in DOE EA Section 4.5.2, *Visual Resources* (p. 4-5 et seq.).

The AMSP/Lockhart Substation site is located adjacent to an existing solar facility in an existing visual setting that already has been modified from its natural state due to existing agricultural, transportation, and utility elements in the built environment (DOE EA, p. 4-5). With the implementation of APMs and mitigation measures imposed by other agencies for the AMSP, the Project would have a less-than-significant impact related to scenic vista, scenic resources within a state scenic highway corridor, degradation of the existing visual character or quality of the site and its surroundings, and the creation of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

Other wind and solar projects in the vicinity of the Project could contribute to a cumulative impact related to aesthetics. Of all the renewable energy projects listed in the cumulative scenario, visual data were available only for the Kramer Junction solar plant, Granite Mountain Wind Energy Project, and the Lightsource Solar Project. The Kramer Junction plant would not be visible from many areas easily accessible to the public, is adjacent to an existing large-scale solar thermal plant, and is on flat land in an area with few viewers. Potential glare impacts of this project are not expected to be significant, and no significant adverse visual impacts were identified. The Granite Mountain EIS concluded no significant visual effects would occur. That project is located east of Apple Valley, approximately 20 miles east of the Lockhart Substation site. The closest Project

element to Granite Mountain would be the southern portion of the Kramer-to-Victor fiber-optic cable. The CPUC has determined that this Project feature would not cumulatively contribute to a substantive visual impact in combination with the wind farm. No adverse visual impacts were identified for the Lightsource Renewable Solar Project. That project is located west of SCE's existing Kramer Substation and would not be in the same viewshed as the Project. The minor fiber-optic improvements proposed in the vicinity of the Kramer Substation would not contribute cumulatively to the Lightsource Renewable Solar Project visual effects.

The Daggett Ridge Wind Farm Notice of Preparation identified visual as a potential issue; however, no analytical data were available. That project is located southeast of Barstow and is not in the same viewshed as the Project; consequently, cumulative visual impacts would not occur should that project move forward. The Barstow sanitary landfill located south of Barstow would be raised approximately 145 feet from its current elevation and this height increase was determined to have a significant visual impact on Highway 247, which is eligible for the State Scenic Highway Program and is a designated scenic highway by the County of San Bernardino and the City of Barstow. That project is not located within the same viewshed as the AMSP. The proposed Hawe's Composting Facility project is located south of SR-58 and could be considered for cumulative visual impacts given the "industrial" nature of the project and its proximity to the AMSP/Lockhart Substation site. However, that project is a low-profile design of a completely different nature than the Project. Motorists driving SR-58 might have very distant views of both projects but in two different directions (north and south). Combined, these two projects would not result in cumulatively adverse visual effects given their different viewsheds and low-profile nature. Other projects in the list, including road upgrades and mixed use/residential development, would have different visual characteristics and so were not considered for cumulative visual impacts.

Consequently, the Project's incremental contribution to any cumulative effect would not be cumulatively considerable.

Agriculture and Forestry

The geographic area of interest for potential cumulative effects for agriculture and forestry includes unincorporated San Bernardino County, as well as in and around the cities of Barstow, Adelanto, and Victorville. Cumulative impacts related to agriculture and forestry were evaluated in DOE EA Section 4.5.1, *Land Use* (p. 4-5). The CPUC independently reviewed this analysis and draws its own conclusions.

The Project's proposed fiber-optic routes would cause a less-than-significant impact related to the conversion of agricultural lands. The Barstow Sanitary Landfill, Kramer Junction Solar Project, Daggett Ridge Wind Farm, and Lightsource Renewable Solar Project do not adversely affect agricultural lands. Neither the Granite Mountain Wind Energy Project, nor the Hawe's Composting Facility, nor the Hacienda at Fairview mixed-use project would contribute an incremental impact related to the conversion of agricultural lands. Analysis of impacts of the SR-58 Upgrade, the Silverlakes Parkway & Clipper Lane project, and the Tortilla-to-Coolwater fiber-optic line is unavailable at this time. However, environmental impacts of the Tortilla-to-Coolwater fiber-optic project would be similar to the inconsequential impacts associated with the

fiber-optic lines proposed as part of this Project because they, too, would be strung on existing transmission lines within existing utility right-of-way. Therefore, no significant cumulative effect on agriculture and forestry would result from the cumulative projects and the proposed Project.

Air Quality

Cumulative effects related to air quality are analyzed in DOE EA Section 4.5.3, Air Quality (p. 4-6 et seq.). The CPUC independently has reviewed this analysis and draws its own conclusions. The Project is proposed in the Mojave Desert Air Basin (MDAB), which is a moderate federal nonattainment area for 8-hour ozone and particulate matter less than 10 microns in diameter (PM10). The MDAB is classified as a state nonattainment area for ozone, PM10, and particulate matter less than 2.5 microns in diameter (PM2.5). The MDAB currently meets the federal and state standards for carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead and is classified as an attainment area for these pollutants (DOE EA, p. 4-6).

The Project would have a less-than-significant impact related to each of the CEQA Appendix G criteria for air quality and would be responsible for only a small portion of the emissions resulting from the AMSP as a whole. As discussed in DOE EA Section 3.3, the estimated annual emissions of volatile organic compounds, nitrogen oxides, and PM10 from construction and operation of the AMSP would be less than the annual *de minimis* levels. The AMSP would conform to the State Implementation Plan (SIP). A SIP is a comprehensive plan that describes how an area will attain the National Ambient Air Quality Standards (NAAQS) and includes a forecast of foreseeable emissions in the area. By complying with the SIP, the AMSP (including the Project) would not contribute to new violations of standards for ambient air quality, increase the frequency or severity of existing violations, or delay timely attainment of the 8-hour ozone and PM10 standard (DOE EA, p. 4-9).

The AMSP would not create new exceedances or contribute to existing exceedances for criteria air pollutants and precursors during construction. It is located in a region with high background concentrations of PM10 that already exceed the state standard. The AMSP's incremental contribution to the total impact is significantly lower than the background concentration itself and PM10 concentrations in the area would exceed the NAAQS even without these emissions. The background concentration is approximately three times the state 24-hour standard. Additionally, the contribution of the AMSP's emissions would cease at the end of the construction period, which includes the 24-month period required for construction of the Project. Implementation of the CEC Conditions of Certification and Mojave Desert Air Quality Management District (MDAQMD) best available control technology requirements would further reduce the AMSP's contribution to PM10 concentrations (DOE EA, p. 4-9).

The AMSP was independently evaluated by the CEC and MDAQMD. With the implementation of the CEC Conditions of Certification and other measures that would occur as part of the Project, the CPUC agrees that all potential construction impacts associated with the AMSP would be avoided or minimized. The proposed AMSP would also have indirect emission reductions associated with the reduction of fossil-fuel-fired power plant emissions due to the AMSP displacing the need for their operation.

Development of the AMSP/Lockhart Substation site would contribute the largest source of construction emissions. In comparison, construction of the interconnect transmission lines and telecommunication system would be a minor source of construction emissions. Additionally, construction of the fiber-optic routes would proceed along the alignment and would not occur at the same location for more than a few days. There are no cumulative projects located within 2 miles of the AMSP/Lockhart Substation site. The Project's construction emissions would comply with the SIP and would not impede MDAQMD's plans for NAAQS attainment. Therefore, given the short-term nature of construction activities, cumulative air quality impacts from construction emissions would not occur.

Operation of the AMSP would result in emissions of criteria air pollutants from onsite sources such as the proposed auxiliary boilers, fire pumps, emergency generator engines, and cooling towers, and fugitive losses from the heat transfer fluid system; and mobile source emissions from project-generated traffic. As discussed above, the estimated annual operational emissions of volatile organic compounds, nitrogen oxides, and PM10 for the project would be less than the annual *de minimis* levels. The AMSP would conform to the SIP and would not impede MDAQMD's efforts for NAAQS attainment. The operational modeling analysis conducted for the AMSP and the Project indicates that, with the exception of California Ambient Air Quality Standards (CAAQS) 24-hour and annual PM10 exceedances, the AMSP (including the Lockhart Substation Project) would not create new exceedances or contribute to existing exceedances for any of the modeled air pollutants. The AMSP and the Project are located in a region with high background concentrations of PM10 that already exceed the state standard. The contribution of the AMSP and Project's emissions to the total 24-hour PM10 impact is only 5 percent; that is, 95 percent of the impact is due to high background concentrations. The 24-hour PM10 background concentration is three times the CAAQS by itself. The AMSP/Lockhart Substation Project's incremental contribution to the total impact is significantly lower than the background concentration itself and PM10 concentrations in the area would exceed the NAAQS even without these emissions. Additionally, the maximum possible PM10 impacts of the AMSP and Lockhart Substation projects would occur at the AMSP fence line and drop off quickly with distance from the AMSP/Lockhart Substation site perimeter fence line. Incorporation of CEC Conditions of Certification and MDAQMD best available control technology requirements would further reduce contributions to PM10 concentrations.

MDAQMD released its Final Determination of Compliance on May 13, 2010, stating that the AMSP is expected to comply with applicable Air District rules, which incorporate state and federal requirements. MDAQMD issued a revised Final Determination of Compliance dated July 1, 2010, with revised permit conditions. MDAQMD concluded that since the background PM10 concentrations are substantially in excess of the CAAQS without the project and the new facility would not be a major stationary source per MDAQMD NSR Regulation XIII for any criteria pollutant, the project would comply with all applicable MDAQMD Rules and Regulations. In addition, the proposed AMSP would not be required to obtain offsets pursuant to MDAQMD Rule 1303. The AMSP would not trigger the Prevention of Significant Deterioration program requirements; therefore, a Prevention of Significant Deterioration increment analysis protocol is not required. The AMSP/Lockhart Substation projects also would comply with all best

available control technology requirements of MDAQMD. Compliance with the District's new source review requirements would ensure consistency with the strategies and future emissions anticipated under the District's air quality attainment and maintenance plans. MDAQMD's Final Determination of Compliance amounts to its approval of the project's permit application.

Operational impacts, when factoring in the Conditions of Certification and other measures that would be implemented as part of the Project, would not contribute substantially to exceedances of the PM10 CAAQS. Consequently, the operating emissions of the AMSP and the Project would not have an adverse impact on air quality. Fugitive dust generated during operation of the Project would be subject to MDAQMD Rule 403.

The AMSP and half of the projects in the cumulative scenario are wind and solar energy projects that would displace emissions from fossil-fuel-based power plants and would generate minimal operational emissions. In addition, all cumulative projects would be required to obtain air permits from MDAQMD to prevent construction and operational emissions from exceeding applicable thresholds. Distribution by the Project of energy generated by the AMSP would indirectly reduce criteria pollutant emissions within the southwestern United States by reducing fossil fuel-fired energy generation.

The AMSP/Lockhart Substation site has served as an agricultural and cattle center for over 60 years. Currently, there are no ranching or residential activities on the property, and only one active pivot irrigation field is in production on the AMSP site. The site currently is a source of fugitive dust emissions and contributes to the background PM10 concentrations in the area. Operation of the AMSP and Project, including the implementation of specified mitigation measures, conditions of certification and APMs would provide better control of fugitive dust onsite than currently is occurring (DOE EA, p. 4-9). Thus, the Project would help reduce the PM10 contribution from the current site.

Consequently, the incremental increase in air emissions associated with Project would not be cumulatively considerable.

Biological Resources

The geographic scope for considering cumulative impacts related to biological resources cannot by defined by jurisdictional or other political boundaries because sensitive habitats and species can have widespread and varying ranges for individual species. The biological resources cumulative impact analysis includes much of the Western Mojave Desert region in San Bernardino County. Potential cumulative effects on biological resources could occur during the Project's proposed 24-month construction period (e.g., from cumulative construction disturbances) and during the projected 30 to 40 year lifespan of the Project (e.g., from unavailability of habitat). Cumulative impacts related to biological resources are analyzed in DOE EA Section 4.5.8, *Biological Resources* (p. 4-11 et seq.). The CPUC independently has reviewed this analysis and draws its own conclusions.

No impact would result from the Project related to a conflict with local policies or ordinances protecting biological resources [criterion e)]. Consequently, the Project would not cause or contribute to any cumulative impact with respect to this issue.

The Project would result in a less-than-significant impact with mitigation incorporated related to special status native plant populations and natural communities under CEQA Guidelines Appendix G criterion a), and a less-than-significant impact related to criteria b), c), d), and f). The AMSP/Lockhart Substation site and other areas in the vicinity of the Project are in an area that contains habitat for desert tortoise, Mohave ground squirrel, and western burrowing owl, along with a range of other sensitive and common species, including migratory species protected under the Migratory Bird Treaty Act and the golden eagle which is protected under the Bald and Golden Eagle Protection Act. Other projects in the region, such as transmission line projects, solar plants, wind farms, mixed-use development, and other infrastructure projects, affect these species to varying degrees depending on their location and magnitude. The AMSP, including Project components, would permanently remove 452 acres of habitat for these species, only 23 acres of which are located in an area that is considered to be of high habitat value for tortoise, Mohave ground squirrel, and western burrowing owl. However, measures have been proposed that would compensate for the loss of habitat caused by the AMSP and related facilities, and limit potential direct and indirect impacts and reduce potentially adverse effects. A number of federal and species-specific plans and guidelines were reviewed during the environmental analysis of the AMSP to determine not only the impacts of that project (including by components of the Project), but also to ensure compliance with these plans, which protect federally listed threatened and endangered species on a cumulative, regional level. With the implementation as part of the Project of regional, species-specific protection measures for tortoise, Mohave ground squirrel, and western burrowing owl and other species, the Project's contribution to cumulative sensitive wildlife species impacts would not be cumulatively considerable. Compensation lands have also been set aside by the projects within the region for the preservation of the desert tortoise and other species. For these reasons, the Project's incremental impacts on biological resources in this area would not be cumulatively considerable.

Cultural Resources

Cumulative impacts related to paleontological resources are analyzed in DOE EA Section 4.5.6, *Paleontological Resources* (p. 4-11). The CPUC independently has reviewed this analysis and draws its own conclusions. Quaternary older alluvial sediments, which have a high paleontological resource potential for vertebrate fossil types are known to occur at the Project site. The geographic scope of the cumulative effects analysis for paleontological resources consists of the area immediately south of the Project which is comprised of Quaternary older alluvial sediments where ground-disturbing activities could occur. This geographic scope of cumulative impacts analysis was established based on a conservative estimate of the natural boundaries of the affected resource. The Project would cause a less-than-significant impact related to paleontological resources [CEQA Guidelines Appendix G criterion c)] associated with ground disturbing activities during construction. In general, potential impacts to scientifically significant paleontological resources that may be present within the AMSP/Lockhart Substation site and along the fiber-optic cable routes, is off-set by the implementation of measures as part of the

Project that would avoid or salvage the resources. Such measures effectively would recover the value to science and society of significant fossils, if any, that would otherwise be destroyed by surface-disturbing actions. The Project's incremental less-than-significant impact related to paleontological resources would not be cumulatively considerable. Ground disturbing activities would not occur during operation and maintenance of the Project, and so this phase of the Project would not cause an impact to paleontological resources and could contribute to any cumulative impact on paleontological resources.

Cumulative impacts related to cultural resources are analyzed in DOE EA Section 4.5.9, *Cultural Resources* (p. 4-12). Although the DOE determined that the proposed project (including all Project components) would not result in any adverse cultural resources impacts under NEPA, and so could not incrementally contribute to significant cumulative impacts, the CPUC independently has determined that the Project would result in a less-than-significant impact related to CEQA Guidelines Appendix G cultural resources criteria a), b), and d) because currently unknown resources that merit consideration under CEQA could be encountered during Project implementation. None of the projects in the cumulative scenario would cause impacts that could combine with those of the Project because none would be developed in the same location. Consequently, the Project's incremental less-than-significant impacts related to cultural resources would not be cumulatively considerable.

Geology, Soils and Seismicity

Cumulative impacts related to geology, soils and seismicity are analyzed in DOE EA Section 4.5.5, *Geology, Soils and Seismicity* (p. 4-10 et seq.). The CPUC independently has reviewed this analysis and draws its own conclusions. Within this resource area, the geographic scope considered for erosion generally includes the air basin and watershed boundary. For other considerations relating to geology, soils, and seismicity, the relevant area includes the area that could be affected by falling Project-related structures. The Project would cause a less-than-significant impact related to CEQA Guidelines Appendix G criteria a) through d). None of the cumulative projects is or would be located close enough to the AMSP/Lockhart Substation site or other Project components that could be considered for cumulative geology and soils impacts. Consequently, the incremental Project-specific less-than-significant impacts could not combine with the impacts of other projects, and so would not be cumulatively considerable.

No impact would result related to criterion e), concerning the capability of soils to adequately support the use of septic tanks or alternative wastewater disposal systems where sewers are not available. Consequently, the Project would not cause or contribute to cumulative impacts related to this issue.

Hazards and Hazardous Materials

Cumulative impacts related to hazards and hazardous materials are analyzed in DOE EA Section 4.5.12, *Public Health and Safety* (p. 4-14.). The CPUC independently has reviewed this analysis and draws its own conclusions. Although the DOE limited the geographic scope of consideration of cumulative impacts under NEPA for these issues to the Project site, the CPUC has determined that, under CEQA, that the geographic scope is broader: Depending on the

pathway of migration, the geographic scope of consideration of cumulative hazard-related impacts would include the MDAB (for airborne hazards or hazardous materials), the watershed boundary and/or Harper Valley Groundwater Basin (for waterborne hazards or hazardous materials), or the extent of affected soils. The geographic scope also includes the delivery routes that would be used to transport hazardous materials to or from the Project site in the event that a traffic accident-related spill occurred. Potential cumulative effects from hazards and hazardous materials could occur during the construction, operation and maintenance, or closure activities.

The Project would cause less-than-significant impacts related to CEQA Appendix G criteria a) through e) and criterion h) related primarily to construction activities resulting in the generation of limited amounts of hazardous wastes and requiring the limited use of hazardous materials such as fuels, lubricants, and cleaning solvents. Minor additive effects of multiple simultaneous construction projects, including the AMSP and Project components, could have a cumulative effect on road and highway safety due to the increase in the number of trucks transporting hazardous materials to the various sites. However, there is no existing adverse cumulative impact to which these projects incrementally could contribute, and, together, they would not create one because the hazards and hazardous materials arena is so heavily regulated, with its limitations and requirements necessarily set at levels that are sufficiently protective of potential cumulative effects. Consequently, the Project-specific incremental less-than-significant impacts relating to hazards and hazardous materials would not be cumulatively considerable.

No impact would result related to private airstrip-related safety hazards for people residing or working in the project area [criterion f)] or the impairment of implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan [criterion g)]. Consequently, the Project would not cause or contribute to any cumulative impact with respect to these issues.

Greenhouse Gas Emissions

The analysis of GHG emissions is inherently a cumulative issue. Related impacts, including the less-than-significant Project-specific contribution to climate change associated with the emission of SF6, are addressed in Section 3.7, *Greenhouse Gas Emissions*. Based on that analysis, the Project's incremental impact would not be cumulatively considerable.

Hydrology and Water Quality

Cumulative impacts related to hydrology and water quality are analyzed in DOE EA Section 4.5.7, *Water Resources* (p. 4-11). The CPUC independently has reviewed this analysis and draws its own conclusions. The geographic scope of the cumulative effects analysis for hydrology and water quality is the Harper Valley Groundwater Basin,[1] a part of the Centro Sub-Basin of the Mojave River Basin; and, for surface waters, the area within the watershed boundary. As analyzed in Chapter 3, the Project would cause less-than-significant impacts related to CEQA Appendix G criteria a) through e).

[1] The Harper Valley Groundwater Basin comprises about 640 square miles (410,000 acres) and includes a small portion of Kern County, with most of the basin within San Bernardino County.

Water would be used during construction of all of the facilities for dust suppression and other activities required for development of the AMSP/Lockhart Substation and related facilities. Construction phase water usage for the AMSP/Lockhart Substation site is estimated to be between 59,800 and 1,766,050 gallons per day, with greatest use during grading activities (DOE EA, p. 4-11). Groundwater studies conducted for the AMSP indicate that the use of these volumes of water would not impact groundwater availability or quality. When combined with the construction phase water use of the other nearby projects, a cumulative impact on groundwater could result – the DOE concluded that such an impact would be "minor" (p. 4-11) and, in light of the evidence, the CPUC agrees. Based on the acres and associated grading required for development of the solar farm relative to the acres that would be graded for the Lockhart Substation Project, very little of the overall water demand of the AMSP as a whole would be used for the Project. Considering that the water use-related impacts of the AMSP as a whole are not significant, the water use-related impacts of the Project would not be cumulatively considerable.

Operational phase water use would be associated with the AMSP, sanitary landfill, Hawes Composting Facility, and the residential and mixed-use developments. Of these projects, the AMSP would have the highest ongoing groundwater use (i.e., a projected peak water use of 2,160 acre-feet per year); however, the groundwater studies conducted indicated that the AMSP would not result in substantively adverse impacts on water resources and no water would be required for operation of the Lockhart Substation Project.

No impact would result related to other substantial degradation of water quality [criterion f)]; the placement of housing or structures within a 100-year flood hazard area [criteria g) and h)]; exposure people or structures to a significant risk of loss, injury or death involving flooding [criterion i)]; or the exposure of people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow [criterion j)]. Consequently, the Project would not cause or contribute to any cumulative impact with respect to these issues.

Noise

Cumulative impacts related to noise are analyzed in DOE EA Section 4.5.4, *Noise* (p. 4-10). The CPUC independently has reviewed this analysis and draws its own conclusions. The geographic scope of the cumulative effects analysis for noise is limited to the distance over which sounds generated by the Project could be heard (i.e., within approximately 1 mile of the site). Potential cumulative effects could occur during construction, and operation and maintenance activities if other noise-generating activities were to occur within these timeframes and within the cumulative impacts area.

The Project would cause a less-than-significant impact related to a permanent increase in ambient noise levels in the project vicinity above levels existing without the project [criterion c)], a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project [criterion d)], and exposure of people residing or working in the area to excessive noise levels of a project proposed within an airport land use plan area, 2 miles of a public airport or public use airport, or a private airstrip [criteria e and f))]. Noise would be generated during the construction of the Project and projects in the cumulative scenario

primarily from the use of heavy construction equipment. Noise associated with delivery trucks also would be generated along each of the haul routes. Due to attenuation, noise levels during construction are greatest near construction sites and roadways. Noise levels drop off rapidly with distance from the noise source. Due to the widely dispersed nature of each of the projects in the cumulative scenario, no cumulative noise impacts are anticipated during construction.

Operational noise would be generated from the Barstow Sanitary Landfill, Hawes Composting Facility, and the wind farms. Equipment at the landfill and composting facility would generate noise at the facilities and haul trucks would generate noise along the haul routes. Operational noise would be generated for the duration of activity at these facilities; however, cumulative operational noise effects are not expected since there are no sensitive receptors located near either facility. In addition, noise would be generated by the turbine blades at the wind farms. Noise effects are greatest in the immediate vicinity of the wind turbines and diminish rapidly with distance; however, there could be minor increases in ambient noise levels near the wind farms. Given the large distances between the wind farms and other facilities and sensitive receptors, no cumulative noise impacts are anticipated. Because of the lack of combination of impacts of the Project and other projects, no significant cumulative effect would occur, and the Project's incremental less-than-significant noise impacts would not be cumulatively considerable.

No impact would result related to the exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies [criterion a)]; or the exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels [criterion b)]. Consequently, the Project would not cause or contribute to any cumulative impact with respect to these issues.

Population and Housing

Cumulative impacts related to population and housing are analyzed in DOE EA Section 4.5.10, *Socioeconomics* (p. 4-12 et seq.). The CPUC independently has reviewed this analysis and draws its own conclusions. The geographic scope of cumulative impacts related to population and housing during construction generally consists of reasonable commute distance from the Project area where construction and operation-related personnel could stay or reside, which, for this Project, has been determined to be within approximately one hour's drive of the Project. For longer-term impacts related to the inducement of population growth, the greater metropolitan area (here, San Bernardino County and cities of Barstow, Adelanto and Victorville) is considered.

The Project would cause a less-than-significant impact related to the indirect inducement of longer-term population growth in an area through extension of infrastructure [criterion a)]. The AMSP and about half of the cumulative projects represent renewable energy projects that would displace energy generated by fossil-fuel-based power plants, and so would serve the existing population and not induce new growth. The Barstow Sanitary Landfill expansion and composting facility are not expected to induce substantial growth. If the SR-58 upgrade occurs, it is not expected to induce population growth because it would affect traffic *through* the area around the Project and not attract traffic *to* the area. The residential components of the Hacienda at Fairview project and Silverlakes would induce population by providing more than 1200 new housing units.

Any indirect inducement of population growth associated with the availability of electricity provided by the Project would not be cumulatively considerable.

No impact would result related to the displacement of substantial numbers of existing housing units or substantial numbers of people [criteria b) and c)]. Consequently, the Project would not cause or contribute to any cumulative impact with respect to these issues.

Public Services

The geographic area considered for potential cumulative effects related to public services includes the service territory of each of the service providers serving the Project. Public services, including police and fire response, could be required during construction or operation and maintenance of the Project. The Project would cause a less-than-significant impact related to substantial adverse physical impacts associated with the provision of 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 fire protection, police protection, schools, or other public facilities (criteria a)i) through a)iv)]. With the possible exception of the residential development projects in the cumulative scenario, none of the projects in the cumulative scenario would require the construction or a new or expansion of existing public facilities.

For the Hacienda at Fairview, the CEQA lead agency limited the number of Certificates of Occupancy pending the completion of construction of a new fire station and a new public safety (police) facility. The construction of these facilities would offset any impact of this project related to fire and police services. No impacts were identified related to other public facilities. The Silverlakes project is on hold. The initial study issued for the project in 2006 concluded that the project should generate adequate revenues to compensate for impacts on public services, but that independent evaluation would be required to be analyzed in an EIR. An EIR has not yet been completed for the project. No evidence indicates that the Project's incremental less-than-significant impacts would contribute to any significant cumulative effect; therefore, the Project's incremental impact would not be cumulatively considerable.

Traffic and Transportation

Cumulative impacts related to traffic and transportation are analyzed in DOE EA Section 4.5.13, *Transportation* (p. 4-14 et seq.). The CPUC independently has reviewed this analysis and draws its own conclusions. The geographic scope of the cumulative effects analysis for traffic and transportation includes Interstate 15 (I-15), U.S. Highway 395, SR-58, and smaller roads in proximity to the Lockhart Substation including Santa Fe Avenue, Lockhart Road, Lockhart Ranch Road, Hoffman Road, Hinkley Road, are Historic Route 66.

Neither the construction nor the operational phase of the AMSP and Lockhart Substation Project would have a significant adverse impact on the local or regional roadway network. Primary impacts to transportation from these projects would occur during the construction phase. To the extent that other projects in the vicinity were constructed simultaneously, there could be minor cumulative impacts to intersections or the roadway network particularly during peak commute

periods, or during deliveries of construction materials or equipment. Given the short-term nature of construction activities for all of the nearby projects, the DOE determined that these impacts would be minor. Based on the evidence, the CPUC agrees that cumulative construction-related effects would not be significant, and so the Project's less –than-significant incremental contribution would not be cumulatively considerable.

Construction traffic associated with the AMSP/Lockhart Substation Project represents a small percentage of the daily traffic volumes on U.S. Highway 395 and less than 7 percent of the daily volume on SR-58 (DOE EA, p. 4-14). Most of the projects listed in Table 4-1 would not utilize SR-58 as a haul route, other than the Hawes Composting Facility, and the SR-58 Upgrade project. However, the SR-58 upgrade is still under review so it is difficult to ascertain whether their construction phase would overlap with the proposed Project. Should these two projects be constructed simultaneously, the number of truck trips along this route could necessitate a specific traffic control plan focused on rail road safety; however, it is speculative at present to assume that such a plan would be necessary.

No impact would result related to a conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities [criterion f)]. Consequently, the Project would not cause or contribute to any cumulative impact with respect to this issue.

Utilities and Service Systems

The Project would cause a less-than-significant impact related to sufficient permitted capacity of a landfill to accommodate the Project's solid waste disposal needs [criterion f)]. The geographic scope of consideration of related cumulative impacts includes the service areas of the landfills that would serve this Project. With the 284-acre expansion of the Barstow Sanitary Landfill occurring as part of the cumulative scenario, there is no significant adverse cumulative impact to which the Project could contribute. The Project's less-than-significant impact would not be cumulatively considerable.

No impact would result related to wastewater treatment requirements [criterion a)]; the construction of new water or wastewater treatment facilities or expansion of existing facilities [criterion b)]; construction of new storm water drainage facilities, or expansion of existing facilities [criterion c)]; available water supplies [criterion d)]; a determination by the wastewater treatment provider that would serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments [criterion e)]; or compliance with federal, State, and local statutes and regulations related to solid waste [criterion g)]. Consequently, the Project would not cause or contribute to any cumulative impact with respect to these issues.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly: *Less than Significant with Mitigation Incorporated*

The Project has the potential to have environmental effects that could cause substantial direct or indirect adverse effects on human beings; however, the implementation of mitigation measures would

reduce such impacts to less-than-significant levels. As analyzed in the context of criterion a), the Project's impacts relating to *Biological Resources* and *Greenhouse Gas Emissions* could cause adverse effects on human beings. However, implementation of the mitigation measures identified in the respective sections of this IS/MND would reduce or avoid such impacts on human beings to a less than significant level.

CHAPTER 4
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APPENDIX A
Electric Magnetic Fields

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AMSP	Abengoa Mohave Solar Project
CDHS	California Department of Health Services
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
DPV	Devers to Palo Verde
ELF	Extremely Low Frequency
EMF	electric and magnetic fields
FMP	field management plan
Gen-ties	generation tie lines
GO	General Order
IARC	International Agency for Research on Cancer
kV	Kilovolt
mG	milliGauss
MW	Megawatt
NIEHS	National Institute of Environmental Health Sciences
NRPB	National Radiation Protection Board
RAPID	Research and Public Information Dissemination
ROW	right-of-way
SCE	Southern California Edison
T/L	transmission line
TSP	tubular steel pole
WHO	World Health Organization

EXECUTIVE SUMMARY

This document is Southern California Edison Company's (SCE) Field Management Plan (FMP) for the proposed Lockhart Substation Project (Proposed Project). SCE proposes to construct a new 220 kV switching station called Lockhart Substation (Proposed Substation). SCE proposes to construct the Lockhart Substation and associated facilities to interconnect the 250 megawatt (MW) Abengoa Mohave Solar Project (AMSP) to SCE's existing Coolwater-Kramer No.1 220 kV transmission line (Proposed Project). Major electric components of the Proposed Project are summarized below:

1. **Lockhart Substation:** Construct a new 220 kV switching station to loop-in the existing Coolwater-Kramer No. 1 220 kV transmission line and to provide two 220 kV line positions to terminate two new 220 kV generation tie lines (gen-ties) owned by the Abengoa Mojave Solar Project (AMSP).
2. **Transmission Lines:** Loop the existing Coolwater-Kramer No. 1 220 kV transmission line into the new Lockhart Substation. The transmission loop would require construction of approximately 3,000 feet of new transmission line segments (comprised of two line segments of approximately 1,500 feet each) creating the new Lockhart-Kramer and Coolwater-Lockhart 220 kV transmission lines.
3. **Generation Tie Line Connections:** Connect the two AMSP built gen-ties into the SCE-owned Lockhart Substation. This work involves construction of two single spans of conductors between the Lockhart switchrack and the last AMSP-owned tower(s).
4. **Distribution Systems:** Connect the existing Hutt 12 kV distribution circuit out of the Hutt Poletop Substation to the 12 kV rack inside the new Lockhart Substation. A range

of approximately 200 - 400 feet of two 5 inch underground conduits (along with conduits for telecom) would be installed from the proposed riser pole west of the proposed Lockhart Substation to the 12 kV rack to provide a path for the required station light and power. Provide temporary power for the construction of both the proposed Lockhart Substation and the AMSP facilities.

This project description is based on planning level assumptions. Exact details would be determined following completion of preliminary and final engineering, identification of field conditions, availability of labor, material, and equipment, and compliance with applicable environmental and permitting requirements.

SCE provides this FMP in order to inform the public, the California Public Utilities Commission (CPUC), and other interested parties of its evaluation of "no-cost and low-cost" magnetic field reduction design options for this project, and SCE's proposed plan to apply these design options to this project. This FMP has been prepared in accordance with CPUC Decision No. 93-11-013 and Decision No. 06-01-042 relating to extremely low frequency (ELF)[6] electric and magnetic fields (EMF). This FMP also provides background on the current status of scientific research related to possible health effects of EMF, and a description of the CPUC's EMF policy.

The "no-cost and low-cost" magnetic field reduction design options that are incorporated into the design of the Proposed Project are as follows:

- Placing major switching station electrical equipment (such as transformers, switchracks, buses and underground duct banks) away from the switching station property lines

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[6] The extremely low frequency is defined as the frequency range from 3 Hz to 3,000 Hz.

Table 1 summarizes "no-cost and low-cost" magnetic field reduction design options that SCE considered for the Proposed Project.

SCE's plan for applying the above "no-cost and low-cost" magnetic field reduction design options for the Proposed Project is consistent with CPUC's EMF policy and with the direction of leading national and international health agencies. Furthermore, the plan complies with SCE's EMF Design Guidelines,[7] and with applicable national and state safety standards for new electrical facilities.

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[7] EMF Design Guidelines, August 2006.

Table 1. Summary of "No-cost and Low-cost" Magnetic Field Reduction Design Options

Area No.	Location[8]	Adjacent Land Use[9]	MF Reduction Design Options Considered	Estimated Cost to Adopt	Design Option(s) Adopted? (Yes/No)	Reason(s) if not adopted
Lockhart Substation	The Lockhart Substation would be located on private land within the boundaries of the new AMSP solar generation facility, approximately 5.5 miles north-east of the intersection of California State Highway 58 and Harper Lake Road in the County of San Bernardino	6	• Placing major switching station electrical equipment (such as transformers, switchracks, buses and underground duct banks) away from the switching station property lines	• No-Cost	• Yes	

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[8] This column shows the major cross streets, existing subtransmission lines, or substation name as reference points.

[9] Land usage codes are as follows: 1) schools, licensed day-cares, and hospitals, 2) residential, 3) commercial/industrial, 4) recreational, 5) agricultural, and 6) undeveloped land.

Area No.	Location[8]	Adjacent Land Use[9]	MF Reduction Design Options Considered	Estimated Cost to Adopt	Design Option(s) Adopted? (Yes/No)	Reason(s) if not adopted
Lockhart Loop-In Transmission Line Segment: Section 1 – Coolwater-Lockhart 220 kV T/L Segment	T/L of about 1,500 feet in length connecting Lockhart Substation to a T/L corridor to the south of the proposed switching station	6	• None	• N/A	• N/A	Due to the limited scope of the T/L work, no no-cost field reduction measures such as arranging phases for field reduction were available. Additionally, CPUC Decision 06-01-042 stated that CPUC"…will not require utility design guidelines to include low cost EMF mitigation for undeveloped land". Therefore, no low-cost reduction measures were considered.
Lockhart Loop-In Transmission Line Segment: Section 2 - Kramer-Lockhart 220 kV T/L Segment	T/L of about 1,500 feet in length connecting Lockhart Substation to a T/L corridor to the south of the proposed switching station	6	• None	• N/A	• N/A	Due to the limited scope of the T/L work, no no-cost field reduction measures such as arranging phases for field reduction were available. Additionally, CPUC Decision 06-01-042 stated that CPUC "…will not require utility design guidelines to include low cost EMF mitigation for undeveloped land". Therefore, no low-cost reduction measures were considered.

BACKGROUND REGARDING EMF AND PUBLIC HEALTH RESEARCH ON EMF

There are many sources of power frequency[10] electric and magnetic fields, including internal household and building wiring, electrical appliances, and electric power transmission and distribution lines. There have been numerous scientific studies about the potential health effects of EMF. After many years of research, the scientific community has been unable to determine if exposures to EMF cause health hazards. State and federal public health regulatory agencies have determined that setting numeric exposure limits is not appropriate.[11]

Many of the questions about possible connections between EMF exposures and specific diseases have been successfully resolved due to an aggressive international research program. However, potentially important public health questions remain about whether there is a link between EMF exposures and certain diseases, including childhood leukemia and a variety of adult diseases (e.g., adult cancers and miscarriages). As a result, some health authorities have identified magnetic field exposures as a possible human carcinogen. As summarized in greater detail below, these conclusions are consistent with the following published reports: the National Institute of Environmental Health Sciences (NIEHS) 1999[12], the National Radiation Protection Board (NRPB) 2001[13], the International Commission on non-Ionizing Radiation Protection (ICNIRP) 2001, the California Department of Health Services (CDHS) 2002[14], and the International Agency for Research on Cancer (IARC) 2002[15] and the World Health Organization (WHO) 2007[16].

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10 In U.S., it is 60 Hertz (Hz).

11 CPUC Decision 06-01-042, p. 6, footnote 10

12 National Institute of Environmental Health Sciences' Report on Health Effects from Exposures to Power-Line frequency Electric and Magnetic Fields, NIH Publication No. 99-4493, June 1999.

13 National Radiological Protection Board, Electromagnetic Fields and the Risk of Cancer, Report of an Advisory Group on Non-ionizing Radiation, Chilton, U.K. 2001

14 California Department of Health Services, An Evaluation of the Possible Risks from Electric and Magnetic Fields from Power Lines, Internal Wiring, Electrical Occupations, and Appliances, June 2002.

15 World Health Organization / International Agency for Research on Cancer, IARC Monographs on the evaluation of carcinogenic risks to humans (2002), Non-ionizing radiation, Part 1: Static and extremely low-

Continued on the next page

The federal government conducted EMF research as a part of a $45-million research program managed by the NIEHS. This program, known as the EMF RAPID (Research and Public Information Dissemination), submitted its final report to the U.S. Congress on June 15, 1999. The report concluded that:

- "The scientific evidence suggesting that ELF-EMF exposures pose any health risk is weak."[17]

- "The NIEHS concludes that ELF-EMF exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard."[18]

- "The NIEHS suggests that the level and strength of evidence supporting ELF-EMF exposure as a human health hazard are insufficient to warrant aggressive regulatory actions; thus, we do not recommend actions such as stringent standards on electric appliances and a national program to bury all transmission and distribution lines. Instead, the evidence suggests passive measures such as a continued emphasis on educating both the public and the regulated community on means aimed at reducing exposures. NIEHS suggests that the power industry continue its current practice of siting power lines to reduce exposures and continue to explore ways to reduce the creation of magnetic fields around transmission and distribution lines without creating new hazards."[19]

In 2001, Britain's NRPB arrived at a similar conclusion:

> "After a wide-ranging and thorough review of scientific research, an independent Advisory Group to the Board of NRPB has concluded that the power frequency electromagnetic fields that exist in the vast majority of homes are not a cause of cancer in general. However, some epidemiological studies do indicate a possible small risk of childhood leukemia associated with exposures to unusually high levels of power frequency magnetic fields."[20]

Continued from the previous page

frequency (ELF) electric and magnetic fields, IARCPress, Lyon, France: International Agency for Research on Cancer, Monograph, vol. 80, p. 338, 2002

16 WHO, Environmental Health Criteria 238, EXTREMELY LOW FREQUENCY FIELDS, p. 11 - 13, 2007

17 National Institute of Environmental Health Sciences, NIEHS Report on Health Effects from Exposures to Power-Frequency Electric and Magnetic Fields, p. ii, NIH Publication No. 99-4493, 1999

18 *ibid.*, p. iii

19 *ibid.*, p. 37 - 38

20 NRPB, NRPB Advisory Group on Non-ionizing Radiation Power Frequency Electromagnetic Fields and the Risk of Cancer, NRPB Press Release May 2001

In 2002, three scientists for CDHS concluded:

> "To one degree or another, all three of the [C] 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 [CDHS] strongly believe that EMFs do not increase the risk of birth defects, or low birth weight.
>
> They [CDHS] 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 [CDHS] 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 a 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, or
>
> 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."[21]

Also in 2002, the World Health Organization's (WHO) IARC concluded:

> "ELF magnetic fields are possibly carcinogenic to humans"[22], based on consistent statistical associations of high-level residential magnetic fields with a doubling of risk of childhood leukemia...Children who are exposed to residential ELF magnetic fields less than 0.4 microTesla (4.0 milliGauss) have no increased risk for leukemia…. In contrast, "no consistent relationship has been seen in studies of childhood brain tumors or cancers at other sites and residential ELF electric and magnetic fields."[23]

In June of 2007, the WHO issued a report on their multi-year investigation of EMF and the possible health effects. After reviewing scientific data from numerous EMF and human health studies, they concluded:

> "Scientific evidence suggesting that everyday, chronic low-intensity (above 0.3-0.4 μT [3-4 mG]) power-frequency magnetic field exposure poses a health risk is based on epidemiological

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21 CDHS, An Evaluation of the Possible Risks From Electric and Magnetic Fields (EMFs) From Power Lines, Internal Wiring, Electrical Occupations and Appliances, p. 3, 2002

22 IARC, Monographs, Part I, Vol. 80, p. 338

23 *ibid.*, p. 332 - 334

studies demonstrating a consistent pattern of increased risk for childhood leukaemia."[24]

"In addition, virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status. Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern."[25]

"A number of other diseases have been investigated for possible association with ELF magnetic field exposure. These include cancers in both children and adults, depression, suicide, reproductive dysfunction, developmental disorders, immunological modifications and neurological disease. The scientific evidence supporting a linkage between ELF magnetic fields and any of these diseases is much weaker than for childhood leukemia and in some cases (for example, for cardiovascular disease or breast cancer) the evidence is sufficient to give confidence that magnetic fields do not cause the disease"[26]

"Furthermore, given both the weakness of the evidence for a link between exposure to ELF magnetic fields and childhood leukemia, and the limited impact on public health if there is a link, the benefits of exposure reduction on health are unclear. Thus the costs of precautionary measures should be very low."[27]

APPLICATION OF THE CPUC'S "NO-COST AND LOW-COST" EMF POLICY TO THIS PROJECT

Recognizing the scientific uncertainty over the connection between EMF exposures and health effects, the CPUC adopted a policy that addresses public concern over EMF with a combination of education, information, and precaution-based approaches. Specifically, Decision 93-11-013 established a precautionary based "no-cost and low-cost" EMF policy for California's regulated electric utilities based on recognition that scientific research had not demonstrated that

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24 WHO, Environmental Health Criteria 238, EXTREMELY LOW FREQUENCY FIELDS, p. 11 - 13, 2007
25 *ibid.*, p. 12
26 *ibid.*, p. 12
27 *ibid.*, p. 13

exposures to EMF cause health hazards and that it was inappropriate to set numeric standards that would limit exposure.

In 2006, the CPUC completed its review and update of its EMF Policy in Decision 06-01-042. This decision reaffirmed the finding that state and federal public health regulatory agencies have not established a direct link between exposure to EMF and human health effects,[28] and the policy direction that (1) use of numeric exposure limits was not appropriate in setting utility design guidelines to address EMF,[29] and (2) existing "no-cost and low-cost" precautionary-based EMF policy should be continued for proposed electrical facilities. The decision also reaffirmed that EMF concerns brought up during Certificate of Public Convenience and Necessity (CPCN) and Permit to Construct (PTC) proceedings for electric and transmission and switching station facilities should be limited to the utility's compliance with the CPUC's "no-cost and low-cost" policies.[30]

The decision directed regulated utilities to hold a workshop to develop standard approaches for EMF Design Guidelines and such a workshop was held on February 21, 2006. Consistent design guidelines have been developed that describe the routine magnetic field reduction measures that regulated California electric utilities consider for new and upgraded transmission line and transmission switching station projects. SCE filed its revised EMF Design Guidelines with the CPUC on July 26, 2006.

"No-cost and low-cost" measures to reduce magnetic fields would be implemented for this project in accordance with SCE's EMF Design Guidelines. In summary, the process of

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28 CPUC Decision 06-01-042, Conclusion of Law No. 5, mimeo. p. 19 ("As discussed in the rulemaking, a direct link between exposure to EMF and human health effects has yet to be proven despite numerous studies including a study ordered by this Commission and conducted by DHS.").

29 CPUC Decision 06-01-042, mimeo. p. 17 - 18 ("Furthermore, we do not request that utilities include non-routine mitigation measures, or other mitigation measures that are based on numeric values of EMF exposure, in revised design guidelines or apply mitigation measures to reconfigurations or relocations of less than 2,000 feet, the distance under which exemptions apply under GO 131-D. Non-routine mitigation measures should only be considered under unique circumstances.").

30 CPUC Decision 06-01-042, Conclusion of Law No. 2, ("EMF concerns in future CPCN and PTC proceedings for electric and transmission and substation facilities should be limited to the utility's compliance with the Commission's low-cost/no-cost policies.").

evaluating "no-cost and low-cost" magnetic field reduction measures and prioritizing within and between land usage classes considers the following:

1. SCE's priority in the design of any electrical facility is public and employee safety. Without exception, design and construction of an electric power system must comply with all applicable federal, state, and local regulations, applicable safety codes, and each electric utility's construction standards. Furthermore, transmission and subtransmission lines and switching stations must be constructed so that they can operate reliably at their design capacity. Their design must be compatible with other facilities in the area and the cost to operate and maintain the facilities must be reasonable.

2. As a supplement to Step 1, SCE follows the CPUC's direction to undertake "no-cost and low-cost" magnetic field reduction measures for new and upgraded electrical facilities. Any proposed "no-cost and low-cost" magnetic field measures, must, however, meet the requirements described in Step 1 above. The CPUC defines "no-cost and low-cost" measures as follows:

   - Low-cost measures, in aggregate, should:
     - Cost in the range of 4 percent of the total project cost.
     - Result in magnetic field reductions of "15% or greater at the utility ROW [right-of-way]…"[31]

   The CPUC Decision stated,

   > "We direct the utilities to use 4 percent as a benchmark in developing their EMF mitigation guidelines. We will not establish 4 percent as an absolute cap at this time because we do not want to arbitrarily eliminate a potential measure that might be available but costs

[31] CPUC Decision 06-01-042, p. 10

more than the 4 percent figure. Conversely, the utilities are encouraged to use effective measures that cost less than 4 percent."[32]

3. The CPUC provided further policy direction in Decision 06-01-042, stating that, "[a]lthough equal mitigation for an entire class is a desirable goal, we will not limit the spending of EMF mitigation to zero on the basis that not all class members can benefit."[33] While Decision 06-01-042 directs the utilities to favor schools, day-care facilities and hospitals over residential areas when applying low-cost magnetic field reduction measures, prioritization within a class can be difficult on a project case-by-case basis because schools, day-care facilities, and hospitals are often integrated into residential areas, and many licensed day-care facilities are housed in private homes, and can be easily moved from one location to another. Therefore, it may be practical for public schools, licensed day-care centers, hospitals, and residential land uses to be grouped together to receive highest prioritization for low-cost magnetic field reduction measures. Commercial and industrial areas may be grouped as a second priority group, followed by recreational and agricultural areas as the third group. Low-cost magnetic field reduction measures will not be considered for undeveloped land, such as open space, state and national parks, and Bureau of Land Management and U.S. Forest Service lands. When spending for low-cost measures would otherwise disallow equitable magnetic field reduction for all areas within a single land-use class, prioritization can be achieved by considering location and/or density of permanently occupied structures on lands adjacent to the projects, as appropriate.

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[32] CPUC Decision 93-11-013, § 3.3.2, p.10.
[33] CPUC Decision 06-01-042, p. 10

This FMP contains descriptions of various magnetic field models and the calculated results of magnetic field levels based on those models. These calculated results are provided only for purposes of identifying the relative differences in magnetic field levels among various transmission or subtransmission line design alternatives under a specific set of modeling assumptions and determining whether particular design alternatives can achieve magnetic field level reductions of 15 percent or more. The calculated results are not intended to be predictors of the actual magnetic field levels at any given time or at any specific location if and when the project is constructed. This is because magnetic field levels depend upon a variety of variables, including load growth, customer electricity usage, and other factors beyond SCE's control. The CPUC affirmed this in D. 06-01-042 stating:

> "Our [CPUC] review of the modeling methodology provided in the utility [EMF] design guidelines indicates that it accomplishes its purpose, which is to measure the relative differences between alternative mitigation measures. Thus, the modeling indicates relative differences in magnetic field reductions between different transmission line construction methods, but does not measure actual environmental magnetic fields."[34]

PROJECT DESCRIPTION

Southern California Edison Company (SCE) proposes to construct a new 220 kV switching station called Lockhart Substation (Proposed Substation). The Lockhart Substation would be located on private land within the boundaries of the new Abengoa Mohave Solar Project (AMSP) generation facility, approximately 5.5 miles north-east of the intersection of California State Highway 58 and Harper Lake Road in the County of San Bernardino. SCE proposes to construct the Lockhart Substation and associated facilities to interconnect the 250 MW AMSP to SCE's existing Coolwater-Kramer No.1 220 kV transmission line (T/L)

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[34] CPUC Decision 06-01-042, p. 11

(Proposed Project). The project area is shown in Figure 1 below. Major components of the Lockhart Project are summarized below:

Lockhart Substation

The Lockhart Substation would be a 220 kV switching station with internal measurements of approximately 450 feet by 550 feet. Lockhart Substation would be an unattended collector station (no power transformation) surrounded by a wall or chain-link fence with two gates. The Proposed Substation details are shown in Figure 2.

SCE would engineer, design, construct, and test the proposed Lockhart Substation. The switching station would consist of a six-bay 220 kV switchrack. One bay position would be utilized to loop the SCE Coolwater-Kramer No. 1 220 kV T/L. Two of the bays would be used to terminate the two AMSP gen-ties. The three remaining positions would be available for future use.

Lockhart Substation would be initially equipped with:

- Two (2) overhead 220 kV buses
- Seven (7) 220 kV circuit breakers
- Fourteen (14) 220 kV disconnect switches
- One (1) Mechanical Electrical Equipment Room (MEER)
- Station Light and power transformers

T/L Components

SCE's T/L requirements for the Lockhart Substation interconnection to the Coolwater-Kramer No. 1 220 kV T/L would consist of the following components: 1) 220 kV T/L loop-in, 2) existing 220 kV T/L structure modification/replacement, and 3) 220 kV Gen-tie extension. Each of these components is described below.

220 kV T/L Loop-In Design

The proposed Lockhart Substation would be connected to the Coolwater-Kramer No. 1 220 kV T/L via loop-in transmission segments. The two loop-in line segments would create two new separate T/Ls: the Coolwater-Lockhart 220 kV T/L; and the Kramer-Lockhart 220 kV T/L. Each T/L segment into the Lockhart Substation would be approximately 1,500 feet long. The proposed loop-in of the existing Coolwater-Kramer No. 1 220 kV T/L would require approximately four double circuit transmission structures to enter the Lockhart Substation. The exact combination of new tubular steel poles (TSP) and/or lattice steel towers (LSTs) needed for the loop-in would be determined during detailed engineering. Two of the 220 kV double circuit structures would be constructed just outside of the switching station fence or wall. The other two structures would be used to re-route the Coolwater-Kramer No. 1 220 kV T/L into Lockhart Substation.

The conductor utilized would be a single 1590 kcmil "Lapwing" ACSR conductor per phase. The section of line connecting the existing Coolwater-Kramer No. 1 220 kV T/L to the first structure outside of Lockhart Substation would require a new right of way, as shown in between SCE's existing ROW and the new Lockhart Substation facilities.

220 kV Generation Tie Line Extension Design

The proposed Lockhart Substation design would involve bringing two 220 kV Gen-tie segments each into 220 kV bus positions. SCE understands that there would be one customer-owned double circuit structure outside the SCE-owned Lockhart Substation facilities to support connection of the two customer Gen-ties. The 220 kV Gen-tie segments were not evaluated for field reduction measures because they are not SCE-owned T/Ls.

Figure 1. Project Area and Lockhart Substation Location

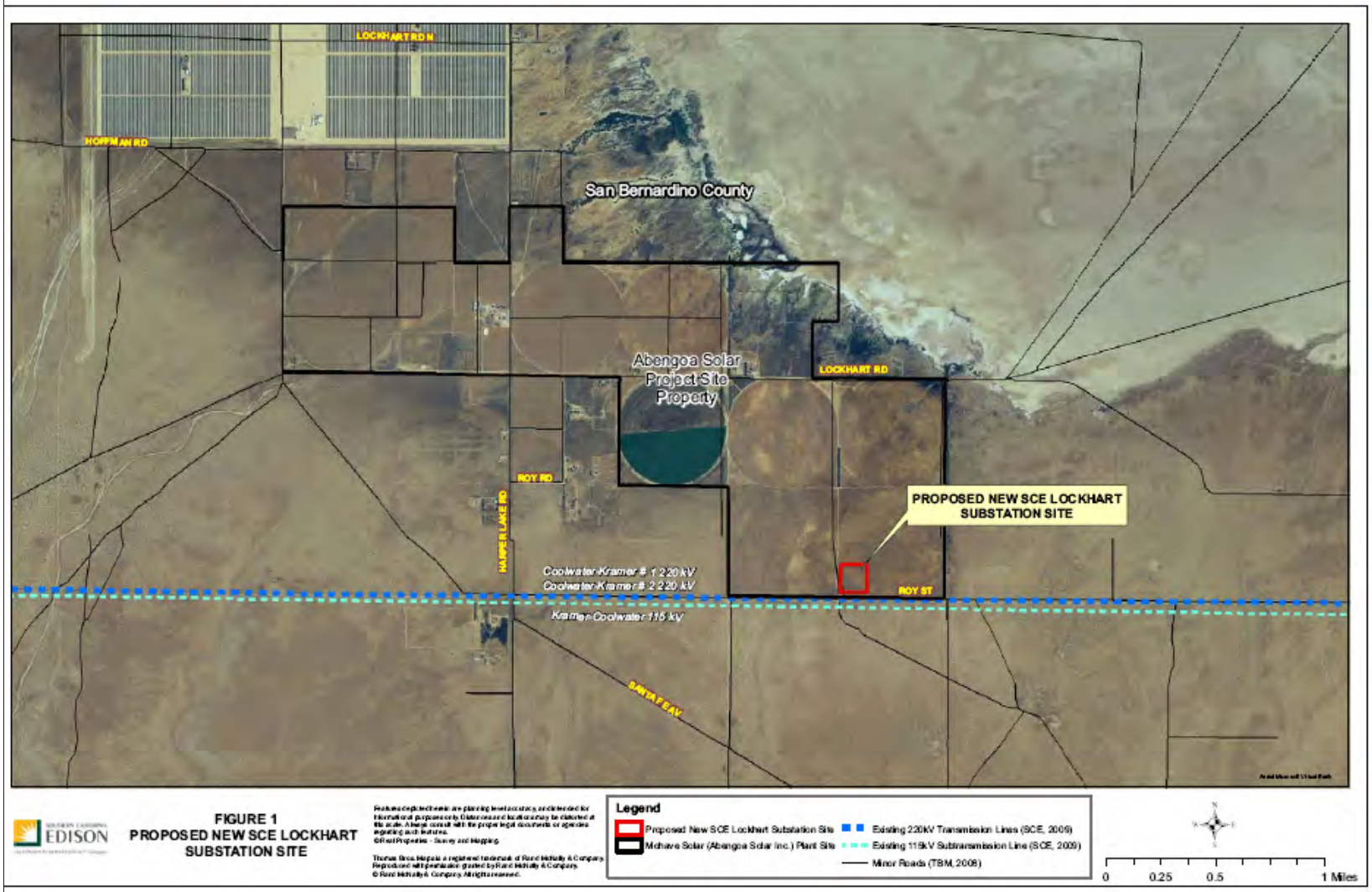

Figure 2. Lockhart Substation Detail

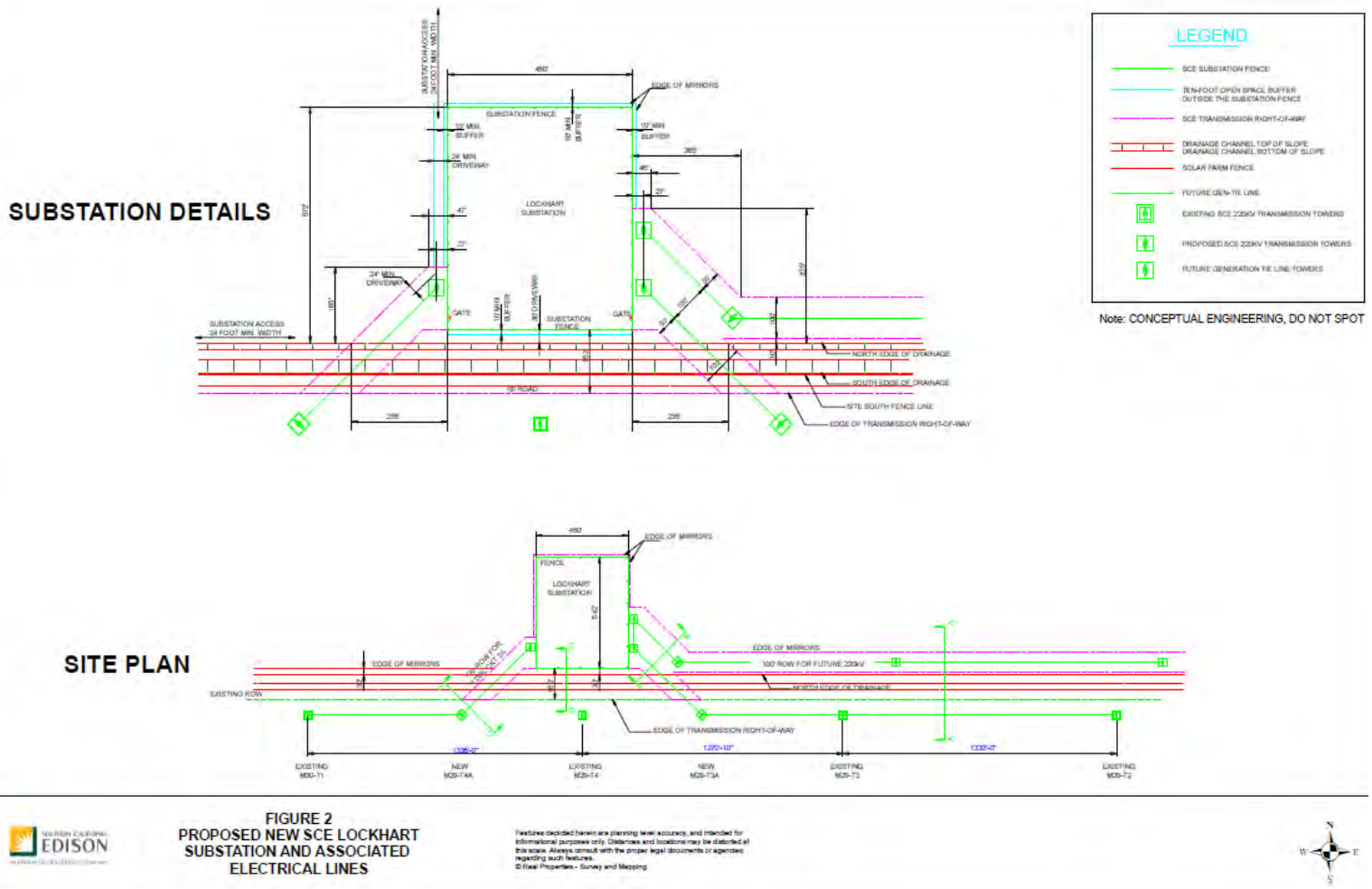

FIGURE 2
PROPOSED NEW SCE LOCKHART SUBSTATION AND ASSOCIATED ELECTRICAL LINES

Features depicted herein are planning level accuracy, and intended for informational purposes only. Distances and locations may be distorted at this scale. Always consult with the proper legal documents or agencies regarding such features.
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EVALUATION OF "NO-COST AND LOW-COST" MAGNETIC FIELD REDUCTION DESIGN OPTIONS

Please note that following magnetic field models and the calculated results of magnetic field levels are intended only for purposes of identifying the relative differences in magnetic field levels among various subtransmission line and subtransmission line design alternatives under a specific set of modeling assumptions (see §VII-Appendix A for more detailed information about the calculation assumptions and loading conditions) and determining whether particular design alternatives can achieve magnetic field level reductions of 15 percent or more. The T/L designs utilized for modeling are based on conceptual engineering, which could vary during final engineering. The calculated results are not intended to be predictors of the actual magnetic field levels at any given time or at any specific location when the Proposed Project is constructed.

For the purpose of evaluating "no-cost and low-cost" magnetic field reduction design options, the Proposed Project is divided into two parts:

- Part 1: Proposed Lockhart Loop-In 220 kV T/L Segments
- Part 2: Proposed Lockhart 220 kV switching station

Part 1: Proposed Lockhart Loop-In 220 kV T/L Segments

For the purpose of identifying possible EMF reduction opportunities and measures, the proposed Lockhart Loop-In 220 kV T/L segments were broken into two sections. These sections are as follows:

- **Section 1:** The Proposed Coolwater-Lockhart 220 kV T/L Segment
- **Section 2:** The Proposed Kramer-Lockhart 220 kV T/L Segment

Section 1: Proposed Coolwater-Lockhart 220 kV T/L Segment

A possible structure design that may be used for the proposed Coolwater-Lockhart 220 kV T/L into Lockhart Substation is shown in Figure 3. The T/L segment will be located in undeveloped areas.

No-Cost Field Reduction Measures: No no-cost field reduction measures such as arranging conductors to reduce magnetic fields were incorporated into the design of the proposed Coolwater-Lockhart 220 kV T/L into Lockhart Substation. This is because of the limited scope of this project and because the proposed Coolwater-Lockhart 220 kV T/L will intersect at an approximately 45 degree angle to existing SCE T/Ls, which will reduce magnetic field interactions between the T/Ls.

Low-Cost Field Reduction Options: The proposed loop-in T/L segment will be located in undeveloped areas. CPUC Decision 06-01-042 required that low-cost measures only be implemented in developed areas. Therefore, low-cost reduction measures, such as arranging conductors for field reduction or using taller structures, were not considered for this segment of the Proposed Project.

Magnetic Field Calculations: Figure 4 and Table 2 show the calculated magnetic field levels for proposed design. These calculations were made using SCE's WY type towers identified during conceptual engineering as a possible tower that may be used for the proposed 220 kV T/L loop-in segment. A structure height of 102 feet was utilized for the magnetic field models.

Figure 3. Proposed Coolwater-Lockhart 220 kV T/L Segment (Facing Lockhart Substation/ Looking Northwest)

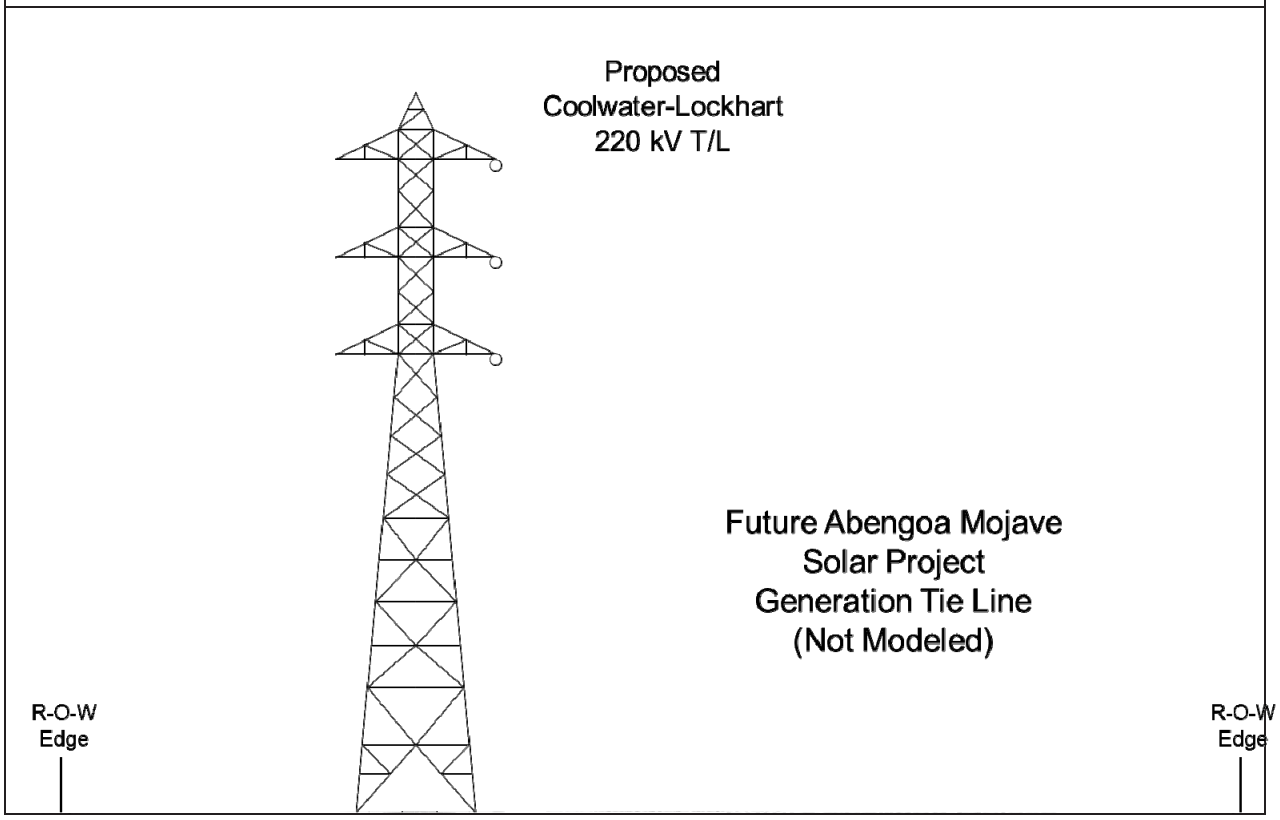

Figure 4. Calculated Magnetic Field Levels[35] for the Proposed Coolwater-Lockhart 220 kV T/L Segment (Looking Northwest)

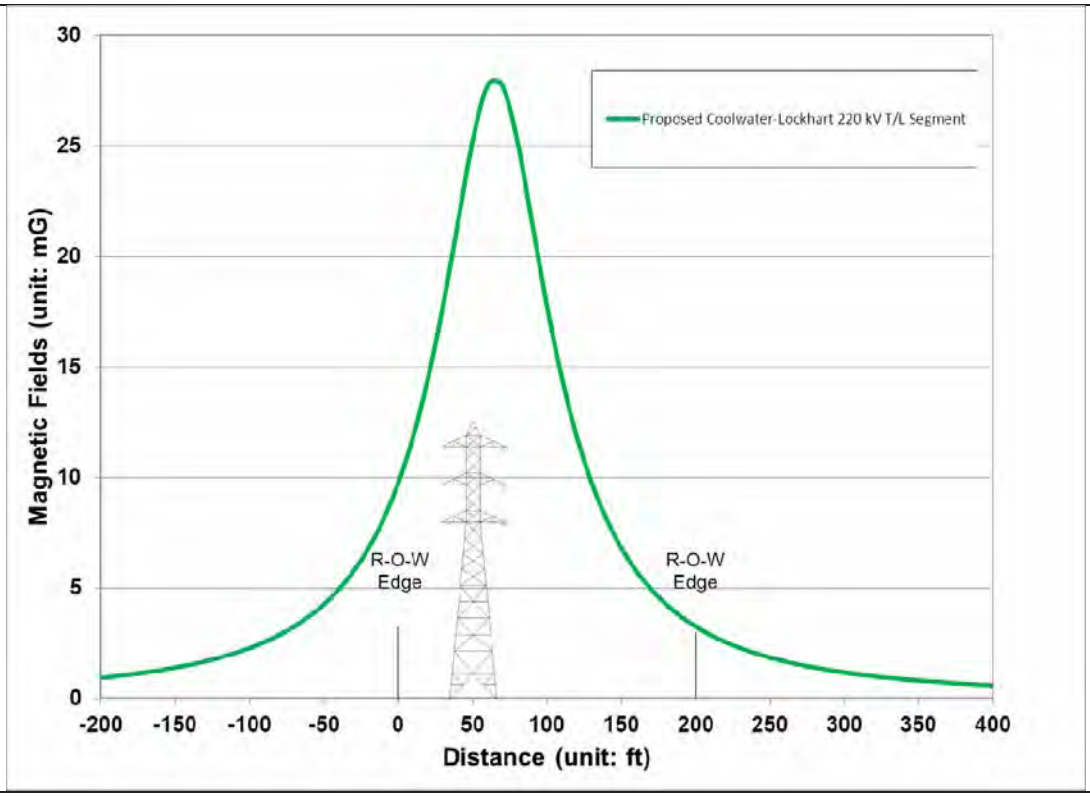

Table 2. Calculated Magnetic Field Levels[36] for Coolwater-Lockhart 220 kV T/L Segment				
Design Options	Left ROW Edge (mG)	% Reduction	Right ROW Edge (mG)	% Reduction
Proposed Coolwater-Lockhart 220 kV T/L Segment	9.8	N/A	3.3	N/A

Recommendations for proposed loop-in T/L Segment: *Because the proposed T/L segment will be located in undeveloped areas, no low-cost reduction measures such as utilizing taller structures are recommended.*

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35 This table lists calculated magnetic field levels for design comparison only and is not meant to predict actual magnetic field levels.

36 This table lists calculated magnetic field levels for design comparison only and is not meant to predict actual magnetic field levels.

Section 2: Proposed Kramer-Lockhart 220 kV T/L Segment

A possible structure design that may be used for the proposed Kramer-Lockhart 220 kV T/L into Lockhart Substation is shown in Figure 5. The T/L segment will be located in undeveloped areas.

No-Cost Field Reduction Measures: No no-cost field reduction measures such as arranging conductors to reduce magnetic fields were incorporated into the design of the proposed Kramer-Lockhart 220 kV T/L into Lockhart Substation. This is because of the limited scope of this project and because the proposed Kramer-Lockhart 220 kV T/L will intersect at an approximately 45 degree angle to existing SCE T/Ls, which will reduce magnetic field interactions between the T/Ls.

Low-Cost Field Reduction Options: The proposed loop-in T/L segment will be located in undeveloped areas. CPUC Decision 06-01-042 required that low-cost measures only be implemented in developed areas. Therefore, low-cost reduction measures, such as arranging conductors for field reduction or using taller structures, were not considered for this segment of the Proposed Project.

Magnetic Field Calculations: Figure 6 and Table 3 show the calculated magnetic field levels for proposed design. These calculations were made using SCE's WY type towers identified during conceptual engineering as a possible tower that may be used for the proposed 220 kV T/L loop-in segments. A structure height of 102 feet was utilized for the magnetic field models.

Figure 5. Proposed Kramer-Lockhart 220 T/L Segment (Facing away from Lockhart Substation/ Looking Southwest)

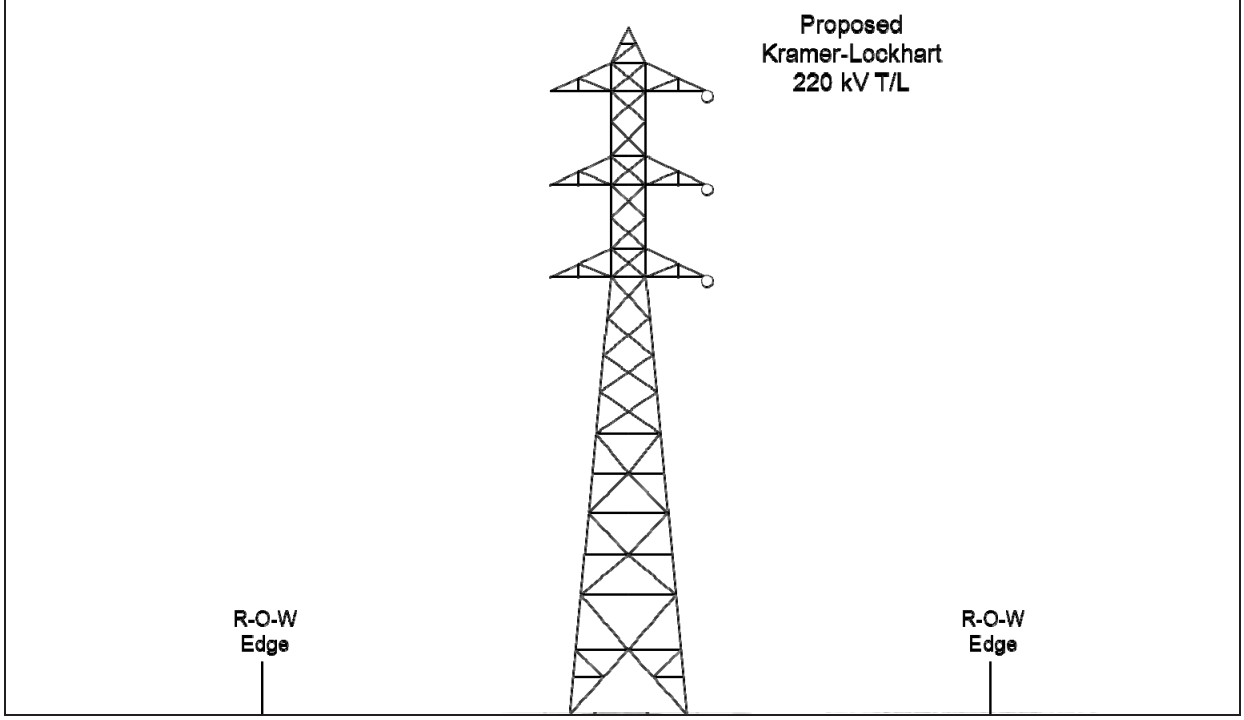

Figure 6. Calculated Magnetic Field Levels[37] for the Proposed Kramer-Lockhart T/L Segment (Looking Southwest)

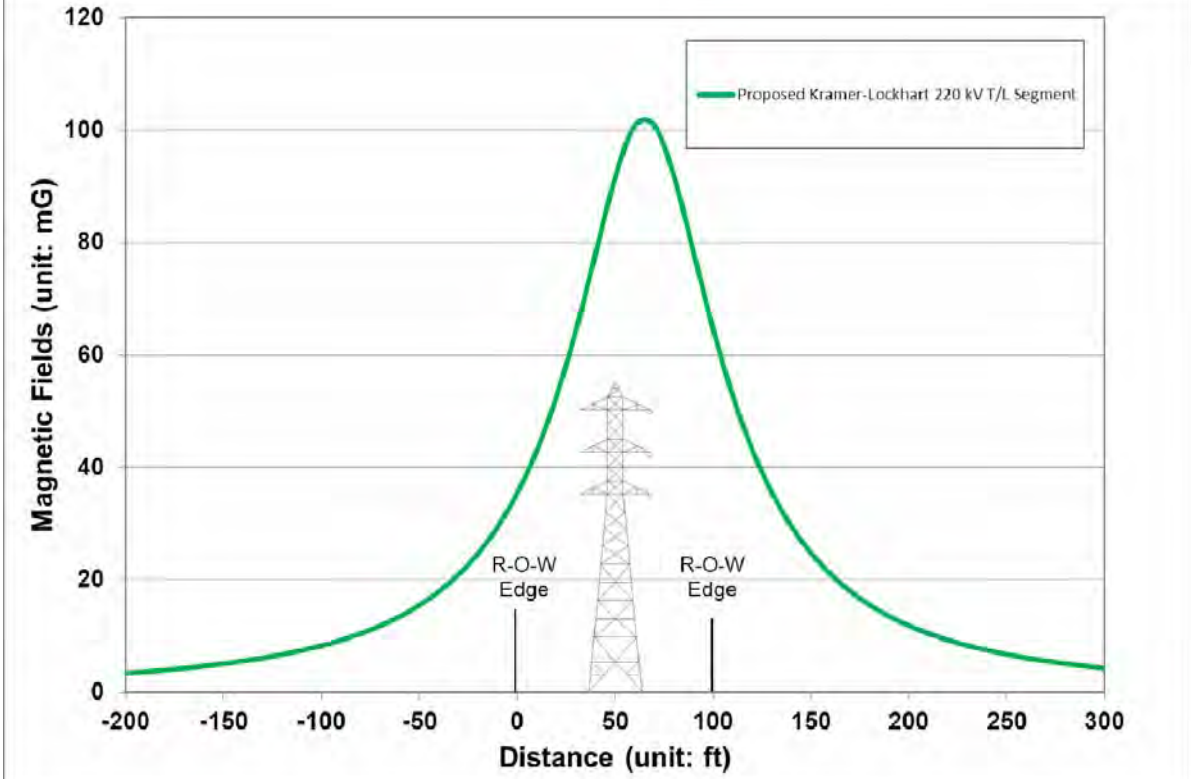

Table 3. Calculated Magnetic Field Levels[38] for Kramer-Lockhart 220 kV T/L Segment				
Design Options	Left ROW Edge (mG)	% Reduction	Right ROW Edge (mG)	% Reduction
Proposed Kramer-Lockhart 220 kV T/L Segment	35.5	N/A	64.6	N/A

Recommendations for proposed loop-in T/L Segment: *Because the proposed T/L segment will be located in undeveloped areas, no low-cost reduction measures such as utilizing taller structures are recommended.*

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37 This table lists calculated magnetic field levels for design comparison only and is not meant to predict actual magnetic field levels.

38 This table lists calculated magnetic field levels for design comparison only and is not meant to predict actual magnetic field levels.

Part 2: Proposed Lockhart 220 kV Switching Station

Generally, magnetic field values along the switching station perimeter are low compared to the switching station interior because of the distance from the perimeter to the energized equipment. Normally, the highest magnetic field values around the perimeter of a switching station result from overhead power lines and underground duct banks entering and leaving the switching station, and are not caused by switching station equipment. Therefore, the magnetic field reduction design options generally applicable to a switching station project are as follows:

- Site selection for a new switching station;
- Setback of switching station structures and major switching station equipment (such as bus, transformers, and underground cable duct banks, etc.) from perimeter;
- Field reduction for T/Ls and subtransmission lines entering and exiting the switching station.

The Switching Station Checklist, as shown in Table 4, is used for evaluating the no-cost and low-cost design options considered for the switching station project, the design options adopted, and reasons that certain design options were not adopted if applicable.

Table 4. Switching Station Checklist for Examining No-cost and Low-cost Magnetic Field Reduction Design Options

No.	No-Cost and Low-Cost Magnetic Field Reduction Design Options Evaluated for a Switching Station Project	Design Options Adopted? (Yes/No)	Reason(s) if not Adopted
1	Are 220 kV rated transformer(s) 50 feet or more from the switching station property line?	N/A	
2	Are 220 kV rated switch-racks, capacitor banks & bus 40 feet or more from the switching station property line?	Yes	

FINAL RECOMMENDATIONS FOR IMPLEMENTING "NO-COST AND LOW-COST" MAGNETIC FIELD REDUCTION DESIGN OPTIONS

In accordance with the "EMF Design Guidelines", filed with the CPUC in compliance with CPUC Decisions 93-11-013 and 06-01-042, SCE would implement the following "no-cost and low-cost" magnetic field reduction design options for Proposed Project:

For Proposed Lockhart 220 kV Loop-In T/Ls:

- Due to the limited scope of work, no field reduction measures were included in the design of the proposed 220 kV Loop-in T/Ls.

For Proposed Lockhart 220 kV Switching Station:

- Placing major switching station electrical equipment (such as switchracks, buses and underground duct banks) away from the switching station property lines

The recommended "no-cost and low-cost" magnetic field reduction design options listed above are based upon preliminary engineering designs, and therefore, they are subject to change during the final engineering designs. If the final engineering designs are different than preliminary engineering designs, SCE would implement comparable "no-cost and low-cost" magnetic field reduction design options. If the final engineering designs are significantly different (in the context of evaluating and implementing CPUC's "no-cost and low-cost" EMF Policy) than the preliminary designs, a Final FMP will be prepared.

SCE's plan for applying the above "no-cost and low-cost" magnetic field reduction design options uniformly for the Proposed Project is consistent with the CPUC's EMF Decisions No. 93-11-013 and No. 06-01-042, and also with recommendations made by the U.S. NIEHS. Furthermore, the recommendations above meet the CPUC approved EMF Design Guidelines as well as all applicable national and state safety standards for new electrical facilities.

APPENDIX A: TWO-DIMENTIONAL MODEL ASSUMPTIONS AND YEAR 2013 FORECASTED LOADING CONDITIONS

Magnetic Field Assumptions:

SCE uses a computer program titled "MFields"[39] to model the magnetic field characteristics of various transmission designs options. All magnetic field models and the calculated results of magnetic field levels presented in this document are intended only for purposes of identifying the relative differences in magnetic field levels among various subtransmission line and subtransmission line design alternatives under a specific set of modeling assumptions and determining whether particular design alternatives can achieve magnetic field level reductions of 15 percent or more. The calculated results are not intended to be predictors of the actual magnetic field levels at any given time or at any specific location if and when the project is constructed.

Typical two-dimensional magnetic field modeling assumptions include:

- All transmission lines were modeled using forecasted peak loads (see Table 4 below)
- All conductors were assumed to be straight and infinitely long
- Average conductor heights accounted for line sag used in the calculation for the 220 kV loop-in T/L segments
- Magnetic field strength was calculated at a height of three feet above ground
- Resultant magnetic fields values were presented in this FMP
- All line currents were assumed to be balanced (i.e. neutral or ground currents are not considered)
- Terrain was assumed to be flat
- Project dominant power flow directions were used.

39 SCE, MFields for Excel, Version 2.0, 2007.

Table 5. Year 2013 Forecasted Loading Conditions for Proposed Lockhart Substation Loop-In T/Ls

Circuit Name	Current (Amp)
Coolwater-Lockhart 220 kV T/L	530 (Towards Lockhart)
Kramer-Lockhart 220 kV T/L	1200 (Away from Lockhart)

Notes:

1. Forecasted loading data is based upon scenarios representing load forecasts for the third quarter of 2013. The forecasting data is subject to change depending upon availability of generations, load increase, changes in load demand, and by many other factors.
2. All existing line loading data is derived from historical data.
3. Load flows for Table 5 are assumed in the opposite directions

APPENDIX B
Mitigation Monitoring, Reporting and Compliance Program

B.1 Introduction

This document describes the mitigation monitoring, reporting and compliance program (MMRCP) for ensuring the effective implementation of the mitigation measures required for the California Public Utilities Commission (CPUC, or Commission) approval of the Southern California Edison (SCE) application to construct, operate and maintain the Project. All mitigation measures are presented in Table B-3, *Mitigation Monitoring, Reporting and Compliance Program for the Lockhart Substation Project*, provided at the end of this MMRCP.

If the Project is approved, this MMRCP would serve as a self-contained general reference for the Mitigation Monitoring Program adopted by the Commission for the Project. If and when the Project has been approved by the Commission, the CPUC will compile the Final Plan from the Mitigation Monitoring Program in the Final MND, as adopted.

B.1.1 MMRCP Authority

The California Public Utilities Code in numerous places confers authority upon the CPUC to regulate the terms of service and the safety, practices and equipment of utilities subject to its jurisdiction. It is the standard practice of the CPUC, pursuant to its statutory responsibility to protect the environment, to require that mitigation measures stipulated as conditions of approval are implemented properly, monitored, and reported on and complied with. In 1989, this requirement was codified statewide under the California Environmental Quality Act (CEQA) in Public Resources Code Section 21081.6. Section 21081.6 requires a public agency to adopt a reporting or monitoring program when it adopts a mitigated negative declaration for a project that could have potentially significant environmental effects. CEQA Guidelines Section 15097 clarifies agency requirements for mitigation monitoring and reporting.

The purpose of a MMRCP is to ensure that measures adopted to mitigate or avoid significant impacts of a project are implemented. The CPUC views the MMRCP as a working guide to facilitate not only the implementation and compliance of mitigation measures by the Applicant, but also the monitoring and reporting activities of the CPUC and any monitors it may designate.

The Commission will address its responsibility under Public Resources Code Section 21081.6 when it takes action on SCE's application. If the Commission approves the application, it also will adopt an MMRCP based on this document that includes the mitigation measures ultimately made a condition of approval by the Commission.

Because the CPUC must decide whether to approve the SCE application and because the application may cause direct or indirect effects on the environment, CEQA requires the CPUC to consider the potential environmental impacts that could occur as the result of its decision and to consider mitigation for any identified significant environmental impacts.

If the CPUC approves SCE's application for a permit to construct the Lockhart Substation and construct and operate the power lines, telecommunications facilities and other infrastructure proposed as part of the Project, SCE would be responsible for implementation of any mitigation measures governing the construction and operation of the Project. Though other federal, State and local agencies would have permit and approval authority over some aspects of construction of the power lines, the CPUC would continue to act as the lead agency for monitoring compliance with all mitigation measures required by the adopted IS/MND. All approvals and permits obtained by SCE would be submitted to the CPUC for mitigation compliance prior to commencing the activity for which the permits and approvals were obtained.

In accordance with CEQA, the CPUC reviewed the impacts that would result from approval of the application. The activities considered include the construction of a 220 kilovolt (kV) substation (Lockhart Substation) and associated 220 kV transmission lines, generation-tie lines, telecommunications connection, and 12 kV distribution circuits in San Bernardino County. The Project would interconnect the 250 megawatt (MW) Abengoa Mojave Solar Project (AMSP) to SCE's existing Cool Water-Kramer No.1 220 kV transmission line.

The CPUC's review concluded that implementation of the Project would not result in any significant unmitigable environmental impacts. All potential impacts would be less than significant or could be mitigated to a less-than-significant level. SCE has agreed to incorporate all of the CPUC-recommended mitigation measures into the Project. The CPUC has included the stipulated mitigation measures as conditions of approval of the application and has circulated an IS/MND for public review.

The attached IS/MND presents and analyzes potential environmental impacts that would result from construction, operation and maintenance of the Project and recommends mitigation measures as appropriate. Based on the IS/MND, approval of the application would have no impact or a less-than-significant impact related to the following environmental resources:

- Aesthetics
- Agriculture and Forestry
- Air Quality
- Cultural Resources
- Geology, Soils, and Seismicity
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

The IS/MND indicates that approval of the application would result in less than significant impacts with mitigation related to the following environmental resources:

- Biological Resources (i.e., rare plants)
- Greenhouse Gas Emissions (i.e., consistency with Scoping Plan Measure H-6 related to high global warming potential gas reductions from stationary sources – SF_6 leak reduction and recycling in electrical applications)

B.1.2 Roles and Responsibilities

As the lead agency under CEQA, the CPUC is required to monitor this Project to ensure that the required mitigation measures and Applicant Proposed Measures (AMPs) are implemented. The CPUC will be responsible for ensuring full compliance with the provisions of this MMRCP and has primary responsibility for implementation of the monitoring program. The purpose of the monitoring program is to document that the mitigation measures required by the CPUC are implemented and that the significance environmental impacts are reduced to the level identified in the MMRCP. The CPUC has the authority to halt any activity associated with the Project if the activity is determined to be a deviation from the approved Project or the adopted mitigation measures.

The CPUC may delegate duties and responsibilities for monitoring to other mitigation monitors or consultants as deemed necessary. The CPUC will ensure that the person(s) delegated any duties or responsibilities are qualified to monitor compliance.

The CPUC, along with its mitigation monitor, will ensure that any variance process, which will be designed specifically for the Project, or deviation from the procedures identified under the MMRCP is consistent with CEQA requirements; no variance will be approved by the CPUC if it creates new significant environmental impacts. As defined in this MMRCP, a variance should be limited strictly to minor changes in the Project that will not trigger other permit requirements, do not increase the severity of an impact analyzed in the IS/MND or create a new impact, and that clearly and strictly complies with the intent of the mitigation measure. A change to the Project that has the potential for creating a significant environmental effect will be evaluated to determine whether supplemental CEQA review is required. Any proposed deviation from the approved Project and adopted mitigation measures, including correction of such deviation, shall be reported immediately to the CPUC and the mitigation monitor assigned to the construction for their review and CPUC approval. In some cases, a variance also may require approval by a CEQA responsible agency.

B.1.3 Enforcement and Responsibility

The CPUC is responsible for enforcing the procedures for monitoring through the environmental monitor. The environmental monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CPUC. The CPUC has the authority to halt any construction, operation, or maintenance activity associated with the

Project if the activity is determined to be a deviation from the approved Project or adopted mitigation measures. The CPUC may assign its authority to its environmental monitor.

B.1.4 Mitigation Compliance Responsibility

SCE is responsible for successfully implementing all the adopted mitigation measures in this MMRCP. The MMRCP contains criteria that define whether mitigation is successful. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely. Additional mitigation success thresholds will be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

SCE shall inform the CPUC and its mitigation monitor in writing of any mitigation measures that are not or cannot be successfully implemented. The CPUC in coordination with its mitigation monitor will assess whether alternative mitigation is appropriate and specify to SCE the subsequent actions required.

B.1.5 Dispute Resolution Process

This MMRCP is expected to reduce or eliminate many of the potential disputes concerning the implementation of the adopted measures. However, in the event that a dispute occurs, the following procedure will be observed:

> **Step 1.** Disputes and complaints (including those of the public) should be directed first to the CPUC's designated Project Manager for resolution. The Project Manager will attempt to resolve the dispute.
>
> **Step 2.** Should this informal process fail, the CPUC Project Manager may initiate enforcement or compliance action to address deviations from the Project or adopted MMRCP.
>
> **Step 3**. If a dispute or complaint regarding the implementation or evaluation of the MMRCP or the mitigation measures cannot be resolved informally or through enforcement or compliance action by the CPUC, any affected participant in the dispute or complaint may file a written "notice of dispute" with the CPUC's Executive Director. This notice should be filed in order to resolve the dispute in a timely manner, with copies concurrently served on other affected participants. Within 10 days of receipt, the Executive Director or designee(s) shall meet or confer with the filer and other affected participants for purposes of resolving the dispute. The Executive Director shall issue an Executive Resolution describing his/her decision, and serve it on the filer and other affected participants.
>
> **Step 4.** If one or more of the affected parties is not satisfied with the decision as described in the Resolution, such party(ies) may appeal it to the Commission via a procedure to be specified by the Commission.

Parties also may seek review by the Commission through existing procedures specified in the Commission's Rules of Practice and Procedure for formal and expedited relief.

B.1.6 General Monitoring Procedures

Mitigation Monitor

Many of the monitoring procedures will be conducted during the construction phase of the Project. The CPUC and the mitigation monitor are responsible for integrating the mitigation monitoring procedures into the construction process in coordination with SCE. To oversee the monitoring procedures and to ensure success, the mitigation monitor assigned to the construction must be on site during that portion of construction that has the potential to create a significant environmental impact or other impact for which mitigation is required. The mitigation monitor is responsible for ensuring that all procedures specified in the monitoring and reporting program are followed.

Construction Personnel

A key feature contributing to the success of mitigation monitoring will be obtaining the full cooperation of construction personnel and supervisors. Many of the mitigation measures require action on the part of the construction supervisors or crews for successful implementation. To ensure success, the following actions, detailed in specific mitigation measures included in the MMRCP, will be taken:

- SCE shall require all contractors to comply with the conditions of project approval, including all applicable mitigation measures.
- One or more pre-construction meetings will be held to inform all and train construction personnel about the requirements of the MMRCP.
- A written summary of mitigation monitoring procedures will be provided to construction supervisors for all mitigation measures requiring their attention.

General Reporting Procedures

Site visits and specified monitoring procedures performed by other individuals will be reported to the mitigation monitor assigned to the construction. A monitoring record form will be submitted to the mitigation monitor by the individual conducting the visit or procedure so that details of the visit can be recorded and progress tracked by the mitigation monitor. A checklist will be developed and maintained by the mitigation monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The mitigation monitor will note any problems that may occur and take appropriate action to rectify the problems. SCE shall provide the CPUC with written quarterly reports of the project, which shall include progress of construction, resulting impacts, mitigation implemented, and all other noteworthy elements of the project. Quarterly reports shall be required as long as mitigation measures are applicable.

Public Access to Records

The public is allowed access to records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CPUC on request. The CPUC and SCE will develop a filing and tracking system.

Condition Effectiveness Review

To fulfill its statutory mandates to mitigate or avoid significant environmental effects and to design a MMRCP to ensure compliance during project implementation (Pub. Res. Code § 21081.6):

- The CPUC may conduct a comprehensive review of conditions which are not effectively mitigating impacts at any time it deems appropriate, including as a result of the Dispute Resolution procedure outlined above; and

- If in either review, the CPUC determines that any conditions are not adequately mitigating significant environmental impacts caused by the Project, or that recent proven technological advances could provide more effective mitigation, then the CPUC may impose additional reasonable conditions to effectively mitigate these impacts.

These reviews will be conducted in a manner consistent with the CPUC's rules and practices.

B.2 Mitigation Monitoring, Reporting and Compliance Program

MMRCP Table B-3, *Mitigation Monitoring, Reporting and Compliance Program for the Lockhart Substation Project*, presents the mitigation measures recommended in the IS/MND. The purpose of the table is to provide a single comprehensive list of impacts, mitigation measures, monitoring and reporting requirements, and timing.

As a preliminary matter, SCE proposed certain measures (Applicant Proposed Measures, or APMs) to reduce or avoid potential environmental impacts (see Table B-1, *Applicant Proposed Measures for the Lockhart Substation Project*). The impact analysis in this IS/MND assumed that these APMs would be implemented as part of the Project. Consequently, the APMs are not "mitigation measures" as the term is defined under CEQA and are not included in Table B-3.

In addition to the APMs identified in Table B-1, *Applicant Proposed Measures for the Lockhart Substation Project*, each of the design features, environmental protection measures, and best management practices (BMPs) provided in DOE EA Appendix S (p. 1 et seq.) or referenced in the analysis of impacts related to the respective environmental resources for which Southern California Edison is responsible (including the measures required by the California Energy Commission as Conditions of Certification, or "COCs," in the Commission Decision for the Abengoa Mojave Solar Plant Project) is incorporated into the Project. In making the determinations of environmental effect in CPUC's IS/MND for the Project, it was assumed that the agency-implemented measures would be implemented as part of the Project. These measures are set forth in Table B-2, *Agency-Imposed Measures for the Abengoa Mojave Solar Project.*

TABLE B-1
APPLICANT PROPOSED MEASURES FOR THE LOCKHART SUBSTATION PROJECT

APM No.	APM Description
Air Resources	
AIR-1	Construction activities would be conducted in compliance with AQMD requirements, as applicable to the Project
Aesthetics and Visual Resources	
AES-1	LSTs and TSPs would be galvanized steel with a dulled grey finish that minimizes reflected light.
AES-2	Insulators that minimize reflection of light would be utilized.
AES-3	Substation equipment would have materials that minimize reflective light.
AES-4	If chain link fence is used, it would have a dulled-finish.
AES-5	The substation lighting would be designed to be manually operated for non-routine nighttime work.
Biological Resources	
BIO-1	Preconstruction biological clearance surveys would be conducted to identify special-status plants and wildlife.
BIO-2	SCE would prepare a Worker Environmental Awareness Program (WEAP). All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project.
BIO-3	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 (Avian Power Line Interaction Committee 2006).
Cultural Resources	
CR-1	A cultural resource inventory of the project area would be conducted for cultural resources prior to any disturbance. All surveys would be conducted and documented as per applicable laws, regulations, and guidelines.
CR-2	To the extent feasible, all ground-disturbing activities shall be sited to avoid or minimize impacts to cultural resources listed as, or potentially-eligible for listing as, unique archaeological sites, historical resources, or historic properties.
CR-3	A protective buffer zone would be established and maintained around each recorded archaeological site within or immediately adjacent to the ROW.
Paleontological Resources	
PALEO-1	A paleontologist would conduct a pre-construction field survey of the project area.
PALEO-2	Prior to construction, a certified paleontologist would supervise monitoring of construction excavations.
Geology and Soils	
GEO-1	Prior to final design of substation facilities, and transmission and, 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.
GEO-2	For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substations".
GEO-3	New access roads, where required, would be designed to minimize ground disturbance during grading.
GEO-4	Cut and fill slopes would be minimized by a combination of benching and following natural topography where feasible.
GEO-5	Any disturbed areas associated with temporary construction would be returned to preconstruction conditions (to the extent feasible) after the completion of project construction.

TABLE B-1
APPLICANT PROPOSED MEASURES FOR THE LOCKHART SUBSTATION PROJECT

APM No.	APM Description
Hazards And Hazardous Materials	
HAZ-1	A Phase I ESA would be performed at each new or expanded substation location and along newly acquired transmission subtransmission line ROWs.
HAZ-2	SCE would implement standard fire prevention and response practices for the construction activities.
HAZ-3	As applicable, SCE would follow fire codes per Cal Fire Power Line Fire Prevention Fire Guide requirements for vegetation clearance during construction of the project to reduce the fire hazard potential.
HAZ-4	Hazardous materials and waste handling would be managed in accordance with the following SCE plans and programs: • Spill Prevention, Countermeasure, and Control Plan (SPCC Plan). In accordance with Title 40 of the CFR, Part 112, SCE would prepare a SPCC for proposed and/or expanded substations, as applicable. • Hazardous Materials Business Plans (HMBPs). Prior to operation of new or expanded substations, SCE would prepare or update and submit, in accordance with Chapter 6.95 of the CHSD, and Title 22 CCR, an HMBP, as applicable. • Storm Water Pollution Prevention Plan (SWPPP): A project-specific construction SWPPP would be prepared and implemented prior to the start of construction of the transmission line and substation. • Health and Safety Program: SCE would prepare and implement a health and safety program to address site-specific health and safety issues. • Hazardous Materials and Hazardous Waste Handling: A Project-specific hazardous materials management and hazardous waste management program would be developed prior to initiation of the project. Material Safety Data Sheets would be made available to all Project workers • Emergency Release Response Procedures: An Emergency Response Plan detailing responses to releases of hazardous materials would be developed prior to construction activities. All construction personnel, including environmental monitors, would be aware of state and federal emergency response reporting guidelines.
HAZ-5	Hazardous materials would be used or stored and disposed of in accordance with Federal, State, and Local regulations.
HAZ-6	The substation would be grounded to limit electric shock and surges that could ignite fires.
HAZ-7	All construction and demolition waste would be removed and transported to an appropriately permitted disposal facility.
Hydrology and Water Quality	
HYDRO-1	Construction equipment would be kept out of flowing stream channels as feasible.
HYDRO-2	Towers would be located to avoid active drainage channels, especially downstream of steep hill slope areas, to minimize the potential for damage.
Land Use	
LU-1	SCE shall provide 14 days of advance notice of the start of construction to property owners located within 300 feet of construction-related activities.
Noise	
NOISE-1	SCE would comply with local noise ordinances.
Transportation and Traffic	
TRANS-1	Traffic control services would be used for equipment delivery, supply delivery, and conductor stringing, as applicable.
TRANS-2	Construction traffic would be scheduled for off-peak hours to the extent feasible and would not block emergency equipment routes.
TRANS-3	If work requires modifications or activities within local roadway and railroad ROWs, appropriate permits would be obtained prior to the commencement of construction activities.

TABLE B-2
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Visual Resources		
1. Design Feature 1: The surfaces of all aboveground structures except the solar collectors (i.e., control building, administration building, warehouse, water treatment building, solar collector array assembly buildings, enclosures for mechanical and electrical equipment, substation MERS building, water storage tanks, etc.) will be given low reflectivity finishes with neutral desert tan colors sympathetic to the desert environment to minimize the contrast of the structures with their backdrops.	X	
2. Design Feature 2: All substation equipment will be specified with low reflectivity, neutral finishes. All insulators at the substations and on the takeoff equipment will be nonreflective and nonrefractive. The chain-link fences surrounding the substations and the Project site will have a dulled finish to reduce contrast with the desert surroundings.		X
3. Design Feature 3: For overhead transmission lines, tubular steel poles (TSPs) will be painted lightgray colors or will be dulled galvanized steel. If concrete monopoles are used, they will be natural concrete with light-gray colors. All insulators specified for this Project will be made of materials that do not reflect or refract light. All conductors specified for the AMSP/Lockhart Substation site will be nonspecular; that is, they will be treated at the factory to dull their surfaces to reduce their potential to reflect light.	X	X
4. Design Feature 4: All construction-related operations at the construction laydown area will be kept clean and tidy. Mojave Solar will remove construction debris promptly at regular intervals, not to exceed 2 weeks at any one location.	X	
5. Design Feature 5: All outdoor lighting will be the minimum required to meet safety and security standards and all light fixtures will be hooded to eliminate any potential for glare effects and to prevent light from spilling off the site or up into the sky. In addition, the light fixtures will have sensors and switches to permit the lighting to be turned off at times when it is not required.	X	
6. Design Feature 6: The Applicant will voluntarily consult with residential property owners within 0.5 mile of the proposed AMSP/Lockhart site boundary to suggest offsite-planting on adjacent residential properties (if landowner is interested) to assist with visual screening of the AMSP/Lockhart site as seen from these single-family residential locations.	X	
Air Quality		
Design Measures		
1. The Applicant will have an onsite construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the proposed construction mitigations will be provided on a periodic basis.	X	
2. All unpaved roads and disturbed areas in the Project and laydown construction sites will be watered as frequently as necessary to control fugitive dust. The frequency of watering will be on a minimum schedule of every 2 hours during the daily construction activity period. Watering may be reduced or eliminated during periods of precipitation.	X	
3. Vehicle speeds within the AMSP site will be limited to 5 mph on unpaved areas within the construction zones.	X	
4. The AMSP construction site entrance(s) will be posted with visible speed limit signs.	X	
5. All construction equipment vehicle tires will be inspected and cleaned as necessary to be free of dirt prior to leaving the construction site via paved roadways.	X	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Air Quality (cont.)		
Design Measures (cont.)		
6. Gravel ramps will be provided at the tire cleaning area within the AMSP site.	X	
7. All unpaved exits from the AMSP construction site will be graveled or treated to reduce track-out to public roadways.	X	
8. All construction vehicles will enter the AMSP construction site through the treated entrance roadways, unless an alternative route has been provided.	X	
9 Construction areas adjacent to any paved roadway will be provided with sandbags or other similar measures as specified in the construction Storm Water Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.	X	X
10. All paved roads within the AMSP construction site will be cleaned on a periodic basis (or less during periods of precipitation), to prevent the accumulation of dirt and debris.	X	
11. The first 500 feet of any public roadway exiting the AMSP construction site will be cleaned on a periodic basis (or less during periods of precipitation), using wet sweepers or air-filtered dry vacuum sweepers, when construction activity occurs or on any day when dirt or runoff from the construction site is visible on the public roadways.	X	
12. Any soil storage piles and/or disturbed areas that remain inactive for longer than 10 days will be covered, or shall be treated with appropriate dust suppressant compounds.	X	X
13. All vehicles used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to minimize fugitive dust emissions. A minimum freeboard height of 2 feet will be required on all bulk materials transport.	X	X
14. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition will remain in place until the soil is stabilized or permanently covered with vegetation.	X	
15. Disturbed areas will be revegetated or covered with gravel or other dust suppressant material as soon as practical.	X	X
16. The Applicant will work with the construction contractor to utilize to the extent feasible, EPA/CARB Tier II/Tier III engine compliant equipment for equipment over 100 horsepower (hp).	X	X
17. Ensure periodic maintenance and inspections per manufacturer specifications.	X	X
18. Reduce idling time through equipment and construction scheduling.	X	X
19. Use California low sulfur diesel fuels (<=15 parts per million by weight [ppmw] sulfur).	X	X

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Air Quality (cont.)		
Mitigation Measures from the CEC Conditions of Certification – Applicable to AMSP/Lockhart Substation. Refer to Appendix I for MDAQMD conditions.		
AQ-SC1: Air Quality Construction Mitigation Manager (AQCMM): The Project owner shall designate and retain an onsite AQCMM who shall be responsible for directing and documenting compliance with Conditions of Certification AQ-SC3, AQ-SC4, and AQ-SC5 for the entire Project site and linear facility construction. The onsite AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the Project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the compliance project manager (CPM). Verification: At least 30 days prior to the start of ground disturbance, the Project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the onsite AQCMM and all AQCMM Delegates.	X-COC	
AQ-SC2: Air Quality Construction Mitigation Plan (AQCMP): The Project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with Conditions of Certification AQ-SC3, AQ-SC4, and AQ-SC5. Verification: At least 30 days prior to the start of any ground disturbance, the Project owner shall submit the AQCMP to the CPM for approval. The AQCMP shall include effectiveness and environmental data for the proposed soil stabilizer. The CPM will notify the Project owner of any necessary modifications to the plan within 15 days from the date of receipt.	X-COC	
AQ-SC3: Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report that demonstrates compliance with the AQCMP mitigation measures for the purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes that will not comply with the performance standards identified in AQ-SC4 from leaving the Project site. The following fugitive dust mitigation measures shall be included in the AQCMP required by AQ-SC2, and any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval. a. The main access roads through the facility to the power block areas will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main power block area, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved or treated prior to taking initial deliveries. b. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a nontoxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as CARB-approved soil stabilizers, and shall not increase any other environmental impacts, including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the Project and linear construction sites shall be watered as frequently as necessary during grading (consistent with BIO-7) and after active construction activities shall be stabilized with a nontoxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods, in order to comply with the dust mitigation objectives of Condition of Certification AQ-SC4. The frequency of watering can be reduced or eliminated during periods of precipitation. c. No vehicle shall exceed 10 mph on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 mph on stabilized unpaved roads as long as such speeds do not create visible dust emissions. d. Visible speed limit signs shall be posted at the construction site entrances.	X-COC	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Air Quality (cont.)		
e. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways. f. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station. g. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways. h. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM. i. Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently effective measures to prevent runoff to roadways, or other similar runoff control measures as specified in the SWPPP, only when such SWPPP measures are necessary so that this condition does not conflict with the requirements of the SWPPP. j. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris. k. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways. l. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds. m. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least 1 foot of freeboard. n. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation. <u>Verification</u>: The AQCMM shall provide the CPM a Monthly Compliance Report to include the following to demonstrate control of fugitive dust emissions: A. A summary of all actions taken to maintain compliance with this condition; B. Copies of any complaints filed with the District in relation to Project construction; and C. Any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the Project owner's discretion.		
<u>AQ-SC4</u>: Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the Project site and within 400 feet upwind of any regularly occupied structures not owned by the Project owner or (B) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing how the additional	X-COC	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Air Quality (cont.)		
mitigation measures will be accomplished within the time limits specified. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed: Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination. Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination. Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within 1 hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The Project owner may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within 1 hour of the original determination, unless overruled by the CPM before that time. Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include: A. A summary of all actions taken to maintain compliance with this condition; B. Copies of any complaints filed with the District in relation to Project construction; and C. Any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the Project owner's discretion.		
AQ-SC5: Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. The following off-road diesel construction equipment mitigation measures shall be included in the AQCMP required by AQ-SC2, and any deviation from the AQCMP mitigation measures shall require prior and CPM notification and approval. a. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the onsite AQCMM showing that the engine meets the conditions set forth herein. b. All construction diesel engines with a rating of 50 hp or higher and lower than 750 hp shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the onsite AQCMM demonstrates that such engine is not available for a particular item of equipment. Engines larger than 750 hp shall meet Tier 2 engine standards. In the event that a Tier 3 engine is not available for any off-road equipment larger than 50100 hp and smaller than 750 hp, that equipment shall be equipped with a Tier 2 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOX) and diesel particulate matter (DPM) to no more than Tier 2 levels unless certified by engine manufacturers or the onsite AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is "not practical" for the following, as well as other, reasons. 1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 2 equivalent emission levels and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or 2. The construction equipment is intended to be on-site for 10 days or less.	X-COC	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Air Quality (cont.)		
3. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical. c. The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within 10 working days of the termination and that a replacement for the equipment item in 1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure. 2. The retrofit control device is causing or is reasonably expected to cause engine damage. 3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public. 4. Any other seriously detrimental cause that has the approval of the CPM prior to implementation of the termination. d. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications. e. All diesel heavy construction equipment shall not idle for more than 5 minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement. f. Construction equipment will employ electric motors when feasible. Verification: The AQCMM shall include in the Monthly Compliance Report the following to demonstrate control of diesel construction-related emissions: A. A summary of all actions taken to control diesel construction related emissions; B. A list of all heavy equipment used onsite during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and C. Any other documentation deemed necessary by the CPM or AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the Project owner's discretion.		
AQ-SC6: The Project owner, when obtaining dedicated on-road or off-road vehicles for mirror washing activities and other facility maintenance activities, shall only obtain vehicles that meet California on-road vehicle emission standards or appropriate EPA/California off-road engine emission standards for the latest model year available when obtained. Verification: At least 30 days prior to the start commercial operation, the Project owner shall submit to the CPM a copy of the plan that identifies the size and type of the onsite vehicle and equipment fleet and the vehicle and equipment purchase orders and contracts and/or purchase schedule. The plan shall be updated every other year and submitted in the Annual Compliance Report.	X-COC	
AQ-SC7: The Project owner shall provide a site Operations Dust Control Plan, including all applicable fugitive dust control measures identified in the verification of AQ-SC3 that will be applicable to minimizing fugitive dust emission creation from operation and maintenance activities and preventing all fugitive dust plumes that will not comply with the performance standards identified in AQ-SC4 from leaving the Project site; that:	X-COC	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Air Quality (cont.)		
A. Describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind anywhere within the Project boundaries; and B. Identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed shall be limited to no more than 10 mph on these unpaved roadways, with the exception that vehicles may travel up to 25 mph on stabilized unpaved roads as long as such speeds do not create visible dust emissions. The site operations fugitive dust control plan shall include the use of durable nontoxic soil stabilizers on all regularly used unpaved roads and disturbed off-road areas, or alternative methods for stabilizing disturbed off-road areas, within the Project boundaries, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The soil stabilizer used shall be a nontoxic soil stabilizer or soil weighting agent that can be determined to be as efficient as or more efficient for fugitive dust control than CARB-approved soil stabilizers, and that shall not increase any other environmental impacts, including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of condition AQ-SC4. The measures and performance requirements of AQ-SC4 shall also be included in the Operations Dust Control Plan. Verification: At least 30 days prior to start of commercial operation, the Project owner shall submit to the CPM for review and approval a copy of the site Operations Dust Control Plan that identifies the dust and erosion control procedures, including effectiveness and environmental data for the proposed soil stabilizer that will be used during operation of the Project and that identifies all locations of the speed limit signs. Within 60 days after commercial operation, the Project owner shall provide to the CPM a report identifying the locations of all speed limit signs, and a copy of the Project employee and contractor training manual that clearly identifies that Project employees and contractors are required to comply with the dust and erosion control procedures and onsite speed limits.		
AQ-SC8: The Project owner shall provide the CPM copies of all District-issued Authority to Construct (ATC) and Permit to Operate (PTO) documents for the facility. The Project owner shall submit to the CPM for review and approval any modification proposed by the Project owner to any Project Federal air permit. The Project owner shall submit to the CPM any modification to any Federal air permit proposed by the District or EPA, and any revised Federal air permit issued by the District or EPA, for the Project. Verification: The Project owner shall submit any ATC, PTO, and proposed Federal air permit modifications to the CPM within 5 working days of its submittal either by (1) the Project owner to an agency, or (2) receipt of proposed modifications from an agency. The Project owner shall submit all modified ATC/PTO documents and all Federal air permits to the CPM within 15 days of receipt.	X-COC	
AQ-SC9: The Project owner shall offer to pay for temporary equivalent lodging to all residents that are located within 0.25 mile of the Project site fence line during the initial grading/site preparation phase of construction, for those periods of time when the initial grading/site preparation earth-moving activities may occur within 0.25 mile of these residential properties. The Project owner shall contact and provide this offer of temporary lodging to all residents affected by this condition at least 1 month prior to the start of initial grading. Verification: The Project owner shall provide to the CPM, prior to the start of initial grading, a statement signed by the Project owner's project manager stating that the owner or residents of the properties affected by this condition have been notified and that the residents have been offered by the Project owner paid relocation during the affected period of the initial grading/site preparation phase of construction. The statement shall list affected property owners/residents notified and the means of notification. Additionally, in the Monthly Compliance Report the Project owner shall provide documentation regarding any requests from the residents to be relocated for longer periods during construction and the Project owner's actions to evaluate those requests.	X-COC	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Noise		
Construction Phase Noise Control Measures		
1. At least 15 days prior to the start of ground disturbance, the Project proponent, or its designee shall notify all residents within 2 miles of the site, by mail or other effective means, of the commencement of construction. At the same time, a telephone number shall be established for use by the public and included in the notice to report any undesirable noise conditions associated with the construction and operation of the Project and include that telephone number in the above notice.	X	
2. Throughout the construction and operation of the AMSP, Mojave Solar, or it designee, shall document, investigate, evaluate, and attempt to resolve all legitimate, Project-related noise complaints.	X	
3. Mojave Solar, or its designee, shall prepare a noise control program and a statement verifying that the noise control program will be implemented throughout construction of the Project. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal/OSHA standards.	X	
4. Noisy construction work (such as grading, drilling, and heavy lifts) shall be restricted to the period from 7 a.m. to 7 p.m. on weekdays and Saturdays, unless otherwise permitted in accordance with the San Bernardino County Code. If construction work outside of these hours is needed to maintain the overall development schedule, such after-hours construction shall be limited to relatively quiet activities (such as welding, circuit testing, and inspections) so as to not disturb the closest residential receptors.	X	
5. Construction equipment shall have appropriate silencing features or equipment installed and maintained during the course of the construction phase. For example, haul trucks and other enginepowered equipment shall be equipped with adequate mufflers. Stationary compressors and generators shall utilize noise-reduction enclosures or similar noise control features. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust braking shall be limited to emergencies.	X	
6. To minimize construction-related truck traffic noise, stockpiling and vehicle staging areas shall be located at least 200 feet away from occupied residential dwellings or other sensitive receptor locations to reduce annoyances from vehicular traffic. Construction routes will be established to minimize truck movements near residential streets.	X	
7. Mojave Solar, or its designee, will install temporary silencers on air and steam discharge vents during the Commissioning and Initial Start-up Phase of the AMSP. This will reduce noise from the few weeks of air and steam blow cleaning that only occurs during this part of the plant's life cycle.	X	
8. If a traditional, high-pressure steam blow process is employed, Mojave Solar, or its designee, shall equip steam blow piping with a temporary silencer that quiets the noise of steam blows to no greater than 110 dBA measured at a distance of 100 feet. The Project owner shall conduct steam blows only during the hours of 8 a.m. to 5 p.m., unless it can be demonstrated that offsite noise impacts will not cause annoyance.	X	
9. At least 15 days prior to the first steam blow(s), Mojave Solar, or it designee, shall notify all residents within 2 miles of the site of the planned steam blow activity, and shall make the notification available to other area residents in an appropriate manner. The notification may be in the form of letters to the area residences, telephone calls, fliers, or other effective means. The notification shall include a description of the purpose and nature of the steam blow(s), the proposed schedule, the expected sound levels, and the explanation that it is a one-time operation and not a part of normal plant operations.	X	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Noise (cont.)		
Operational Phase Noise Control Measures		
1. Within 90 days of the AMSP achieving a sustained output of 80% or greater of rated capacity, Mojave Solar, or it designee, shall conduct a 25-hour community noise survey, utilizing the same monitoring sites employed in the pre-Project ambient noise survey as a minimum. The survey shall also include the octave band pressure levels to ensure that no new pure-tone noise components have been introduced. A verification survey report will be prepared within 30 days following the completion of the field effort. No single piece of equipment will be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves will be adequately muffled to preclude noise that draws legitimate complaints. If the results from the survey indicate that the Project noise levels are in excess of County limits, additional measures may be implemented to reduce noise to a level of compliance. A copy of the verification survey report will be provided to the County of San Bernardino; the County will be kept apprised of progress made toward correcting any noise-related issues.	X	
2. Within 120 days of the AMSP achieving a sustained output of 80% or greater of rated capacity, Mojave Solar, or it designee, shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey will be conducted by a qualified person in accordance with the provisions of Title 8, CCR Sections 5095–5099 and Title 29, CFR Section 1910.95. The survey results will be used to prepare a report and determine the magnitude of employee noise exposure. If necessary, measures will be identified to comply with the applicable California and Federal regulations. The report will be kept on file with the onsite plant manager.	X	
3. Given the very low, late-night noise levels in the vicinity of the AMSP/Lockhart Substation site, the occasional mirror-washing activities will be conducted, if practical, using lower-noise water trucks (i.e., gasoline-powered, natural gas-powered, or electric-powered), rather than diesel-powered trucks. Mirror-washing equipment will have appropriate silencing features or equipment (such as mufflers) installed and maintained. Further, mirror washing in solar field areas closest to residential receptors will be conducted before midnight, if practical.	X	
Geology		
Seismic Safety Design Measures		
1. Power plant structures and equipment will be designed in accordance with seismic requirements of the Alquist-Priolo Earthquake Fault Zoning Act. For new substation construction, specific requirements for seismic design will be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substations."	X	X
2. Project foundations will be designed in accordance with recommendations provided in the final geotechnical design report for the AMSP and Lockhart Substation.	X	X
Erosion Control During Construction Phase		
1. Local soil berms and a detention area will be constructed to contain stormwater runoff. X	X	
2. Site grading, clearing, and grubbing will be confined to only those areas needed for facility construction as indicated in the conceptual grading plan.	X	
3. Temporary erosion controls including crushed rock, silt fences and fiber rolls will be used as needed to minimize erosion in active grading areas. Soil stockpiles will be covered prior to forecasted storm events and during windy conditions. Fiber rolls or gravel bags will be placed around the perimeter of the stockpiles to further minimize the potential for runoff.	X	

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Geology (cont.)		
Erosion Control During Construction Phase (cont.)		
4. Additionally, water will be used to control dust and will be applied at a rate to minimize runoff.	X	
5. An erosion control plan will be developed and implemented to ensure minimum soil loss and to maintain water quality. Temporary and long-term erosion control measures will be constructed and maintained as necessary during and following construction until long-term stabilization has been established.		X
Paleontology		
1. Prior to the start of any Project-related construction (defined as construction-related vegetation clearing, ground disturbance and preparation, and site excavation activities), the Project owner will ensure that the paleontological resource specialist is available for field activities and prepared to implement these measures. The paleontological resource specialist will be responsible for implementing all the paleontological measures and for using qualified personnel to assist in this work.	X	X[1]
2. Prior to the start of construction, a Paleontological Resource Monitoring and Mitigation Plan will be prepared by a paleontological resource specialist. The plan will identify general and specific measures to minimize potential impacts to sensitive paleontological resources. The Project paleontological resource specialist will implement the Paleontological Resource Monitoring and Mitigation Plan as needed. The Paleontological Resource Monitoring and Mitigation Plan will include, but not be limited to, the following elements and measures. • A discussion of the sequence of Project-related tasks, such as any preconstruction surveys, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery; identification and inventory; preparation of final reports; and transmittal of materials for curation; • Identification of the person(s) expected to assist with each of the tasks identified within this condition, and a discussion of the mitigation team leadership and organizational structure, and the interrelationship of tasks and responsibilities; • Where monitoring of Project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring; • An explanation that the designated paleontological resource specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined; • A discussion of the equipment and supplies necessary for the recovery of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits; • Inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum that meets the SVP standards and requirements for the curation of paleontological resources; and • Identification of the institution (expected to be the SBCM) that has agreed to receive any data and fossil materials recovered during Project-related monitoring and mitigation work, discussion of any requirements of specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution.	X	X[1]
3. Prior to the start of construction, the paleontological resource specialist will prepare a staff training program. The paleontological training program will address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program will also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during Project activities.	X	X[1]

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Paleontology (cont.)		
4. During construction, the designated paleontological resource specialist or paleontological monitor will monitor construction-related grading, excavation, trenching, and/or augering in areas with a significant potential for fossil-bearing sediments to occur. All ground disturbances in Quaternary older alluvium (greater than 5 feet in depth) and Quaternary lake deposits will be monitored on a full-time basis because of their high paleontological sensitivity. All ground disturbances in Quaternary younger alluvium (at or less than 5 feet in depth) will be spot-checked by paleontological monitors. Paleontological monitoring will include inspection of exposed rock units and microscopic examination of matrix to determine if fossils are present. Paleontological monitors will have authority to temporarily divert excavations or drilling away from exposed fossils in order to efficiently and professionally recover the fossil specimens and collect associated data.	X	X[1]
5. The Project owner, through the designated paleontological resource specialist, will ensure recovery, preparation for analysis, analysis, identification and inventory, the preparation for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during the monitoring, data recovery, mapping, and mitigation activities related to the Project.	X	X[1]
6. The Project owner will ensure preparation of a Paleontological Resources Report by the designated paleontological resource specialist following the analysis of the recovered fossil materials and related information. The report will include a description and inventory list of recovered fossil materials, a map showing the location of paleontological resources found in the field, determinations of sensitivity and significance, and a statement by the paleontological resource specialist that Project impacts to paleontological resources have been mitigated.	X	X[1]
Water Resources		
1. Initially, grading will proceed in a systematic manner in those areas needed for site construction and operation. Undisturbed areas will remain so until being actively graded.	X	
2. Berms are proposed to be used along slopes or check structures to control sediment loss and erosion. As indicated for the storm channel sections, riprap gabions or other erosion control measures will be used to minimize scour and erosion.	X	
3. Roads and paved areas are proposed to be kept free of dust, dirt, and visible soil materials. A stabilized construction entrance/exit shall be constructed and maintained. Stabilized construction roadways will be used throughout the Project site and maintained throughout the construction period. Water is proposed to be used to control fugitive dust emissions and applied as to minimize and control water runoff.	X	
4. BMPs are proposed to be applied and, if necessary, repaired as soon as erosion is evident or a particular measure fails. Temporary erosion control measures are proposed as well and temporary sediment control materials are proposed to be maintained onsite throughout the construction period to respond as needed to unforeseen rain or emergencies.	X	
5. The AMSP will develop and implement a Channel Maintenance Program for routine maintenance of the storm water channels to protect the integrity of the channels from erosion and sedimentation.	X	
Biological Resources		
1. Designated Biologist Selection BIO-1: The project owner shall assign a Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the Energy Commission Compliance Project Manager (CPM), CDFG, and USFWS for approval. The Designated Biologist must meet the following minimum qualifications: a. Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field; and	X-COC	X

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
b. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; c. At least one year of field experience with biological resources found in or near the project area; d. Meet current USFWS Authorized Biologist criteria and demonstrate familiarity with protocols and guidelines for the desert tortoise; and e. Possess a recovery permit for desert tortoise and a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise and Mohave ground squirrel or have adequate experience and qualifications to obtain these authorizations. It is possible that two biologists may be utilized – each with an MOU for desert tortoise or MGS. In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.		
2. Designated Biologist Duties BIO-2: The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s), but remains the contact for the project owner and CPM. a. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources conditions of certification; b. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), to be submitted by the project owner; c. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat; d. Halt any and all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued or a violation of federal or state environmental laws or a violation of any environmental agreements/conditions made between the applicant and the CPM and/or the regulatory agencies; e. Clearly mark sensitive biological resource areas, if present and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions; f. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (i.e. parking lots) for animals in harm's way; g. Notify the project owner and the CPM of any non-compliance with any biological resources condition of certification; h. Respond directly to inquiries of the CPM regarding biological resource issues; X-COC X i. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Report; and j. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training and all permits.	X-COC	X

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
3. Biological Monitor Selection, Qualifications, and Duties BIO-3: The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references and contact information, of the proposed Biological Monitors to the CPM, CDFG, and USFWS for approval. The resume shall demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks, including: • Biological Monitor(s) involved in any aspect of desert tortoise surveys or handling must meet the criteria to be considered a USFWS Authorized Biologist (USFWS 2008) and demonstrate familiarity with the most recent protocols and guidelines for the desert tortoise. • Biological Monitor(s) involved in any aspect of Mohave ground squirrel surveys or handling must possess a California ESA Memorandum of Understanding pursuant to Section 2081(a) for Mohave ground squirrel or have adequate experience and qualifications to obtain this authorizations. • Biological Monitor(s) training by the Designated Biologist shall include familiarity with the conditions of certification and the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), Worker Environmental Awareness Program (WEAP), and all permits. • The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, grading, boring or trenching. The Designated Biologist shall remain the contact for the Project owner, BLM's Authorized Officer and the CPM.	X-COC	X
4. Designated Biologist and Biological Monitor Authority BIO-4: The project owner's Construction/Operation Manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources conditions of certification. If required by the Designated Biologist and Biological Monitor(s) the project owner's Construction/Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall: a. Halt any and all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued or a violation of federal or state environmental laws or a violation of any environmental agreements/conditions made between the applicant and the CPM and/or the regulatory agencies; b. Inform the project owner and the Construction/Operation Manager when to resume activities; and c. Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or will be instituted, as a result of the work stoppage. d. If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist. It is expected that the Designated Biologist will be onsite during construction or otherwise available by phone.	X-COC	X
5. Worker Environmental Awareness Program BIO-5: The project owner shall develop and implement a CPM-approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction, operation, and closure are informed about sensitive biological resources associated with the project. The WEAP must: a. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media is made available to all participants; b. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, if present; c. Present the reasons for protecting these resources;	X-COC	X

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
d. Present the meaning of various temporary and permanent habitat protection measures as necessary; e. Discuss penalties for violation of applicable LORS (e.g., federal and state endangered species acts); f. Identify whom to contact if there are further comments and questions about the material discussed in the program; and g. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines. The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.		
6. Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP): Development and Compliance BIO-6 The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the CPM (for review and approval) and to CDFG and USFWS (for review and comment) if applicable and shall implement the measures identified in the approved BRMIMP. A copy of the BRMIMP shall be kept onsite and made readily available to biologists, regulatory agencies, the project owner, contractors, and subcontractors as needed. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall identify: a. All biological resource mitigation, monitoring, and compliance measures proposed and agreed to by the project owner; b. All applicant-proposed mitigation measures presented in the Application for Certification, data request responses, and workshop responses [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-6]; c. All biological resource conditions of certification identified as necessary to avoid or mitigate impacts [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-6]; d. All biological resource mitigation, monitoring, and compliance measures required in federal agency terms and conditions, such as those provided in the Biological Opinion; e. All biological resource mitigation, monitoring, and compliance measures required in local agency permits, such as site grading and landscaping requirements; f. All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation, and closure; g. All required mitigation measures for each sensitive biological resource; h. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities; i. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction; j. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities — one set prior to any site (and related facilities) mobilization disturbance and one set subsequent to completion of project construction. Include planned timing of aerial photography and a description of why times were chosen; k. Duration for each type of monitoring and a description of monitoring methodologies and frequency; l. Performance standards to be used to help decide if/when proposed mitigation is or is not successful; m. All performance standards and remedial measures to be implemented if performance standards are not met;	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
n. A preliminary discussion of biological resources-related facility closure measures; and o. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval.		
7. Impact Avoidance and Minimization Measures BIO-7: The project owner shall implement the following measures during construction and operation to manage their project site and related facilities in a manner to avoid or minimize impacts to the local biological resources: a. *Limit Disturbance Area.* The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils shall be stockpiled in disturbed areas, which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7] b. *Minimize Road Impacts*. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads (e.g., new spur roads) or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction. c. *Minimize Traffic Impacts*. Vehicular traffic during project construction and operation shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour on Harper Lake Road and within fenced areas that have been cleared of tortoises and other wildlife. The speed limit shall not exceed 15 miles per hour within unfenced areas and secondary unpaved access roads. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7] d. *Monitor During Construction*. The Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The USFWS-approved Designated Biologist or Biological Monitor shall closely monitor vegetation removal and grading activities to prevent wildlife injury or mortality. e. *Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas*. Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. Temporary disturbance areas, if necessary, shall occur within the project site and shall be designed, installed, and maintained with the goal of minimizing disturbance. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006) and Mitigating Bird Collisions with Power Lines (APLIC 2004) to reduce the likelihood of bird electrocutions and collisions. f. *Avoid Use of Toxic Substances*. Road surfacing and sealants as well as soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7] g. *Minimize Lighting Impacts*. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards the project boundaries and the Harper Dry Lake marsh. Lighting shall be shielded, directional, and at the lowest intensity required for activity. h. *Avoid Vehicle Impacts to Desert Tortoise*. Parking and storage shall occur within desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. During construction, a Biological Monitor shall drive along project access roads, particularly	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
Harper Lake Road at least every three hours during the desert tortoise active period (April through May and September through October) looking for desert tortoise or other vulnerable wildlife within the roadway. Outside of the active period, roads shall be monitored at least twice a day in advance of peak AM and PM traffic periods. During operation, employees shall report any desert tortoise sightings along roadways to the Biological Monitor. If a desert tortoise is observed in the roadway or beneath a parked vehicle, it will be left to move on its own or a Biological Monitor may remove and transfer the animal to a safe location if temperatures are within the appropriate range as identified in the Final Desert Tortoise Clearing and Translocation Plan.		
i. *Avoid Wildlife Pitfalls*. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the permanently fenced area have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected at the beginning of each workday, periodically throughout, and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.		
j. *Avoid Entrapment of Wildlife*. Any construction pipe, culvert, or similar structure with a diameter greater than three inches, stored less than eight inches above ground for one or more days/nights, shall be inspected for wildlife before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored, or placed on pipe racks. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7]		
k. *Report Wildlife Injury and Mortality*. All inadvertent deaths of sensitive species, including road kill, shall be reported to the appropriate project representative. Species name, physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the Monthly Compliance Reports. Injured animals shall be reported to CDFG or USFWS and the CPM and the project owner shall follow instructions that are provided by CDFG or USFWS. If CDFG or USFWS cannot be immediately reached, consideration should be given to taking the animal to a veterinary hospital. If any golden eagles are recovered dead, they shall be sent to the National Eagle Repository after cause of death has been investigated.		
l. *Minimize Standing Water*. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises, common ravens, and other wildlife to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and attract desert tortoise, common ravens, and other wildlife to the site and shall take appropriate action to reduce water application where necessary. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7]		
m. *Minimize Spills of Hazardous Materials*. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be cleaned up immediately and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.		
n. *Worker Guidelines*. During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7]		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
o. *Avoid Spread of Noxious Weeds*. The project owner shall implement the following Best Management Practices during construction and operation to prevent the spread and propagation of noxious weeds [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7]: • Limit the size of any vegetation and/or ground disturbance to the absolute minimum and limit ingress and egress to defined routes; • Reestablish vegetation quickly on disturbed sites temporarily disturbed areas, including pipelines, transmission lines, and staging areas (see BIO-9); • Prevent spread of non-native plants via vehicular sources by implementing TrackcleanTM or other methods of vehicle cleaning for vehicles coming and going from construction sites. Earth-moving equipment and construction vehicles shall be cleaned within an approved area or commercial facility prior to transport to the construction site. The number of cleaning stations shall be limited and weed control/herbicide application shall be used at the cleaning station(s); • Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations; • Invasive non-native species shall not be used in landscaping plans and erosion control; and • Monitor and rapidly implement control measures to ensure early detection and eradication of weed invasions. p. *Implement Erosion Control Measures*. Standard erosion control measures shall be implemented for all phases of construction and operation. All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward an ephemeral drainage or Harper Dry Lake shall be stabilized to reduce erosion potential. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7] q. *Monitor Ground Disturbing Activities Prior to Site Mobilization*. If ground disturbing activities are required prior to site mobilization, such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife. Actions not included in the project description are prohibited. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-7]		
8. Pre-Construction Nest Surveys and Impact Avoidance and Minimization Measures for Migratory Birds BIO-8: Pre-construction nest surveys shall be conducted if construction activities will occur from February 1 through August 1. At all times of the year, noise generating activities shall be limited during early morning and evening to avoid impacts to birds protected under the Migratory Bird Treaty Act. The Designated Biologist or Biological Monitor shall perform surveys in accordance with the following guidelines: a. Surveys shall cover all potential nesting habitat in the project site and within 500 feet of the boundaries of the plant site as well as any areas potentially exposed to noise levels above 60 dBA [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-8]; b. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys needs to be conducted within the 10-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation; c. If active nests are detected during the survey, a no-disturbance buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG and USFWS) and monitoring plan shall be developed. Nest locations shall be mapped using GPS technology and submitted, along with a weekly report stating the survey results, to the CPM; and d. The Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist in consultation with the CPM, disturb nesting activities (e.g., excessive noise above 60 dBA), shall be prohibited within the buffer zone until such a determination is made.	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
9. Golden Eagle Territory-Specific Management Plan BIO-9: In addition to the breeding season golden eagle inventory conducted in spring 2010 (per USFWS protocol [Pagel et al. 2010]), a nonbreeding season golden eagle inventory survey shall be conducted in late-summer/ early-winter 2010 (USFWS, in prep). If an occupied golden eagle territory is identified within 10 miles of the project site (except for the territory identified at Black Mountain in April 2010) during breeding or non-breeding inventory surveys for the AMS project, the project owner shall prepare and implement a Golden Eagle Territory-Specific Management Plan. This plan shall: a. Include measures to avoid and minimize disturbance (as defined in 50 CFR 22.3) to golden eagles during project construction and operation activities. Measures may include limited operating periods or no-disturbance buffers within which certain potentially disruptive project activities shall not be conducted, or modification of certain project activities to reduce the potential for disturbance to eagles. b. Identify monitoring actions and schedule for their implementation to ensure avoidance and minimization of disturbance. Monitoring and reporting shall be conducted pre- and post-activity per Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al. 2010).	X-COC	
10. Documentation of Bald and Golden Eagle Act Compliance BIO-10: The project owner shall provide documentation to the CPM that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code, sections 668-668d).	X-COC	
11. Desert Tortoise Exclusion Fencing, Clearance Surveys, and Translocation Plan BIO-11: A Desert Tortoise Exclusion Fencing, Clearance Surveys, and Translocation Plan (Desert Tortoise Plan) shall be developed in consultation with the CPM, CDFG, and USFWS. This plan shall include detailed measures to avoid and minimize impacts to desert tortoise in and near the construction areas as well as methods for clearance surveys, fence installation, tortoise handling, artificial burrow construction, egg handling and other procedures, which shall be consistent with those described in the USFWS Desert Tortoise Field Manual (www.fws.gov/ventura/speciesinfo/protocols_guidelines) or more current guidance provided by CDFG and USFWS. At a minimum, the following measures shall be included in the plan and implemented by the project owner to manage their construction site, and related facilities, in a manner to avoid, minimize, or mitigate impacts to desert tortoise. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11] 1. *Fence Installation*. Prior to ground disturbance, the entire project site shall be fenced with desert tortoise exclusion fence. To avoid impacts to desert tortoise during fence construction, the proposed fence alignment shall be flagged and the alignment surveyed within 24 hours prior to fence construction. Surveys shall be conducted by the Designated Biologist using techniques approved by the USFWS and CDFG. Biological Monitors may assist the Designated Biologist under his or her supervision. These surveys shall provide 100% coverage of all areas to be disturbed during fence construction and an additional transect along both sides of the proposed fence line. This fence line transect shall cover an area approximately 90 feet wide centered on the fence alignment. Transects shall be no greater than 30 feet apart. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11] All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with USFWS-approved protocol. A. Timing and Supervision of Fence Installation. The exclusion fencing shall be installed prior to site clearing and grubbing. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11] B. Fence Material and Installation. The permanent tortoise exclusionary fencing shall consist of galvanized hard wire cloth 1 by 2 inch mesh sunk 12 inches into the ground, and 24 inches above ground (refer to parameters for USFWS-approved tortoise exclusion fencing at www.fws.gov/ventura/speciesinfo/protocols_guidelines). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11]	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
For temporary exclusion fencing, a "folded bottom" technique shall be implemented. This method follows the same guidelines as installation of permanent fencing except instead of burying the bottom 12 inches of the fencing, it is bent at a approximately 90 degree angle (to follow the contour of the ground) and spikes or other retaining methods are driven into the ground every two linear feet in such a manner as to "anchor" the bottom of the fence. This method eliminates the need for trenching, which for short-term temporary impacts may be more beneficial to the recovery of the landscape, and thus the species.		
C. Security Gates. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates shall remain closed except during vehicle passage and may be electronically activated to open and close immediately after vehicle(s) have entered or exited to prevent extended periods with open gates, which might lead to a tortoise entering. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11]		
D. Stormwater Drainage Fencing. The onsite stormwater drainage channels, including the headwalls, outlet, and road crossings, shall be permanently fenced to ensure exclusion of desert tortoise during AMS operation. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11]		
E. Fence Inspections. Following installation of the desert tortoise exclusion fencing for the permanent site and stormwater drainage fencing and temporary fencing (if required), the fencing shall be regularly inspected. Permanent fencing shall be inspected monthly and during/immediately following all major rainfall events. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within two days of observing damage. Inspections of permanent site fencing shall occur for the life of the project. Temporary fencing must be inspected immediately following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area enclosed by the fence for tortoise. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11]		
2. *Desert Tortoise Clearance Surveys*. Following construction of the tortoise exclusionary fencing around the Plant Site, all fenced areas shall be cleared of tortoises by the Designated Biologist, who may be assisted by Biological Monitors. A minimum of two, 100 percent coverage protocol clearance surveys with negative results must be completed and these must coincide with heightened desert tortoise activity from April through May and September through October. Non-protocol clearance surveys may be conducted in areas of certainly unsuitable habitat (e.g., developed) with prior approval of specific areas by USFWS and CDFG (these proposed areas shall be identified in the draft Desert Tortoise Plan). Clearance survey transects shall be followed as described in the Final Desert Tortoise plan. Additional clearance survey guidelines area provided in the USFWS Desert Tortoise Field Manual (www.fws.gov/ventura/speciesinfo/protocols_guidelines). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11]		
Translocation of Desert Tortoise. If desert tortoises are detected during clearance surveys within the project impact area, the Designated Biologist shall safely translocate the tortoise the shortest possible distance to the nearest suitable habitat. Any handling efforts shall be in accordance with techniques described in the final Desert Tortoise Plan, which shall be consistent with the USFWS Desert Tortoise Field Manual (www.fws.gov/ventura/speciesinfo/protocols_guidelines). If a visibly diseased tortoise is encountered onsite, procedures shall be implemented in accordance with the approved final Desert Tortoise Plan.		
3. *Burrow Inspection*. All potential desert tortoise burrows within the fenced area shall be searched for presence. To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined, in accordance with the final Desert Tortoise Plan. Immediately following excavation and if environmental conditions warrant immediate translocation, tortoises excavated from burrows shall be translocated to unoccupied natural or artificial burrows within the location approved by USFWS and CDFG per the final Desert Tortoise Plan. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11]		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
4. *Burrow Excavation*. Burrows inhabited by tortoises shall be excavated by the Designated Biologist using hand tools, and then collapsed or blocked to prevent re-occupation, in accordance with the final Desert Tortoise Plan. If excavated during May through July, the Designated Biologist shall search for desert tortoise nests/eggs. All desert tortoise handling and removal, and burrow excavations, including nests, shall be conducted by the Designated Biologist in accordance with the USFWS Desert Tortoise Field Manual (www.fws.gov/ventura/speciesinfo/protocols_guidelines). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11] 5. *Monitoring During Clearing*. Following the installation of exclusionary fencing and after ensuring desert tortoises are absent from the project site, heavy equipment shall be allowed to enter the project site to perform earth work such as clearing, grubbing, leveling, and trenching. A Biological Monitor shall be onsite at all times during initial clearing and grading activities. Should a tortoise be discovered, it shall be relocated as described above in accordance with the final Desert Tortoise Plan. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-11] 6. *Reporting*. The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise as described in the paragraph below. Desert tortoise moved from within project areas shall be marked for future identification as described in USFWS Desert Tortoise Field Manual (www.fws.gov/ventura/speciesinfo/protocols_guidelines). Digital photographs of the carapace, plastron, and fourth costal scute shall be taken. Scutes shall not be notched for identification.		
12. Mohave Ground Squirrel Clearance Surveys BIO-12: The project owner shall implement the following measures to manage their construction site, and related facilities, in a manner to avoid or minimize impacts to Mohave ground squirrels (MGS): 1 *Clearance Survey*. After the installation of the desert tortoise exclusion fence and immediately prior to any ground disturbance, the Designated Biologist(s) shall examine the construction disturbance area for MGS and their burrows. The survey shall provide 100 percent coverage of suitable habitat within the project site (undisturbed desert saltbush scrub, disturbed desert saltbush scrub, disturbed desert saltbush scrub regrowth, fallow agriculture-saltbush scrub regrowth). A. If potentially occupied burrows are identified, an attempt shall be made to trap and relocate the individual(s). Potentially occupied burrows shall be fully excavated by hand. B. Trapping, relocation, and MGS burrow excavation shall only be conducted by individual(s) possessing an MOU with CDFG for such activities. 2. *Records of Capture*. If MGS are captured via trapping or burrow excavation, the Designated Biologist shall maintain a record of each Mohave ground squirrels handled, including: a) the locations (Global Positioning System [GPS] coordinates and maps) and time of capture and/or observation as well as release; b) sex; c) approximate age (adult/juvenile); d) weight; e) general condition and health, noting all visible conditions including gait and behavior, diarrhea, emaciation, salivation, hair loss, ectoparasites, and injuries; and f) ambient temperature when handled and released. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-12] 3. *Relocation*. Any MGS captured via trapping or burrow excavation shall be relocated to suitable habitat adjacent to the project site, which provides conditions suitable for the long-term survival of relocated MGS. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-12]	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
13. Burrowing Owl Impact Avoidance, Minimization and Mitigation Measures BIO-13: Prior to preconstruction surveys, a Burrowing Owl Monitoring and Mitigation Plan (Burrowing Owl Plan) shall be developed by the project owner in consultation with the CPM and CDFG. This plan shall include detailed measures to avoid and minimize impacts to burrowing owls in and near the construction areas (if indentified during surveys) and shall be consistent with CDFG guidance (CDFG 1995). In addition, the plan shall identify the optimal time to concurrently relocate both desert tortoise and burrowing owl. At a minimum, the following measures shall be included in the plan and implemented by the project owner to manage their construction site, and related facilities, in a manner to avoid, minimize, or mitigate impacts to breeding and foraging burrowing owls. 1. *Pre-Construction Surveys and Nest Avoidance*. The Designated Biologist shall conduct preconstruction surveys for burrowing owls within the project site and a 160-foot buffer. These surveys shall be conducted concurrent with desert tortoise clearance surveys, to the maximum extent possible. The following shall be included in the Plan and implemented to avoid and minimize impacts to burrowing owls onsite: A. Pre-construction surveys shall be conducted prior to the nesting season (February 1 through August 31) and all burrowing owls will be passively relocated using one-way trap doors. Once the Designated Biologist has verified that all burrowing owls have vacated an occupied burrow, the Designated Biologist shall collapse the burrow, preventing reoccupation. B. If ground disturbance cannot be avoided in areas where nesting burrowing owls are active, a 250-foot exclusion area around occupied burrows will be flagged and this area will not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival. The exclusion area shall remain connected to natural area(s) to the extent possible, to avoid completely surrounding the owl with construction activities and/or equipment. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-13] 2. *Artificial Burrow Installation*. Prior to any ground-disturbing activities, the project owner shall install five artificial burrows for each identified burrowing owl burrow in the project area that would be destroyed, within in the approved compensatory habitat area. The Designated Biologist shall survey the site selected for artificial burrow construction to verify that such construction will not affect desert tortoise or Mohave ground squirrel or existing burrowing owl colonies in the relocation area. Installation of the artificial burrows shall occur after baseline surveys of the relocation area and prior to ground disturbance or heavy equipment staging. Design of the artificial burrows shall be consistent with CDFG guidelines (CDFG 1995) and shall be approved by the CPM in consultation with CDFG. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-13] 3. *Passive Relocation*. Prior to passive relocation, any owls that will be relocated shall be color banded with air-craft aluminum bands in accordance with the guidance provided by USGS bird banding lab (http://www.pwrc.usgs.gov/bbl) to monitor relocation success. Color banding shall not be conducted during the breeding season. During the non-breeding season, owls would be given a minimum of three weeks to become familiar with the new artificial burrows, after which eviction of owls within the project site could begin. Use of one-way doors described by Trulio (1995) and Clark and Plumpton (2005) would be used to facilitate passive relocation of owls. A. Monitoring and Success Criteria. The Designated Biologist shall survey the compensatory mitigation area and a suitable habitat within a 600 meter radius from the project site to assess use of the artificial burrows by owls and relocation success after exclusion from the project area. Surveys shall be conducted using methods consistent with Phase II and Phase III California Burrowing Owl Consortium guidelines (CBOC 1993). Surveys shall be conducted two times in the spring and two times in the winter following eviction. The second survey within a season shall be conducted within 30 days of the first. Surveys shall continue for a period of two years to encompass a total of two spring seasons (4 total spring surveys) and two winter seasons (4 total winter surveys). Surveys and monitoring shall be conducted using non-invasive methods (i.e., high-powered binoculars, spotting scope, or camera). Owls shall	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
not be trapped or otherwise handled to read the color band. If survey results indicate burrowing owls are not nesting within the surveyed area, remedial actions may be developed and implemented in consultation with the CPM, CDFG and USFWS to correct conditions at the site that might be preventing owls from nesting there. A report describing survey results and any remedial actions taken shall be submitted to the CPM, CDFG and USFWS no later than January 31 of each year for two years. 4. *Preserve and Manage Compensatory Habitat*. For each individual owl or pair identified on the project site during pre-construction surveys, off-site mitigation shall be required as described in the California Burrowing Owl Consortium guidelines (CBOC 1993). Determining which ratio to apply depends on whether the proposed compensatory habitat is occupied or unoccupied. A. Replacement of occupied habitat with occupied habitat: 1.5 times 6.5 (9.75) acres per pair of single bird B. Replacement of occupied habitat with suitable unoccupied habitat: 3 times 6.5 (19.5) acres per pair of single bird. Compensatory habitat shall be suitable for occupation by burrowing owls and preserved and managed in perpetuity for this purpose. Compensatory mitigation may be within the 118.2 acres proposed for desert tortoise and MGS (refer to BIO-15), provided that it also meets the criteria for suitable burrowing owl habitat. The compensatory habitat shall be managed for the benefit of burrowing owls, with the specific goals of: A. Maintaining the functionality of artificial and natural burrows; and B. Minimizing the occurrence of weeds (species considered "moderate" or "high" threat to California wildlands as defined by CAL-IPC [2006] and noxious weeds rated "A" or "B" by the California Department of Food and Agriculture and any federal-rated pest plants [CDFA 2009]) at less than 10% cover of the shrub and herb layers. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-13] The Burrowing Owl Plan shall also include monitoring and maintenance requirements for the compensatory habitat, details on methods for measuring compliance goals, and remedial actions to be taken if management goals are not met. The final Burrowing Owl Plan is due before preconstruction surveys begin to ensure that an approved relocation methodology will be followed for any owls occurring within the project area. Therefore, it is understood that the compensatory mitigation acreage (if required) may not be identified in the Burrowing Owl Plan. However, the Plan shall propose a location for compensatory mitigation land and the acreage required, quantified according to the CBOC methods outlined above. If owls are identified during the pre-construction survey, the project owner shall submit an addendum to the Burrowing Owl Plan, which identifies the number of owls identified and the exact acreage to be preserved and managed in perpetuity for burrowing owl based on the results of the preconstruction survey and as agreed to in consultation with CDFG.		
14. American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures BIO-14: To avoid direct impacts to American badgers and desert kit fox, preconstruction surveys shall be conducted for these species concurrent with the desert tortoise surveys. Surveys shall be conducted as described below: Biological Monitors shall perform pre-construction surveys for badger setts and kit fox burrows in the project area, including areas within 250 feet of the project site. If burrows are detected, each burrow shall be classified as inactive, potentially active, or definitely active. Inactive burrows and setts that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox. Potentially and definitely active burrows and setts shall not be disturbed during the whelping/pupping season (February 1 – September 30). Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand. If tracks are observed, the Biological Monitor shall directly observe	X-COC	X

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
the burrow or sett and block the entrance after the animal exits and the Biological Monitor has verified that there are no animals in the burrow or sett. The burrow or den shall be blocked with natural materials (e.g., rocks, dirt, sticks, and vegetation piled in front of the entrance) or passive hazing methods shall be employed for the next three to five nights to discourage the badger or kit fox from continued use. Passive hazing methods shall be approved by CDFG. Live or other traps shall not be used (CCR Title 14 Section 460). A kit fox or badger shall never be trapped in its burrow/sett. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den.		
15. Compensatory Mitigation BIO-15: To fully mitigate for habitat loss and incidental take of desert tortoise and Mohave ground squirrel as well as burrowing owl, the project owner shall acquire, prior to ground-disturbing activities, in fee or in easement, no less than 118.2 acres of land suitable for these species and shall provide funding for the enhancement and long-term management of these compensation lands. The responsibilities for management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. If habitat disturbance exceeds that described in this analysis, the project owner shall be responsible for acquisition and management of additional compensation lands and/or additional funds required to compensate for any additional habitat disturbances. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. Agreements to delegate land acquisition or management shall be implemented within 12 months of the Energy Commission's decision. The acquisition and management of compensation lands shall include, but is not limited to, the following elements [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15] 1. *Selection Criteria for Compensation Lands*. The compensation lands selected for acquisition ortitle/easement transfer shall: A. have substantial capacity to support resident and dispersing desert tortoise, MGS, and burrowing owl; B. be a contiguous block of land (preferably) or located so that parcel(s) result in a contiguous block of protected habitat; [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]: C. not be encumbered by easements or uses that will preclude fencing of the site or preclude management of the site for the primary benefit of the species for which mitigation lands were secured; and D. include mineral/water rights or ensure that those rights may not be evoked in a manner to negate the value of the compensation lands. 2. *Review and Approval of Compensation Lands Prior to Acquisition or Title/Easement Transfer*. A minimum of three months prior to acquisition or transfer of the property title and/or easement, the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a proposal to the CPM, CDFG, and USFWS describing the parcel(s) intended for purchase or title/easement transfer. This proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise, MGS, and burrowing owl in relation to the criteria listed above. Approval from the CPM, in consultation with USFWS and CDFG, shall be required for acquisition of all parcels comprising no less than 118.2 acres in advance of purchase or title/easement transfer. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15] 3. *Review and Approval of Compensation Lands Management Plan*. Within six months of the land or easement purchase or transfer, as determined by the date on the title, the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a compensation lands management plan to the CPM, CDFG, and USFWS. The plan shall include, but not be limited to proposed measures to enhance habitat (e.g., removal of structures and other human attractants); maintenance procedures; general maintenance provisions (e.g., trash dumping, trespass, pesticide use avoidance, etc.). 4. *Mitigation. Security for Compensation Lands and Avoidance/Minimization Measures*. The project owner shall provide financial assurances to the CPM, with copies of the document(s) to CDFG and USFWS, to guarantee that an adequate level of funding is available to implement all biological avoidance, minimization, and compensation measures described in the conditions of certification**.** These funds shall be used solely for implementation of the measures associated with the project. The project owner or an approved third party shall complete acquisition of the proposed compensation lands prior to initiating ground-disturbing project activities.	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
5. *Conditions for Acquisition of Compensation Lands*. The project owner shall comply with the following conditions relating to acquisition of compensation lands or transfer of the property's title and/or easement after the CPM, in consultation with CDFG and USFWS, has approved the proposed compensation lands as described above. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]		
A. Preliminary Report: The project owner, or approved third party, shall provide a recent preliminary title report (no more than six months old), hazardous materials survey report (i.e., Phase I ESA), biological analysis, and other necessary documents for the proposed 118.2 acres. All documents conveying or conserving compensation lands and all conditions of title/easement are subject to a field review and approval by the CPM, in consultation with CDFG and USFWS, California Department of General Services and, if applicable, the Fish and Game Commission and/or Wildlife Conservation Board. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]		
B. Title/Conveyance: The project owner shall transfer fee title/deed or a conservation easement for the 118.2 acres of compensation lands to CDFG under terms approved by CDFG. Alternatively, a CPM-approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 may hold fee title or a conservation easement over the compensation lands. In the event an approved nonprofit holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG and USFWS; in the event an approved nonprofit holds a conservation easement over the compensation lands, CDFG shall be named a third party beneficiary. USFWS shall be named a third party beneficiary regardless of who holds the easement. The project owner shall also provide a property assessment and warranty. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]		
C. Enhancement Fund. The project owner shall fund the initial protection and enhancement of the 118.2 acres by providing the enhancement fund to the CDFG. Alternatively, a CPM approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 to manage the compensation lands may hold the enhancement funds. If CDFG takes fee title to the compensation lands, the enhancement fund must go to CDFG. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]		
D. Endowment Fund: Prior to ground-disturbing project activities, the project owner shall provide to CDFG a capital endowment in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis that will be conducted for the 118.2 acres of compensation lands. Alternatively, a CPM-approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 may hold the endowment fees. If CDFG takes fee title to the compensation lands, the endowment must go to CDFG, where it will likely be held in the special deposit fund established pursuant to Government Code section 16370. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation will manage the endowment for CDFG and with CDFG guidance. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]		
The project owner and the CPM shall ensure that an agreement is in place with the endowment holder/manager to ensure the following: • Interest. Interest generated from the initial capital endowment shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the compensation lands. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]		
Withdrawal of Principal. The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party endowment manager to ensure the continued viability of the species on the 118.2 acres. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision will likely be deposited in a special		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
deposit fund established pursuant to Government Code section 16370. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation will manage the endowment for CDFG and with CDFG guidance. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15] E. *Pooling Endowment Funds*. CDFG, or a CPM-approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 to hold endowments may pool the endowment with other endowments for the operation, management, and protection of the 118.2 acres for local populations of desert tortoise and MGS. However, for reporting purposes, the endowment fund must be tracked and reported individually. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15] F. *Security Deposit*. The project owner may proceed with ground disturbing activities before fully performing its compensatory mitigation duties and obligations as set forth above only if the project owner secures its performance by providing funding to CDFG (Security Deposit), or if CDFG approves, administrative proof of funding, necessary to cover easement costs, fencing/cleanup costs, and as necessary, initial protection and enhancement of the compensation lands. If the Security is provided to allow the commencement of project disturbance prior to completion of compensation actions, the project owner, CDFG, or a third-party entity approved by the CPM, in consultation with CDFG and USFWS, may draw on the principle sum if it is determined that the project owner has failed to comply with the conditions of certification. The security will be returned to the project owner upon completion of the legal transfer of the compensation lands to CDFG or approved third-party entity, or upon completion of an implementation agreement with a third party mitigation banking entity acceptable to the CPM and CDFG, to acquire and/or manage the compensation lands. The Security is calculated as follows: • Costs of enhancing compensation lands are estimated at $250 per acre. • Costs of establishing an endowment for long-term management of compensation lands are estimated at $1,300 per acre. G. *Reimbursement Fund*. The project owner shall provide reimbursement to the CDFG or approved third party for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other state agency reviews; and overhead related to providing compensation lands. The project owner is responsible for all compensation lands acquisition/easement costs, including but not limited to, title and document review costs, as well as expenses incurred from other state agency reviews and overhead related to providing compensation lands to the department or approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures. The project owner may choose to satisfy its mitigation obligations by paying an in-lieu fee instead of acquiring compensation lands to mitigate for 118.2 acres of habitat, pursuant to California Senate Bill 34 (enacting CESA § 2069 and 2099) or other applicable in-lieu fee provision, to the extent the in-lieu fee provision is found by the Energy Commission to be in compliance with CEQA and CESA requirements. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-15]		
16. Tamarisk Eradication, Monitoring, and Reporting Program BIO-16: The project owner shall ensure effective removal of tamarisk by designing and implementing a monitoring and reporting plan. The plan shall include proposed methods for tamarisk removal and treatment, monitoring and maintenance procedures/timeline, irrigation, success standards and contingency measures, and monitoring and maintenance objectives to prevent the re-invasion of undesirable weeds and/or invasive wildlife species for a minimum of five years. The plan shall include identification on a map of each location and size of non-native vegetation to be removed, and the methods proposed to remove and dispose of invasive wildlife species. Exotic, non-native, and invasive species removal shall be conducted throughout the monitoring and maintenance period. Prior to any tree removal, it will be verified that there are no nesting raptors or other MBTA-protected birds. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-16]	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
For the CPM and CDFG to deem eradication successful: • The site shall not contain more than 5% exotic plant species for the CPM and CDFG to deem the tamarisk removal successful. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-16] • All plant species with rates of dispersal and establishment listed as "High" or "Moderate" on the California Invasive Plant Inventory shall have documented absence, or have been removed from the site for at least three years for the CPM and CDFG to deem the site successful. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-16] • The site shall not contain invasive wildlife species for the CPM and CDFG to deem the site successful. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-16] Monitoring and maintenance of the site shall be conducted for five years unless less monitoring can be justified. Following the first year of monitoring, if the project owner petitions to terminate the monitoring program, staff and CDFG will determine whether more years are of monitoring are needed. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-16]		
17. Monitoring Impacts of Solar Collection Technology on Birds BIO-17: The project owner shall prepare and implement a Bird Monitoring Study to monitor the death and injury of birds from collisions with facility features such as reflective mirror-like surfaces and from heat, and bright light from concentrating sunlight. The study design shall be approved by the CPM in consultation with CDFG and USFWS, and shall be incorporated into the project's BRMIMP and implemented. The Bird Monitoring Study shall include detailed specifications on data and carcass collection protocol and a rationale justifying the proposed schedule of carcass searches. The study shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-17]	X-COC	X (except as noted)
18. Common Raven Monitoring, Management, and Control BIO-18: The project owner shall implement the following measures to manage their construction site and related facilities in a manner to control raven populations and to mitigate cumulative and indirect impacts to desert tortoise associated with regional increases in raven numbers [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-18]: 1. *Common Raven Monitoring, Management, and Control Plan*. The project owner shall design and implement a Common Raven Monitoring, Management, and Control Plan that is consistent with the most current USFWS-approved raven management guidelines and that meets the approval of USFWS, CDFG, and Energy Commission staff. The Raven Plan shall numbers: A. Identify conditions associated with the project that might provide raven subsidies or attractants; B. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities; C. Describe control practices for ravens; D. Address monitoring and nest removal during construction and for the life of the project; E. And discuss reporting requirements. 2. *USFWS Regional Raven Management*. The project owner shall submit payment to the project subaccount of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the regional raven management plan. The amount shall be a one-time payment of $105 per acre of land permanently disturbed by the project.	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
19. Evaporation Pond Monitoring and Adaptive Management Plan BIO-19: The project owner shall design and implement an Evaporation Pond Monitoring and Adaptive Management Plan that meets the requirements of the USFWS, CDFG, RWQCB and the CPM. The objective of the Plan is to define the monitoring and reporting procedures as well as triggers for adaptive management strategies that shall be implemented to prevent wildlife mortality at the evaporation ponds. The plan shall include [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19]: • A description of evaporation pond design features such as side slope specifications, freeboard and depth requirements, which will prevent use by wildlife [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19]. • A detailed description of the wildlife monitoring procedures and schedule. For the initial implementation of a new technology, daily monitoring shall be conducted both at the project evaporation ponds and the wetlands within the Harper Lake ACEC. Monitoring may be reduced to weekly and potentially bi-weekly or monthly depending on the results of initial monitoring period [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19]. • A detailed description of the water quality and water level monitoring procedures and schedule. Water quality and water level monitoring shall coincide with wildlife monitoring to provide a basis for comparative analysis [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19]. • A description of wildlife exclusion/deterrent technologies and adaptive management strategies. Technologies shall include but are not limited to netting, and shall not disturb or harass non-target wildlife adjacent to the project area [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19]. • Triggers for adaptive management (i.e., modifications to existing technology or replacement with new technology). Adaptive management shall be necessary if:1)more than one dead bird per quarter is discovered at the evaporation ponds; or 2)one special-status animal is discovered at the evaporation ponds; or 3) noise levels attributable to the technology exceed 60 dBA at the Harper Lake ACEC wetlands. After three failed attempts at new technology, the ponds shall be netted [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19]. • Reporting requirements, to include monthly reporting for the first year if a technology other than netting is used. Reporting may be reduced to monthly or quarterly thereafter if no bird or wildlife deaths are reported during the first year. If wildlife mortality occurs at the ponds or if birds are disturbed at the marsh as described above, the CPM shall be notified within 10 days of the incident and the accompanying adaptive management action to implemented [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19]. • Evaporation pond monitoring and reporting shall continue for the life of the project. The draft Plan submitted by the Applicant (AS 2009d) shall provide the basis for the final plan, subject to review and revisions form the CPM in coordination with USFWS, CDFG, and RWQCB [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-19].	X-COC	X (except as noted)
20. Harper Dry Lake Marsh Water Delivery BIO-20: To ensure continuity of water delivery to the Harper Dry Lake ACEC the project owner shall not decommission the existing well on Mojave Solar, LLC owned property that currently serves the Harper Dry Lake marsh (wetland well) until an alternate well is able to effectively convey a minimum of 75 acre feet per year to the Harper Dry Lake marsh [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-20]. This condition of certification does not transfer to Mojave Solar, LLC the obligation of Luz Solar Partners Ltd. to allow BLM to pump 75 acre feet of water per year to the marsh, under SEGS IX Condition of Certification **BIO-11.k** [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-20].	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
21. USFWS Biological Opinion BIO-21: The project owner shall provide a copy of the Biological Opinion per Section 7 of the federal Endangered Species Act written by the U. S. Fish and Wildlife Service in consultation with U.S. Department of Energy. The terms and conditions contained in the Biological Opinion shall be incorporated into the project's BRMIMP and implemented by the project owner.	X-COC	X (except as noted)
22. Prior to the commencement of ground disturbance activities, clearance surveys will be conducted for MGS burrows along the alignment concurrently with the DT surveys. All burrows within work areas will be excavated. If MGS are detected, they will be allowed to escape the exclusion area prior to completion of fencing of the area. The Designated Biologist will maintain records of squirrels that have been excluded from the work areas, and will prepare a report for submittal to the CDFG 30 day after clearance surveys.	X-COC	X (except as noted)
23. Prior to construction, a California Burrowing Owl Consortium (CBOC), with CDFG approval, protocol level burrowing owl survey will be conducted along the fiber-optic alignments to detect the presence of burrowing owls. Active owl burrows will be mapped and avoided to the maximum extent possible with a minimum 1,250-foot buffer around the active burrow. If the burrow cannot be avoided, the owl will be passively relocated outside of nesting season February 1 through August 31. Relocation of owls will follow the guidelines in the avoidance and minimization measures listed in section 3.8.4.1.2 of this document.	X-COC	X (except as noted)
24. Surveys for sensitive plant species will be conducted during the Spring season and within appropriate habitats prior to commencement of ground disturbance activities. Surveys will be conducted in the Spring prior to construction/ground disturbance. Surveys will follow the rare plant and vegetation survey guidelines provided by CNPS (CNPS 2001a), CDFG (CDFG 2000), and the CEC Recommended Biological Resources Field Survey Guidelines for Large Solar Projects, Draft April 2, 2009 (CEC 2009).	X-COC	X (except as noted)
5. Desert Tortoise avoidance and minimization measures per the Desert Tortoise Clearance and Relocation/Translocation Plan (Desert Tortoise Plan), to be approved by CEC, CDFG, USFWS, and BLM: [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. ***Plant Site Clearance Surveys*** • All tortoise sign will be mapped and evaluated (e.g., type, age, size) during all passes, and all scat collected. During subsequent passes, areas where fresh scat is found will prompt concentrated searches. After the second pass, concentrated searches will be conducted in all areas where recent sign is concentrated, unless a tortoise has been found in that area. No burrows will be collapsed until the third pass, assuming that all tortoises probably have been relocated from the Project Area. (Fresh burrows used by other wildlife, including badgers or foxes, will not be collapsed until occupants have been removed via active or passive techniques approved by CDFG.) While clearance is planned to occur when ambient temperatures are safe for translocating tortoises, ambient temperatures may rise unexpectedly during the second pass such that a tortoise or other wildlife might be trapped in the open if its burrow has been excavated and collapsed during the search effort. To assist the identification of currently used burrows, all burrows will be inspected and assessed for occupation or recent use by tortoises during the first two passes, gated with small sticks along the entrance to detect future use, mapped and flagged. On the third pass, burrows will be completely excavated using standardized techniques approved by USFWS (2009a) and the Desert Tortoise Council (1994). During excavation, attention will be given to potential tortoise nests (see Nest Relocation, below). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Following the installation of exclusionary fencing and after ensuring DT are absent from the Project site, heavy equipment shall be allowed to enter the Project site to perform earthwork such as clearing, grubbing, leveling, and trenching. A biological monitor shall be onsite at all times during initial clearing and grading activities. Should a tortoise be discovered, it shall be relocated as described above in accordance with the final Desert Tortoise Plan. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
Data Collected: • Each captured tortoise will be processed at capture, prior to translocation. The gender, carapace length, width along the widest area between and inclusive of Marginals 5 and 6, height at the third vertebral, distinguishing morphology, clinical signs of disease, capture site location and description, and the amount of void, if any, will be recorded. In addition, the tortoise will be photographed and drawn. All release site locations will also be recorded at relocation/translocation, along with their descriptions. All tortoise handling will be accomplished by techniques outlined in the USFWS *Field Manual* (2009a: Sections 7.6-7.8) and including the most recent disease prevention techniques (e.g., Wendland et al. 2009). Each tortoise will be assigned an individual number, with a number series to be provided by USFWS. Marking techniques will be approved by USFWS, but temporary marks using very small epoxy numbers (e.g., clear epoxy over a small, indelible number on a correction fluid [Wite-Out®] background) on an ostal or interior marginal area that receives little to no abrasion are suggested, with a Project specific identifier. Such numbers will last for several years, which will facilitate identifying specific tortoises if they are subsequently observed during Project maintenance or other activities, including repeated observations during construction (e.g., on the perimeter fence). *Health Considerations:* • Visual health assessments will be conducted on all tortoises relocated (i.e., moved <500 m) or translocated (moved > 500 m), by an experienced biologist approved by the USFWS. • USFWS (2010b) guidance and later e-mails from USFWS (T. Englehard, pers. comm. to A. Karl) have identified that no tortoise will be relocated within 1.5 km (0.9 mi) of a diseased resident tortoise because relocated tortoises may move 1.5 km after translocation. No tortoise may be translocated within 6 km of a diseased resident tortoise. Mojave Solar will comply with the requirement to complete a 100%-coverage survey for resident diseased tortoises within 1.5 km of any tortoise relocated from the MSP site, including during perimeter fence construction, or within 6 km of any tortoise translocated. All resident tortoises within 1.5 km of a relocation site and 6.5 km of a translocation site will be processed (weighed, measured, described, photographed), marked with an epoxy number for future identification and their health assessed. If any tortoises from the Project Area are moved more than 500 m, then all resident tortoises within 6.5 km of the Translocation Site will be fitted with a transmitter for follow-up blood sampling at the earliest date approved by USFWS, currently 15 May. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • No tortoise with clinical signs of mycoplasmosis will be relocated or translocated. Schumacher *et al.* (1997) observed that clinical signs had a high statistical correlation with positive serology (i.e., exposure to *Mycoplasma agassizii*). A mucous nasal discharge is the clinical sign that was the most reliable predictor (93% of tortoises with a mucous nasal discharge were seropositive), although it could be caused by pathogens other than *M. agassizii*. Furthermore, a purulent nasal discharge was the only clinical sign that was relatively objective; other clinical signs were far more subjective, were potentially present for other reasons, and reduced the statistical predictability of positive serology. For the MSP, a purulent nasal discharge will be the threshold to identify a diseased tortoise, unless USFWS determines that other clinical signs should be used for diagnosing a diseased tortoise. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Relocated or translocated desert tortoises determined to be infectious or unhealthy will be sent to the Desert Tortoise Conservation Center (DTCC) or other USFWS-approved facility where they will undergo further assessment, treatment, and/or necropsy. Mojave Solar will provide a flat fee of $9,000 for each desert tortoise sent to the DTCC commensurate with the cost to provide housing, care, treatment, and other services for five years ($3,000 for Year 1, $1,500 for Years 2 to 5). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
Transmitters: • If needed for monitoring relocated or translocated tortoises, transmitters will be affixed to the tortoises. Holohil R1-2B transmitters (24 mm wide by 11 mm thick; 14.9 g; www.holohil.com) will be epoxied onto a carapace scute using five-minute gel epoxy. For males, transmitters will be affixed to the fifth vertebral; for females, transmitters will be affixed to the anterior carapace in the most appropriate location for the animal's shell shape that will preclude interference with righting. The transmitter antenna will be fed through a plastic sheath with a diameter slightly greater than the antenna. This sheath will be epoxied low on the carapace, just above the marginal scutes, and split at the scute seams (growth areas) to preclude distortion of the tortoise's shell during growth. This technique permits the antenna to remain protected from abrasion, but move freely, thereby not affecting tortoise growth. Juvenile tortoises will be similarly equipped but with smaller transmitters, appropriate for their mass and size (<10% of the tortoise's mass). Because the antenna sheath is tightly curved on a very small tortoise, potentially constricting antenna movement with subsequent growth distortion, much more of the antenna will remain free on small tortoises. These are proven techniques to minimize disturbance to the tortoise, refined and/or developed and used by Dr. Karl for more than 20 years and on over 300 tortoises and subsequently used at Fort Irwin for several hundred tortoises. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. *Transportation and Handling:* • Tortoises that only need to be moved a few hundred feet will be hand-carried to the release site. Each tortoise that is hand-carried will be kept upright and the handler, wearing disposable examination gloves (one pair per tortoise), will move the tortoise as quickly and smoothly as possible. Tortoises that must be moved farther from the capture site or temporarily held in a climate-controlled situation will be sequestered in individual, sterilized tubs with taped, sterilized lids or single-use cardboard boxes with lids. During transport by vehicle, the tortoise tub will be kept shaded and the tub will be placed on a well-padded surface that is not over a heated portion of the vehicle floor. These measures are consistent with USFWS guidance (2009a: Section 7.10). • Should a tortoise void or defecate between capture and release, it will be thoroughly rinsed to remove potential attracting odors to predators. Then, it will be placed in a shallow bath of room temperature water to re-hydrate it, per USFWS guidance (2009a: Section 7.9). The tortoise's mass following this procedure will be recorded. *Handling Temperatures:* • Handling will adhere to USFWS (2010b) handling guidelines, which state that tortoises can only be handled when air temperatures, measured at 2 in (5 cm) above the ground (shaded bulb), are not expected to exceed 95°F (35°C) during the handling session. If the air temperature exceeds 95°F during handling or processing, desert tortoises will be kept shaded in an environment where the ambient air temperatures do not exceed 91°F (32.7°C) and air temperature does not exceed 95°F. The desert tortoise will not be released until air temperature at the release site declines to 95°F. • Tortoises must go underground to escape surface heat at ground surface temperatures of 109°F (43°C) (Karl 1992) to 113°F (45°C) (Zimmerman et al., 1994). Because surface temperatures can easily exceed 109°F when air temperatures at two inches are still below 95°F, the more conservative temperature will govern all tortoise handling described in the Desert Tortoise Plan, to minimize harm to tortoises. In other words, the USFWS guidelines will be followed except in the situation where they exceed 109°F ground temperature. ***Relocation/Translocation Procedures*** *Perimeter Fencing:* • Any tortoise that must be moved during perimeter fencing will be relocated immediately outside the construction zone, but onto MSP land. Release points will be as close as possible to the capture point, to keep tortoises within their home range, but will always be on or		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
immediately adjacent to suitable habitat. Specific release points cannot be identified at this time without knowing where tortoises are, but the highest likelihood of finding a tortoise along the perimeter fence is along the southern, eastern and northeastern border of the Beta Site and the western border of the Alpha Site. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Generally, tortoises will be placed in the shade of a shrub or, if known, in the entrance of that tortoise's burrow (but see below in the event that ambient temperatures are high). The most recent USFWS guidance (USFWS 2010b) states that all "perimeter fence" tortoises be moved to the interior of the Project Area. Because the solar project site has limited desert tortoise habitat and is expect to support few if any desert tortoises, which is supported by the limited amount sign and burrows on the proposed solar fields, it is believed that any individual found during fence construction maintains a territory outside of the solar project site and is utilizing the project area for foraging or movement. Therefore, desert tortoises on the MSP project found during fence construction will be placed outside of the solar project site rather than inside. • All tortoises relocated from harm's way during perimeter fencing will be transmittered as described above. The exception will be tortoises brumating (≈hibernating) in burrows during winter (see below for a discussion of handling tortoises outside of USFWS temperature guidelines). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Translocation will occur when air temperatures at 2 in (5 cm) above the ground, are not forecast to exceed 90°F (32°C) within three hours of release and 95°F (35°C) within one week of release; additionally, daily low temperatures should not be cooler than 50°F (10°C). The rationale for the higher temperature constraints is that tortoises must find or dig new refuges in the potentially unfamiliar translocation area prior to the onset of lethal daily temperatures. Along the perimeter fenceline, however, tortoises will be moved only a short distance, within their home ranges, where they are knowledgeable about the locations of refuges. USFWS (2010b) has agreed that relocation on linear facilities, including perimeter fencing, may occur during any time of the year. The only high temperature constraint is that no tortoise will be moved when air temperatures are expected to exceed 90°F (32°C) within three hours of release. Alternatives below summarize conditions and methods detailed in the Desert Tortoise Plan whereby tortoises could be relocated during *periods* of higher temperatures, although no tortoise will be moved when air temperatures exceed 95°F, except in an emergency. • Relocate to known burrow; monitor [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Erect temporary fence between tortoise and construction; monitor; remove fence when appropriate [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Temporarily move construction to another area • Collect and hold in climate controlled facility; release in evening or the following morning; monitor [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. During winter or low temperatures, the following methods summarize the approach to relocating tortoises that must be moved along the perimeter fence: • If cannot be avoided, place tortoise in artificial burrow, temporarily block in and monitor; remove block at two weeks (or earlier depending on the weather) and monitor • If tortoise fails to find suitable winter burrow and will not use artificial burrow, hold in climate controlled facility, in the dark at temperatures simulating burrow temperatures, until seasonal temperatures warm and tortoises are active; release within 100 feet of capture burrow; monitor. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
Plant Site: • Any tortoise that must be moved <500 meters will be relocated immediately outside the construction zone, but onto MSP land, and placed in the shade of a shrub or at the entrance to a known burrow for that tortoise. Release points will be as close as possible to the capture point, to keep tortoises within their home range, but will always be on or immediately adjacent to suitable habitat. Specific release points cannot be identified at this time without knowing where tortoises are, but the highest likelihood of finding a tortoise along the perimeter fence is along the southern, eastern and northeastern border of the Beta Site and the western border of the Alpha Site. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Any tortoise translocated >500 meters will be placed in an individual quarantine pen in the relevant Translocation Site (see below), under a shrub or near an artificial burrow. Two artificial burrows, each at least 4 feet (1.2 m) long, will be constructed for each tortoise, using a gaspowered auger or shovel/plywood, per USFWS (2009a) guidance. Translocated tortoises will only be translocated once. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Based on published and unpublished research, a juvenile tortoise moved farther than 330 feet (100 m) may be outside its recent or familiar use area. For AMSP clearance, if juvenile tortoises are moved within 330 feet of the capture location, where they may have site familiarity, they will be released under a shrub and monitored initially as described in Post-Release Tortoise Monitoring, below. For distances >330 ft, they will be moved to the Translocation Site into a predator-proof enclosure, using 5-ft-tall “Non-Climb”, 2 by 4 inch vertical mesh fencing, buried at least 1 ft. and with avian netting over the top. The size of the enclosure will depend on the number of tortoises found, but will be a minimum of 20 feet in diameter, extending to 50 feet or more, as necessary, to accommodate more juvenile tortoises. (Morafka *et al*. 1997 successfully penned juvenile tortoises at the rate of 62-123 tortoises per acre (152-305 animals per hectare). After tortoises have become familiar with the site’s odors and landmarks for at least two weeks, escape holes will be opened in the lower edge for tortoises to escape passively (e.g., Morafka et al. 1997). Modifications to the design and process may occur in response to predator interest in the enclosure or juvenile tortoise behavior in the enclosure, incorporating new and relevant headstarting techniques used at Twentynine Palms Marine Corps Air Ground Combat Center. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • All translocated tortoises will be rehydrated within 12 hours prior to release, via USFWS (2009a) Methods [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Two translocation sites were chosen, one on each side of Harper Lake Road, to minimize post-translocation movements of tortoises across that road. All tortoises west of Harper Lake Road will be moved to the Translocation Site in Section 25, on land owned by Mojave Solar. All tortoises east of Harper Lake Road will be moved to the Translocation Site in Section 4, in the BLM DWMA and ACEC. Translocation to a DWMA or ACEC is preferred by CDFG, and BLM has agreed to move the few potential tortoises from MSP to BLM land (L. Encinas, pers. comm.). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • The Translocation Site pens will be sufficiently large to support each tortoise pending disease testing results. Each will be a minimum of 165 x 165 feet (50 by 50 m), thereby providing adequate forage and sufficient habitat for a tortoise to find and/or construct adequate cover sites. Pens will be constructed using double-walled, 1 by 2 inch tortoise-proof fencing, installed as identified for perimeter fencing, above. They will be separated by a minimum of 100 meters so that tortoises will not be crowded once the fences are removed (if tortoises are seronegative) and tortoises fully released. Prior to Project Area clearance, pen design and an animal husbandry plan for penned tortoises will be approved by experienced personnel from an accredited American Zoological Association institution and approved by USFWS, BLM, and CDFG. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• If a tortoise is found inside the Plant Site during initial grading or operations, and temperatures are too high for safe relocation/translocation, the tortoise will be captured, secured in an individual, sterilized box and temporarily placed in a quiet, climate-controlled environment (e.g., the onsite Project office). Depending on temperatures and other factors, it is possible that the tortoise could be affixed with a transmitter and relocated outside the Project Area or translocated into the Translocation Site the same day, when temperatures subside (or the following morning for juvenile tortoises), and monitored to ensure its safety. If the tortoise will likely be harmed or die, it will be held in captivity at a location approved by USFWS and CDFG, away from other tortoises, to be released into the Translocation Site during the next available window. Other options will also be investigated. The goal of the translocation is to keep the tortoise in the population, in order to promote recovery. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		
Post-Release Monitoring		
• During perimeter fence construction, tortoises will be moved a short distance from construction activities along the perimeter fence and therefore will be assumed to be within their home range and familiar with burrow locations. However, they will receive immediate post-release monitoring nonetheless. This may be especially critical for juvenile tortoises, which are highly subject to depredation. The Desert Tortoise Plan discusses the details of immediate post-release monitoring for all tortoises relocated during fence		
• USFWS (2010b) requires a five-year monitoring program for translocatees, including tortoises relocated during perimeter fence construction. Based on multiple Project surveys, it is assumed that fewer than five tortoises will be part of the study. USFWS (2010b) has determined that no resident and control study cohorts are required for fewer than five translocatees (including juveniles). If five or more desert tortoises are translocated from the project site, Mojave Solar will work with the BLM, CDFG, and Service to identify appropriate locations for control and resident desert tortoise monitoring. Mojave Solar will monitor all transmittered tortoises for five years from the time of relocation/translocation. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		
• Tortoises will be located by telemetry according to the schedule identified in USFWS (2010b) guidelines. Each time the tortoise is located, the behavior, location (UTM), and burrow description (if any) will be recorded. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		
• Survival and general health will be monitored through body condition indices (mass to volume ratios), clinical signs of disease, serology, and inspection for injuries. Any time a tortoise is handled, it will be examined for clinical signs of disease. Formal health assessments will be conducted during April (following brumation), July (following oviposition), and October (prior to brumation). At these times, body condition (mass to volume ratio) also will be measured (mass, carapace length, width at Marginal 5 or 6, height). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		
• Blood samples will be taken and analyzed annually, in July or October. An approved biologist will conduct the assessments and tissue sampling. While blood samples are not required of tortoises moved <500 meters during relocation, blood will be sampled shortly after relocation3 in order to provide baseline data. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		
• Sampling frequency and techniques for disease analysis will be updated as necessary during the study, based on the newest disease information from this and other studies. This may include tests for other pathogens (e.g. *Mycoplasma.* spp., herpesvirus, iridovirus) as their importance and evaluation techniques become validated for desert tortoises. Data will be recorded on a data sheet similar to that in Appendix 1, with an additional health assessment data sheet to be provided by USFWS. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		
• Any health problems observed (*e.g.*, rapid declines in body condition, perceived outbreaks of disease, mortality events) will be reported to the USFWS, CDFG and BLM such that appropriate actions can be taken in a timely manner. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• Should a transmittered tortoise die, the cause of death will be determined to the extent possible. This information, along with the location and any other analysis that could assist the USFWS, CDFG, BLM and DOE will be provided to these agencies within 48 hours, verbally, or five business days, if by e-mail. All fresh carcasses will be salvaged and frozen. They will be submitted for necropsy upon direction from USFWS, CDFG, and BLM; DOE will also be notified. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. • Transmitters will be changed as necessary. Mojave Solar has also proposed some alternatives for consideration if fewer than five tortoises are relocated/translocated. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. ***Nest Relocation*** • Any nests found between November 1 and April 15 are unlikely to be viable and will not be moved; hatching is typically completed by October. In the event that nests are found between April 15 and October 31, the nests will be moved. Eggs will be inspected to determine if they are viable and, if so, will be moved to an identical microsite (e.g., cover, plant species, soil type, substrate, aspect) on the approved Translocation Site using standard techniques (e.g. Desert Tortoise Council 1994, USFWS 2009a). Translocated nests will be fenced with open-mesh fencing (e.g. 2-inch wide mesh) that will permit hatchlings to escape but prevent depredation by canids that might be attracted to the new nests by human scent predator entry. Open-mesh fencing or avian netting also will be installed on the roof of the nest enclosure to prevent predator entry. Nests will be monitored from a 30-foot distance once a month until late November, at which time they will be excavated for examination. If possible, hatchlings will be weighed, measured, photographed, described and marked. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-25]. Measures specific to the SPS Upgrades: • A qualified biologist will conduct preconstruction clearance surveys for desert tortoises within the limits of the proposed work activity associated with the fiber-optic upgrades. The résumés of the biologists MSLLC and SCE wish to perform these surveys will be provided to USFWS for concurrence prior to conducting the surveys, as part of the process identified in BIO-1 through BIO-4, for the selection of the Designated Biologist and Biological Monitor, if feasible. The limits of proposed work activity will be fenced with temporary desert tortoise fencing, immediately prior to the clearance survey. Clearance surveys will follow the current USFWS desert tortoise survey protocol. • A qualified biologist will conduct preconstruction clearance surveys for desert tortoises within the limits of the proposed work activity associated with the fiber-optic upgrades. The résumés of the biologists MSLLC and SCE wish to perform these surveys will be provided to USFWS for concurrence prior to conducting the surveys, as part of the process identified in BIO-1 through BIO-4, for the selection of the Designated Biologist and Biological Monitor, if feasible. The limits of proposed work activity will be fenced with temporary desert tortoise fencing, immediately prior to the clearance survey. Clearance surveys will follow the current USFWS desert tortoise survey protocol. In addition to the WEAP training required under BIO-5, all personnel involved in the construction, operation, and maintenance of the fiber-optic upgrades will adhere to the following measures: • During construction, all vehicles will remain on existing access and spur roads in potentially occupied desert tortoise habitat. Vehicle speeds in these areas will not exceed 15 miles per hour. Personnel will check under parked vehicles prior to moving the vehicle. If a desert tortoise is found under a vehicle and does not leave on its own, a Designated Biologist or Biological Monitor may be called to relocate the animal out of harm's way, no more than 1,640 feet (500 meters) from its original location.		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• During operations and maintenance activities, all vehicles will remain on existing access and spur roads in potentially occupied desert tortoise habitat. Vehicle speeds in these areas will not exceed 15 miles per hour. Personnel will check under parked vehicles prior to moving the vehicle. If a desert tortoise is found under a vehicle, a Designated Biologist or Biological Monitor will move the desert tortoise as described in the attached Desert Tortoise Plan. • In construction areas in potentially occupied desert tortoise areas, work and staging areas, including the locations of the fiber-optic upgrades under construction, may be fenced with USFWS-approved temporary desert tortoise fencing in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The Designated Biologist or Biological Monitor will assist in determining the boundaries of the area to be fenced in consultation with USFWS and CDFG, and with BLM when construction areas are within lands administered by the BLM. All workers will be advised that equipment and vehicles must remain within the fenced work areas. Installation of the fencing and any necessary surveys will be directed and/or conducted by the Designated Biologist or Biological Monitor in concurrence with these agencies. The fencing will remain in place for the duration of construction activities at a particular location and will be removed when construction activities are complete. The Designated Biologist or Biological Monitor will inspect the fencing on a biweekly basis to ensure that no holes develop that could allow desert tortoises to enter the work areas. If holes are found, they will be repaired immediately. • If desert tortoises are found within an area that has been fenced to exclude them, activities will cease until the Designated Biologist or Biological Monitor moves the desert tortoises out of harm's way outside of the fence, no greater than 1,640 feet (500 meters) away from their original location. At this time, the fencing will be inspected for holes. • If desert tortoises are found in a construction area where fencing was deemed unnecessary, the tortoise will be moved per the Desert Tortoise Plan. • Any desert tortoises found during clearance surveys will be translocated per the Desert Tortoise Plan. Monitoring of active construction outside fenced areas will be continuous. A monitor must be onsite to address any tortoises found inside fenced areas that are not fully graded. • The Designated Biologist or Biological Monitor will follow the handling guidelines at all times if handling desert tortoises is required. • The Designated Biologist or Biological Monitor will have the authority to stop all activities until appropriate corrective measures have been completed. SCE will restrict work to daylight hours, except during an emergency, to avoid nighttime activities when desert tortoises may be present on the access road. Traffic speed will be maintained at 15 miles per hour (24 kilometers per hour) or less in the work area. The temporary ground disturbance associated with the trenching will occur within previously disturbed areas, and will not require rehabilitation or restoration. However, for any construction laydown areas required for the SCE downstream upgrade that will result in soil excavation or surface scouring in nondisturbed areas supporting native vegetation, the following shall be implemented to restore native vegetation: 1. Stockpile Topsoil. To increase chances for revegetation success in temporarily disturbed areas of native vegetation, topsoil shall be stockpiled from the Project work area where temporary disturbances include vegetation removal and soil excavation (e.g., trenching for the installation of fiber-optic cable conduit) for use in revegetation. Native topsoil from the least disturbed locations of temporary excavations, and only areas that are free of noxious weeds, shall be used as a source of topsoil. Topsoil shall be stockpiled from the areas of native vegetation identified for disturbance at a particular site for use in revegetation of temporarily disturbed soils. Two (2) to three (3) inches of soil shall be scraped and stockpiled for use in revegetation of temporarily disturbed areas. Elements related to the collection and stockpiling of topsoil shall be conducted as described on pages 39-40 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003).		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
2. Restore Temporarily Disturbed Areas. Only seed from locally occurring species shall be used for revegetation. Seeds shall contain a mix of short-lived early pioneer species such as native annuals and perennials and subshrubs (for example, cheesebush, matchweed, peppergrass, rabbitbrush, creosote bush, burro-weed, needlegrass, rice grass, and goldenhead). Seeding shall be conducted as described in Chapter 5 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003). A list of plant species suitable for Mojave Desert region revegetation projects, including recommended seed treatments, are included in Appendix A-8 of the same report. The list of native plants observed during surveys of the Project area can also be used as a guide to site-specific plant selection for revegetation. 3. Control Noxious Weeds. Maintain percent cover of noxious weeds (species considered "moderate" or "high" threat to California wildlands as defined by the California Invasive Plant Council [CAL-IPC 2006] and noxious weeds rated "A" or "B" by the California Department of Food and Agriculture [CDFA] and any Federal-rated pest plants [CDFA 2009]) below current levels in rehabilitated areas. 4. Performance Standard. Since all temporary impacts are to be mitigated as permanent, in the form of habitat replacement at set ratios, no performance standard shall be put in place on the success of the restoration of these areas. Implementation of the measures outlined in BIO-12, and the documentation of the restoration activities by the Designated Biologist shall be sufficient for adherence to this measure. 5. Reporting. The Designated Biologist shall record the following information for any restoration activity: a) the locations (narrative and maps) and dates of habitat restoration; b) extent of surface area disturbed and restored; c) type and source of native seed mix used; d) general description of the pre-disturbance site (plant species diversity, presence of invasive plant species, etc.); and e) a general description of the areas immediately surrounding the restoration site (plant species diversity, presence of invasive plant species, habitat quality, level of disturbance, etc.).		
26. Prior to the commencement of ground disturbance activities, clearance surveys will be conducted for MGS burrows along the alignment concurrently with the DT surveys. All burrows within work areas will be excavated. If MGS are detected, they will be allowed to escape the exclusion area prior to completion of fencing of the area. The Designated Biologist will maintain records of squirrels that have been excluded from the work areas, and will prepare a report for submittal to the CDFG 30 day after clearance surveys.	X-COC	X (except as noted)
27. Prior to construction, a California Burrowing Owl Consortium (CBOC), with CDFG approval, protocol level burrowing owl survey will be conducted along the fiber-optic alignments to detect the presence of burrowing owls. Active owl burrows will be mapped and avoided to the maximum extent possible with a minimum 1,250-foot buffer around the active burrow. If the burrow cannot be avoided, the owl will be passively relocated outside of nesting season February 1 through August 31. Relocation of owls will follow the guidelines in the avoidance and minimization measures listed in section 3.8.4.1.2 of this document.	X-COC	X (except as noted)
28. If construction activities occur during avian nesting season (February 1 through August 1), two surveys separated by a 10-day interval will be conducted to detect potential active avian nests by a qualified biologist familiar with locating nests. If active nests are found, CDFG will be consulted to establish a no disturbance buffer, until the nest is no longer active as determined by a qualified biologist. This will be accomplished by monitoring the nest with a non-invasive method such as observing the nest with a spotting scope.	X-COC	X (except as noted)
29. Surveys for sensitive plant species will be conducted during the Spring season and within appropriate habitats prior to commencement of ground disturbance activities. Surveys will be conducted in the Spring prior to construction/ground disturbance. Surveys will follow the rare plant and vegetation survey guidelines provided by CNPS (CNPS 2001a), CDFG (CDFG 2000), and the CEC Recommended Biological Resources Field Survey Guidelines for Large Solar Projects, Draft April 2, 2009 (CEC 2009).	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
30. General minimization include the following Pursuant to BIO-7: • *Limit Disturbance Area*. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils shall be stockpiled in disturbed areas, which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, vehicles, and equipment shall be confined to the flagged areas. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-30]. • *Minimize Road Impacts*. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads (e.g., new spur roads) or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction. • *Minimize Traffic Impacts*. Vehicular traffic during project construction and operation shall be confined to existing routes of travel to and from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour on Harper Lake Road and within fenced areas that have been cleared of tortoises and other wildlife. The speed limit shall not exceed 15 miles per hour within unfenced areas and secondary unpaved access roads. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-30]. • *Monitor During Construction*. The Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The USFWS-approved Designated Biologist or Biological Monitor shall closely monitor vegetation removal and grading activities to prevent wildlife injury or mortality. • *Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas*. Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. Temporary disturbance areas, if necessary, shall occur within the project site and shall be designed, installed, and maintained with the goal of minimizing disturbance. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC 2004) to reduce the likelihood of bird electrocutions and collisions. • *Avoid Use of Toxic Substances*. Road surfacing and sealants as well as soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-30]. • *Minimize Lighting Impacts*. Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards the project boundaries and the Harper Dry Lake marsh. Lighting shall be shielded, directional, and at the lowest intensity required for activity. • *Avoid Vehicle Impacts to Desert Tortoise*. Parking and storage shall occur within desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. During construction, a Biological Monitor shall drive along project access roads, particularly Harper Lake Road at least every three hours during the desert tortoise active period (April through May and September through October) looking for desert tortoise or other vulnerable wildlife within the roadway. Outside of the active period, roads shall be monitored at least twice a day in advance of peak AM and PM traffic periods. During operation, employees shall report any desert tortoise sightings along roadways to the Biological Monitor. If a desert tortoise is observed in the roadway or beneath a parked vehicle, it will be left to move on its own or a Biological Monitor may remove and transfer the animal to a safe location if temperatures are within the appropriate range as identified in the Final Desert Tortoise Clearing and Translocation Plan.		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• *Avoid Wildlife Pitfalls*. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the permanently fenced area have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected at the beginning of each workday, periodically throughout, and at the end of each workday by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual to a safe location. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.	X-COC	X (except as noted)
• *Avoid Entrapment of Wildlife*. Any construction pipe, culvert, or similar structure with a diameter greater than three inches, stored less than eight inches above ground for one or more days/nights, shall be inspected for wildlife before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored, or placed on pipe racks. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-30].		
• *Report Wildlife Injury and Mortality*. All inadvertent deaths of sensitive species, including road kill, shall be reported to the appropriate project representative. Species name, physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the Monthly Compliance Reports. Injured animals shall be reported to CDFG or USFWS and the CPM and the project owner shall follow instructions that are provided by CDFG or USFWS. If CDFG or USFWS cannot be immediately reached, consideration should be given to taking the animal to a veterinary hospital. If any golden eagles are recovered dead, they shall be sent to the National Eagle Repository after cause of death has been investigated.		
• *Minimize Standing Water*. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises, common ravens, and other wildlife to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and attract desert tortoise, common ravens, and other wildlife to the site and shall take appropriate action to reduce water application where necessary. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-30].		
• *Minimize Spills of Hazardous Materials*. All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the project Hazardous Materials Plan. Hazardous spills shall be cleaned up immediately and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.		
• *Worker Guidelines*. During construction all trash and food-related waste shall be placed in selfclosing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-30].		
• *Avoid Spread of Noxious Weeds*. The project owner shall implement the following Best Management Practices during construction and operation to prevent the spread and propagation of noxious weeds: [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-30].		
a. Limit the size of any vegetation and/or ground disturbance to the absolute minimum and limit ingress and egress to defined routes;		
b. Reestablish vegetation quickly on disturbed sites temporarily disturbed areas, including pipelines, transmission lines, and staging areas (see **BIO-9**);		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
c. Prevent spread of non-native plants via vehicular sources by implementing TrackcleanTM or other methods of vehicle cleaning for vehicles coming and going from construction sites. Earth-moving equipment and construction vehicles shall be cleaned within an approved area or commercial facility prior to transport to the construction site. The number of cleaning stations shall be limited and weed control/herbicide application shall be used at the cleaning station(s); d. Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations; e. Invasive non-native species shall not be used in landscaping plans and erosion control; and f. Monitor and rapidly implement control measures to ensure early detection and eradication of weed invasions. • *Implement Erosion Control Measures*. Standard erosion control measures shall be implemented X2 for all phases of construction and operation. All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward an ephemeral drainage or Harper Dry Lake shall be stabilized to reduce erosion potential. • *Monitor Ground Disturbing Activities Prior to Site Mobilization*. If ground disturbing activities are required prior to site mobilization, such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife. Actions not included in the project description are prohibited.		
31. Desert Tortoise avoidance and minimization measures: A Desert Tortoise Clearance and Relocation/Translocation Plan (Desert Tortoise Plan) will be approved by CEC, CDFG, USFWS, and BLM. ***Perimeter Fencing*** • Prior to ground disturbance and tortoise clearance of the plant site, the entire site shall be fenced with DT exclusion fence. To avoid impacts to DT during fence construction, the proposed fence alignment shall be flagged and the alignment surveyed within 24 hours prior to fence construction. Surveys shall be conducted by the Designated Biologist using techniques approved by USFWS and CDFG. Biological monitors may assist the Designated Biologist under his or her supervision. These surveys shall provide 100% coverage of all areas to be disturbed during fence construction and an additional transect along both sides of the proposed fence line. This fence line transect shall cover an area approximately 90 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Burrows and tortoises will be avoided if at all possible (especially for temporary fencing). But, if a burrow must be destroyed for fencing to occur, then it will be visually and tactilely examined for occupancy by tortoises and other wildlife. If occupancy is negative or cannot be established, the burrow will be carefully excavated with hand tools, using standardized techniques approved by USFWS (2009a) and the Desert Tortoise Council (1994). No burrows that can be avoided will be collapsed during perimeter fence construction. • The fence installation shall be supervised by the Designated Biologist and monitored by the biological monitors to ensure the safety of any tortoise present. The level of monitoring will depend on the specific fencing activity, but at least one biological monitor will accompany each separate construction team, such that no driving, trenching, fence pulling, or any surface disturbing activities will occur without the immediate presence of a biological monitor. Maps of burrows from the pre-construction survey will be provided to all biological monitors to assist in protecting tortoises. Such maps will also be potentially useful for relocating tortoises. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Tortoises will be avoided if at all possible. Any tortoise that must be moved will be relocated as detailed in the Desert Tortoise Relocation/Translocation section, below.	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• The permanent tortoise exclusionary fencing shall consist of galvanized hard wire cloth, 1-by-2- inch mesh sunk 12 inches into the ground, and at least 24 inches above ground, with t-stakes or other solid, permanent poles placed at 8 to 10-foot intervals (refer to parameters for USFWS approved tortoise exclusion fencing at www.fws.gov/ventura/ species info/protocols_guidelines). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Temporary fencing may be used to exclude tortoises until the permanent fence is installed. Temporary fencing will follow guidelines and materials for permanent fencing except in very temporary situations, when silt fencing may be used. In both cases, supporting stakes will be sufficiently spaced (e.g., ≤8 feet for wire mesh; ≤5 feet for silt fencing) to maintain fence integrity. Fencing may be buried if it will not create a biologically significant disturbance, or bent outward at or below the ground level, with the bent portion tacked and/or held down by rocks and soil. This method eliminates the need for trenching, which, for short-term temporary impacts, may be more beneficial to the recovery of the landscape, and thus the species. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates shall remain closed except during vehicle passage and may be electronically activated to open and close immediately after vehicle(s) have entered or exited to prevent extended periods with open gates, which might lead to a tortoise entering. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • The onsite storm water drainage channels, including the headwalls, outlet, and road crossings, shall be permanently fenced to ensure exclusion of DT during plant operation. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Following installation of the DT exclusion fencing for the permanent site, storm water drainage fencing, and temporary fencing (if required), the fencing shall be regularly inspected. Permanent fencing shall be inspected monthly and during/immediately following all rainfall events where soil and water flow through washes or overland and could damage the fence or erode the soil underneath. Any damage to the fencing will be repaired immediately. If it cannot be repaired immediately, any gaps that are open to tortoise habitat will be continuously monitored until the gap can be repaired to ensure that a tortoise has not entered the site through the gap. Temporary fencing will be inspected at least weekly if construction is occurring; if there is a delay in construction, temporary fence inspections will follow the same schedule as for permanent fencing. All gaps in temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area enclosed by the fence for tortoises. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Following the onset of the tortoise activity season, or if exclusion fencing is installed when tortoises are known to be active (for example, if unusually warm weather occurs in winter before fencing is completed), then all installed exclusion fence (partial or complete) will be checked ensure that no tortoise is trapped inside the fenced area. If fencing is installed during a warm period in winter, then all fencing will be checked twice daily, during the warmer periods of the day. Any tortoise will be relocated as described for fence construction. If fencing occurs during spring or summer (approximately 1 April through September), then all fencing will be checked 2-3 times daily during tortoise activity temperatures (between approximately 15 and 42°C ground surface temperature), for two weeks, to ensure that a tortoise is not inadvertently trapped inside. Tortoises will be passively or actively relocated as identified for fence construction. If, for any reason, tortoise clearance surveys were delayed for several months after fencing, at least one clearance pass will be completed as soon as tortoises became active following the completion of fencing (e.g., April if fencing were completed in winter, immediately after fencing if fencing were completed from April through October). These measures will ensure that no tortoise are trapped into the non-habitat inside the site following fencing. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
Plant Site Clearance Surveys		
• Following construction of the tortoise exclusionary fencing around the plant site (permanent or temporary), the plant site shall be cleared of tortoises by the Designated Biologist, who may be assisted by biological monitors. Clearance surveys must coincide with heightened DT activity from April through May and late September through October. Non-protocol clearance surveys may be conducted in areas of certain unsuitable habitat (e.g., developed) with prior approval of specific areas by USFWS and CDFG. Per USFWS (2010b) guidelines, a minimum of three, 100% coverage clearance passes will be completed. For the Project Area to be deemed cleared of tortoises, no additional tortoises may be found on the two, final, consecutive clearance passes. If a tortoise is found on one of these passes, two clean passes (i.e., no new tortoises) must follow before the Project Area can be declared to be cleared of tortoises. In this event, and because of the broad fields of non-habitat, it will not be necessary to complete another clearance of the entire Project Area, but instead only that portion of the site where the tortoise was found. Clearance transects generally will be 15 feet [G1]wide. Transects narrower than 15 feet wide will be used if dictated by dense shrub vegetation or where visibility is otherwise compromised. Wider transects during the second and third passes may be requested of USFWS on the shrub-less crop fields, depending on the height and nature of the vegetation there and the results of the first clearance pass. On each subsequent pass, an attempt will be made to view all shrubs and the terrain from as many angles as possible. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31].		
• Following the installation of exclusionary fencing and after ensuring DT are absent from the Project site, heavy equipment shall be allowed to enter the Project site to perform earthwork such as clearing, grubbing, leveling, and trenching. A biological monitor shall be onsite at all times during initial clearing and grading activities. Should a tortoise be discovered, it shall be relocated as described above in accordance with the final Desert Tortoise Plan. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31].		
Data Collected:		
• Each captured tortoise will be processed at capture, prior to translocation. The gender, carapace length, width along the widest area between and inclusive of Marginals 5 and 6, height at the third vertebral, distinguishing morphology, clinical signs of disease, capture site location and description, and the amount of void, if any, will be recorded. In addition, the tortoise will be photographed and drawn. All release site locations will also be recorded at relocation/translocation, along with their descriptions. All tortoise handling will be accomplished by techniques outlined in the USFWS *Field Manual* (2009a: Sections 7.6-7.8) and including the most recent disease prevention techniques (e.g., Wendland et al. 2009). Each tortoise will be assigned an individual number, with a number series to be provided by USFWS. Marking techniques will be approved by USFWS, but temporary marks using very small epoxy numbers (e.g., clear epoxy over a small, indelible number on a correction fluid [Wite-Out®] background) on an ostal or interior marginal area that receives little to no abrasion are suggested, with a Project specific identifier. Such numbers will last for several years, which will facilitate identifying specific tortoises if they are subsequently observed during Project maintenance or other activities, including repeated observations during construction (e.g., on the perimeter fence).		
Health Considerations:		
• Visual health assessments will be conducted on all tortoises relocated (i.e., moved <500 m) or translocated (moved > 500 m), by an experienced biologist approved by the USFWS.		
• USFWS (2010b) guidance and later e-mails from USFWS (T. Englehard, pers. comm. to A. Karl) have identified that no tortoise will be relocated within 1.5 km (0.9 mi) of a diseased resident tortoise because relocated tortoises may move 1.5 km after translocation. No tortoise may be translocated within 6 km of a diseased resident tortoise. Mojave Solar will comply with the requirement to complete a 100%-coverage survey for resident diseased tortoises within 1.5 km of any tortoise relocated from the MSP site, including during perimeter fence construction, or within 6 km of any tortoise translocated. All resident tortoises within 1.5 km of a relocation site and		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
6.5 km of a translocation site will be processed (weighed, measured, described, photographed), marked with an epoxy number for future identification and their health assessed. If any tortoises from the Project Area are moved more than 500 m, then all resident tortoises within 6.5 km of the Translocation Site will be fitted with a transmitter for follow-up blood sampling at the earliest date approved by USFWS, currently 15 May. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • No tortoise with clinical signs of mycoplasmosis will be relocated or translocated. Schumacher *et al.* (1997) observed that clinical signs had a high statistical correlation with positive serology (i.e., exposure to *Mycoplasma agassizii*). A mucous nasal discharge is the clinical sign that was the most reliable predictor (93% of tortoises with a mucous nasal discharge were seropositive), although it could be caused by pathogens other than *M. agassizii*. Furthermore, a purulent nasal discharge was the only clinical sign that was relatively objective; other clinical signs were far more subjective, were potentially present for other reasons, and reduced the statistical predictability of positive serology. For the MSP, a purulent nasal discharge will be the threshold to identify a diseased tortoise, unless USFWS determines that other clinical signs should be used for diagnosing a diseased tortoise. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Relocated or translocated desert tortoises determined to be infectious or unhealthy will be sent to the Desert Tortoise Conservation Center (DTCC) or other USFWS-approved facility where they will undergo further assessment, treatment, and/or necropsy. Mojave Solar will provide a flat fee of $9,000 for each desert tortoise sent to the DTCC commensurate with the cost to provide housing, care, treatment, and other services for five years ($3,000 for Year 1, $1,500 for Years 2 to 5). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. *Transmitters:* • If needed for monitoring relocated or translocated tortoises, transmitters will be affixed to the tortoises. Holohil R1-2B transmitters (24 mm wide by 11 mm thick; 14.9 g; www.holohil.com) will be epoxied onto a carapace scute using five-minute gel epoxy. For males, transmitters will be affixed to the fifth vertebral; for females, transmitters will be affixed to the anterior carapace in the most appropriate location for the animal's shell shape that will preclude interference with righting. The transmitter antenna will be fed through a plastic sheath with a diameter slightly greater than the antenna. This sheath will be epoxied low on the carapace, just above the marginal scutes, and split at the scute seams (growth areas) to preclude distortion of the tortoise's shell during growth. This technique permits the antenna to remain protected from abrasion, but move freely, thereby not affecting tortoise growth. Juvenile tortoises will be similarly equipped but with smaller transmitters, appropriate for their mass and size (<10% of the tortoise's mass). Because the antenna sheath is tightly curved on a very small tortoise, potentially constricting antenna movement with subsequent growth distortion, much more of the antenna will remain free on small tortoises. These are proven techniques to minimize disturbance to the tortoise, refined and/or developed and used by Dr. Karl for more than 20 years [G2]and on over 300 tortoises and subsequently used at Fort Irwin for several hundred tortoises. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. *Transportation and Handling:* • Tortoises that only need to be moved a few hundred feet will be hand-carried to the release site. Each tortoise that is hand-carried will be kept upright and the handler, wearing disposable examination gloves (one pair per tortoise), will move the tortoise as quickly and smoothly as possible. Tortoises that must be moved farther from the capture site or temporarily held in a climate-controlled situation will be sequestered in individual, sterilized tubs with taped, sterilized lids or single-use cardboard boxes with lids. During transport by vehicle, the tortoise tub will be kept shaded and the tub will be placed on a well-padded surface that is not over a heated portion of the vehicle floor. These measures are consistent with USFWS guidance (2009a: Section 7.10).		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• Should a tortoise void or defecate between capture and release, it will be thoroughly rinsed to remove potential attracting odors to predators. Then, it will be placed in a shallow bath of room temperature water to re-hydrate it, per USFWS guidance (2009a: Section 7.9). The tortoise's mass following this procedure will be recorded. *Handling Temperatures:* • Handling will adhere to USFWS (2010b) handling guidelines, which state that tortoises can only be handled when air temperatures, measured at 2 in (5 cm) above the ground (shaded bulb), are not expected to exceed 95°F (35°C) during the handling session. If the air temperature exceeds 95°F during handling or processing, desert tortoises will be kept shaded in an environment where the ambient air temperatures do not exceed 91°F (32.7 °C) and air temperature does not exceed 95°F. The desert tortoise will not be released until air temperature at the release site declines to 95°F. • Tortoises must go underground to escape surface heat at ground surface temperatures of 109°F (43°C) (Karl 1992) to 113°F (45°C) (Zimmerman et al., 1994). Because surface temperatures can easily exceed 109°F when air temperatures at two inches are still below 95°F, the more conservative temperature will govern all tortoise handling described in the Desert Tortoise Plan, to minimize harm to tortoises. In other words, the USFWS guidelines will be followed except in the situation where they exceed 109°F ground temperature. ***Relocation/Translocation Procedures*** *Perimeter Fencing:* • Any tortoise that must be moved during perimeter fencing will be relocated immediately outside the construction zone, but onto MSP land. Release points will be as close as possible to the capture point, to keep tortoises within their home range, but will always be on or immediately adjacent to suitable habitat. Specific release points cannot be identified at this time without knowing where tortoises are, but the highest likelihood of finding a tortoise along the perimeter fence is along the southern, eastern and northeastern border of the Beta Site and the western border of the Alpha Site. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Generally, tortoises will be placed in the shade of a shrub or, if known, in the entrance of that tortoise's burrow (but see below in the event that ambient temperatures are high). The most recent USFWS guidance (USFWS 2010b) states that all "perimeter fence" tortoises be moved to the interior of the Project Area. Because the solar project site has limited desert tortoise habitat and is expect to support few if any desert tortoises, which is supported by the limited amount sign and burrows on the proposed solar fields, it is believed that any individual found during fence construction maintains a territory outside of the solar project site and is utilizing the project area for foraging or movement. Therefore, desert tortoises on the MSP project found during fence construction will be placed outside of the solar project site rather than inside. • All tortoises relocated from harm's way during perimeter fencing will be transmittered as described above. The exception will be tortoises brumating (≈hibernating) in burrows during winter (see below for a discussion of handling tortoises outside of USFWS temperature guidelines). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Translocation will occur when air temperatures at 2 in (5 cm) above the ground, are not forecast to exceed 90°F (32°C) within three hours of release and 95°F (35°C) within one week of release; additionally, daily low temperatures should not be cooler than 50°F (10°C). The rationale for the higher temperature constraints is that tortoises must find or dig new refuges in the potentially unfamiliar translocation area prior to the onset of lethal daily temperatures. Along the perimeter fenceline, however, tortoises will be moved only a short distance, within their home ranges, where they are knowledgeable about the locations of refuges. USFWS (2010b) has agreed that relocation on linear facilities, including perimeter fencing, may occur during any time of the year. The only high temperature constraint is that no tortoise will be moved when air temperatures are expected to exceed 90°F (32°C) within three hours of release. Alternatives		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
below summarize conditions and methods detailed in the Desert Tortoise Plan whereby tortoises could be relocated during *periods* of higher temperatures, although no tortoise will be moved when air temperatures exceed 95°F, except in an emergency. • Relocate to known burrow; monitor [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Erect temporary fence between tortoise and construction; monitor; remove fence when appropriate [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Temporarily move construction to another area [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Collect and hold in climate controlled facility; release in evening or the following morning; monitor [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. During winter or low temperatures, the following methods summarize the approach to relocating tortoises that must be moved along the perimeter fence: • If cannot be avoided, place tortoise in artificial burrow, temporarily block in and monitor; remove block at two weeks (or earlier depending on the weather) and monitor [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • If tortoise fails to find suitable winter burrow and will not use artificial burrow, hold in climate controlled facility, in the dark at temperatures simulating burrow temperatures, until seasonal temperatures warm and tortoises are active; release within 100 feet of capture burrow; monitor. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. *Plant Site:* • Any tortoise that must be moved <500 meters will be relocated immediately outside the construction zone, but onto MSP land, and placed in the shade of a shrub or at the entrance to a known burrow for that tortoise. Release points will be as close as possible to the capture point, to keep tortoises within their home range, but will always be on or immediately adjacent to suitable habitat. Specific release points cannot be identified at this time without knowing where tortoises are, but the highest likelihood of finding a tortoise along the perimeter fence is along the southern, eastern and northeastern border of the Beta Site and the western border of the Alpha Site. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Any tortoise translocated >500 meters will be placed in an individual quarantine pen in the relevant Translocation Site (see below), under a shrub or near an artificial burrow. Two artificial burrows, each at least 4 feet (1.2 m) long, will be constructed for each tortoise, using a gaspowered auger or shovel/plywood, per USFWS (2009a) guidance. Translocated tortoises will only be translocated once. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Based on published and unpublished research, a juvenile tortoise moved farther than 330 feet (100 m) may be outside its recent or familiar use area. For AMSP clearance, if juvenile tortoises are moved within 330 feet of the capture location, where they may have site familiarity, they will be released under a shrub and monitored initially as described in Post-Release Tortoise Monitoring, below. For distances >330 ft, they will be moved to the Translocation Site into a predator-proof enclosure, using 5-ft-tall “Non-Climb”, 2 by 4 inch vertical mesh fencing, buried at number of tortoises found, but will be a minimum of 20 feet in diameter, extending to 50 feet or more, as necessary, to accommodate more juvenile tortoises. (Morafka *et al*. 1997 successfully penned juvenile tortoises at the rate of 62-123 tortoises per acre (152-305 animals per hectare). After tortoises have become familiar with the site’s odors and landmarks for at least two weeks, escape holes will be opened in the lower edge for tortoises to escape passively (e.g., Morafka et al. 1997). Modifications to the design and process may occur in response to predator interest in the enclosure or juvenile tortoise behavior in the enclosure,		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
incorporating new and relevant headstarting techniques used at Twentynine Palms Marine Corps Air Ground Combat Center. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • All translocated tortoises will be rehydrated within 12 hours prior to release, via USFWS (2009a) Methods [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Two translocation sites were chosen, one on each side of Harper Lake Road, to minimize post-translocation movements of tortoises across that road. All tortoises west of Harper Lake Road will be moved to the Translocation Site in Section 25, on land owned by Mojave Solar. All tortoises east of Harper Lake Road will be moved to the Translocation Site in Section 4, in the BLM DWMA and ACEC. Translocation to a DWMA or ACEC is preferred by CDFG, and BLM has agreed to move the few potential tortoises from MSP to BLM land (L. Encinas, pers. comm.). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • The Translocation Site pens will be sufficiently large to support each tortoise pending disease testing results. Each will be a minimum of 165 x 165 feet (50 by 50 m), thereby providing adequate forage and sufficient habitat for a tortoise to find and/or construct adequate cover sites. Pens will be constructed using double-walled, 1 by 2 inch tortoise-proof fencing, installed as identified for perimeter fencing, above. They will be separated by a minimum of 100 meters so that tortoises will not be crowded once the fences are removed (if tortoises are seronegative) and tortoises fully released. Prior to Project Area clearance, pen design and an animal husbandry plan for penned tortoises will be approved by experienced personnel from an accredited American Zoological Association institution and approved by USFWS, BLM, and CDFG. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • If a tortoise is found inside the Plant Site during initial grading or operations, and temperatures are too high for safe relocation/translocation, the tortoise will be captured, secured in an individual, sterilized box and temporarily placed in a quiet, climate-controlled environment (e.g., the onsite Project office). Depending on temperatures and other factors, it is possible that the tortoise could be affixed with a transmitter and relocated outside the Project Area or translocated into the Translocation Site the same day, when temperatures subside (or the following morning for juvenile tortoises), and monitored to ensure its safety. If the tortoise will likely be harmed or die, it will be held in captivity at a location approved by USFWS and CDFG, away from other tortoises, to be released into the Translocation Site during the next available window. Other options will also be investigated. The goal of the translocation is to keep the tortoise in the population, in order to promote recovery. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. ***Post- Release Monitoring*** • During perimeter fence construction, tortoises will be moved a short distance from construction activities along the perimeter fence and therefore will be assumed to be within their home range and familiar with burrow locations. However, they will receive immediate post-release monitoring nonetheless. This may be especially critical for juvenile tortoises, which are highly subject to depredation. The Desert Tortoise Plan discusses the details of immediate post-release monitoring for all tortoises relocated during fence • USFWS (2010b) requires a five-year monitoring program for translocatees, including tortoises relocated during perimeter fence construction. Based on multiple Project surveys, it is assumed that fewer than five tortoises will be part of the study. USFWS (2010b) has determined that no resident and control study cohorts are required for fewer than five translocatees (including juveniles). If five or more desert tortoises are translocated from the project site, Mojave Solar will work with the BLM, CDFG, and Service to identify appropriate locations for control and resident desert tortoise monitoring. Mojave Solar will monitor all transmittered tortoises for five years from the time of relocation/translocation. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Tortoises will be located by telemetry according to the schedule identified in USFWS (2010b) guidelines. Each time the tortoise is located, the behavior, location (UTM), and burrow description (if any) will be recorded. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• Survival and general health will be monitored through body condition indices (mass to volume ratios), clinical signs of disease, serology, and inspection for injuries. Any time a tortoise is handled, it will be examined for clinical signs of disease. Formal health assessments will be conducted during April (following brumation), July (following oviposition), and October (prior to brumation). At these times, body condition (mass to volume ratio) also will be measured (mass, carapace length, width at Marginal 5 or 6, height) [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Blood samples will be taken and analyzed annually, in July or October. An approved biologist will conduct the assessments and tissue sampling. While blood samples are not required of tortoises moved <500 meters during relocation, blood will be sampled shortly after relocation3 in order to provide baseline data. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Sampling frequency and techniques for disease analysis will be updated as necessary during the study, based on the newest disease information from this and other studies. This may include tests for other pathogens (e.g. *Mycoplasma.* spp., herpesvirus, iridovirus) as their importance and evaluation techniques become validated for desert tortoises. Data will be recorded on a data sheet similar to that in Appendix 1, with an additional health assessment data sheet to be provided by USFWS. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Any health problems observed (*e.g.*, rapid declines in body condition, perceived outbreaks of disease, mortality events) will be reported to the USFWS, CDFG and BLM such that appropriate actions can be taken in a timely manner. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Should a transmittered tortoise die, the cause of death will be determined to the extent possible. This information, along with the location and any other analysis that could assist the USFWS, CDFG, BLM and DOE will be provided to these agencies within 48 hours, verbally, or five business days, if by e-mail. All fresh carcasses will be salvaged and frozen. They will be submitted for necropsy upon direction from USFWS, CDFG, and BLM; DOE will also be notified. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Transmitters will be changed as necessary. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. Mojave Solar has also proposed some alternatives for consideration if fewer than five tortoises are relocated/translocated. ***Nest Relocation*** • Any nests found between November 1 and April 15 are unlikely to be viable and will not be moved; hatching is typically completed by October. In the event that nests are found between April 15 and October 31, the nests will be moved. Eggs will be inspected to determine if they are viable and, if so, will be moved to an identical microsite (e.g., cover, plant species, soil type, substrate, aspect) on the approved Translocation Site using standard techniques (e.g. Desert Tortoise Council 1994, USFWS 2009a). Translocated nests will be fenced with open-mesh fencing (e.g. 2-inch wide mesh) that will permit hatchlings to escape but prevent depredation by canids that might be attracted to the new nests by human scent predator entry. Open-mesh fencing or avian netting also will be installed on the roof of the nest enclosure to prevent predator entry. Nests will be monitored from a 30-foot distance once a month until late November, at which time they will be excavated for examination. If possible, hatchlings will be weighed, measured, photographed, described and marked. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. Measures specific to the SPS Upgrades: A qualified biologist will conduct preconstruction clearance surveys for desert tortoises within the limits of the proposed work activity associated with the fiber-optic upgrades. The résumés of the biologists MSLLC and SCE wish to perform these surveys will be provided to USFWS for concurrence prior to conducting the surveys, as part of the process identified in BIO-1 through BIO-4, for the selection of the Designated Biologist and Biological Monitor, if feasible. The limits of proposed work activity will be fenced with		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
temporary desert tortoise fencing, immediately prior to the clearance survey. Clearance surveys will follow the current USFWS desert tortoise survey protocol. In addition to the WEAP training required under BIO-5, all personnel involved in the construction, operation, and maintenance of the fiber-optic upgrades will adhere to the following measures[SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]: • During construction, all vehicles will remain on existing access and spur roads in potentially occupied desert tortoise habitat. Vehicle speeds in these areas will not exceed 15 miles per hour. Personnel will check under parked vehicles prior to moving the vehicle. If a desert tortoise is found under a vehicle and does not leave on its own, a Designated Biologist or Biological Monitor may be called to relocate the animal out of harm's way, no more than 1,640 feet (500 meters) from its original location. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • During operations and maintenance activities, all vehicles will remain on existing access and spur roads in potentially occupied desert tortoise habitat. Vehicle speeds in these areas will not exceed 15 miles per hour. Personnel will check under parked vehicles prior to moving the vehicle. If a desert tortoise is found under a vehicle, a Designated Biologist or Biological Monitor will move the desert tortoise as described in the attached Desert Tortoise Plan. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • In construction areas in potentially occupied desert tortoise areas, work and staging areas, including the locations of the fiber-optic upgrades under construction, may be fenced with USFWS-approved temporary desert tortoise fencing in a manner that prevents equipment and vehicles from straying from the designated work area into adjacent habitat. The Designated Biologist or Biological Monitor will assist in determining the boundaries of the area to be fenced in consultation with USFWS and CDFG, and with BLM when construction areas are within lands administered by the BLM. All workers will be advised that equipment and vehicles must remain within the fenced work areas. Installation of the fencing and any necessary surveys will be directed and/or conducted by the Designated Biologist or Biological Monitor in concurrence with these agencies. The fencing will remain in place for the duration of construction activities at a particular location and will be removed when construction activities are complete. The Designated Biologist or Biological Monitor will inspect the fencing on a biweekly basis to ensure that no holes develop that could allow desert tortoises to enter the work areas. If holes are found, they will be repaired immediately. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • If desert tortoises are found within an area that has been fenced to exclude them, activities will cease until the Designated Biologist or Biological Monitor moves the desert tortoises out of harm's way outside of the fence, no greater than 1,640 feet (500 meters) away from their original location. At this time, the fencing will be inspected for holes. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • If desert tortoises are found in a construction area where fencing was deemed unnecessary, the tortoise will be moved per the Desert Tortoise Plan. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • Any desert tortoises found during clearance surveys will be translocated per the Desert Tortoise Plan. Monitoring of active construction outside fenced areas will be continuous. A monitor must be onsite to address any tortoises found inside fenced areas that are not fully graded. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • The Designated Biologist or Biological Monitor will follow the handling guidelines at all times if handling desert tortoises is required. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. • The Designated Biologist or Biological Monitor will have the authority to stop all activities until appropriate corrective measures have been completed. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
SCE will restrict work to daylight hours, except during an emergency, to avoid nighttime activities when desert tortoises may be present on the access road. Traffic speed will be maintained at 15 miles per hour (24 kilometers per hour) or less in the work area. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. The temporary ground disturbance associated with the trenching will occur within previously disturbed areas, and will not require rehabilitation or restoration. However, for any construction laydown areas required for the SCE downstream upgrade that will result in soil excavation or surface scouring in nondisturbed areas supporting native vegetation, the following shall be implemented to restore native vegetation: [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. 1. Stockpile Topsoil. To increase chances for revegetation success in temporarily disturbed areas of native vegetation, topsoil shall be stockpiled from the Project work area where temporary disturbances include vegetation removal and soil excavation (e.g., trenching for the installation of fiber-optic cable conduit) for use in revegetation. Native topsoil from the least disturbed locations of temporary excavations, and only areas that are free of noxious weeds, shall be used as a source of topsoil. Topsoil shall be stockpiled from the areas of native vegetation identified for disturbance at a particular site for use in revegetation of temporarily disturbed soils. Two (2) to three (3) inches of soil shall be scraped and stockpiled for use in revegetation of temporarily disturbed areas. Elements related to the collection and stockpiling of topsoil shall be conducted as described on pages 39-40 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. 2. Restore Temporarily Disturbed Areas. Only seed from locally occurring species shall be used for revegetation. Seeds shall contain a mix of short-lived early pioneer species such as native annuals and perennials and subshrubs (for example, cheesebush, matchweed, peppergrass, rabbitbrush, creosote bush, burro-weed, needlegrass, rice grass, and goldenhead). Seeding shall be conducted as described in Chapter 5 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen 2003). A list of plant species suitable for Mojave Desert region revegetation projects, including recommended seed treatments, are included in Appendix A-8 of the same report. The list of native plants observed during surveys of the Project area can also be used as a guide to site-specific plant selection for revegetation. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. 3. Control Noxious Weeds. Maintain percent cover of noxious weeds (species considered “moderate” or “high” threat to California wildlands as defined by the California Invasive Plant Council [CAL-IPC 2006] and noxious weeds rated “A” or “B” by the California Department of Food and Agriculture [CDFA] and any Federal-rated pest plants [CDFA 2009]) below current levels in rehabilitated areas. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. 4. Performance Standard. Since all temporary impacts are to be mitigated as permanent, in the form of habitat replacement at set ratios, no performance standard shall be put in place on the success of the restoration of these areas. Implementation of the measures outlined in BIO-12, and the documentation of the restoration activities by the Designated Biologist shall be sufficient for adherence to this measure. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31]. 5. Reporting. The Designated Biologist shall record the following information for any restoration activity: a) the locations (narrative and maps) and dates of habitat restoration; b) extent of surface area disturbed and restored; c) type and source of native seed mix used; d) general description of the pre-disturbance site (plant species diversity, presence of invasive plant species, etc.); and e) a general description of the areas immediately surrounding the restoration site (plant species diversity, presence [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-31].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
32. The project owner shall provide a copy of the Biological Opinion per Section 7 of the federal Endangered Species Act written by the U.S. Fish and Wildlife Service in consultation with U.S. Department of Energy. The terms and conditions contained in the Biological Opinion shall be incorporated into the project's BRMIMP and implemented by the project owner. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-32].	X-COC	X (except as noted)
33. To fully mitigate for habitat loss and incidental take of desert tortoise and Mohave ground squirrel as well as burrowing owl, the project owner shall acquire, prior to ground-disturbing activities, in fee or in easement, no less than 118.2 acres of land suitable for these species and shall provide funding for the enhancement and long-term management of these compensation lands. The responsibilities for management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the CPM, in consultation with CDFG and USFWS prior to land acquisition or management activities. If habitat disturbance exceeds that described in this analysis, the project owner shall be responsible for acquisition and management of additional compensation lands and/or additional funds required to compensate for any additional habitat disturbances. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat. Agreements to delegate land acquisition or management shall be implemented within 12 months of the Energy Commission's decision. The acquisition and management of compensation lands shall include, but is not limited to, the following elements: [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. 1. *Selection Criteria for Compensation Lands*. The compensation lands selected for acquisition or title/easement transfer shall: [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. A. have substantial capacity to support resident and dispersing desert tortoise, MGS, and burrowing owl; [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. B. be a contiguous block of land (preferably) or located so that parcel(s) result in a contiguous block of protected habitat; [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. C. not be encumbered by easements or uses that will preclude fencing of the site or preclude management of the site for the primary benefit of the species for which mitigation lands were secured; [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. and D. include mineral/water rights or ensure that those rights may not be evoked in a manner to negate the value of the compensation lands. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. 2. *Review and Approval of Compensation Lands Prior to Acquisition or Title/Easement Transfer*. A minimum of three months prior to acquisition or transfer of the property title and/or easement, the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a proposal to the CPM, CDFG, and USFWS describing the parcel(s) intended for purchase or title/ easement transfer. This proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise, MGS, and burrowing owl in relation to the criteria listed above. Approval from the CPM, in consultation with USFWS and CDFG, shall be required for acquisition of all parcels comprising no less than 118.2 acres in advance of purchase or title/easement transfer. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. 3. *Review and Approval of Compensation Lands Management Plan*. Within six months of the land or easement purchase or transfer, as determined by the date on the title, the project owner, or a third-party approved by the CPM, in consultation with CDFG and USFWS, shall submit a compensation lands management plan to the CPM, CDFG, and USFWS. The plan shall include, but not be limited to proposed measures to enhance habitat (e.g., removal of structures and other human attractants); maintenance procedures; general maintenance provisions (e.g., trash dumping, trespass, pesticide use avoidance, etc.). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
4. *Mitigation. Security for Compensation Lands and Avoidance/Minimization Measures*. The project owner shall provide financial assurances to the CPM, with copies of the document(s) to CDFG and USFWS, to guarantee that an adequate level of funding is available to implement all biological avoidance, minimization, and compensation measures described in the conditions of certification**.** These funds shall be used solely for implementation of the measures associated with the project. The project owner or an approved third party shall complete acquisition of the proposed compensation lands prior to initiating ground-disturbing project activities. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].		
5. *Conditions for Acquisition of Compensation Lands*. The project owner shall comply with the following conditions relating to acquisition of compensation lands or transfer of the property's title and/or easement after the CPM, in consultation with CDFG and USFWS, has approved the proposed compensation lands as described above. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].		
A. Preliminary Report: The project owner, or approved third party, shall provide a recent preliminary title report (no more than six months old), hazardous materials survey report (i.e., Phase I ESA), biological analysis, and other necessary documents for the proposed 118.2 acres. All documents conveying or conserving compensation lands and all conditions of title/easement are subject to a field review and approval by the CPM, in consultation with CDFG and USFWS, California Department of General Services and, if applicable, the Fish and Game Commission and/or Wildlife Conservation Board. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].		
B. Title/Conveyance: The project owner shall transfer fee title/deed or a conservation easement for the 118.2 acres of compensation lands to CDFG under terms approved by CDFG. Alternatively, a CPM-approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 may hold fee title or a conservation easement over the compensation lands. In the event an approved non-profit holds title, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG and USFWS; in the event an approved nonprofit holds a conservation easement over the compensation lands, CDFG shall be named a third party beneficiary. USFWS shall be named a third party beneficiary regardless of who holds the easement. The project owner shall also provide a property assessment and warranty. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].		
C. Enhancement Fund. The project owner shall fund the initial protection and enhancement of the 118.2 acres by providing the enhancement fund to the CDFG. Alternatively, a CPM approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 to manage the compensation lands may hold the enhancement funds. If CDFG takes fee title to the compensation lands, the enhancement fund must go to CDFG. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].		
D. Endowment Fund: Prior to ground-disturbing project activities, the project owner shall provide to CDFG a capital endowment in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis that will be conducted for the 118.2 acres of compensation lands. Alternatively, a CPM-approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 may hold the endowment fees. If CDFG takes fee title to the compensation lands, the endowment must go to CDFG, where it will likely be held in the special deposit fund established pursuant to Government Code section 16370. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation will manage the endowment for CDFG and with CDFG guidance. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].		
The project owner and the CPM shall ensure that an agreement is in place with the endowment holder/manager to ensure the following:		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• Interest. Interest generated from the initial capital endowment shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action designed to protect or improve the habitat values of the compensation lands. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. • Withdrawal of Principal. The endowment principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party endowment manager to ensure the continued viability of the species on the 118.2 acres. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision will likely be deposited in a special deposit fund established pursuant to Government Code section 16370. If the special deposit fund is not used to manage the endowment, the California Wildlife Foundation will manage the endowment for CDFG and with CDFG guidance. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. E. Pooling Endowment Funds. CDFG, or a CPM-approved, in consultation with CDFG and USFWS, non-profit organization qualified pursuant to California Government Code section 65965 to hold endowments may pool the endowment with other endowments for the operation, management, and protection of the 118.2 acres for local populations of desert tortoise and MGS. However, for reporting purposes, the endowment fund must be tracked and reported individually. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. F. Security Deposit. The project owner may proceed with ground disturbing activities before fully performing its compensatory mitigation duties and obligations as set forth above only if the project owner secures its performance by providing funding to CDFG (Security Deposit), or if CDFG approves, administrative proof of funding, necessary to cover easement costs, fencing/cleanup costs, and as necessary, initial protection and enhancement of the compensation lands. If the Security is provided to allow the commencement of project disturbance prior to completion of compensation actions, the project owner, CDFG, or a third-party entity approved by the CPM, in consultation with CDFG and USFWS, may draw on the principle sum if it is determined that the project owner has failed to comply with the conditions of certification. The security will be returned to the project owner upon completion of the legal transfer of the compensation lands to CDFG or approved third-party entity, or upon completion of an implementation agreement with a third party mitigation banking entity acceptable to the CPM and CDFG, to acquire and/or manage the compensation lands. The Security is calculated as follows: [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. • Costs of enhancing compensation lands are estimated at $250 per acre. Costs of establishing an endowment for long-term management of compensation lands are estimated at $1,300 per acre. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. G. Reimbursement Fund. The project owner shall provide reimbursement to the CDFG or approved third party for reasonable expenses incurred during title, easement, and documentation review; expenses incurred from other state agency reviews; and overhead related to providing compensation lands. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33]. The project owner is responsible for all compensation lands acquisition/easement costs, including but not limited to, title and document review costs, as well as expenses incurred from other state agency reviews and overhead related to providing compensation lands to the department or approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures. The project owner may choose to satisfy its mitigation obligations by paying an in-lieu fee instead of acquiring compensation lands to mitigate for 118.2 acres of habitat, pursuant to California Senate Bill 34 (enacting CESA § 2069 and 2099) or other applicable in-lieu fee provision, to the extent the in-lieu fee provision is found by the Energy Commission to be in compliance with CEQA and CESA requirements. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-33].		

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
34. To protect golden eagles within a 10 mile radius of the AMSP site the project will provide funding in the amount of $60,000 to the U.S. Fish and Wildlife Service (Service), to be spent by the Service on monitoring and other actions that the Service determines will be beneficial to golden eagles located in a 10-mile radius of the AMSP. ASI may provide funds to implement this measure into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). It is anticipated that the $60,000 payment may be used to fund actions such as (1) a 10-year monitoring program for the Black Mountain golden eagle nesting pair, which is located within a 10-mile radius of the AMSP; (2) implementing road restrictions along Black Mountain Road by placing large boulders along the road in those sections directly alongside the golden eagle nests; and (3) implementing seasonal road closures of Black Mountain Road by erecting steel gates at the northern and southern ends of Black Mountain Wash. The funds also may be spent on other actions deemed by the Service to be beneficial to golden eagles within a 10 mile radius of the AMSP. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-34]. Pursuant to CEC License Decision Condition of Certification LAND-1, ASI will mitigate for the loss of 128 acres of agricultural land recently under production on the plant site by providing for the purchase of 128 acres of comparable agricultural land or an easement guaranteeing 128 acres of comparable land will be available in perpetuity for productive agricultural use. This will also provide foraging habitat for golden eagles within the project area. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-34]. Pursuant to CEC License Decision Condition of Certification BIO-20, ASI will ensure continuity of water delivery to the Harper Dry Lake ACEC by providing an alternate well able to effectively convey a minimum of 75-acre feet per year to the Harper Dry Lake marsh. To ensure continuity of water delivery to the Harper Dry Lake ACEC the project owner shall not decommission the existing well on Mojave Solar, LLC-owned property that currently serves the Harper Dry Lake marsh (wetland well) until an alternate well is able to effectively convey a minimum of 75 acre feet per year to the Harper Dry Lake marsh. This condition of certification does not transfer to Mojave Solar, LLC the obligation of Luz Solar Partners Ltd. to allow BLM to pump 75 acre feet of water per year to the marsh, under SEGS IX Condition of Certification **BIO-11.k**. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-34]. Pursuant to CEC License Decision Condition of Certification BIO-15, ASI will provide 118.2 acres of land suitable for desert tortoise, Mojave ground squirrel and burrowing owl to compensate for the loss of habitat for these species on the plant site. The compensation land is located directly west of the MSP plant site and will provide suitable foraging habitat for golden eagles. ASI also will provide funding for the enhancement and long-term management of the compensation lands. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-34].	X-COC	X (except as noted)
35. The project owner shall provide documentation to the CPM that the project is in compliance with the Bald and Golden Eagle Protection Act (Title 16, United States Code, sections 668-668d). [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-35].	X-COC	X (except as noted)
36. The project owner shall prepare and implement a Bird Monitoring Study to monitor the death and injury of birds from collisions with facility features such as reflective mirror-like surfaces and from heat, and bright light from concentrating sunlight. The study design shall be approved by the CPM in consultation with CDFG and USFWS, and shall be incorporated into the project's BRMIMP and implemented. The Bird Monitoring Study shall include detailed specifications on data and carcass collection protocol and a rationale justifying the proposed schedule of carcass searches. The study shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-36].	X-COC	X (except as noted)
37. Avoidance and minimization measures for the SWHA, a State-listed threatened species, will include: [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-37]. • Pre-construction surveys of the AMSP site and a surrounding 0.5-mile buffer, per the recommended CDFG survey methodology for the species (CDFG 2000b).	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Biological Resources (cont.)		
• If active nesting is documented within a 0.5-mile radius of the site during the surveys, Mojave Solar will coordinate with CDFG to develop additional conservation measures, such as nest monitoring during construction or delaying construction activities near the nest until all chicks have fledged. Mitigation for the loss of SWHA foraging habitat will be offset by the preservation of the compensation lands. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF BIO-37].		
38. The project owner shall design and implement an Evaporation Pond Monitoring and Adaptive Management Plan that meets the requirements of the USFWS, CDFG, RWQCB, and the CPM. The objective of the Plan is to define the monitoring and reporting procedures as well as triggers for adaptive management strategies that shall be implemented to prevent wildlife mortality at the evaporation ponds. The plan shall include the following: • A description of evaporation pond design features such as side slope specifications, freeboard and depth requirements, which will prevent use by wildlife. • A detailed description of the wildlife monitoring procedures and schedule. For the initial implementation of a new technology, daily monitoring shall be conducted both at the project evaporation ponds and the wetlands within the Harper Lake ACEC. Monitoring may be reduced to weekly and potentially bi-weekly or monthly depending on the results of initial monitoring period. • A detailed description of the water quality and water level monitoring procedures and schedule. Water quality and water level monitoring shall coincide with wildlife monitoring to provide a basis for comparative analysis. • A description of wildlife exclusion/deterrent technologies and adaptive management strategies. Technologies shall include but are not limited to netting, and shall not disturb or harass non-target wildlife adjacent to the project area. • Triggers for adaptive management (i.e., modifications to existing technology or replacement with new technology). Adaptive management shall be necessary if:1)more than one dead bird per quarter is discovered at the evaporation ponds; or 2)one special-status animal is discovered at the evaporation ponds; or 3) noise levels attributable to the technology exceed 60 dBA at the Harper Lake ACEC wetlands. After three failed attempts at new technology, the ponds shall be netted. • Reporting requirements, to include monthly reporting for the first year if a technology other than netting is used. Reporting may be reduced to monthly or quarterly thereafter if no bird or wildlife deaths are reported during the first year. If wildlife mortality occurs at the ponds or if birds are disturbed at the marsh as described above, the CPM shall be notified within 10 days of the incident and the accompanying adaptive management action to implemented. • Evaporation pond monitoring and reporting shall continue for the life of the project. The draft Plan submitted by the Applicant (AS 2009d) shall provide the basis for the final plan, subject to review and revisions form the CPM in coordination with USFWS, CDFG, and RWQCB. For the CPM and CDFG to deem the eradication successful: • The site shall not contain more than 5% exotic plant species for the CPM and CDFG to deem the tamarisk removal successful. • All plant species with rates of dispersal and establishment listed as “High” or “Moderate” on the California Invasive Plant Inventory shall have documented absence, or have been removed for the site for at least three years for the CPM and CDFG to deem the site successful. • The site shall not contain invasive wildlife species for the CPM and CDFG to deem the site successful. Monitoring and maintenance of the site shall be conducted for five years unless less monitoring can be justified. Following the first year of monitoring, if the project owner petitions to terminate the monitoring program, staff and CDFG will determine whether more years of monitoring are needed.	X-COC	X (except as noted)

TABLE B-2 (Continued)
AGENCY-IMPOSED MEASURES FOR THE ABENGOA MOJAVE SOLAR PROJECT

Agency-Imposed Design Features, Environmental Protection Measures, and BMPs	Responsible Party	
	Mojave Solar	SCE
Cultural Resources		
1. A Monitoring Plan will be developed prior to start of construction. The document will provide protocols for construction monitoring and procedures in the event unanticipated cultural material is encountered during construction.	X-COC	X (except as noted)
2. All sub-surface ground-disturbing activities shall be monitored by a qualified archaeologist.	X-COC	X (except as noted)
3. A Monitoring report documenting the results of the monitoring will be prepared and submitted to BLM.	X-COC	X (except as noted)
4. In the event of the discovery of unanticipated cultural material, the qualified archaeologist will coordinate with the Project construction manager and environmental compliance manager to stop all work in the vicinity of the find until the BLM archaeologist can be notified and the find can be assessed. If the discovery is determined to be not eligible, work will be allowed to continue. [SCE IS NOT RESPONSIBLE FOR IMPLEMENTING THIS PORTION OF CUL-4].	X-COC	X (except as noted)
5. Based on the Native American contact program, Native American representatives have expressed interest in involvement in construction monitoring. The project owner will coordinate with local Native American tribes regarding their participation in construction monitoring.	X-COC	X (except as noted)
6. Avoidance of cultural resources determined eligible for listing in the NRHP is preferred. If cultural resources are discovered during construction that are determined to be eligible to the NRHP, the BLM archaeologist shall be notified and BLM, the SHPO, and other interested parties will consult regarding effects. Whenever practicable, cultural resource discovered during construction that are determined eligible for listing in the NRHP will be left in place and preserved from damage. If avoidance is not feasible, adverse effects will be addressed in a Memorandum of Agreement.	X-COC	X (except as noted)

NOTE 1: Applies only where ground disturbance is expected (trenching, replacement poles and interset poles).

TABLE B-3
MITIGATION MONITORING, REPORTING AND COMPLIANCE PROGRAM FOR THE LOCKHART SUBSTATION PROJECT

Environmental Impact	Mitigation Measures Proposed in this IS/MND	Implementing Actions	Monitoring/Reporting Requirements	Timing
Aesthetics				
None required				
Agricultural and Forestry Resources				
None required				
Air Quality				
None required				
Biological Resources				
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 California Department of Fish and Game or U.S. Fish and Wildlife Service	**Mitigation Measure CPUC-BIO-1:** Floristic surveys shall be conducted along downstream upgrades in accordance with CDFG Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFG, 2009). Rare plants encountered shall be subject to the following: a. 100 feet from any occurrences. b. Plant species shall be included in the Worker Environmental Awareness Program. c. If California Rare Plant Rank 1 plants are detected in the Project disturbance area, the Project owner shall prepare and implement a Special-Status Plant Mitigation Plan, with a goal of retaining at least 75% of the local population of the affected species. Compensatory mitigation at a ratio of 3:1 shall be required for the portion that is not avoided. At a minimum, the Plan shall include a description and discussion of the species, a description of avoidance and minimization measures, and a compensation plan if total avoidance is not possible. d. If California Rare Plant Rank 2 plants are detected in the Project disturbance area, the Project owner shall prepare and implement a Special-Status Plant Mitigation Plan, with a goal of retaining at least 75% of the local population of the affected species. Compensatory mitigation at a ratio of 2:1 shall be required for the portion that is not avoided. At a minimum, the Plan shall include a description and discussion of the species, a description of avoidance and minimization measures, and a compensation plan if total avoidance is not possible. e. Where compensatory mitigation is required, it shall consist of acquisition of habitat supporting the target species, or restoration/enhancement of existing populations. The Project owner shall provide funding for the acquisition and/or restoration/enhancement, initial improvement, and			

TABLE B-3 (Continued)
MITIGATION MONITORING, REPORTING AND COMPLIANCE PROGRAM FOR THE LOCKHART SUBSTATION PROJECT

Environmental Impact	Mitigation Measures Proposed in this IS/MND	Implementing Actions	Monitoring/Reporting Requirements	Timing
Biological Resources (cont.)				
	long-term maintenance and management of the acquired or restored lands. In the event that no opportunities for acquisition or restoration/enhancement exist, the Project owner can fund a species distribution study designed to promote the future preservation, protection, or recovery of the species. f. If California Rare Plant Rank 3 plants are detected in the Project disturbance area, and the occurrence has local or regional significance, the occurrence shall be treated as a Rank 2 plant species, as above. A plant occurrence would be considered to have local or regional significance if: (1) it occurs at the outermost periphery of its range in California; (2) it occurs in an atypical habitat, region, or elevation for the taxon that suggests the occurrence may have genetic significance; or (3) it exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or subspecies. g. For all rare plant impacts, seeds shall be collected from the affected plants onsite, prior to construction, to conserve germplasm and provide a seed source for restoration efforts. Seed shall be collected under the supervision or guidance of a reputable seed storage facility, and costs associated with long-term storage shall be the responsibility of the Project owner.			
Cultural Resources				
None required				
Geology, Soils, and Seismicity				
None required				
Greenhouse Gas Emissions				
Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	**Mitigation Measure CPUC-GHG-1: Low SF_6 Leak Rate Circuit Breakers and Monitoring.** The Applicant shall ensure that the new circuit breakers installed at the Lockhart Substation have guaranteed SF6 leak rates of 0.5 percent by volume or less. The Applicant shall provide CPUC with documentation of compliance, such as specification sheets, prior to installation of the circuit breakers. In addition, the Applicant shall annually monitor the SF6-containing circuit breakers at the substation for the detection and repair of leaks. The Applicant shall annually report its Lockhart Substation-related SF6 emissions to the CPUC until a regulation is approved by the OAL that approves a regulation requiring annual reporting of SF6 emissions to CARB.			

TABLE B-3 (Continued)
MITIGATION MONITORING, REPORTING AND COMPLIANCE PROGRAM FOR THE LOCKHART SUBSTATION PROJECT

Environmental Impact	Mitigation Measures Proposed in this IS/MND	Implementing Actions	Monitoring/Reporting Requirements	Timing
Hazards and Hazardous Materials				
None required				
Hydrology and Water Quality				
None required				
Land Use and Planning				
None required				
Mineral Resources				
None required				
Noise				
None required				
Population and Housing				
None required				
Public Services				
None required				
Recreation				
None required				
Transportation and Traffic				
None required				
Utilities and Service Systems				
None required				

APPENDIX C

Project Description from PTC Application

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SOUTHERN CALIFORNIA EDISON
LOCKHART SUBSTATION
PROJECT DESCRIPTION
FOR ABENGOA SOLAR INC.

Dated: April 15, 2010

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LOCKHART SUBSTATION PROJECT DESCRIPTION
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PROJECT DESCRIPTION

Abengoa Solar Inc. (Abengoa) applied to the California Independent System Operator (CAISO) for interconnection of a new 250 MW solar generation Lockhart Project currently referred to as the *Abengoa Mojave Solar Project* (AMSP). Abengoa requested and paid for Interconnection Studies in accordance with the CAISO Large Generation Interconnect Procedures (LGIP) Tariff. The CAISO assigned Queue Position 125 to the AMSP. All applicable interconnection studies have been completed for the AMSP, and Abengoa is currently negotiating the execution of the Large Generator Interconnection Agreement (LGIA) under an "Energy Only" service arrangement with the implementation of Special Protection System (SPS). Such service arrangement could result in the need to implement congestion management protocols which could result in the curtailment of generation resources in the area during times when total generation production in the area exceeds the total area transmission capability.

1.0 Project Overview

Southern California Edison (SCE) proposes to construct the Lockhart Substation and associated facilities to interconnect the 250 MW AMSP to SCE's existing Cool Water-Kramer No.1 220 kV transmission line (Lockhart Project). This project description is prepared for Abengoa for use in its California Energy Commission (CEC) Application for Certification (AFC) (docket 09-AFC-05) and Bureau of Land Management (BLM) Environmental Impact Statement (EIS). Major components of the Lockhart Project are summarized below:

- *Lockhart Substation*: Construct a new 220 kV Substation to loop-in the existing Cool Water-Kramer No. 1 220 kV transmission line and to provide two 220 kV line positions to terminate two new 220 kV generation tie lines (gen-ties) owned by AMSP.

- *Transmission Lines*: Loop the existing Cool Water-Kramer No. 1 220 kV transmission line into the new Lockhart Substation. The transmission loop would require construction of approximately 3,000 feet of new transmission line segments (comprised of two line segments of approximately 1,500 feet each) creating the new Lockhart-Kramer and Cool Water-Lockhart 220 kV transmission lines.

- *Generation Tie Line Connections*: Connect the two AMSP-built gen-ties into the SCE-owned Lockhart Substation. This work involves construction of two single spans of conductors between the Lockhart switchrack and the last AMSP-owned tower(s).

- *Distribution Systems*: Connect the existing Hutt 12 kV distribution circuit out of the Hutt Poletop Substation replacing one and removing one existing pole approximately 40 feet north of the Lockhart Substation. A range of approximately 200-400 feet of underground conduit would be installed from the replaced pole to the substation to provide a path for one of the two required sources of station light and power. Provide temporary power for the construction of both the proposed Lockhart Substation and the AMSP facilities.

- *Telecommunications Facilities*: Install fiber optic communication cables, associated poles, conduits, and other telecommunication facilities to provide diverse path routing of

communications required for the AMSP interconnection, and to provide communications redundancy at the two AMSP power blocks. Facilities would include construction of a telecommunications room at Tortilla Substation. Work would also include installing communication paths between the Victor, Roadway, Tortilla, Kramer, Lockhart, and Cool Water Substations.

This project description is based on planning level assumptions. Further details will be made available upon completion of preliminary and final engineering, identification of field conditions, verification of availability of materials and equipment, and compliance with applicable environmental and permitting requirements. With regards to construction work activities, SCE anticipates working typical construction schedules; however, the actual construction hours may vary.

2.0 Project Location

The Lockhart Substation would be located on private land within the boundaries of the new AMSP solar generation facility, approximately 5.5 miles north-east of the intersection of California State Highway 58 and Harper Lake Road in the County of San Bernardino (see Figure 1). At this time, the extent of the SCE portion of the overall facility property would be approximately 8 to 10 acres including the Lockhart Substation, minimum 10-foot wide safety buffers, access for new loop-in line segments, and two gen-ties. To accommodate the proposed Lockhart Substation location within Abengoa's identified property and to allow for future access to the substation, a corridor (transmission right-of-way (ROW)) would also be provided to SCE along the southern boundary of the AMSP paralleling the AMSP water drainage channel. Abengoa would provide temporary construction yards/staging areas, approximately 4 acres combined, necessary for substation, transmission, distribution systems, and telecommunication facilities to construct the Lockhart Project.

The electrical distribution system to provide station light and power would tap into the existing Hutt 12 kV distribution circuit that is in immediate proximity to the Lockhart Substation site.

The telecommunication facilities, needed to provide adequate line protection, would require the installation of new fiber optic cable from: 1) SCE's Kramer Substation to Lockhart Substation on an existing distribution pole line (see Figure 3-1), 2) SCE's proposed Lockhart Substation to SCE's Tortilla Substation on existing distribution pole lines and approximately 1,500 feet of new underground and approximately 11,000 feet of new overhead pole line (see Figure 3-2), 3) SCE's Tortilla Substation to SCE's Cool Water Substation on existing distribution pole lines (see Figure 3-2), and 4) SCE's Lockhart to the AMSP Alpha and Beta plant sites (two routes are required to each plant site as shown in Figure 3-4). In addition, a new telecommunication facility would be required within SCE's Tortilla Substation (see Figure 3-6).

Abengoa elected to interconnect to SCE's transmission system with the implementation of a Special Protection System (SPS). Implementation of the SPS would enable the AMSP to operate under an "Energy Only" service arrangement. The telecommunication facilities needed for the SPS would require the installation of new fiber optic cable from SCE's Victor Substation to

SCE's Kramer Substation on the existing Kramer-Victor 115 kV line (see Figure 3-5), and the installation of an optical repeater site would be required at SCE's Roadway Substation.

3.0 Lockhart Substation

The Lockhart Substation would be a 220 kV switching station with internal measurements of approximately 450 feet by 550 feet. Lockhart Substation would be an unattended collector station (no power transformation) surrounded by a wall or chain-link fence with two gates (see Figure 2).

3.1 Substation Design and Equipment

SCE would engineer, design, construct, and test the proposed Lockhart Substation. The substation would consist of a six-bay 220 kV switchrack. One bay position would be utilized to loop the SCE Cool Water-Kramer No. 1 220 kV transmission line. Two of the bays would be used to terminate the two AMSP gen-ties. The three remaining positions would be available for future use.

Lockhart Substation would be initially equipped with:

- Two (2) overhead 220 kV buses
- Seven (7) 220 kV circuit breakers
- 220 kV disconnect switches
- One (1) Mechanical Electrical Equipment Room (MEER)
- Light and power transformers
- Station lighting
- Back-up generator

3.2 Substation Construction

3.2.1 Grading and Ground Disturbance

Because the Lockhart Substation would be located within the boundaries of the AMSP, the grading of the substation site would be included within the solar developer's overall grading design. Therefore, SCE would neither prepare a grading and drainage plan, nor would SCE apply for grading permits from the County of San Bernardino. Prior to Abengoa's submittal of the site grading application to the County, SCE would review and approve that portion of the grading design pertaining to the substation location. Abengoa would carry out site grading in accordance with the developer's county approved grading plans.

Also, land disturbance areas and earth moving quantities, including vehicle emissions at the substation location are included within the AMSP facilities application.

Upon completion of the site preparation by the developer, SCE would assume responsibility for the remainder of the Lockhart Substation construction including the installation of a temporary chain-link fence surrounding the construction site.

Access to the substation site for both construction and operation would be gained through the solar facilities internal road network from its main access on Harper Lake Road. This internal road network would be paved as identified in the AMSP facility application.

Table 1 below provides the approximate area of land disturbance at the Lockhart Substation site within the substation fences, and the approximate volume and type of earth materials that would be used or disposed by SCE during Substation construction.

Table 1: Substation Materials and Estimated Volumes

Element	Material	Approximate Volume (yd^3)
Substation Equipment Foundations	Concrete	1,350
Equipment and cable trench excavations *	Soil	1,530
Cable Trenches**	Concrete	25
Internal Driveway	Asphalt concrete Class II aggregate base	440 630
Substation Rock Surfacing	Rock, nominal 1 to 1-1/2 inch per SCE Standard	2,400

Notes to Table 1

* Excavation "spoils" would be placed on site during the below-ground construction phase to the extent possible.

** Standard cable trench elements are factory fabricated, delivered to the site and installed by crane. Intersections are cast in place concrete.

3.2.2 Construction Yard/Staging Areas

Abengoa would provide a temporary staging yard, approximately 1.5 acres, necessary to construct the Lockhart Substation.

3.2.3 Geotechnical Studies

Prior to the start of construction, Abengoa would conduct a geotechnical study of the substation site and the transmission line routes, including an evaluation of the depth to the water table, evidence of faulting, liquefaction potential, physical properties of subsurface soils, soil resistivity, slope stability, and the presence of hazardous materials.

3.2.4 Below Grade Construction

After the substation site is graded, below grade facilities would be installed. Below grade facilities include a ground grid, underground conduit, trenches, and all required foundations. The design of the ground grid would be based on soil resistivity measurements collected during a geotechnical investigation prior to the construction.

3.2.5 Equipment Installation

Above grade installation of substation facilities (i.e., buses, circuit breakers, steel structures, and the MEER) would commence after the below grade structures are in place.

3.2.6 Hazards and Hazardous Materials

Construction and operation of the Lockhart Substation would require the limited use of hazardous materials such as fuels, lubricants, and cleaning solvents. SCE would comply with all applicable laws relating to hazardous materials use, storage, and disposal. A Stormwater Pollution Prevention Plan (SWPPP) would also be prepared by Abengoa for the Lockhart Substation Project.

3.2.7 Waste Management

Construction of the Lockhart Substation would result in the generation of various waste materials including soil, vegetation, and sanitation waste (portable toilets). Soil excavated for the Lockhart Substation site would either be used as fill or disposed of off-site at an appropriately licensed waste facility. Sanitation waste (i.e., human generated waste) would be disposed of according to the sanitation waste management practices.

3.2.8 Post-Construction Cleanup

Any damage to existing roads as a result of construction would be repaired, to the extent possible, once construction is completed in accordance with local agency requirements. Following completion of construction activities, SCE would also restore all areas that were temporarily disturbed by construction of the Lockhart Substation to as close to preconstruction conditions as possible, or where applicable, to the conditions agreed upon between the landowner and SCE. In addition, all construction materials and debris would be removed from the area and recycled or properly disposed of off-site. SCE would conduct a final inspection to ensure that cleanup activities were successfully completed.

3.2.9 Construction Equipment Personnel and Temporary Facilities

The estimated elements, materials, number of personnel and equipment required for construction of the Lockhart Substation are summarized below in Table 2 and include construction of the telecommunications room at Tortilla Substation. In addition to the information provided in Table 2, a temporary contractor office trailer and equipment trailer would be placed within the proposed substation construction area during the construction phase of the Lockhart Substation Project.

Construction would be performed by either SCE construction crews or its contractors. Contractor construction personnel would be managed by SCE construction management personnel. SCE anticipates a total of approximately 14 construction personnel working on any given day. SCE also anticipates that crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would be dependent upon

County permitting, material availability, and construction scheduling. For example, electrical equipment (such as substation MEER, wiring, and circuit breaker) installation may occur while transmission line construction would be proceeding.

Table 2: Construction Equipment and Personnel Use Estimations

Activity and number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours/Day)
Survey (2 people)	10	2-Survey Trucks (Gasoline)	8
Grading (8 people)	40	1-Dozer (Diesel) 2-Loader (Diesel) 1-Scraper (Diesel) 1-Grader (Diesel) 1-Water Truck (Diesel) 2-4X4 Backhoe (Diesel) 1-4X4 Tamper (Diesel) 1-Tool Truck (Gasoline) 1-Pickup 4X4 (Gasoline)	4 4 3 3 2 2 2 2 2
Fencing (4 people)	25	1-Bobcat (Diesel) 1-Flatbed Truck (Gasoline) 1-Crewcab Truck (Gasoline)	8 2 4
Civil (8 people)	70	1-Excavator (Diesel) 1-Foundationauger (Diesel) 2-Backhoes (Diesel) 1-Dump truck (Diesel) 1-Cement truck (Diesel) 1-Skip Loader (Diesel) 1-Water Truck (Diesel) 2-Bobcat Skid Steer (Diesel) 1-Forklift (Propane) 1-17TonCrane (Diesel) 1-Tool Truck (Gasoline)	4 5 3 2 2 3 3 3 4 2 hours/day for 45 days 3
MEER (4 people)	40	1-Carry-all Truck (Gasoline) 1-Stake Truck (Gasoline)	3 2
Electrical (8 people)	90	2-Scissor Lifts (Propane) 2-Manlifts (Propane) 1-Reach Manlift (Propane) 1-15 ton Crane (Diesel) 1-Tool Trailer 2-Crew Trucks (Gasoline)	3 3 4 3 3 2

Activity and number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours/Day)
Wiring (2 people)	50	1-Manlift (Propane) 1-Tool Trailer	4 3
Maintenance Crew Equipment Check (2 people)	45	2-MaintenanceTrucks (Gasoline) 1- Wiring Truck (Gasoline)	4 3
Testing (2 people)	80	1-Crew Truck (Gasoline)	3
Asphalting (6 people)	50	2-Paving Roller (Diesel) 1-Asphalt Paver (Diesel) 1-Stake Truck (Gasoline) 1-Tractor (Diesel) 1-Dump Truck (Diesel) 2-Crew Trucks (Gasoline) 1-Asphalt Curb Machine (Diesel)	4 4 4 3 3 2 3

4.0 Transmission Lines and Related Structures

SCE's transmission line requirements for the Lockhart Substation interconnection to the Cool Water-Kramer No. 1 220 kV transmission line would consist of the following components: 1) 220 kV transmission line loop-in, 2) existing 220 kV transmission line structure modification/replacement, and 3) 220 kV gen-tie extension. Each of these components is described below.

4.1 Transmission Line and Related Structures Design and Equipment

4.1.1 220 kV Transmission Line Loop-In Design

The proposed Lockhart Substation would be connected to the Coolwater-Kramer No. 1 220 kV transmission line via loop-in transmission segments. The two loop-in line segments would create two new separate transmission lines: the Coolwater-Lockhart 220 kV transmission line; and the Kramer-Lockhart 220 kV transmission line. Each transmission line segment into the Lockhart Substation would be approximately 1,500 feet long (see Figure 2).

The proposed loop-in of the existing Coolwater-Kramer No. 1 220 kV transmission line would require approximately four double circuit transmission structures to enter the Lockhart Substation. The exact combination of new tubular steel poles (TSP) and/or lattice steel towers (LST) needed for the loop-in would be determined during detailed engineering (see Figures 4-1 and 4-2).

Two of the 220 kV double circuit structures would be constructed just outside of the substation fence or wall. The other two structures would be used to re-route the Coolwater-Kramer No. 1 220 kV transmission line into Lockhart Substation. The conductor utilized would be a single 1590 kcmil “Lapwing” ACSR conductor per phase.

The section of line connecting the existing Coolwater-Kramer No. 1 220 kV transmission line to the first structure outside of Lockhart Substation would require a new right of way, as shown in Figure 2, between SCE’s existing ROW and the new Lockhart Substation facilities.

4.1.2 Existing 220 kV Transmission Line Structure Modification/Replacement Design

To support the loop-in, one existing double circuit transmission structure may need to be removed. However, the exact number of towers to be removed would be determined during detailed engineering.

4.1.3 220 kV Generation Tie Line Extension Design

The proposed Lockhart Substation design would involve bringing two 220 kV gen-tie segments into a 220 kV position. SCE understands that there would be one customer-owned double circuit structure outside the SCE-owned Lockhart Substation facilities to support connection of the two customer gen-ties.

SCE’s scope of work would involve connecting the gen-ties from the customer owned dead end structures to the appropriate 220 kV position inside Lockhart Substation. The span needed for this connection is estimated to be up to 300 feet depending on the location of the transmission line tower relative to Lockhart Substation. The conductor utilized would be a single 1590 kcmil “Lapwing” Aluminum Conductor Steel Reinforced (ACSR) per phase.

4.2 Transmission Line and Related Structures Construction

Construction activities would consist of the receiving and handling of construction materials, rehabilitation of existing and creation of new access roads for construction activities, site preparation, assembly and erection of structures, removal of existing structure(s), stringing of conductors, and site cleanup.

4.2.1 Transmission Line Access and Spur Roads

This portion of the Lockhart Substation Project would involve construction within existing and new ROWs. Existing public roads, as well as existing transmission line roads would be used as much as possible during construction of this project. However, the project would require new transmission line roads to access the new transmission line segments and structure locations. Transmission line roads are classified into two groups; access roads and spur roads. Access roads are through roads that run between tower sites along a ROW and serve as the main transportation route along line ROWs. Spur roads are roads that lead from access roads and terminate at one or more structure sites.

Rehabilitation work may be necessary in some locations along the existing transmission line roads to accommodate construction activities. This work may include the re-grading and repair of existing access, spur roads and associated drainage hardware. These roads would be cleared of vegetation; blade-graded to remove potholes, ruts, and other surface irregularities; and re-compacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. The graded road would have a minimum drivable width of 14 feet with 2 feet of shoulder on each side (depending upon field conditions).

Similar to rehabilitation of existing roads, all new road alignments would first be cleared and grubbed of vegetation; roads would be blade-graded to remove potholes, ruts, and other surface irregularities; fill material would be deposited where necessary; and roads would be re-compacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. The graded road would have a minimum drivable width of 14 feet with 2 feet of shoulder on each side, but may be wider depending on final engineering requirements and field conditions. New road gradients would be leveled so that any sustained grade would not exceed 12 percent. Drainage hardware would be installed where necessary to ensure adequate drainage of the road to reduce erosion and rutting. All curves would have a radius of curvature of not less than 50 feet measured at the center line of the usable road surface. The new roads would typically have turnaround areas near the structure locations.

4.2.2 Marshalling Yard/Staging Areas

A marshalling yard would be required for the construction of the transmission line loop-in segments and the gen-tie connection to SCE's proposed Lockhart Substation. A temporary equipment and material staging area would also be established for short-term utilization within AMSP property as needed.

Equipment and materials to be stored at the temporary equipment and material staging area may include:

- Construction trailer
- Construction equipment
- Conductor/wire reels
- Transmission structure components
- Overhead ground wire/Optical ground wire cable
- Hardware
- Insulators
- Consumables, such as fuel and joint compound
- Portable sanitation facilities
- Waste materials for salvaging, recycling, and/or disposal

The size of the temporary equipment and material staging area would be dependent upon a detailed site inspection and would take into account, where practical, suggestions by the SCE crew foreman or the SCE contractor selected to do the work. An area of approximately 0.5 to 1.5 acres would be required. Additional temporary areas may be required for crew "show up" yards and would be used for temporary parking. Land disturbed at the temporary equipment and

material staging area would be restored, to the extent possible, to preconstruction conditions following the completion of construction.

4.2.3 Temporary Bypass Facilities

SCE may temporarily transfer the existing Coolwater-Kramer No 2 220 kV conductor to temporary structures during the removal and replacement of the existing Coolwater-Kramer No. 1 220 kV structures. Upon completion of the construction of the 220 kV replacement structures and dismantling of the existing 220 kV structure to a level below the conductor attachment height, the existing conductor would be transferred over from the temporary structures and attached to the new 220 kV structures. The exact number of temporary transmission structures and the related ground disturbance would not be known until final engineering is performed.

4.2.4 Construction of New 220 kV Transmission Structures

The proposed sites for the new structures would first be graded and/or cleared of vegetation as required to provide a reasonably level and vegetation-free surface for footing and structure construction. The temporary laydown area, approximately 200 feet by 200 feet (0.92 acre), required for the assembly of the structures would also be cleared of vegetation and graded as required to provide a reasonably level and vegetation-free surface for the laydown, assembly, and erection of the structures. Erection of the structure would require an erection crane to be set up adjacent to and 60 feet from the centerline of the structure. A crane pad would be located within the laydown area used for structure assembly. If the existing terrain is not suitable to support crane activities, a temporary 50 feet by 50 feet (0.06 acre) crane pad would be constructed.

The structures would require drilled, poured-in-place, concrete footings that would form the structure foundation. Actual footing diameters and depths for each of the structure foundations would depend on the soil conditions and topography at the site and would be determined during final engineering.

The foundation process starts with the excavation of the hole for the structure. The hole would be excavated using truck or track-mounted auger with various diameter augers to match the diameter requirements of the structure. The excavated material would be distributed at the structure site, used as fill for the new roads or substation site, or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an off-site disposal facility in accordance with all applicable laws.

Following excavation of the foundation footing for each structure, steel reinforced rebar cage(s) would be set in the excavated footing holes, anchor bolts and/or stub angles would be set in place, precision would be verified by a surveyor, and concrete would then be placed. The steel reinforced rebar cage(s) would be assembled off site and delivered to the structure location by flatbed truck. A typical transmission structure would require approximately 50-80 cubic yards of concrete delivered to the structure location depending upon the type of structure being constructed, soil conditions, and topography at each site. The transmission structure footings would project approximately 1-4 feet above the ground level.

During construction, existing commercial ready-mix concrete supply facilities would be used where feasible. If commercial ready-mix concrete supply facilities do not exist within the general area of need, a temporary concrete batch plant would be set up. If necessary, approximately two acres of land would be sub-partitioned from the temporary equipment and material staging area within the Lockhart Substation site/property for a temporary concrete batch plant. Equipment would include a central mixer unit (drum type); three silos for injecting concrete additives, fly ash, aggregate, 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.

The assembly would consist of hauling the structure components from the staging yard to their designated structure location using semi-trucks with 40-foot trailers and off loaded at site. Crews would then assemble portions of each structure on the ground at the structure location, while on the ground, the top section may be pre-configured with the necessary insulators and wire-stringing hardware before being set in place. An 80-ton all-terrain or rough-terrain crane would be used to position the base section on top of previously prepared foundation. When the base section is secured, the remaining portions of the structure would then be placed upon the base section and bolted together.

After construction is completed, the transmission structure site would be graded such that water would run toward the direction of the natural drainage. In addition, drainage would be designed to prevent ponding and erosive water flows that could cause damage to the structure footing. The graded area would be compacted and would be capable of supporting heavy vehicular traffic.

4.2.5 Removal of Existing 220 kV Transmission Structure

Transmission line facilities planned to be removed would include an existing 220 kV transmission structure, and associated hardware (i.e. insulators, vibration dampeners, suspension clamps, ground wire clamps, shackles, links, nuts, bolts, washers, cotters pins, insulator weights, and bond wires). The existing access routes would be used to reach the structure site, but some rehabilitation work on these routes may be necessary before removal activities begin. In addition, grading may be necessary to establish a temporary laydown area approximately 150 feet by 150 feet (0.52 acre) adjacent to the existing structure for equipment and material staging during the structure removal. A crane truck or rough terrain crane would be used to support the structure during dismantle and removal. A crane pad would be located within the laydown area used for structure assembly. If the existing terrain is not suitable to support crane activities, a temporary 50 feet by 50 feet (0.06 acre) crane pad would be constructed. The existing structure footings would be removed to a depth of approximately 2 feet below ground level. Holes would be filled, compacted, and the area would be smoothed to match surrounding grade.

SCE may temporarily transfer the existing 220 kV conductor to temporary structures during the removal and replacement of the existing 220 kV structure. Upon completion of the construction of the 220 kV replacement structures and dismantling of the existing 220 kV structure to a level

below the conductor attachment height, the existing conductor would be transferred over from the temporary structures and attached to the new 220 kV structures.

4.2.6 Wire-Stringing of 220 kV Conductor

Wire-stringing would include all activities associated with the installation of conductors, including the installation of primary conductor and overhead ground wire (OHGW), vibration dampeners, weights, spacers, and suspension and dead-end hardware assemblies. Insulators and stringing sheaves (rollers or travelers) would be typically attached during the steel erection process.

A standard wire-stringing plan would include a sequence of events starting with determination of wire pulls and wire pull equipment set-up positions. Advanced planning by supervision determines circuit outages, pulling times, and safety protocols to ensure that safe and effective installation of wire is accomplished.

Wire-stringing activities would be conducted in accordance with SCE specifications that are similar to process methods detailed in Institute of Electrical and Electronics Engineers Standard 524-2003, Guide to the Installation of Overhead Transmission Line Conductors.

Wire pulls would include the length of any given continuous wire installation process between two selected points along the line. Wire pulls would be selected, where possible, based on availability of dead-end structures at the ends of each pull, geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment setups. In some cases, it may be preferable to select an equipment setup position between two suspension structures. Anchor rods would then be installed to provide dead-ending capability for wire sagging purposes, and also to provide a convenient splicing area.

To ensure the safety of workers and the public, safety devices such as traveling grounds, guard structures, and radio-equipped public safety roving vehicles and linemen would be in place prior to the initiation of wire-stringing activities.

The following four steps describe the wire installation activities proposed by SCE:

- Step 1: Sock Line, Threading: Typically, a lightweight sock line would be passed from structure to structure, which would be threaded through the wire rollers in order to engage a camlock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for a conductor pull.

- 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 conductor using a special swivel joint to prevent damage to the wire 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.

- Step 3: Splicing, Sagging, and Dead-ending: After the conductor is pulled-in, the conductor would be sagged to proper tension and dead-ended to structures.

- Step 4: Clipping-in, Spacers: After the conductor is dead-ended, the conductors would be secured to all tangent structures; a process called clipping in. Once this is complete, spacers, if applicable, would be attached between the bundled conductors of each phase to keep uniform separation between each conductor.

The dimensions of the area needed for the stringing setups associated with wire installation are variable and depend upon terrain. The preferred minimum area needed for tensioning equipment set-up sites would require approximately 150 feet by 500 feet (1.72 acres). The preferred minimum area needed for pulling equipment set-up sites would require approximately 150 feet by 300 feet (1.03 acres). Crews though can work from within slightly smaller areas when space is limited. Each stringing operation would include one puller positioned at one end and one tensioner and wire reel stand truck positioned at the other end.

Stringing equipment that cannot be positioned at either side of a dead-end transmission structure would require installation of temporary field snubs (i.e. anchoring and dead-end hardware) to sag conductor wire to the correct tension.

The puller and tensioner set-up locations would require level areas to allow for maneuvering of the equipment. When possible, these locations would be located on existing level areas and existing roads to minimize the need for grading and cleanup. The final number and locations of the puller and tensioner sites would be determined during detailed engineering for the Lockhart Project based on the construction methods chosen by SCE or its contractor.

An overhead ground wire (OHGW) or optical ground wire (OPGW) for shielding would be installed on the transmission line and would be installed in the same manner as the conductor. The OHGW or OPGW would typically be installed in conjunction with the conductor, depending upon various factors including line direction, inclination, and accessibility.

4.2.7 Housekeeping and Construction Site Cleanup

During construction, water trucks may 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, to the extent possible, once construction is complete.

SCE would restore, to the extent possible, all areas that are temporarily disturbed by Lockhart Substation Project activities (including equipment and material staging yard, pull and tension sites, and structure laydown and assembly sites) to preconstruction conditions following the completion of construction. Restoration may include grading and restoration of 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 at an off-site disposal facility in accordance with all applicable laws. SCE would conduct a final inspection to ensure that cleanup activities are successfully completed.

Table 3 below provides information on temporary and permanent land disturbance areas related to construction of the transmission lines.

Table 3: Ground Disturbance Table – Transmission Line Construction

Lockhart Project Feature	Site Quantity	Disturbed Acreage Calculation (L x W)	Acres Disturbed During Construction	Acres to be restored	Acres Permanently Disturbed
Modify Existing 220 kV Lattice Steel Tower (1)	0	150' x 150'	0	0	0.000
Remove Existing 220 kV Lattice Steel Tower (1)	1	150' x 150'	0.517	0.517	0.000
Temporary Conductor Field Snub/Transfer Area (2)	6	200' x 150'	4.132	4.132	0.000
Construct New 220 kV Lattice Steel Tower (3)	4	200' x 200'	1.837	1.200	0.637
Construct New 220 kV Gen-Tie Structure (5)	0	200' x 200'	0	0	0.000
Conductor & OHGW Stringing Setup Area - Puller (6)	3	300' x 150'	3.099	3.099	0.000
Conductor & OHGW Stringing Setup Area - Tensioner (7)	3	500' x 150'	5.165	5.165	0.000
New Access/Spur Roads (8)	0.6	linear miles x 14' wide	1.018	0.000	1.018
Lockhart Sub - Material & Equipment Staging Area	1	approx. 1.5 acres	1.500	1.500	0.000
Total Estimated (6)			17.268	15.613	1.6552

Notes to Table 3:
1. Includes the removal of existing conductor, teardown of existing structure, and removal of foundation 2' below ground surface.
2. Includes area needed for temporary conductor transfer towers and/or conductor removal, field snubs, and splicing new conductor; area to be restored after construction.
3. Includes foundation installation, structure assembly & erection, and conductor & OHGW attachment; a majority of the area to be restored after construction; a portion of ROW beneath and within 35' of the LST to remain permanently cleared of vegetation and access area of 25' around structure; area to be permanently disturbed for each 220 kV LST equals 0.3183 acres.
4. Includes foundation installation, structure assembly & erection, and conductor & OHGW attachment; a majority of the area to be restored after construction; a portion of ROW beneath and within 25' of the LST to remain permanently cleared of vegetation and access area of 25' around structure; area to be permanently disturbed for each LST equals 0.2173 acres.
5. Includes foundation installation, structure assembly & erection, and conductor & OHGW attachment; a majority of the area to be restored after construction; a portion of area within 25' of the structure to remain permanently cleared of vegetation; approximately 0.057 acre would be permanently disturbed for the structure.
6. Based on 9,000' conductor reel lengths, number of circuits, and route design.
7. Based on length of road in miles x road width of 14'.
8. The disturbed acreage calculations are estimates based upon SCE's preferred area of use for the described Project feature, the width of the existing right-of-way, or the width of the proposed right-of-way and, they do not include any new access/spur road information; they are subject to revision based upon final engineering and review of the Project by SCE's Construction Manager and/or Contractor awarded the Project.
Note: All data provided in this table is based on planning level assumptions and may change following completion of more detailed engineering, identification of field conditions, availability of material, and equipment, and any environmental and/or permitting requirements.

4.2.8 Operation and Maintenance

Following the completion of Lockhart Project construction, operation and maintenance of the new lines would commence. SCE would conduct operation, inspection, and maintenance activities at least once a year, in compliance with CPUC General Order No. 165. The frequency of inspection and maintenance activities would depend upon weather effects and any unique problems that may arise due to such variables as substantial storm damage or vandalism.

4.2.9 Labor and Equipment

Construction of the Lockhart Project would be performed by SCE crews or its contract personnel and supervised by SCE's Lockhart Substation Project administration and inspection. The estimated number of persons and types of equipment required for each phase of transmission line construction for the Lockhart Substation Project is shown in Tables 4, 5, and 6 below.

TABLE 4

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TO CONSTRUCT NEW 220 KV LOOP-IN LINES

LOCKHART SUBSTATION PROJECT

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Survey (1)				**4**	**6**		**0.5 Miles**
3/4-Ton Pick-up Truck, 4x4	200	Gas	2		6	8	1 Mile/Day and Construction Support
Temporary Equipment & Material Staging Area (2)				**4**			
1-Ton Crew Cab, 4x4	300	Diesel	1		Duration of Project	2	
30-Ton Crane Truck	300	Diesel	1			2	
Water Truck	350	Diesel	1				
10,000 lb Rough Terrain Fork Lift	200	Diesel	1			5	
Truck, Semi, Tractor	350	Diesel	1			1	
Roads & Landing Work (4)				**5**	**4**		**0.5 Miles & 4 Pads**
1-Ton Crew Cab, 4x4	300	Diesel	2		4	2	0.5 Miles/Day & 0.66 Structure Pads/Day
Road Grader	350	Diesel	1		4	4	
Backhoe/Front Loader	350	Diesel	1		4	6	
10-cu. yd. Dump Truck	350	Diesel	2		4	8	

TABLE 4

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TO CONSTRUCT NEW 220 KV LOOP-IN LINES

LOCKHART SUBSTATION PROJECT

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Drum Type Compactor	250	Diesel	1		4	4	
Track Type Dozer	350	Diesel	1		4	6	
Lowboy Truck/Trailer	500	Diesel	2		2	2	
Install LST Foundations (5)				**9**	**6**		**4 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		6	2	
30-Ton Crane Truck	300	Diesel	1		6	5	
Backhoe/Front Loader	200	Diesel	1		6	8	0.50 LST/Day
Auger Truck	500	Diesel	1		6	8	
10-cu. yd. Dump Truck	350	Diesel	2		6	8	
10-cu. yd. Concrete Mixer Truck	425	Diesel	4		4	5	
LST Steel Haul (6)				**6**	**4**		**4 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		4	2	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		4	6	1 LST/Day
40' Flat Bed Truck/ Trailer	350	Diesel	1		4	8	
LST Steel Assembly (7)				**14**	**11**		**4 LSTs**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	3		11	4	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		11	4	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		11	6	0.25 LST/Day
30-Ton Crane Truck	300	Diesel	2		11	8	
Compressor Trailer	350	Diesel	2		11	6	
LST Erection (8)				**8**	**16**		**4 LSTs**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		16	5	0.13 LST/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		16	5	

TABLE 4

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TO CONSTRUCT NEW 220 KV LOOP-IN LINES

LOCKHART SUBSTATION PROJECT

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Compressor Trailer	120	Diesel	1		16	6	
80-Ton Rough Terrain Crane	350	Diesel	1		16	6	
Install Conductor & OHGW (9)				**16**	**6**		**0.6 Circuit Miles**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		6	8	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		6	8	
Wire Truck/Trailer	350	Diesel	2		6	2	
Dump Truck (Trash)	350	Diesel	1		5	2	
20,000 lb. Rough Terrain Fork Lift	350	Diesel	1		6	2	
22-Ton Manitex	350	Diesel	1		6	8	
30-Ton Manitex	350	Diesel	2		6	6	
Splicing Rig	350	Diesel	1		6	2	
Splicing Lab	300	Diesel	1		4	2	0.25 miles/day
Spacing Cart	10	Diesel	1		4	8	
Static Truck/ Tensioner	350	Diesel	1		6	2	
3 Drum Straw line Puller	300	Diesel	1		6	4	
60lk Puller	525	Diesel	1		6	3	
Sag Cat w/ 2 winches	350	Diesel	1		6	2	
580 Case Backhoe	120	Diesel	1		6	2	
D8 Cat	300	Diesel	1		6	3	
Lowboy Truck/Trailer	500	Diesel	1		6	2	
Restoration (10)				**7**	**3**		**0.5 Miles**
1-Ton Crew Cab, 4x4	300	Diesel	2		3	2	
Road Grader	350	Diesel	1		3	6	
Backhoe/Front Loader	350	Diesel	1		3	6	
Drum Type Compactor	250	Diesel	1		3	6	0.5 Mile/Day
Track Type Dozer	350	Diesel	1		3	6	
Lowboy Truck/Trailer	300	Diesel	1		3	3	

TABLE 5

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TO CONSTRUCT NEW 220 KV GEN-TIE CONNECTION ON SCE PROPERTY

LOCKHART SUBSTATION PROJECT

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Survey (1)				**4**	**2**		**500 feet**
3/4-Ton Pick-up Truck, 4x4	200	Gas	2		2	8	1 Mile/Day
Temporary Equipment & Material Staging Area (2)				**4**			
1-Ton Crew Cab, 4x4	300	Diesel	1			2	
Water Truck	350	Diesel	1			8	
30-Ton Crane Truck	300	Diesel	1		Duration of Project	2	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1			5	
Truck, Semi, Tractor	350	Diesel	1			1	
Roads & Landing Work (3)				**5**	**2**		**0.1 Miles & 1 Pad**
1-Ton Crew Cab, 4x4	300	Diesel	2		2	2	
Road Grader	350	Diesel	1		1	4	
10-cu. yd. Dump Truck	350	Diesel	2		2		
Backhoe/Front Loader	350	Diesel	1		2	6	0.5 Miles/Day & 2 Structure Pads/Day
Drum Type Compactor	250	Diesel	1		2	4	
Track Type Dozer	350	Diesel	1		2	6	
Lowboy Truck/Trailer	500	Diesel	2		2	2	
Install TSP Foundation (4)				**7**	**2**		**1 TSP**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	3		2	2	
30-Ton Crane Truck	300	Diesel	1		2	5	
Backhoe/Front Loader	200	Diesel	1		1	8	
Auger Truck	500	Diesel	1		2	8	2 TSPs/Day
10-cu. yd. Dump Truck	350	Diesel	2		2	8	
10-cu. yd. Concrete Mixer Truck	425	Diesel	3		1	3	
TSP Haul (5)				**3**	**1**		**1 TSP**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	1		1	5	4 TSPs/Day

TABLE 5

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TO CONSTRUCT NEW 220 KV GEN-TIE CONNECTION ON SCE PROPERTY

LOCKHART SUBSTATION PROJECT

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Flat Bed Truck/Trailer	350	Diesel	1		1	8	
80-Ton Rough Terrain Crane	350	Diesel	1		1	6	
TSP Assembly (6)				**8**	**1**		**1 TSP**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		1	5	2 TSPs/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		1	5	
Compressor Trailer	120	Diesel	1		1	5	
80-Ton Rough Terrain Crane	350	Diesel	1		1	6	
TSP Erection (7)				**8**	**1**		**1 TSP**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		1	5	2 TSPs/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		1	5	
Compressor Trailer	120	Diesel	1		1	5	
80-Ton Rough Terrain Crane	350	Diesel	1		1	6	
Install Conductor & OPGW (8)				**16**	**4**		**0.1 Circuit Miles**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	4		4	8	0.2 miles/day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	4		4	8	
Wire Truck/Trailer	350	Diesel	4		2	2	
Dump Truck (Trash)	350	Diesel	1		4	2	
20,000 lb. Rough Terrain Fork Lift	350	Diesel	1		4	2	
22-Ton Manitex	350	Diesel	1		4	8	
30-Ton Manitex	350	Diesel	4		4	6	
Splicing Rig	350	Diesel	2		4	2	
Splicing Lab	300	Diesel	2		2	2	
Spacing Cart	10	Diesel	2		2	8	
Static Truck/ Tensioner	350	Diesel	1		2	2	
3 Drum Straw line Puller	300	Diesel	2		2	4	

TABLE 5

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TO CONSTRUCT NEW 220 KV GEN-TIE CONNECTION ON SCE PROPERTY

LOCKHART SUBSTATION PROJECT

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
60lk Puller	525	Diesel	1		2	3	
Sag Cat w/ 2 winches	350	Diesel	2		2	2	
580 Case Backhoe	120	Diesel	1		4	2	
D8 Cat	300	Diesel	2		2	3	
Lowboy Truck/Trailer	500	Diesel	1		4	2	
Restoration (9)				**7**	**3**		**0.5 Miles**
1-Ton Crew Cab, 4x4	300	Diesel	2		3	2	
Road Grader	350	Diesel	1		1	6	
Backhoe/Front Loader	350	Diesel	1		1	6	
Drum Type Compactor	250	Diesel	1		1	6	0.5 Mile/Day
Track Type Dozer	350	Diesel	1		1	6	
Lowboy Truck/Trailer	300	Diesel	1		3	3	

TABLE 6

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TRANSMISSION LINE STRUCTURE REMOVAL

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Temporary Equipment & Material Staging Area(2)				**4**			
1-Ton Crew Cab, 4x4	300	Diesel	1			2	
30-Ton Crane Truck	300	Diesel	1			2	
Water Truck	350	Diesel	1		Duration of Project	8	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1			5	
Truck, Semi, Tractor	350	Diesel	1			1	
Roads & Landing Work (3)				**5**	**2**		**.5 Miles & 3 Pads**
1-Ton Crew Cab, 4x4	300	Diesel	2		2	2	
Road Grader	350	Diesel	1		2	4	
Backhoe/Front Loader	350	Diesel	1		2	6	
Drum Type Compactor	250	Diesel	1		2	4	0.5 Miles/Day & 2 Structure Pads/Day
Track Type Dozer	350	Diesel	1		2	6	
Excavator	300	Diesel	1		2	6	
Lowboy Truck/Trailer	500	Diesel	1		2	2	
LST Removal (4)				**8**	**2**		**1 LSTs**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		2	6	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		2	6	0.75 LST/Day
Compressor Trailer	120	Diesel	1		2	6	
80-Ton Rough Terrain Crane	350	Diesel	1		2	6	
Remove Foundations (5)				**9**	**1**		**3 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		1	2	0.50 LST/Day
Backhoe/Front Loader	200	Diesel	1		6	8	
Auger Truck	500	Diesel	1		8	8	
10-cu. yd. Dump Truck	350	Diesel	2		8	8	

TABLE 6

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY TRANSMISSION LINE STRUCTURE REMOVAL

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Compressor Trailer	120	Diesel	1		2	6	
LST Steel Haul (6)				**4**	**1**		**3 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	1		1	2	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		1	6	1 LST/Day
40' Flat Bed Truck/ Trailer	350	Diesel	1		1	8	
Transfer Conductor (9)				**16**	**3**		**.5 Circuit Miles**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		3	8	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		3	8	
Wire Truck/Trailer	350	Diesel	2		3	2	
Dump Truck (Trash)	350	Diesel	1		5	2	
20,000 lb. Rough Terrain Fork Lift	350	Diesel	1		3	2	
22-Ton Manitex	350	Diesel	1		3	8	
30-Ton Manitex	350	Diesel	2		3	6	
Splicing Rig	350	Diesel	1		3	2	
Splicing Lab	300	Diesel	1		3	2	1 tower/day
Spacing Cart	10	Diesel	1		3	8	
Static Truck/ Tensioner	350	Diesel	1		3	2	
3 Drum Straw line Puller	300	Diesel	1		3	4	
60lk Puller	525	Diesel	1		3	3	
Sag Cat w/ 2 winches	350	Diesel	1		3	2	
580 Case Backhoe	120	Diesel	1		3	2	
D8 Cat	300	Diesel	1		3	3	
Lowboy Truck/Trailer	500	Diesel	1		3	2	
Restoration (11)				**7**	**3**		**.5 Miles**
1-Ton Crew Cab, 4x4	300	Diesel	2		3	2	0.5 Mile/Day
Road Grader	350	Diesel	1		1	6	
Backhoe/Front Loader	350	Diesel	1		1	6	

TABLE 6

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY
TRANSMISSION LINE STRUCTURE REMOVAL

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Drum Type Compactor	250	Diesel	1		1	6	
Track Type Dozer	350	Diesel	1		3	6	
Lowboy Truck/Trailer	300	Diesel	1		2	3	

5.0 Distribution System for Station Light and Power

The following elements describe the distribution requirements for one of the two required sources of Lockhart Substation station light and power.

5.1 Distribution System Design and Equipment

The Hutt 12 kV distribution circuit out of Hutt Poletop Substation is assumed to remain in place and; therefore, it would be the source to provide station light and power to the Lockhart Substation. The Lockhart Project calls for rearranging the existing Hutt 12 kV overhead distribution circuit where it terminates at the central site for the proposed Lockhart Substation at approximately the location of an existing distribution pole located near Roy Street and a private dirt road. This distribution pole would need to be removed as well as the pole to the north in order to make room for the new Lockhart Substation.

A new distribution riser pole would be installed from an existing pole on the west side of the proposed Lockhart Substation. (see Figure 5). An Omni-rupter switch would be installed on the distribution 12 kV riser pole along with the distribution riser. Approximately 200-400 feet of two five inch conduits would be installed to a new 12 kV station light and power rack location within Lockhart Substation adjacent to the MEER. Portions of these facilities could also be utilized for installation of the required telecommunication fiber optic cables into Lockhart Substation (described below in Section 6.0, Telecommunication System).

The 12 kV Hutt distribution circuit would extend through one of the new five inch conduits with 1/0 aluminum jacketed concentric neutral (JCN), cross-linked polyethylene (CLP) cable to connect the existing overhead tap line to the back-up station light and power transformers mounted on the 12 kV rack within the substation.

SCE's construction requirements for temporary power would be a 200 amp, 120/240 volt, 3-phase, 4-wire panel. An open delta transformer bank would be installed on an existing 12 kV distribution pole to the west of the proposed Lockhart Substation.

TABLE 7
LOCKHART SUBSTATION

CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY
12KV HUTT STATION LIGHT & POWER

Work Activity				**Estimated Workforce**	**Estimated Schedule (Days)**		**Activity Production**
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity			Duration of Use (Hrs/Day)	Estimated Production Per Day
Trenching, Structure Excavation(1)				**4**	**1**		
1-Ton Crew Cab	300	Diesel	1		1	2	
Backhoe Front Loader	300	Diesel	1		1	8	
Dump Truck	300	Diesel	1		1	4	
Overhead Line Work(2)				**4**	**2**		
1-Ton Crew Cab, 4x4	300	Diesel	1		2	2	
55’ Double Bucket Truck	350	Diesel	1		2	8	
Underground Cable Pulling and Makeup (3)				**4**	**1**		
55’ Double Bucket Truck	350	Diesel	1		1	8	
1-Ton Crew Cab, 4x4	300	Diesel	1		1	2	
Hydraulic Rewind Puller	300	Diesel	1		1	6	

Crew size assumptions:

1. Trenching and Conduit Installation = one 4-man crew
2. Overhead Line Work = one 4-man crew
3. Underground Cable Pulling and Makeup = one 4-man crew

5.2 Distribution System Construction

A lay down area within the SCE-owned Lockhart Substation property or within AMSP property as needed would be required to store any materials needed during construction. One line truck and a companion vehicle with a four man crew would be utilized to perform the work each day. SCE anticipates

working typical construction schedules, however the actual construction hours may vary. Land disturbance for distribution construction activities would be within the AMSP property and included in AMSP's disturbance area.

6.0 Telecommunication System

The following elements describe the requirements for Lockhart Substation telecommunication facilities.

6.1 Telecommunication System Design and Equipment

A telecommunication system would be required in order to provide transmission line protection, SPS, monitoring, and remote operation capabilities of the electrical equipment at Lockhart Substation.

To provide line protection, the telecommunications system would extend diverse communication paths utilizing fiber-optic cables to connect Lockhart Substation to the SCE telecommunication network via SCE's Kramer Substation, SCE's Tortilla Substation, and also to the AMSP Alpha and Beta power facilities. In addition, a telecommunication path between SCE's Tortilla Substation and SCE's Cool Water Substation is currently undergoing permitting as part of a separate project and would also be used for the required line protection (see Figure 3-1, Figure 3-2, Figure 3-3 and Figure 3-4). In addition, a new telecommunication facility would be required at SCE's Tortilla Substation (see Figure 3-6). This telecommunications facility is needed to support the additional telecommunication equipment to be installed at Tortilla Substation.

To provide for the required SPS, SCE telecommunications would install a fiber optic cable between SCE's existing Kramer Substation and SCE's existing Victor Substation. SCE has evaluated the possibility of installing a telecommunication ADSS fiber optic cable on the existing Kramer-Victor 115 kV pole line. The completion of the initial evaluation identified that the SCE's Kramer-Victor 115 kV pole line is adequate to support the ADSS fiber optic cable. However, approximately 30 new wood or lightweight steel interset poles would have to be installed in specific areas within existing ROW to support ground clearance requirements. The number and exact location, as well as type of interset poles would be determined during final engineering (see Figure 3-5).

It is anticipated that the total distance of the combined telecommunication routes would be approximately 85 miles.

As described in detail below, certain portions of the fiber optic cable would be constructed on existing overhead distribution and transmission wood and light duty steel poles, while other portions of the cable would be constructed on new overhead structures and newly constructed underground conduit system(s). For a breakdown of new versus existing components refer to the Table 8 below.

Telecommunications Equipment:

- New overhead/underground 48-strand fiber optic cables to connect the Lockhart Substation site/property to SCE's Kramer and Tortilla Substations, and AMSP's Alpha and Beta Substations.
- New overhead/underground 96-strand fiber optic cables to connect SCE's Kramer Substation to SCE's Victor Substation.
- New fiber optic multiplex equipment and channel equipment in the Lockhart Substation MEER.
- New telecommunications room within SCE's existing Tortilla Substation.
- New fiber optic multiplex equipment and channel equipment at SCE's Kramer, Tortilla, Coolwater, Roadway, Lugo Substations and any other location necessary to support the communication requirements for the Lockhart Project.
- Replacement of existing poles if required, to be determined during final engineering.

Cable Route, SCE's Kramer Substation to Lockhart Substation:

From SCE's Kramer Substation, proceed north from the MEER building approximately 800' feet installing underground cable in an existing underground trench. Continue west approximately 525 feet installing underground cable in existing underground conduit. Continue north approximately 725 feet installing underground cable in existing underground conduit to pole 1793491E rise up.

Continue north approximately 2,000 feet installing ADSS overhead cable on existing overhead structures, continue east on ROW approximately 63,500 feet installing overhead cable on existing overhead structures. Continue north on Harper Lake Road approximately 5,700 feet installing overhead cable on existing overhead structures, continue east on Lockhart Road approximately 11,000 feet installing overhead cable on existing overhead structures to pole 4488408E where path would continue south approximately 5,700 feet installing overhead cable on new overhead structures to be installed for station light and power for Lockhart Substation. Install riser and continue for approximately 1,000 feet installing underground cable in new underground conduit structures to Lockhart Substation MEER.

Cable Route, SCE's Lockhart Substation to SCE's Tortilla Substation:

From Lockhart Substation, proceed south from the MEER for approximately 1,000 feet installing underground cable in new underground conduit to a new pole with riser. From this point continue west on existing overhead H-frame subtransmission structures within SCE's existing Coolwater-Kramer 115 kV ROW for approximately 11,000 feet (see Figure 7).. A riser would be installed on the last pole near the intersection with Harper Lake Road. Continue south on Harper Lake Road for approximately 400 feet installing new underground cable and conduit to pole 4349976E where a new riser would be installed. Continue south on Harper Lake Road to HWY 58 for approximately 26,000 feet installing ADSS overhead cable on existing overhead structures.

From HWY 58 continue east for approximately 52,600 feet installing overhead cable on existing overhead structures. Continue south on Summerset Road for approximately 5,300 feet installing overhead cable on existing overhead structures. Continue east on Community Boulevard for approximately 10,600 feet installing overhead cable on existing overhead structures to Lenwood Road. Continue south for approximately 13,500 feet installing overhead cable on existing overhead structures. Continue south on Sun Valley Drive for approximately 2,000 feet installing overhead cable on existing overhead structures. Continue northeast on the existing SCE Poco 33 kV pole line for approximately 25,000 to Avenue I installing overhead cable on existing overhead structures. Continue south approximately 1,850 feet installing overhead cable on existing overhead structures. Continue south crossing over Interstate 15 for approximately 425 feet to pole 1847916E on I Street and continue south approximately 4,500 feet to Siderite Road installing overhead cable on the existing overhead structures.

From Siderite Road continue east for approximately 1,400 feet installing overhead cable on existing overhead structures. Continue northwest on SCE's existing Kramer-Tortilla 115 kV ROW for approximately 6,100 feet installing overhead cable on existing overhead structures to pole 2263364E drop down existing riser, continue east for approximately 500 feet installing underground cable in existing underground conduit to SCE's Tortilla Substation MEER.

Cable Route, SCE's Lockhart Substation to AMSP's Alpha and Beta Power Facilities:

Routing of second diverse path routed fiber-optic cable from Lockhart Substation to AMSP's Alpha and Beta power facilities would be dependent on easements and paths provided by Abengoa.

Cable Route, SCE's Victor Substation to Kramer Substation:

The Victor Substation to Kramer Substation fiber optic cable would consist of a proposed fiber optic communications path between SCE's existing Victor Substation and Kramer Substation (see Table 10 and 11). The Victor Substation to Kramer Substation fiber optic cable would proceed approximately 225' northwest from the Victor MEER in a new underground conduit to a new riser to be installed on 115 kV pole 4409452E. From this new line riser, approximately 14,750 feet of new overhead fiber optic cable would be installed on the existing Kramer-Victor 115 kV overhead structures, which generally parallel Hwy 395 towards the Kramer Substation. A new riser drop down, approximately 500' of new underground conduit, a new line riser would be required to cross under 287 kV transmission lines owned by the Los Angeles Department of Water and Power (LADWP). From this point, the new fiber optic cable would be installed on the existing Kramer-Victor 115 kV overhead structures for approximately 4,300 feet. A new riser drop down, approximately 500' of new underground conduit, a new line riser would be required to cross under SCE's Kramer-Lugo 220 kV transmission lines. From this point, the new fiber optic cable would again be installed on the existing Kramer-Victor 115 kV overhead structures for approximately 6,400 feet where it would then be routed in and out of SCE's Roadway 115 kV Substation. To route into SCE's Roadway 115 kV Substation MEER, a new riser drop down and approximately 350 feet of new underground conduit would be required. To route out of SCE's Roadway 115 kV Substation MEER, approximately 575 feet of new cable would be installed on existing underground conduit, approximately 600 feet of new cable would

be installed on new underground conduit, and a new line riser would be required. From this point, approximately 570 feet of new overhead cable would be installed back to the Kramer-Victor 115 kV line where it would then head north for approximately 155,000 feet towards the Kramer Substation. A new riser drop down would be required on the last Kramer-Victor 115 kV pole just outside the Kramer Substation and approximately 1,000 feet of new underground conduit towards the Kramer Substation MEER would complete the fiber optic communications path between SCE's existing Victor Substation and Kramer Substation. Approximately 30 new wood or lightweight steel interset poles would have to be installed in specific areas within existing ROW to support ground clearance requirements as stated earlier in this document. The number and exact location, as well as type of interset poles would be determined during final engineering.

Cable Route, SCE's Tortilla Substation to Coolwater Substation:

The Tortilla-Coolwater fiber optic cable is needed to complete the path for the required line protection. However, it is currently undergoing permitting as part of a separate project and is included here as a reference. However, if the other project is cancelled or delayed, this fiber optic cable is still required for the Lockhart Project.

Proposed cable route: From the Coolwater GS Communication Room proceed east approximately 196 feet and south approximately 789 feet installing underground cable in existing underground conduit to the existing riser pole 2311957E, go up existing riser and continue west approximately 910 feet installing overhead cable on existing overhead structures to pole 2311962E, continue south approximately 255 feet installing overhead cable on existing overhead structures to riser pole 2311963E, and continue south approximately 1,026 feet installing underground cable in underground conduit to riser pole 1847660E, go up riser and continue west approximately 3,071 feet installing overhead cable on existing overhead structures to pole 2311982E, continue south approximately 500 feet installing overhead cable on existing overhead structures to pole 83120S, continue west approximately 16,675 feet installing overhead cable on existing overhead structures to pole 430515S, continue south approximately 420 feet installing overhead cable on existing overhead structures to pole 430514S, continue west approximately 17,903 feet installing overhead cable on existing overhead structures to pole 1771073E, continue south approximately 200 feet installing overhead cable on existing overhead structures to pole 1771075E, continue west approximately 14,931 feet installing overhead cable on existing overhead structures to pole 1730385E, continue north approximately 300 feet installing overhead cable on existing overhead structures to pole 1730387E, continue west approximately 268 feet installing overhead cable on existing overhead structures to pole 4699300E, continue south approximately 75 feet installing overhead cable on existing overhead structures to "no tag" pole, continue west approximately 322 feet installing overhead cable on existing overhead structures to new riser pole 4645190E, install riser on pole drop down riser and continue north and east approximately 395 feet installing underground cable in new underground conduit to existing substation cable trench, continue north approximately 45 installing underground cable in existing substation cable trench into the MEER in Tortilla Substation.

Table 8 – Summary of Proposed Telecommunications Fiber Optic Cables Estimates

	Kramer to Lockhart	Lockhart to Tortilla	Victor to Kramer	Tortilla to Coolwater*
Fiber-Optic Cable Length (Proposed)	92,000 ft (18 miles)	164,000 ft (31 miles)	185,000 ft (35 miles)	57,900 ft (11 miles)
Total Length Underground (U.G.)	3,100 ft	1,900 ft.	2,300 ft	2460 ft
-Existing U.G. Conduits	2,000 ft.	500 ft.	700 ft	2460 ft
-New U.G. Conduits Needed	1,100 ft.	1,400 ft.	1600 ft	0
Total Length Overhead (O.H.)	88,000 ft.	162,000 ft.	182,700 ft	55,440 ft
-Existing O.H.	82,000 ft.	150,000 ft	182,700 ft	55,440 ft
-New O.H.	6,000 ft.	12,000 ft	0 ft	0
-Existing Poles	250	600	226	220
-New Poles Required	30	55	30	0
Estimated Ground Disturbance	7,500 sq ft	13,700 sq ft.	226,500 sq ft	3,400 sq ft.
Time and Resources to Construct (4 men per crew)	38 Crew Days	64 Crew Days	154 Crew Days	19 Crew Days
Total Man Days Required	152 Man Days	256 Man Days	755 Man Days	97 Man Days

Note: These figures are desktop estimates and may change based upon final engineering.

***** Tortilla to Coolwater fiber-optic cable is in the permitting phase in a separate project and is included in this table only should it be required to be constructed as part of the Lockhart Project.

6.2 Telecommunication System Construction

Construction Activities

SCE would utilize SCE's existing Victor, Roadway, Kramer, Tortilla, and Coolwater Substations as well as SCE's Barstow Service Center and the proposed Lockhart Substation as marshalling yards to support the installation of the telecommunications facilities required for this project. SCE or contractor crews would use standard construction methods to construct the required fiber optic cables. The crews would comply with all rules, regulations and standards with interdepartments and other agencies while in their performance of the construction phase.

Portions of the fiber optic cable would be constructed on existing overhead distribution and transmission wood and light duty steel poles. In addition, portions of the cable would be constructed on new overhead structures and newly constructed underground conduit system(s), subject to determination through final engineering. This project description is based on planning level assumptions. Exact details would be determined following completion of preliminary and final engineering, identification of field conditions, availability of labor, material, and equipment, and compliance with applicable environmental and permitting requirements.

Generally no hazardous materials would be used in installing underground conduit, new wood communication poles, and the stringing of fiber-optic cables. There is generally no need for local services or utilities (such as water). Waste generated (empty cable reels, cut-off pieces of fiber cable) would be disposed of at existing SCE facilities.

Table 9 - Telecommunications Labor Force and Construction Equipment Estimates

Construction Element	Number of Personnel	Equipment Requirements
Cable Construction	4	2 – Bucket Trucks (Diesel) 1 – Pick-up (Diesel) 2 – Cable Dollies 1 – Single Drum Puller (Diesel) 1 – 2 Axle Trailer
Receive and Load Out Materials	4	1 – 5-Ton Forklift (Diesel) 1 – Pick-up (Diesel)
Cleanup	4	2 – Bucket Trucks (Diesel) 1 – Pick-up (Diesel)

TABLE 10
CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY
CONSTRUCT KRAMER-VICTOR FIBER OPTIC CABLE

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Survey (1)				**4**	**4**		**34 Miles/Interset Poles**
½-Ton Pick-up Truck, 4x4	200	Gas	2		4	8	12 Mile/Day
Marshalling Yard (2)				**4**			
1-Ton Crew Cab, 4x4	300	Diesel	1			2	
30-Ton Crane Truck	300	Diesel	1			2	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		Duration of Project	5	
4000 gallon Water Truck	350	Diesel	1			8	
Truck, Semi, Tractor	350	Diesel	1			1	
Roads (3)				**5**	**17**		**34 Miles**
1-Ton Crew Cab, 4x4	300	Diesel	2		17	2	2 Miles/Day
Road Grader	350	Diesel	1		17	4	
Backhoe/Front Loader	350	Diesel	1		17	6	

TABLE 10
CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY
CONSTRUCT KRAMER-VICTOR FIBER OPTIC CABLE

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Drum Type Compactor	250	Diesel	1		17	4	
Track Type Dozer	350	Diesel	1		17	6	
Excavator	300	Diesel	1		9	6	
Lowboy Truck/Trailer	500	Diesel	1		9	2	
Install 5 foot Crossarm (4)				**8**	**23**		**34 Miles Approx 900 Poles**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	3		23	2	40 Crossarms /Day
Bucket Truck	300	Diesel	2		23	5	
Install LWS Poles (5)				**10**	**8**		**Interset 30 LWS Poles**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	3		8	2	4 Poles /Day
Auger Truck	500	Diesel	1		8	8	
Backhoe/Front Loader	200	Diesel	1		18	8	
Steel Pole Haul (6)				**8**	**3**		**30 LWS Poles**
¾-Ton Pick-up Truck, 4x4	300	Diesel	2		3	5	12 steel Poles/Day
30-Ton Crane Truck	300	Diesel	1			4	
40' Flat Bed Truck/ Trailer	350	Diesel	2		3	8	
Install Fiber Optic Cable (7)				**8**	**11**		**34 Circuit Miles**
¾-Ton Pick-up Truck, 4x4	300	Diesel	2		11	8	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	4		11	8	3 miles/day
Bucket Truck	350	Diesel	2		11	8	1800 foot reel
Splicing Lab	300	Diesel	1		3	2	
3 Drum Straw line Puller/Tensioner	300	Diesel	1		6	6	
Restoration (8)				**7**	**34**		**34 Miles**
1-Ton Crew Cab, 4x4	300	Diesel	2		34	2	1 Mile/Day
Road Grader	350	Diesel	1		34	6	
Water Truck	350	Diesel	1		34	8	

TABLE 10
CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES BY ACTIVITY
CONSTRUCT KRAMER-VICTOR FIBER OPTIC CABLE

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horse-Power	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production Per Day
Backhoe/Front Loader	350	Diesel	1		34	6	
Drum Type Compactor	250	Diesel	1		34	6	
Track Type Dozer	350	Diesel	1		34	6	
Lowboy Truck/Trailer	300	Diesel	1		34	3	

Crew Size Assumptions:

#1 Survey = one 4-man crew
#2 Marshalling Yards = one 4-man crew
#3 Road Work = one 5-man crew
#4 Install 5 foot Crossarm = two 4-man crew
#5 Install LWS Poles = one 10-man crew
#6 Steel Pole Haul = one 8-man crew
#7 Install Fiber Optic Cable = two 4-man crews
#8 Restoration = one 7-man crew

Table 11 - Ground Disturbance Kramer-Victor Fiber-Optic Cable

Project Feature	Site Quantity	Disturbed Acreage Calculation (L x W)	Acres Disturbed During Construction	Acres to be Restored	Acres Permanently Disturbed
Construct New Light Weight Steel Pole (1)	30	75' x 75'	3.9	2.4	1.5
Fiber Optic Setup Area - Tensioner (2)	18	40' x 60'	1.0	1.0	0.0
Fiber Optic Splicing Setup Areas (2)	18	20' x 30'	0.2	0.2	0.0
New Access Roads (3)	0.1	linear miles x 14' wide	0.1	0.0	0.1
Total Estimated (5)			**5.2**	**3.6**	**1.6**

Notes:
2. Includes structure assembly & erection, conductor & ADSS installation. Area to be restored after construction. Portion of R/W within 25' of the Tubular Steel Pole and within 10' of Light Weight Steel Pole, and H-Frame to remain cleared of vegetation. Permanently disturbed areas for TSP=0.06 acre, LWS=0.05 acre, and H-Frame=0.06acre.
3. Based on 9,000' conductor reel lengths, number of circuits, and route design.

4. Based on approximate length of road in miles x road width of 14'.
5. The disturbed acreage calculations are estimates based upon SCE's preferred area of use for the described project feature, the width of the existing right-of-way, or the width of the proposed right-of-way and, they do not include any new access/spur road information; they are subject to revision based upon final engineering and review of the project by SCE's Construction Manager and/or Contractor awarded project.

Footing / Base Volume and Area Calculations:
Average TSP depth 30ft deep, 7ft diameter, qty 1 per TSP: earth removed for footing = 42.8 cu. yds.; surface area = 38.5 sq.ft.
Average LWS depth 12ft deep, 2.5ft diameter, qty 1 per LWS: earth removed for pole base = 2.2 cu. yds.; surface area = 4.9 sq. ft.
Average Wood H-Frame depth 12ft deep, 2.5ft diameter, qty 2 per H-Frame: earth removed for pole base = 4.4 cu. yds.; surface area = 9.8 sq. ft.

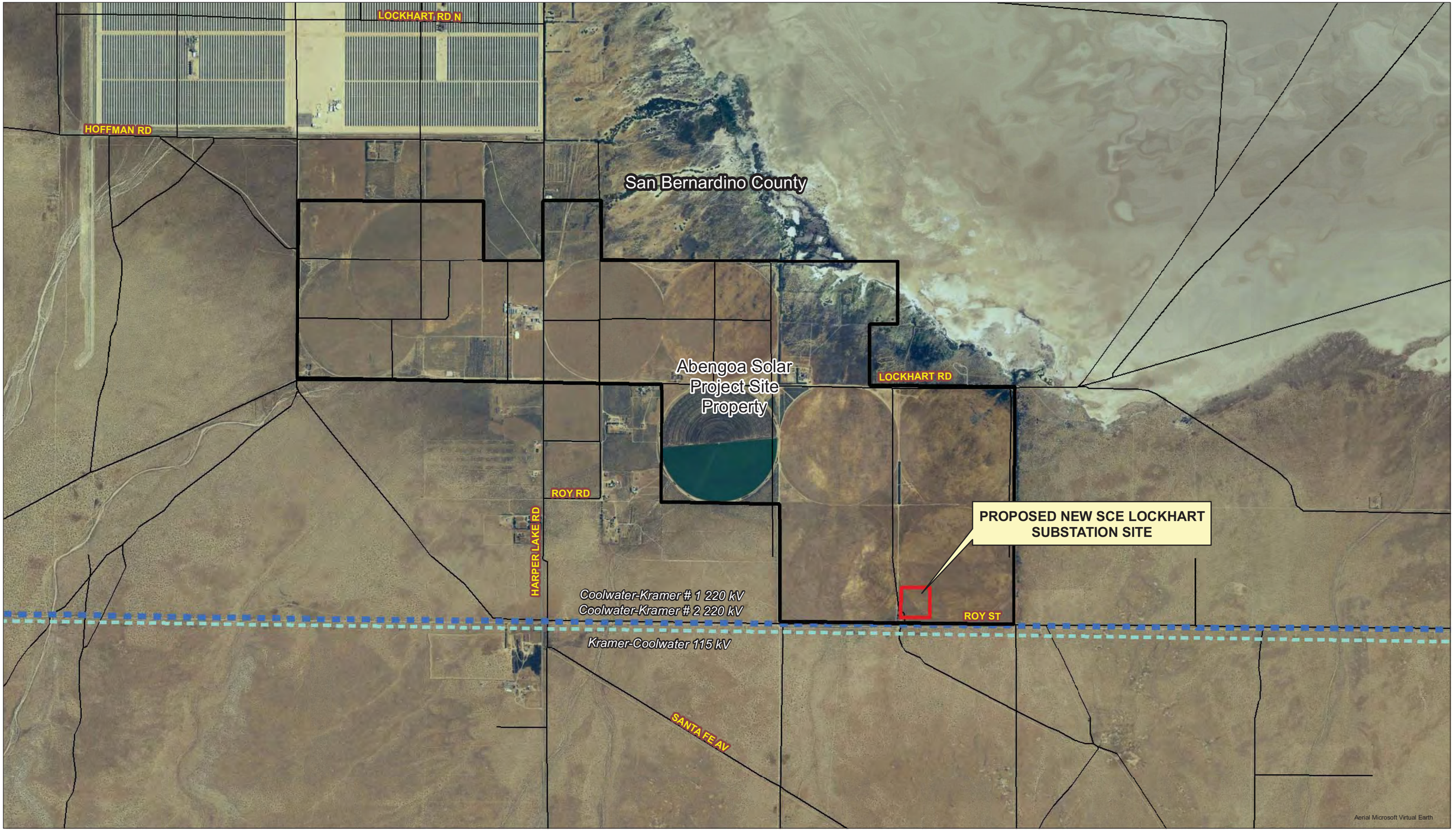

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FIGURE 1
PROPOSED NEW SCE LOCKHART SUBSTATION SITE

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Legend

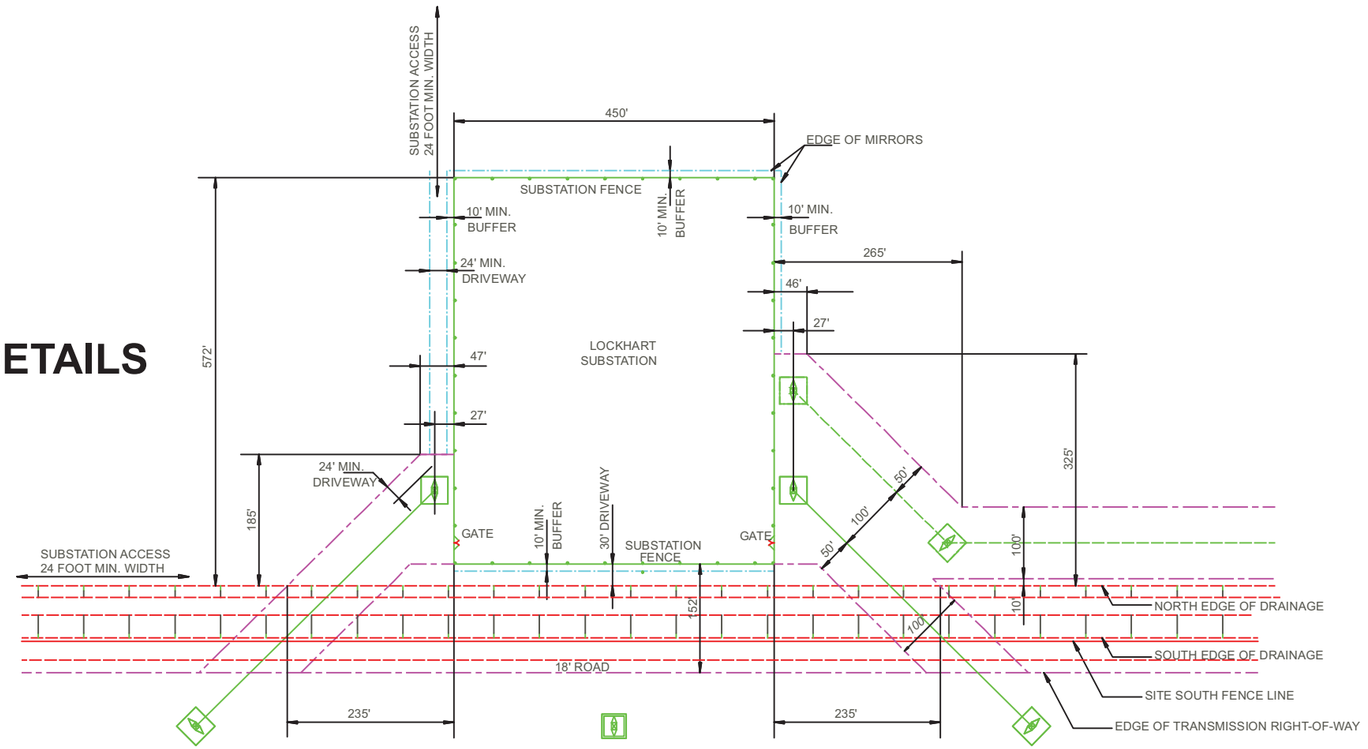
- Proposed New SCE Lockhart Substation Site
- Mohave Solar (Abengoa Solar Inc.) Plant Site
- Existing 220kV Transmission Lines (SCE, 2009)
- Existing 115kV Subtransmission Line (SCE, 2009)
- Minor Roads (TBM, 2008)

N W E S

0 0.25 0.5 1 Miles

P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT200819625_Interconnection_Maps\MXD_April022010_Rev2\Figure 1 - Preferred Substation Site-PropertyRev2.mxd 4/07/2010

SUBSTATION DETAILS



LEGEND

- SCE SUBSTATION FENCE
- TEN-FOOT OPEN SPACE BUFFER OUTSIDE THE SUBSTATION FENCE
- SCE TRANSMISSION RIGHT-OF-WAY
- DRAINAGE CHANNEL TOP OF SLOPE
  DRAINAGE CHANNEL BOTTOM OF SLOPE
- SOLAR FARM FENCE
- FUTURE GEN-TIE LINE
- EXISTING SCE 220KV TRANSMISSION TOWERS
- PROPOSED SCE 220KV TRANSMISSION TOWERS
- FUTURE GENERATION TIE LINE TOWERS

Note: CONCEPTUAL ENGINEERING, DO NOT SPOT

SITE PLAN

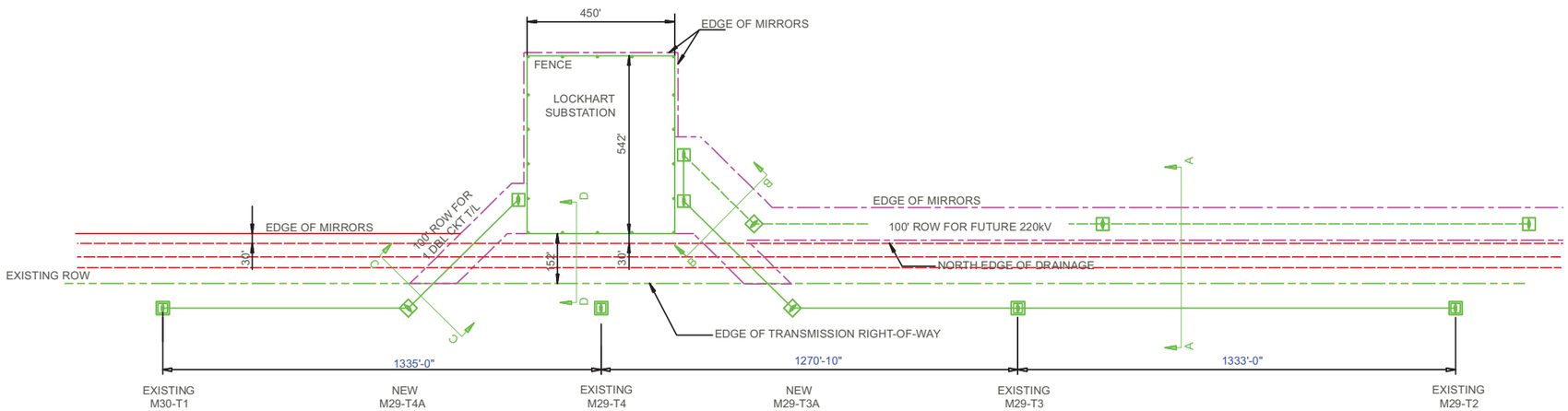


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FIGURE 2
PROPOSED NEW SCE LOCKHART SUBSTATION AND ASSOCIATED ELECTRICAL LINES

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P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT200819625_Interconnection_Maps\MXD_April\022010_Rev2\Figure 2 - LockHart Central Substation and Associated Electrical Lines.mxd 4/07/2010

P:\GISData\Projects\MasterData\Mapr Transmission Projects\LockhartProject2010\NOT20080919625_Interconnection_Maps\Figure 3-1 Proposed Telecomm Rev2.mxd DATE: 4/02/2010

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FIGURE 3-1
OVERVIEW OF PROPOSED NEW TELECOMMUNICATION FIBER OPTIC CABLES FOR THE LOCKHART PROJECT

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Legend

Proposed Telecommunication Path
- Kramer-Lockhart Path
- Kramer-Victor Path
- Lockhart-Tortilla Path
- Coolwater-Tortilla Path

- Proposed New Lockhart Substation
- Existing Substation (SCE, 2010)
- Mohave Solar (Abengoa Solar Inc.) Plant Site

- Freeways (TBM, 2008)
- Highways (TBM, 2008)
- Railroads (TBM, 2008)

- County Boundary (TBM, 2008)
- City Boundary (TBM, 2008)

Hydrology Areas (TBM, 2008)
- Perennial
- Dry

N W E S

0 1.25 2.5 5 Miles

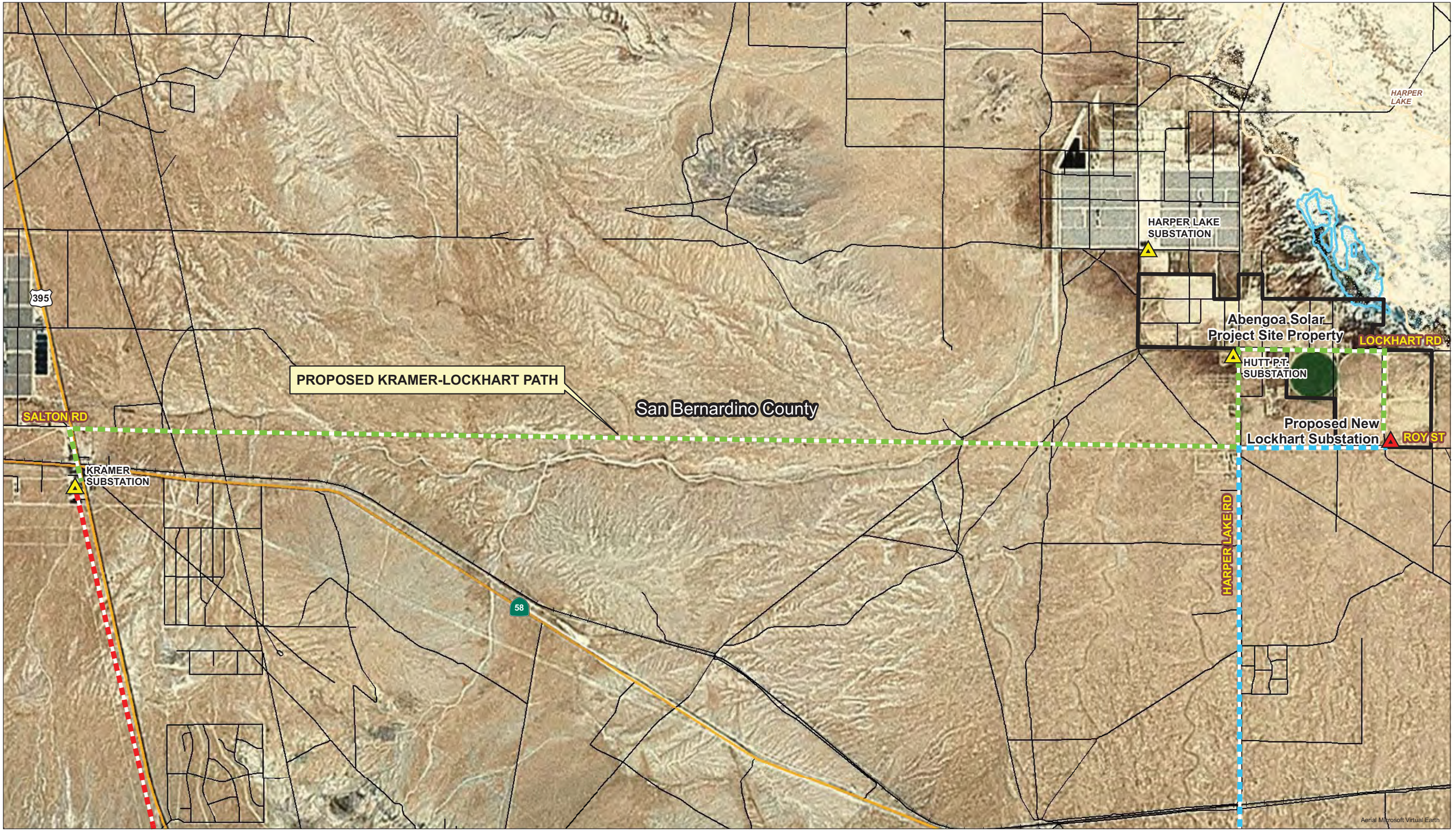

FIGURE 3-2
PROPOSED NEW TELECOMMUNICATION FIBER OPTIC CABLE CONNECTING KRAMER SUBSTATION TO NEW LOCKHART SUBSTATION

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Legend

Proposed Telecommunication Path
- Kramer-Lockhart Path
- Kramer-Victor Path
- Lockhart-Tortilla Path

- Proposed Lockhart Substation
- Existing Substation (SCE, 2010)
- Mohave Solar (Abengoa Solar Inc.) Plant Site

- Freeways (TBM, 2008)
- Highways (TBM, 2008)
- Minor Roads (TBM, 2008)
- Railroads (TBM, 2008)

- City Boundary (TBM, 2008)

Hydrology Areas (TBM, 2008)
- Perennial
- Dry

N W E S

0 0.25 0.5 1 Miles

P:\GIS\Data\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT20080919625_Interconnection_Maps\Figure 3-2 Proposed Telecomm Kramer to Lockhart Rev2.mxd DATE: 4/02/2010

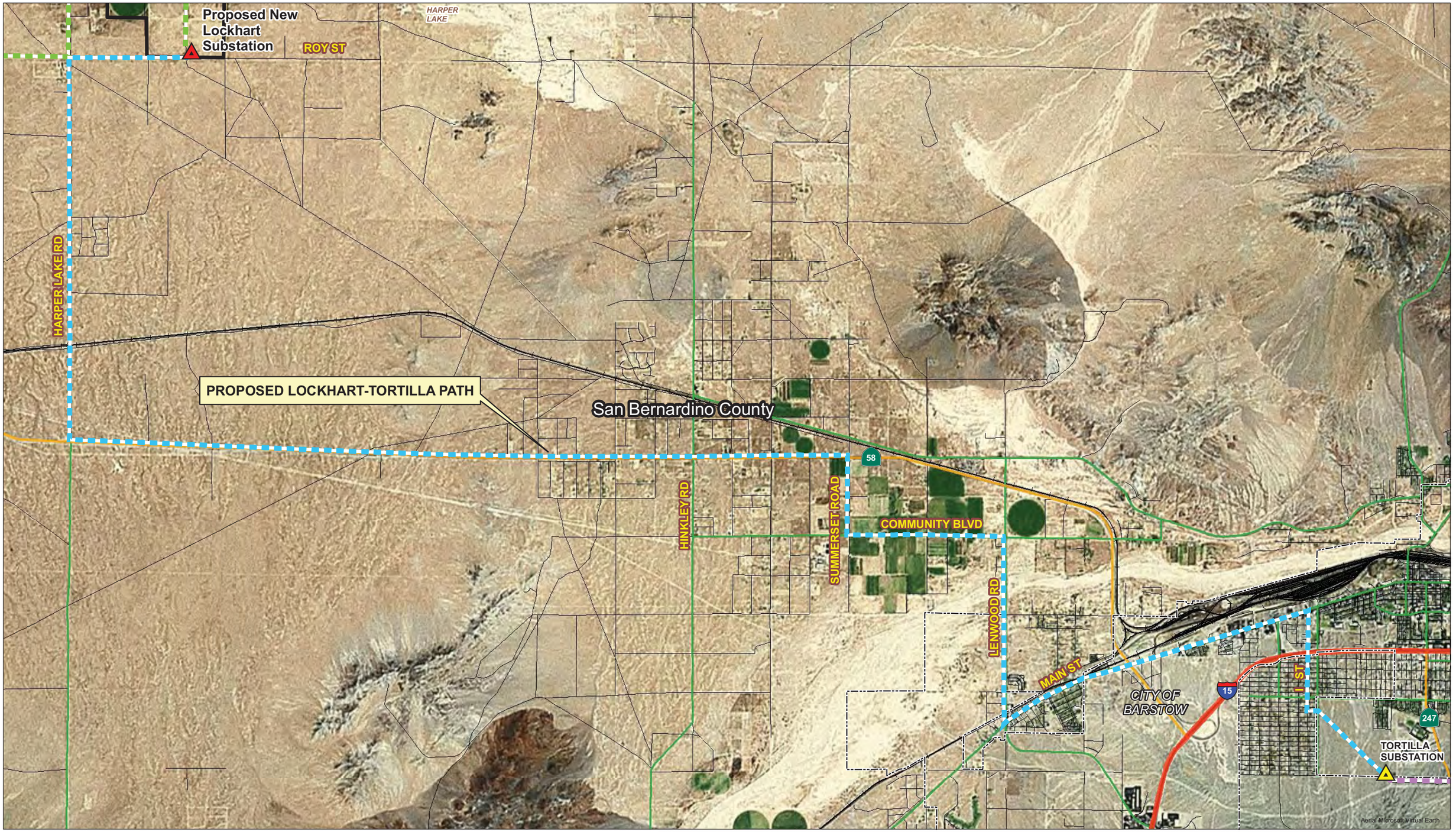

FIGURE 3-3
PROPOSED NEW TELECOMMUNICATION FIBER OPTIC CABLE CONNECTING NEW LOCKHART SUBSTATION TO TORTILLA SUBSTATION

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Legend

Proposed Telecommunication Path
- Lockhart-Tortilla Path
- Kramer-Lockhart Path
- Coolwater-Tortilla Path (Under Permitting)

- Proposed Lockhart Substation
- Existing Substation (SCE, 2010)

- Freeways (TBM, 2008)
- Highways (TBM, 2008)
- Major Roads (TBM, 2008)
- Minor Roads (TBM, 2008)
- Railroads (TBM, 2008)
- City Boundary (TBM, 2008)

Hydrology Areas (TBM, 2008)
- Perennial
- Dry

N W E S

0 0.25 0.5 1 Miles

P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT2008\9625_Interconnection_Maps\Figure 3-3 Proposed Telecomm Lockhart to Tortilla Rev2.mxd DATE: 4/02/2010

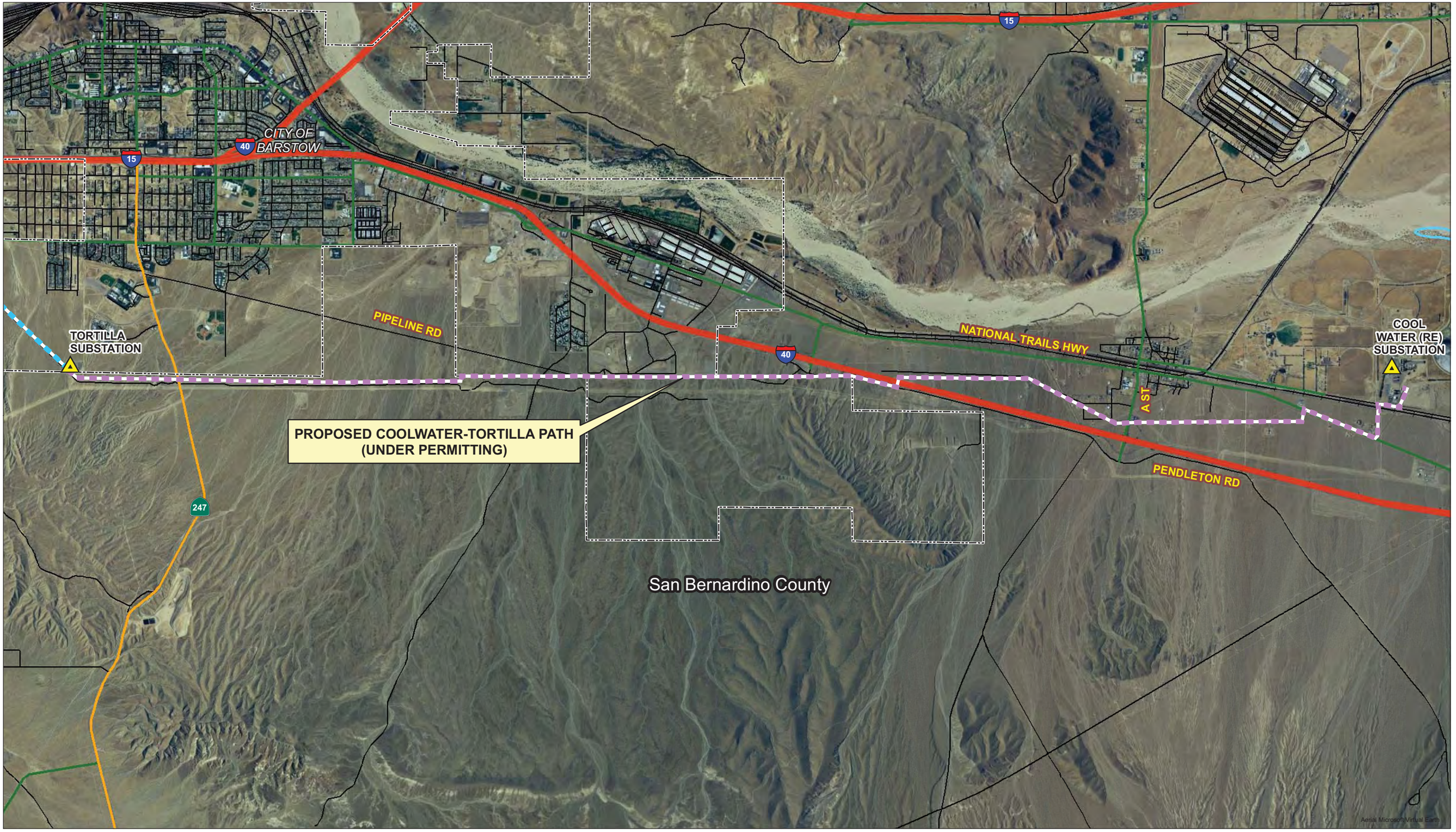

FIGURE 3-4
PROPOSED NEW TELECOMMUNICATION FIBER OPTIC CABLE CONNECTING TORTILLA SUBSTATION TO COOLWATER SUBSTATION (NOT BUILT - IN PERMITTING PHASE)

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Legend

Proposed Telecommunication Path
- Coolwater-Tortilla Path (Under Permitting)
- Lockhart-Tortilla Path

Existing Substation (SCE, 2010)

- Freeways (TBM, 2008)
- Highways (TBM, 2008)
- Major Roads (TBM, 2008)
- Minor Roads (TBM, 2008)
- Railroads (TBM, 2008)
- City Boundary (TBM, 2008)

Hydrology Areas (TBM, 2008)
- Perennial
- Dry

N W E S

0 0.25 0.5 1 Miles

P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT200819625_Interconnection_Maps\MXD_April022010_Rev2\Figure 3-4 Proposed Telecomm TORTILLA TO COOLWATER Rev2.mxd DATE: 4/02/2010

Proposed SCE Fiber-Optic Cables
From Lockhart to Abengoa
Alpha & Beta Facilities

HARPER
DRY LAKE

Construction
Laydown

Evaporation
Ponds

Solar Array

Solar Array

ALPHA SITE

Power Block

Solar Array

Area of Critical
Ecological Concern

FO Cable to Alpha

Proposed Drainage Channel

Evaporation
Ponds

Solar Array

Solar Array

BETA SITE

FO Cable to Beta

Power Block

Proposed Drainage Channel

Interconnection
Facilities

Solar Array

Superior-Cronese DWMA

MGS Conservation Area

Blue Lines = Proposed Fiber-Optic (FO) Cables for Diverse Communication Path

Map Source: Abengo Mojave Solar Project

P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT200819625_Interconnection_Maps\MXD_Apr\l022010_Rev2\Figure 3-5 Proposed Telecomm abengoa.mxd 4/02/2010

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FIGURE 3-5
PROPOSED NEW TELECOMMUNICATION FIBER OPTIC CABLES CONNECTING NEW SCE LOCKHART SUBSTATION TO ABENGOA ALPHA AND BETA FACILITIES

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LEGEND

PROPOSED NEW LOCKHART SUBSTATION TO ABENGOA FACILITIES FIBER OPTIC CABLE

NOTE: MAP FOR PROPOSED NEW TELECOMMUNICATION FIBER OPTIC CABLES ONLY,
REFER TO PROPOSED NEW SCE LOCKHART SUBSTATION LOCATION ON FIGURE 1.

N
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FIGURE 3-6
PROPOSED NEW TELECOMMUNICATION FIBER OPTIC CABLE CONNECTING KRAMER SUBSTATION TO VICTOR SUBSTATION

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Features depicted herein are planning level accuracy, and intended for informational purposes only. Distances and locations may be distorted at this scale. Always consult with the proper legal documents or agencies regarding such features.

Legend

Proposed Telecommunication Path
- Kramer-Victor Path
- Kramer-Lockhart Path
- Lockhart-Tortilla Path
- Coolwater-Tortilla Path (Under Permitting)

- Proposed Lockhart Substation
- Existing Substation (SCE, 2010)
- Mohave Solar (Abengoa Solar Inc.) Plant Site

- Freeways (TBM, 2008)
- Highways (TBM, 2008)
- Railroads (TBM, 2008)

- County Boundary (TBM, 2008)
- City Boundary (TBM, 2008)

Hydrology Areas (TBM, 2008)
- Perennial
- Dry

N W E S

0 1.25 2.5 5 Miles

P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT200819625_ Interconnection_Maps\MXD_April\022010_ Rev2\Figure 3-6 Proposed Telecomm KRAMER TO VICTOR Rev2.mxd DATE: 4/02/2010

North

West

Fence

Proposed
Telecommunication
Facility is 14 Ft X 37 Ft.

(Locate in southwest corner
of substation)

MEER

New Comm
Facility

Gate

Entry Road

Road Extension to New Comm Facility

Fence

NOTE: For illustrative purposes, not to scale.

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FIGURE 3-7
PROPOSED NEW TELECOMMUNICATION FACILITY
AT TORTILLA SUBSTATION

N
W E
S

DOUBLE 220KV

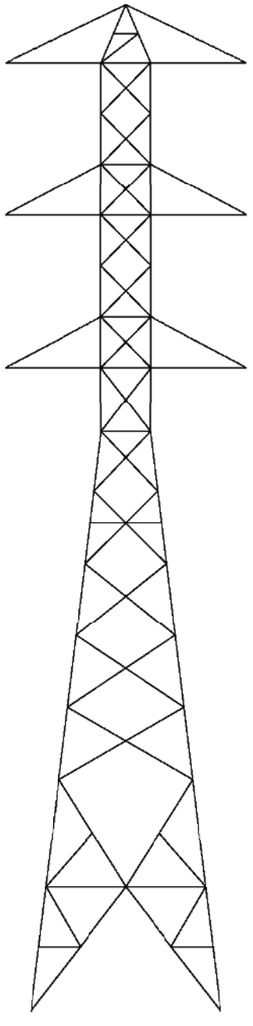

FIGURE 4-1
220KV LATTICE STEEL
TOWER CONFIGURATION

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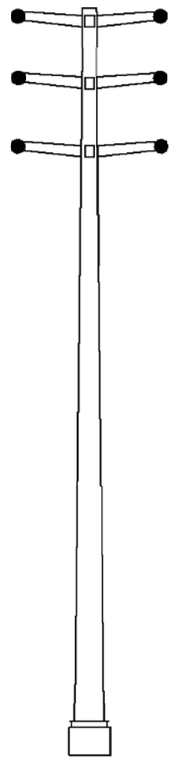
DOUBLE CIRCUIT
220KV TSP



SINGLE CIRCUIT
220KV TSP

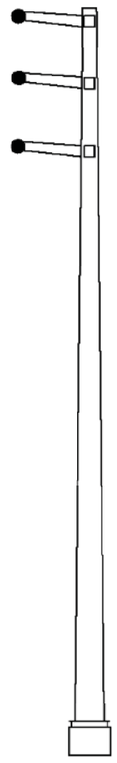


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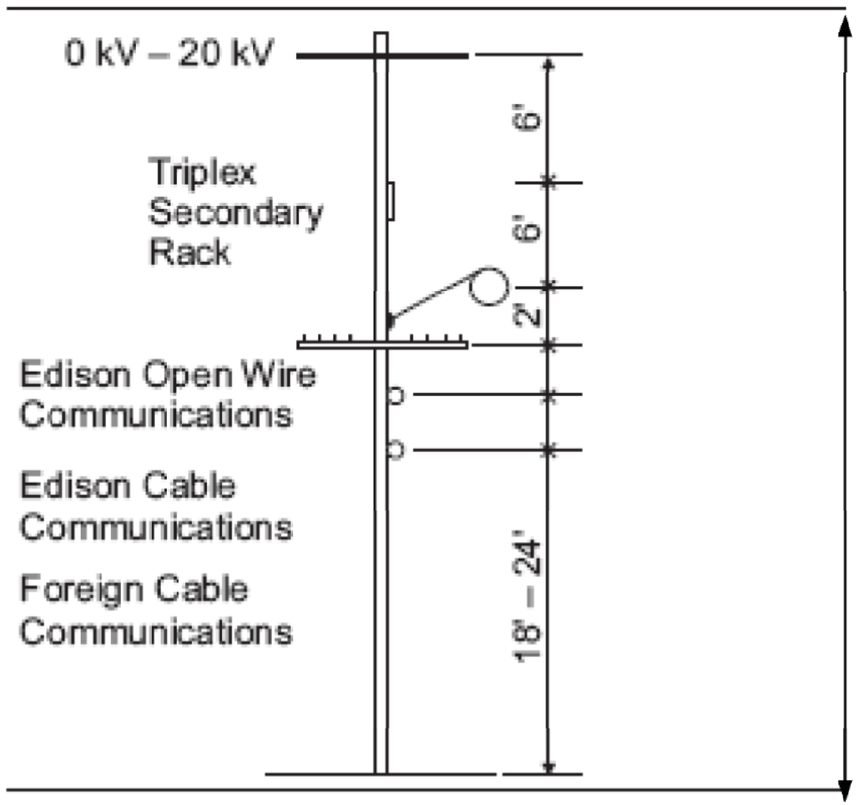
FIGURE 4-2
220KV TUBULAR STEEL
POLE CONFIGURATION

P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT200819625_Interconnection_Maps\Figure 4-2 220 kV TSP Pole Configuration.mxd 3/12/2010

Typical Pole Heads/Clearance



P:\GISData\Projects\MasterData\Major Transmission Projects\LockhartProject\2010\NOT200819625_Interconnection_Maps\Figure 5 - Pole Configuration.mxd 3/5/2010

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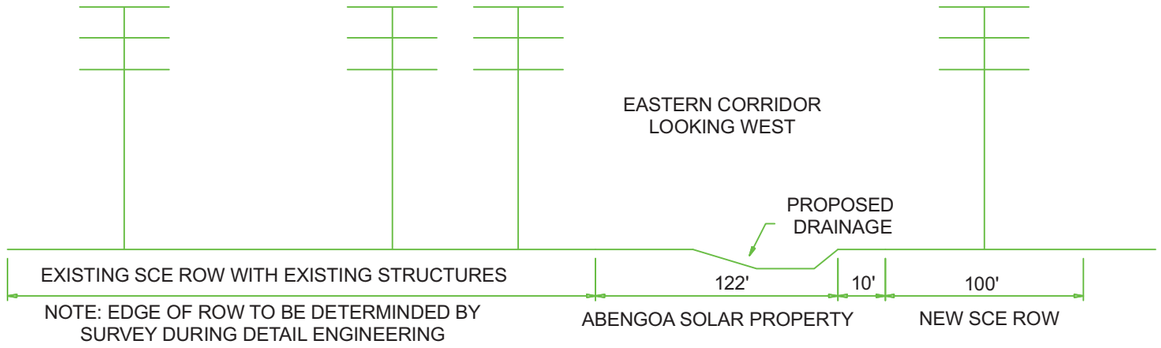
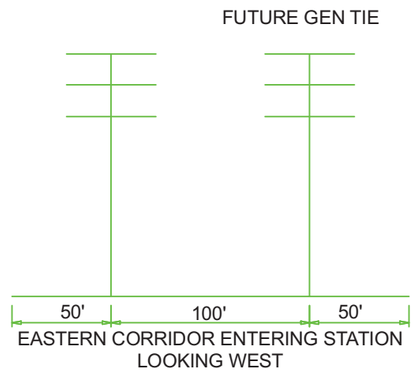
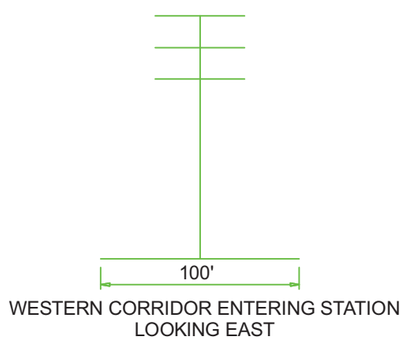
FIGURE 5
DISTRIBUTION POLE CONFIGURATION



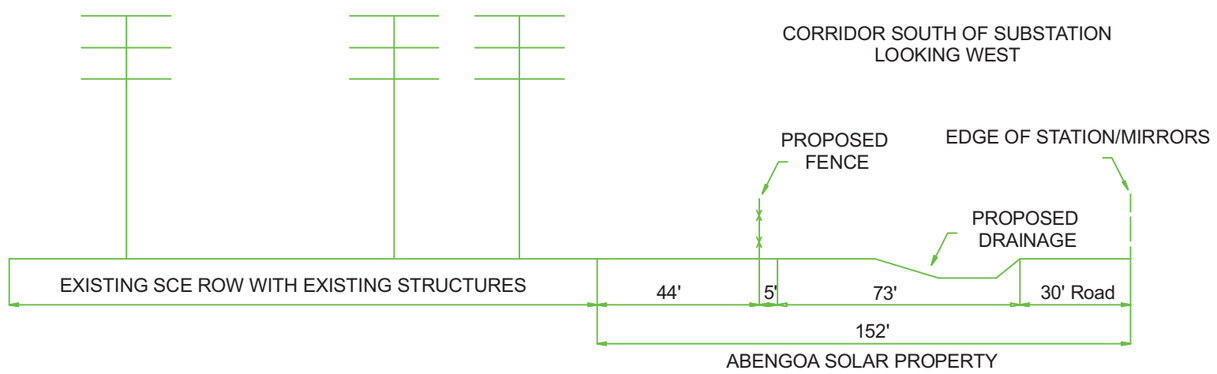
SECTION A - A



SECTION B - B



SECTION C - C



SECTION D- D

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FIGURE 6
CROSS SECTIONS

Features depicted herein are planning level accuracy, and intended for informational purposes only. Distances and locations may be distorted at this scale. Always consult with the proper legal documents or agencies regarding such features.

P:\GISData\Projects\MasterData\Major Transmission Projects\LockharProject\2010\NOT200819625_Interconnection_Maps\MXD_April\22010_Rev2\Figure 6 - Cross Section.mxd 4/7/2010

115KV H-FRAME

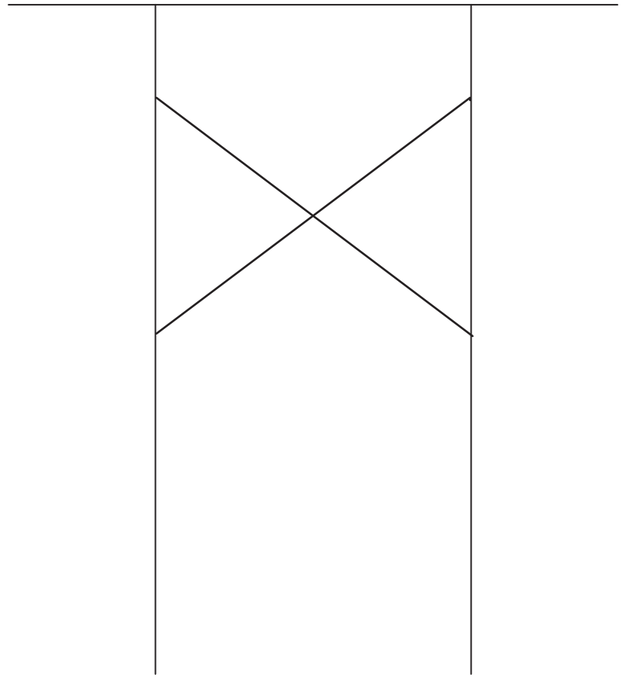

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FIGURE 7
TYPICAL 115 KV H-FRAME SUBTRANSMISSION STRUCTURE

Best Management Practices (BMP's)

BMP NO.	BMP DESCRIPTION
AIR QUALITY	
AIR-1	The construction activities would be in compliance with AQMD requirements, as applicable to the project,
AESTHETICS AND VISUAL RESOURCES	
AES-1	LSTs and TSPs would be galvanized steel with a dulled grey finish that minimizes reflected light.
AES-2	Insulators that minimize reflection of light would be utilized.
AES-3	Substation equipment would have materials that minimize reflective light.
AES-4	If chain link fence is used, it would have a dulled-finish.
AES-5	The substation lighting would be designed to be manually operated for non-routine nighttime work.
BIOLOGICAL RESOURCES	
BIO-1	Preconstruction biological clearance surveys would be conducted to identify special-status plants and wildlife.
BIO-2	SCE would prepare a Worker Environmental Awareness Program (WEAP). All construction crews and contractors would be required to participate in WEAP training prior to starting work on the project.
BIO-3	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 (Avian Power Line Interaction Committee 2006).
CULTURAL RESOURCES	
CR-1	A cultural resource inventory of the project area would be conducted for cultural resources prior to any disturbance. All surveys would be conducted and documented as per applicable laws, regulations, and guidelines.
CR-2	To the extent feasible, all ground-disturbing activities shall be sited to avoid or minimize impacts to cultural resources listed as, or potentially-eligible for listing as, unique archaeological sites, historical resources, or historic properties.
CR-3	A protective buffer zone would be established and maintained around each recorded archaeological site within or immediately adjacent to the ROW.
PALEONTOLOGY RESOURCES	
PALEO-1	A paleontologist would conduct a pre-construction field survey of the project area.
PALEO-2	Prior to construction, a certified paleontologist would supervise monitoring of construction excavations.
GEOLOGY AND SOILS	
GEO-1	Prior to final design of substation facilities, and transmission and, 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.
GEO-2	For new substation construction, specific requirements for seismic design would be followed based on the Institute of Electrical and Electronic Engineers' 693 "Recommended Practices for Seismic Design of Substations".
GEO-3	New access roads, where required, would be designed to minimize ground disturbance during grading.
GEO-4	Cut and fill slopes would be minimized by a combination of benching and following natural topography where feasible.
GEO-5	Any disturbed areas associated with temporary construction would be returned to preconstruction conditions (to the extent feasible) after the completion of project construction.
HAZARDS AND HAZARDOUS WASTE	
HAZ-1	A Phase I ESA would be performed at each new or expanded substation location and along newly acquired transmission subtransmission line ROWs.
HAZ-2	SCE would implement standard fire prevention and response practices for the construction activities.
HAZ-3	As applicable, SCE would follow fire codes per Cal Fire Power Line Fire Prevention Fire Guide requirements for vegetation clearance during construction of the project to reduce the fire hazard potential.
HAZ-4	Hazardous materials and waste handling would be managed in accordance with the following SCE plans and programs: • *Spill Prevention, Countermeasure, and Control Plan (SPCC Plan).* In accordance with Title 40 of the CFR, Part 112, SCE would prepare a SPCC for proposed and/or expanded substations, as applicable. • *Hazardous Materials Business Plans (HMBPs).* Prior to operation of new or expanded substations, SCE would prepare or update and submit, in accordance with Chapter 6.95 of the CHSD, and Title 22 CCR, an HMBP, as applicable. • *Storm Water Pollution Prevention Plan (SWPPP):* A project-specific construction SWPPP would be prepared and implemented prior to the start of construction of the transmission line and substation. • *Health and Safety Program:* SCE would prepare and implement a health and safety program to address site-specific health and safety issues. • *Hazardous Materials and Hazardous Waste Handling:* A project-specific hazardous materials management and hazardous waste management program would be developed prior to initiation of the

	project. Material Safety Data Sheets would be made available to all Project workers • *Emergency Release Response Procedures:* An Emergency Response Plan detailing responses to releases of hazardous materials would be developed prior to construction activities. All construction personnel, including environmental monitors, would be aware of state and federal emergency response reporting guidelines.
HAZ-5	Hazardous materials would be used or stored and disposed of in accordance with Federal, State, and Local regulations.
HAZ-6	The substation would be grounded to limit electric shock and surges that could ignite fires.
HAZ-7	All construction and demolition waste would be removed and transported to an appropriately permitted disposal facility.
HYDROLOGY AND WATER QUALITY	
HYDRO-1	Construction equipment would be kept out of flowing stream channels as feasible.
HYDRO-2	Towers would be located to avoid active drainage channels, especially downstream of steep hill slope areas, to minimize the potential for damage.
LAND USE	
LAND USE-1	SCE shall provide 14 days of advance notice of the start of construction to property owners located within 300 feet of construction-related activities.
NOISE	
NOISE-1	SCE would comply with local noise ordinances.
TRANSPORTATION AND TRAFFIC	
TRANS-1	Traffic control services would be used for equipment, supply delivery, and conductor stringing, as applicable.
TRANS-2	Construction traffic would be scheduled for off-peak hours to the extent feasible and would not block emergency equipment routes.
TRANS-3	If work requires modifications or activities within local roadway and railroad ROWs, appropriate permits would be obtained prior to the commencement of construction activities.

APPENDIX D

Certificate of Service and Mailing List

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CERTIFICATE OF SERVICE

I, Anthony Padilla, of Environmental Science Associates, certify that I have on this date caused the following:

Publication of the Initial Study/Mitigated Negative Declaration (MND) for Southern California Edison Company's Application to the California Public Utilities Commission pursuant to General Order (GO) 131-D to construct and operate the Lockhart Substation Project (A.11-05-006). The Notice of Intent to adopt the MND is to be served by United Stated Postal Service (USPS) mail to owners of property within 300 feet of the Project route alignments. Copies of the MND for Responsible, Trustee, and other local, State and federal public agencies whose jurisdiction falls within the Project area; planning departments of the County of San Bernardino and the cities of Adelanto, Barstow, and Victorville are to be delivered via USPS certified mail or an overnight delivery service as documented in the comprehensive mailing list included in Appendix D of the MND.

I declare under penalty of perjury pursuant to the laws of the State of California that the foregoing is true and correct.

Executed on May 13, 2011 in San Francisco, California.

Anthony Padilla

Anthony Padilla

MAILING LIST:
AGENCIES, ORGANIZATIONS AND INDIVIDUALS SENT A COPY OF DRAFT IS/MND

Agency/Organization	First Name	Last Name	Title	Street	City	State	Zip Code
Lead Agency/Applicant							
California Public Utilities Commission	Iain	Fisher	CEQA Project Manager	505 Van Ness Avenue	San Francisco	CA	94102
California Public Utilities Commission	Karen	Miller	CPUC Public Advisor	505 Van Ness Avenue	San Francisco	CA	94102
California Public Utilities Commission	Julie	Fitch	Energy Division Director	505 Van Ness Avenue	San Francisco	CA	94102
Southern California Edison Company	Ryan	Stevenson	Project Manager, Regulatory Policy & Affairs Dept	2244 Walnut Grove Avenue, Quad 3D, 388K	Rosemead,	CA	91770
Local Agencies							
County of San Bernardino	Josie	Gonzales	Chairman, Board of Supervisors	385 N. Arrowhead Avenue, 5th Floor	San Bernardino	CA	92415
County of San Bernardino	Gregory C.	Devereaux	County Administrative Officer	385 N. Arrowhead Avenue	San Bernardino	CA	92415
County of San Bernardino	Christine	Kelly	Director, Land Use Services Department	385 N. Arrowhead Avenue, 1st Floor	San Bernardino	CA	92415
County of San Bernardino	Wendy	Luntz	Planning Commission Secretary	385 N. Arrowhead Avenue, 1st Floor	San Bernardino	CA	92415
City of Adelanto	Linda	Blackbern	Senior Planner	11600 Air Expressway	Adelanto	CA	92301
City of Barstow	Michael	Massimini	City Planner	City Hall 220 E. Mountain View St., Suite A	Barstow	CA	92311
City of Victorville	Bill	Webb, AICP	Development Director	14343 Civic Drive	Victorville	CA	92393-5001
State and Federal Agencies							
California Air Resources Board	Richard	Corey	Division Chief, Stationary Sources	1001 I Street PO Box 2815	Sacramento	CA	95812
California Department of Fish and Game, Region 6	John	McCamman	Director	1416 Ninth St., 12th Floor	Sacramento	CA	95814
California Department of Food and Agriculture	Gregory	Aghazarian	Legislation and Policy	1220 N Street	Sacramento	CA	95814
California Department of Health Care Services	Toby	Douglas	Director	1501 Capitol Ave.	Sacramento	CA	94234-7320
California Department of Transportation	Cindy	McKim	Director	P.O. Box 942873	Sacramento	CA	92473-0001

MAILING LIST: (Continued)
AGENCIES, ORGANIZATIONS AND INDIVIDUALS SENT A COPY OF DRAFT IS/MND

Agency/Organization	First Name	Last Name	Title	Street	City	State	Zip Code
Lead Agency/Applicant							
California Department of Transportation, District 8	Dr. Raymond W.	Wolfe	Director	464 W. 4th Street	San Bernardino	CA	92401
California Department of Transportation, Division of Aeronautics, MS#40	Gary	Cathey	Chief	P.O. Box 942874	Sacramento	CA	94274-0001
California Department of Water Resources	Cathey	Crothers	Chief Council	1416 9th Street	Sacramento	CA	95814
California Energy Commission	Melissa	Jones	Executive Director	1516 Ninth Street	Sacramento	CA	95814-5512
California Regional Water Quality Control Board, Lahontan Region 6, Victorville Office	Harold	Singer	Executive Officer	14440 Civic Drive, Suite 200	Victorville	CA	92392
California Resources Agency	John	Laird	Secretary	1416 Ninth St, Suite 1311	Sacramento	CA	95814
California State Water Resources Control Board	Tom	Howard	Executive Director	1001 "I" Street	Sacramento	CA	95814
Mojave Desert Air Quality Management District	Eldon	Heaston	Executive Director	14306 Park Ave.	Victorville	CA	92392
Native American Heritage Commission	Katy	Sanchez		915 Capitol Mall, Room 364	San Francisco	CA	95814
Office of Historic Preservation	Ron	Parsons		1725 23rd Street, Suite 100	San Francisco	CA	95816
U.S. Department of Energy, Loan Guarantee Program Office	Daniel C.	Tobin	Program Manager		Washington	DC	20585
U.S. Fish and Wildlife Service	Diane	Elam		2800 Cottage Way, Suite W2606	San Francisco	CA	95825
U.S. Department of Interior Bureau of Land Management, Barstow Field Office	Roxie	Trost	Field Manager	2601 Barstow Road	Barstow	CA	92311
Local Libraries Serving As Repositories							
Adelanto Branch Library			Branch Manager	11497 Bartlett Avenue	Adelanto	CA	92301
Barstow Branch Library	Debbie	Medina	Branch Manager	304 East Buena Vista	Barstow	CA	92311

MASTER MAILING LIST:
HOMEOWNERS SENT NOTICE OF INTENT TO ADOPT (NOI) IS/MND

APN(S)	House #	Street	City	State	Zip Code
49014215	10050	Toluca Lake Avenue	North Hollywood	CA	91602
49016112, 49016113	11500	W. 13th Avenue	Lakewood	CO	80215
49602218	*Not Available*	*Not Available*	*Not Available*	*Not Available*	*Not Available*
49602223		PO Box 51111	Los Angeles	CA	90051