Volume I: Executive Summary
and Chapters 1 through 3

United States Department of the Interior
Bureau of Land Management

Desert Sunlight Solar Farm Project
California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement

For the
Palm Springs – South Coast Field Office
Palm Springs, California

April 2011
CACA #48649

NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

BLM

DOI Control No. FES 10-39

United States Department of the Interior
Bureau of Land Management

Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement

For the

Palm Springs – South Coast Field Office
Palm Springs, California

April 2011

John R Kalish
John R. Kalish
Field Manager

April 4, 2011
Date

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In reply refer to:
1610-670.36
2800/ CACA 048649

April 15, 2011

Dear Reader:

Enclosed is the Proposed Resource Management Plan-Amendment/Final Environmental Impact Statement (PA/FEIS) for the California Desert Conservation Area (CDCA) Plan and Desert Sunlight Solar Farm (DSSF) Project. The Bureau of Land Management (BLM) prepared the PA/FEIS in consultation with cooperating agencies, taking into account public comments received during the National Environmental Policy Act (NEPA) process. The proposed decision on the plan amendment would add the DSSF site to those identified in the current CDCA Plan, as amended, for solar energy production. The proposed decision on the PA is whether to add the DSSF site to those identified in the CDCA Plan, as amended, for solar energy production. The proposed decision on the DSSF is whether to approve the issuance of the right-of-way grant applied for by Desert Sunlight Holdings, LLC.

This PA/FEIS for the DSSF has been developed in accordance with NEPA and the Federal Land Policy and Management Act of 1976. The PA is largely based on the preferred alternative in the Draft Resource Management Plan-Amendment/Draft Environmental Impact Statement (DRMP-A/DEIS), which was released on August 27, 2010. The PA/FEIS for the DSSF contains the proposed plan and project decisions, a summary of changes made between the DRMP-A/DEIS and PRMP-A/FEIS, an analysis of the impacts of the decisions, a summary of written comments received during the public review period for the DRMP-A/DEIS and responses to comments.

Pursuant to BLM's planning regulations at 43 Code of Federal Regulations (CFR) 1610.5-2, any person who participated in the planning process for the PA and has an interest that is or may be adversely affected by that planning decision may protest approval of that planning decision within 30 days from the date the Environmental Protection Agency (EPA) publishes its notice of availability for the PA/FEIS in the *Federal Register*. For further information on filing a protest, please see the accompanying protest regulations in the pages that follow (Attachment 1). The regulations specify the required elements in a protest. Protesting parties should take care to document all relevant facts and, as much as possible, reference or cite the planning documents or available planning records (e.g., meeting minutes or summaries, correspondence, etc.). To aid in ensuring the completeness of the protest, a protest checklist is attached to this letter (labeled as Attachment 2).

All protests must be in writing and mailed to one of the following addresses:

Regular Mail:
Director (210)
Attention: Brenda Hudgens-Williams
BLM Protest Coordinator

Overnight Mail or Other Delivery:
Director (210)
Attention: Brenda Hudgens-Williams
BLM Protest Coordinator

P.O. Box 66538
Washington, D.C. 20035

1620 L Street, N.W., Suite 1075
Washington, D.C. 20036

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Emailed and faxed protests will not be accepted as valid protests unless the protesting party also provides the original letter by either regular or overnight mail postmarked by the close of the protest period. Under these conditions, the BLM will consider the emailed or faxed protest as an advance copy and will afford it full consideration. If you wish to provide the BLM with such advance notification, please direct faxed protests to the attention of Brenda Hudgens-Williams - BLM Protest Expeditor at 202-912-7129, and emailed protests to Brenda_Hudgens-Williams@blm.gov.

The BLM Director will make every attempt to promptly render a decision on each valid protest. The decision will be in writing and will be sent to the protesting party by certified mail, return receipt requested. The decision of the BLM Director shall be the final decision of the Department of the Interior. Responses to protest issues will be compiled in a Director's Protest Resolution Report that will be made available to the public following issuance of the decisions.

Upon resolution of all protests, the BLM may issue a Record of Decision (ROD) adopting the Approved PA and making a decision regarding issuance of the right-of-way grant for the DSSF. Copies of the ROD will be mailed or made available electronically to all who participated in this NEPA process and will be available to all parties through the "Planning" page of the BLM national website (*http://www.blm.gov/planning*), or by mail upon request.

Unlike the PA decision, issuance of the proposed right-of-way grant decision is an implementation decision that is not subject to protest under the BLM planning regulations. Rather, once the BLM resolves the protests to the land use plan decision and issues the ROD, the right-of-way decision(s) may be appealed to the Interior Board of Land Appeals pursuant to 43 CFR Part 4, Subpart E, or challenged in federal district court.

Sincerely,

John R. Kalish

John R. Kalish
Field Manager

Attachment 1

Protest Regulations

[CITE: 43CFR1610.5-2]

TITLE 43--PUBLIC LANDS: INTERIOR
CHAPTER II--BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR
PART 1600--PLANNING, PROGRAMMING, BUDGETING--Table of Contents
Subpart 1610--Resource Management Planning
Sec. 1610.5-2 Protest procedures.

(a) Any person who participated in the planning process and has an interest which is or may be adversely affected by the approval or amendment of a resource management plan may protest such approval or amendment. A protest may raise only those issues which were submitted for the record during the planning process.

(1) The protest shall be in writing and shall be filed with the Director. The protest shall be filed within 30 days of the date the Environmental Protection Agency published the notice of receipt of the final environmental impact statement containing the plan or amendment in the Federal Register. For an amendment not requiring the preparation of an environmental impact statement, the protest shall be filed within 30 days of the publication of the notice of its effective date.

(2) The protest shall contain:

(i) The name, mailing address, telephone number and interest of the person filing the protest;
(ii) A statement of the issue or issues being protested;
(iii)A statement of the part or parts of the plan or amendment being protested;
(iv) A copy of all documents addressing the issue or issues that were submitted during the planning process by the protesting party or an indication of the date the issue or issues were discussed for the record; and
(v) A concise statement explaining why the State Director's decision is believed to be wrong.

(3) The Director shall promptly render a decision on the protest.

(b) The decision shall be in writing and shall set forth the reasons for the decision. The decision shall be sent to the protesting party by certified mail, return receipt requested. The decision of the Director shall be the final decision of the Department of the Interior.

Attachment 2

Resource Management Plan Protest
Critical Item Checklist

The following items *must* be included to constitute a valid protest whether using this optional format, or a narrative letter.

(43 CFR 1610.5-2)

BLM's practice is to make comments, including names and home addresses of respondents, available for public review. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment--including your personal identifying information--may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations and businesses, will be available for public inspection in their entirety.

Resource Management Plan (RMP) or Amendment (RMPA) being protested:

Name:

Address:

Phone Number: ( )

Your interest in filing this protest (how will you be adversely affected by the approval or amendment of this plan?):

Issue or issues being protested:

Statement of the part or parts of the plan being protested:

Attach copies of all documents addressing the issue(s) that were submitted during the planning process by the protesting party, <u>OR an indication of the date the issue(s) were discussed for the record</u>.

Date(s):

A concise statement explaining why the State Director's decision is believed to be wrong:

Palm Springs South Coast Field Office
Desert Sunlight Solar Farm Project California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement

Lead Agency: Bureau of Land Management (BLM)
Palm Springs / South Coast Field Office (PSSCFO)
Palm Springs, California

For further information, contact:
Allison Shaffer, Project Manager PSSCFO -
1201 Bird Center Drive, Palm Springs, CA 92262

Abstract

This Plan Amendment/Final Environmental Impact Statement (PA/FEIS) addresses the possible United States Bureau of Land Management (BLM) approval of an amendment to the *California Desert Conservation Area Plan* (CDCA Plan) to allow for solar energy and of a right-of-way (ROW) grant to lease land managed by the BLM for construction, operation and decommissioning of a solar photovoltaic energy generation facility. The Agency Preferred Alternative covers approximately 4,176 acres (ac), managed by the BLM, and would generate 550 megawatts (MW) of electricity annually. The PA/FEIS identifies impacts of the Agency Preferred Alternative, including impacts related to biological resources, cultural resources, land use, visual resources, hydrology, water quality, and water use. Many of these adverse impacts can be avoided or substantially reduced based on compliance with applicable laws, ordinances, regulations and standards, and compliance with measures provided in this PA/FEIS.

Chapter 2.0 discusses the Desert Sunlight Solar Farm Project (DSSF) (550 MW on approximately 4,176 ac), a reconfigured 550 MW Alternative (550 MW on approximately 4,110 ac), a reduced footprint 550 MW Alternative (550 MW on approximately 3,303 ac), the No Action Alternative (No ROW Grant and No CDCA Plan Amendment), the No Project Alternative (No ROW Grant and Amend the CDCA Plan for No Solar), and the No Project Alternative (No ROW Grant and Amend the CDCA Plan for Other Solar). Chapter 3.0 describes the existing conditions on and in the vicinity of the project site. Chapter 4.0 describes the potential adverse environmental impacts expected under each of the Alternatives, including the Agency Preferred Alternative.

The Field Manager of the PSSCFO has the authority for site management of future activities related to the ROW grant and is the BLM Authorized Officer for this FEIS.

TABLE OF CONTENTS

Section Page

TABLE OF CONTENTS *(continued)*

Section | Page

TABLE OF CONTENTS *(continued)*

Section Page

TABLE OF CONTENTS *(continued)*

Section | Page

TABLE OF CONTENTS *(continued)*

Section Page

Section Page

LIST OF FIGURES

Figure Page

LIST OF FIGURES

Figure | Page

LIST OF TABLES

Table Page

LIST OF TABLES *(continued)*

Table | Page

LIST OF TABLES *(continued)*

Table Page

LIST OF TABLES *(continued)*

Table | Page

LIST OF TABLES *(continued)*

Table | Page

LIST OF TABLES *(continued)*

Table Page

LIST OF TABLES *(continued)*

Table Page

APPENDICES

Appendix

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

<u>This Final Environmental Impact Statement (EIS) incorporates revisions since the Draft EIS was published as a result of input from community members, regulatory agencies and other stakeholders, and minor changes in the Project design by the Applicant. These revisions are shown as italicized and underlined text in this Final EIS. The Bureau of Land Management (BLM) has concluded that these revisions would not significantly increase, and in some situations would decrease, Project impacts as compared with the impacts described in the Draft EIS.</u>

The Applicant, Desert Sunlight Holdings, LLC (Sunlight), proposes to construct and operate a 550-megawatt (MW) solar photovoltaic (PV) energy-generating project known as the Desert Sunlight Solar Farm (DSSF). The PV generating facility (Solar Farm), most of the corridor for the Project's 220-kilovolt (kV) generation interconnection line (Gen-Tie Line), and one of two potential sites being considered for a new substation would be located on lands administered by the US Department of Interior (DOI), BLM, Palm Springs-South Coast Field Office. The Project includes development of a new 500- to 220- (500/220-) kV substation (referred to herein as the Red Bluff Substation), where the PV generating facility would interconnect with the Southern California Edison (SCE) regional transmission system. While the Red Bluff Substation is included as part of the Project for planning and environmental considerations, it would be constructed, owned, and operated by SCE, not the Applicant.

Because the Project would be located primarily on lands administered by the BLM, the Applicant filed a right-of-way (ROW) grant application with the BLM for a permit to construct and operate the Project (Case File Number CACA #48649). The decision regarding the issuance of the ROW grant will be based in part on an evaluation of the Project's potential environmental effects through the environmental review process under the National Environmental Policy Act of 1969 (NEPA) and the requirements of the Federal Land Policy and Management Act of 1976 (FLPMA).

In compliance with NEPA, the BLM prepared this Final EIS to inform the public about the proposed Project and to meet the needs of federal, state, and local permitting agencies in considering the Project. BLM authorization of a ROW grant for the Project would require a resource management land use plan amendment (PA) to the California Desert Conservation Area (CDCA) Plan (BLM 1980), as amended.

The California Public Utilities Commission (CPUC) has discretionary authority to issue a Permit to Construct (PTC) for SCE's proposed Red Bluff Substation, evaluated herein as a portion of the Project. *<u>Because portions of the Project's alternative Gen-Tie Line routes would cross unincorporated privately owned land, Metropolitan Water District (MWD) owned land, and/or County of Riverside, California (Riverside County) owned land within the jurisdiction of Riverside County, the County has the authority to issue a Public Use Permit for the Project. Additionally, Riverside County has the authority to issue an Encroachment Permit for access to the County road ROW.</u>* As allowed by the California Environmental Quality Act (CEQA) Guidelines Section 15221, the *<u>CPUC and Riverside County</u>* intend to use this EIS to provide the environmental review required for *<u>their respective approvals of the relevant portions of the Project.</u>*

ES.2 PURPOSE AND NEED

Sunlight applied to the BLM for a ROW grant on federal public land to develop the Solar Farm, the Gen-Tie Line route, and the Red Bluff Substation. Sunlight also applied to the Department of Energy (DOE) for a loan guarantee under Title XVII of the Energy Policy Act of 2005 (EPAct 05), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009, PL 111-5 (the Recovery Act). This section discusses the BLM's and DOE's purpose and need for the Proposed Action, as required by NEPA, Sunlight's objectives in proposing the Proposed Action, and CEQA project objectives for the Red Bluff Substation.

BLM Purpose and Need

The BLM's purpose and need for the Proposed Action is to respond to Sunlight's application under Title V of the FLPMA (43 USC 1761) for a ROW grant to construct, operate, maintain, and decommission a utility-scale 550-MW PV solar energy facility (Solar Farm), Gen-Tie Line, and a 500/220-kV substation on public lands, in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws. The BLM will decide whether to approve, approve with modifications, or deny issuance of a ROW grant to Sunlight for the proposed DSSF Project and the related assignment of any ROW grant for the substation to SCE. Concurrently, the BLM also will consider amending the CDCA Plan of 1980, as amended. The CDCA, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission not identified in that plan be considered through the land use plan amendment process. If it decides to approve the issuance of a ROW grant, the BLM also will amend the CDCA as required.

In conjunction with FLPMA, the BLM's applicable authorities include the following:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner.
- *Section 211* of the Energy Policy Act of 2005 (EPAct 2005), which *states that "the Secretary of the Interior should …seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."*
- Secretarial Order 3285A1, Renewable Energy Development by the DOI, dated February 22, 2010. This Secretarial Order establishes the development of renewable energy as a priority for the DOI and creates a Departmental Task Force on Energy and Climate Change. It also announced a policy goal of identifying and prioritizing specific locations (study areas) best suited for large-scale production of solar energy.

DOE Purpose and Need

DOE is a cooperating agency on this EIS, in accordance with a memorandum of understanding between the DOE and BLM, signed in January 2010. DOE's purpose and need for agency action is to comply with its mandate under EPAct 2005 by selecting eligible projects that meet the goals of the act. DOE's proposed action is to issue a loan guarantee for this Project under Title XVII of the EPAct 2005, as amended by the Recovery Act, which requires that construction for the Project commence by September 30, 2011.

DOE's purpose and need for the agency action is based on federal laws addressing the financing and promotion of renewable energy projects and need for immediate economic stimulus. The EPAct 2005 established a federal loan guarantee program within DOE for eligible energy projects. Title XVII of EPAct 2005 authorizes the Secretary of Energy to make loan guarantees for a variety of types of projects, including those that ''avoid, reduce, or sequester air pollutants or anthropogenic [human-caused] emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the US at the time the guarantee is issued." The two principal goals of the loan guarantee program are to encourage commercial use in the US of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. EPAct 2005 was amended by the Recovery Act to create Section 1705, authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects that begin construction before September 30, 2011. The primary purposes of the Recovery Act are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and state and local fiscal stabilization. The Section 1705 Program is designed to address the current economic conditions of the nation, in part, through renewable energy, transmission and leading edge biofuels projects.

Applicant's Objectives for the Proposed Action

Sunlight's fundamental objectives for the DSSF Project are as follows:

- Construct, operate, and eventually decommission a 550-MW PV energy facility and associated interconnection infrastructure; and
- Facilitate SCE's construction and operation of a substation in order to provide renewable electric power to California's transmission grid. This is to help meet federal and state renewable energy supply and greenhouse gas (GHG) emissions reduction requirements.

Sunlight is committed to constructing and operating the Project in an environmentally responsible manner and to providing a sustainable source of renewable energy to the state's investor-owned utilities and the public.

CEQA Project Objectives

SCE proposes to construct the Red Bluff Substation in response to interconnection requests from Desert Sunlight Holdings LLC as part of the Large Generator Interconnection Process (LGIP). CEQA Guidelines, Section 15124(b), requires a statement of project objectives, which are as follows for the Red Bluff Substation:

- Respond to interconnection requests as part of the LGIP from generators in the Desert Center area by constructing a substation to interconnect with the Devers Palo Verde (DPV) 500-kV transmission line;
- Provide safe and reliable electrical service consistent with the North American Electric Reliability Corporation, Federal Energy Regulatory Commission, California Independent System Operator, and SCE's planning design guidelines and criteria;
- Meet project need, while minimizing environmental impacts; and
- Meet project need in accordance with the Large Generation Interconnection Agreement.

ES.3 PROPOSED ACTION AND ALTERNATIVES

The Project area is a largely vacant, undeveloped, and relatively flat area in the Chuckwalla Valley of the Sonoran Desert in eastern Riverside County. The area proposed for the DSSF is approximately six miles north of Interstate 10 (I-10) and the rural community of Desert Center and four miles north of Lake Tamarisk, between the cities of Coachella to the west and Blythe to the east. The Project area contains transmission lines, telephone lines, pipelines, and dirt roads. Joshua Tree National Park is north, east, and west of the area; at its closest point, the DSSF site is approximately 1.4 miles southwest of the national park boundary. The inactive Eagle Mountain Mine is approximately one mile west of the Project Study Area. The areas being considered for the Red Bluff Substation are seven to eight miles southeast or southwest (depending on the site) of the DSSF site, just south of I-10.

Alternatives considered in the EIS were evaluated as a result of the Applicant working with the BLM on evaluating and selecting Project locations, issues identified by the BLM, and comments received during the public scoping process. The BLM is required to consider in detail a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), that are technologically and economically feasible, and that respond to the purpose of and need for the Proposed Action. Similarly, CEQA requires a "reasonable range" of alternatives that are feasible and that satisfy most of the Project sponsor's objectives. For this EIS, the alternatives provided satisfy requirements under both NEPA and CEQA.

Three full action alternatives (Alternatives 1, 2, and 3), one No Action Alternative (Alternative 4), and two No Project Alternatives (Alternatives 5 and 6) are fully analyzed in the EIS. Each of the action alternatives would require an amendment to the CDCA Plan, as would the two No Project Alternatives.

Each action alternative consists of three main components associated with generating and delivering electricity:

- DSSF Site (the main PV generating facility);
- 220-kV Gen-Tie (interconnection) Line; and
- 500/220-kV Substation (Red Bluff Substation) and supporting facilities, including a separate telecommunications site (the Desert Center Telecommunications Site) and an electric distribution line to the substation.

In addition, the determination of the suitability of the Project application area for solar development would be made as part of the plan amendment process.

Multiple alternatives were considered for each component. For the DSSF, two alternative layouts were analyzed: Solar Farm Layout B and Solar Farm Layout C. For the Gen-Tie Line, three alternative routes were analyzed: two that exit the DSSF and go to Substation A (identified as GT-A-1 and GT-A-2) and one that exits the DSSF and goes to Substation B (identified as GT-B-2). For the Red Bluff Substation, two alternative locations were analyzed: Substation A (to the east) and Substation B (to the west). In addition, there are two access road alternatives considered for Substation A only.

Alternatives Considered in Detail

The following alternatives are described in detail in Section 2.2.4 and are fully analyzed in the EIS. Table ES-1 provides a comparison summary of the permanent footprint for the three action alternatives.

Table ES-1
Comparison Summary of Permanent Ground Disturbance[1] for Action Alternatives 1, 2, and 3 (in Acres)

Project Component/Element	Alternative 1: Proposed Action	Alternative 2: Alternate Action	Alternative 3: Reduced Solar Farm Footprint Alternative
Project Power Output	**550 MW**	**550 MW**	**314 MW**
Solar Farm Layout B (2)	<u>*3,912*</u>	<u>*3,912*</u>	-
Solar Farm Layout C (2)	-	-	3,045
Gen-Tie Line A-1 (3a)	<u>*92*</u>	-	-
Gen-Tie Line A-2 (3b)	-	-	<u>*86*</u>
Gen-Tie Line B-2 (3c)	-	<u>*68*</u>	-
Red Bluff Substation A	<u>*76*</u>	-	<u>*76*</u>
Red Bluff Substation-related features	-	-	-
- Drainage/Sideslopes	<u>*14*</u>	-	<u>*14*</u>
- Access Road (4a)	<u>*31*</u>	-	<u>*31*</u>
- Transmission System (5)	<u>*33*</u>	-	<u>*33*</u>
- Distribution Line	8	-	8
- <u>*Material Yard/Staging Area*</u>	<u>*9*</u>	-	<u>*9*</u>
- Telecom Site (6)	<1	-	<1
Red Bluff Substation B	-	<u>*76*</u>	-
Red Bluff Substation-related features	-	-	-
- Drainage/Sideslopes	-	<u>*20*</u>	-
- Access Road (4b)	-	1	-
- Transmission System (5)	-	<u>*22*</u>	-
- Distribution Line	-	<1	-
- <u>*Material Yard/Staging Area*</u>		<u>*10*</u>	
- Telecom Site (6)	-	<1	-
TOTAL ACREAGE	<u>***4,176***</u>	<u>***4,110***</u>	<u>***3,303***</u>

Notes: (1) All ground disturbing impacts previously identified in the Draft EIS as temporary impacts are now considered permanent impacts, per CDFG guidance, due to the long time period for natural revegetation to occur in the desert.

(2) Includes area for all DSSF-related facilities.

<u>*(3a) Permanent disturbance of 92 acres occurs within the ROW corridor totaling 256 acres (12.1 miles long by 160 feet wide with additional fan-shaped areas at corners for stringing).*</u>

<u>*(3b) Permanent disturbance of 68 acres occurs within a corridor totaling 203 acres (10 miles long by 160 feet wide plus additional fan-shaped areas at corners for stringing).*</u>

<u>*(3c) Permanent disturbance of 86 acres occurs within a corridor totaling 226 acres (10.5 miles long by 160 feet wide plus additional fan-shaped areas at corners for stringing).*</u>

(4a) Assume 24,000-foot by 30-foot-wide road from Kaiser Road for Alternative 1 and 24,000 by 30-foot-wide road from Chuckwalla Valley Road/Corn Springs Road for Alternative 2, although acreage amount allows for additional disturbance for adequate engineering and unknown site constraints.

(4b) Assume 2,000-foot by 18-foot-wide road from Eagle Mountain Road.

(5) Includes transmission system associated with connecting Red Bluff Substation to Gen-Tie Line and DPV1.

(6) New Desert Center Communications Site.

Alternative 1—Proposed Action Alternative with Land Use Plan Amendment

With the Proposed Action Alternative, the following configurations of the three Project components are proposed, resulting in approximately *4,176* acres of permanent disturbance:

- Solar Farm Layout B (SF-B);
- Gen-Tie Line A-1 (GT-A-1); and
- Red Bluff Substation A, with Access Road 2.

Solar Farm Layout B is six miles north of the Desert Center and four miles north of Lake Tamarisk, northeast of and next to Kaiser Road, and southwest of Pinto Wash. SF-B encompasses approximately *3,912* acres entirely on BLM-administered land. Access would be provided by Kaiser Road. Once fully operational, it would produce 550 MW of power.

GT-A-1 exits the southwest of the DSSF, runs south along the west side of Kaiser Road, turns east just north of Desert Center, and then runs south across I-10 to the eastern location being considered for the Red Bluff Substation (Red Bluff Substation A). The 160-foot-wide Gen-Tie corridor and additional fan-shaped areas at corners used for wire stringing for GT-A-1 would encompass approximately 256 acres, although permanent disturbance within this corridor would be *92* acres. The total length of GT-A-1 is approximately 12.1 miles. Of the 12-mile ROW, approximately 11.4 miles would be on BLM land and approximately 0.6 mile would be on land owned in fee by the Metropolitan Water District of Southern California. For the Gen-Tie Line, the Applicant proposes to use steel monopoles, which are expected to be approximately 135 feet tall. Typical spacing between structures would be approximately 900 to 1,100 feet.

Red Bluff Substation A would be on approximately 76 acres of BLM-administered land, approximately four miles southeast of California State Route 177, just south of I-10. The substation would be constructed within the central portion of the parcel. Other substation-related Project elements would require an additional *96* acres. These elements include drainage features, access road, electrical distribution line, transmission system loop-in, *material yard/staging area*, and a telecommunications site.

Alternative 2—Alternate Action Alternative with Land Use Plan Amendment

With the Alternate Action Alternative, the following configurations of the three Project components are proposed, resulting in approximately *4,110* acres of permanent disturbance:

- Solar Farm Layout B (SF-B);
- Gen-Tie Line B-2 (GT-B-2); and
- Red Bluff Substation B.

Solar Farm B is as described for Alternative 1.

GT-B-2 would exit the southwest corner of the Solar Farm site, would run south along the west side of Kaiser Road, then would turn southwest, approximately 1.2 miles north of Desert Center. Then it would travel across Eagle Mountain Road, finally turning south across I-10 to the western location that is being considered for the Red Bluff Substation (Red Bluff Substation B). The 160-foot-wide Gen-Tie corridor and additional fan-shaped areas at corners used for wire stringing would encompass approximately 203 acres, although permanent disturbance within this corridor would be *68* acres. The total length of GT-B-2 would be approximately 10 miles. Of the 10-mile ROW, approximately 9.4 miles would be on BLM land and approximately 0.6 mile would be on land owned in fee by the Metropolitan Water District of Southern California. The poles used for the Gen-Tie Line would be the same as those described for Alternative 1.

Red Bluff Substation B would be within a 160-acre parcel of private land south of I-10 at Eagle Mountain Road. This substation is expected to require approximately *76* acres and would be generally located in the center of the parcel. Other substation-related Project elements would require an additional *54* acres. Because this substation site is on a parcel of privately owned land, it would be need to be acquired and subsequently owned by SCE.

Alternative 3—Reduced Solar Farm Footprint Alternative with Land Use Plan Amendment

With the Reduced Solar Farm Footprint Alternative, the following configurations of the three Project components are proposed, resulting in approximately *3,303* acres of permanent disturbance:

- Solar Farm Layout C (SF-C);
- Gen-Tie Line A-2 (GT-A-2); and
- Red Bluff Substation A, with Access Road 2.

SF-C would be in the same general location as SF-B but would be smaller to reduce overall environmental impacts, particularly on the desert tortoise. The acreage required for this layout would be 3,045 acres, and the power output would be 413 MW. The construction schedule would be 26 months, the same as for SF-B.

GT-A-2 would exit the southwest corner of the DSSF would run for approximately 4,400 feet along the east side of Kaiser Road, until it intersects with the ROW of an existing SCE transmission line. Then it would run to the southeast, along the existing transmission ROW, for approximately 7.2 miles then would turn south for approximately 0.6 mile. Then it would continue due west for approximately 0.5 mile, finally turning south cross I-10 and would continue approximately 1,000 feet (not along any existing feature) to Red Bluff Substation A. The GT-A-2 160-foot-wide Gen-Tie corridor and additional fan-shaped areas at corners used for wire stringing would encompass approximately 226 acres, although permanent disturbance within this corridor would be *86* acres. The total length of GT-A-2 is approximately 10.5 miles. Of the 10.5-mile ROW, 6.5 miles would be on BLM land and 4.0 miles would be on private land. For the portions on private land, 21 separate parcels would be crossed.

Red Bluff Substation A is as described for Alternative 1.

Alternative 4 – No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

With this No Action Alternative, the Project would not be approved (all components of the Project would be denied), no ROW grant would be issued to the Applicant, and no CDCA Plan amendment would be approved that would make the land available for large-scale solar development.

Alternative 5 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

With this No *Project* Alternative, the Project would not be approved (all components of the Project would be denied), no ROW grant would be issued to the Applicant, and the CDCA *P*lan would be amended to identify the Project area as unsuitable for future large-scale solar energy development.

Alternative 6 – No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this No *Project* Alternative, the Project would not be approved (all components of the Project would be denied), no ROW grant would be issued to the Applicant, and the CDCA *P*lan would be amended to identify the Project area as suitable for future large-scale solar energy development.

Features Common to all Action Alternatives

Features common to all action alternatives, regardless of the particular layout or route selected, are summarized below.

The DSSF, where the power would be generated, would encompass up to *3,912* acres, consisting of the following components:

- Main generation area, which includes PV arrays, combining switchgear, overhead lines, and access corridors;
- Operations and Maintenance (O&M) Facility;
- Solar Energy Visitors Center;
- On-site substation (where the voltage of the DSSF-generated electricity would be stepped up to 220 kV, which is the voltage of the Gen-Tie Line); and
- Site security and fencing.

The Gen-Tie Line would transmit the electricity generated at the DSSF to the regional transmission system, through the Red Bluff Substation where the power from the DSSF would feed into the SCE’s existing Devers Palo Verde 1 (DPV1) 500-kV transmission line. The Gen-Tie Line would be up to 12.1 miles long, encompassing up to 256 acres. For the Gen-Tie Line, the Applicant plans to use steel monopoles 135 feet high and approximately 900 to 1,100 feet apart.

The 500/220-kV Red Bluff Substation would be on approximately *76* acres, with up to an additional *96* acres of permanent disturbance needed for related features, access roads, and drainage control. It would interconnect the power from the DSSF (through the Gen-Tie Line) to SCE’s DPV1 transmission line, which passes next to the two substation sites evaluated in this EIS. Substation features are as follows:

- Transmission lines to connect the substation to the DPV1 line;
- Connection of the PV Project’s Gen-Tie Line into the substation;
- Modification of some DPV1 towers near the substation;
- Construction of an electric distribution line for substation light and power;

- Installation of telecommunications facilities associated with the Project and the substation;
- Construction of drainage control features outside (but next to) the substation footprint; and
- Construction of new or improvements to existing access roads.

Project Implementation for Action Alternatives

Project Construction

The construction of the Project would begin once all applicable approvals and permits have been obtained. Project construction is expected to take approximately 26 months from the beginning of the construction process to completion of construction of the DSSF, the Gen-Tie Line, and Red Bluff Substation. The substation would be constructed on a schedule that allows interconnection and partial energization of the DSSF before Project construction is complete.

Operation and Facility Maintenance

The DSSF is designed to have essentially no moving parts, no thermal cycle, and no water use for electricity generation or PV module cleaning. After completion of the construction phase of the Project, the only water used would be for domestic purposes (drinking, washing, flushing toilets) in the on-site facilities, including the O&M Facility and the Visitors Center. This simple Project design would require only limited maintenance throughout its lifetime.

Operation and maintenance of the proposed Project Gen-Tie Line would involve periodic inspection via helicopter or truck. The interconnection lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

The Red Bluff Substation would be unstaffed, and electrical equipment would be remotely monitored. SCE personnel would visit the substation three to four times per month for routine maintenance, which would include equipment testing, monitoring, and repair.

Project Decommissioning

The DSSF has a minimum expected lifetime of 30 years, with an opportunity for a lifetime of 50 years or more with equipment replacement and repowering. When the Project concludes operations, much of the wire, steel, and modules that make up the system would be recycled to the extent feasible. The Project components would be deconstructed and recycled or disposed of safely, and the DSSF site could be converted to other uses, in accordance with applicable land use regulations in effect at the time of closure. Consistent with BLM and NEPA requirements, a detailed Decommissioning and Reclamation Plan would be developed to protect public health and safety and to be environmentally acceptable.

Project Modifications Since Publication of the Draft EIS

Since the Project's Draft EIS was published, the Applicant has made various minor changes in the Project design that are included in this Final EIS. These changes have been made for such reasons as improving efficiency; reducing costs; avoiding and minimizing environmental impacts; and incorporating input from regulatory agencies, community members, and other stakeholders. The BLM has concluded that these revisions to the Project would not significantly increase, and in some situations would decrease, impacts compared with the impacts described in the Draft EIS.

The Project modifications include:

Solar Farm Site and Gen-Tie Line

- *A revised layout of Solar Farm facilities that reduces the footprint for Solar Farm Layout B from approximately 4,245 acres to approximately 3,912 acres while achieving the same 550-MW generating capacity. Figure ES-1 shows the change in the footprint.*
- *A revised construction approach involving the use of innovative site preparation techniques that reduce the required volume of earth movement, including: (1) a "disc and roll" technique that uses farm tractors to till the soil over much of the Solar Farm site and then roll it level, and (2) "micrograding" or "isolated cut and fill and roll" of other areas of the site to trim off high spots and use the material to fill in low spots. These techniques minimize the area of the Solar Farm site where conventional cut and fill grading will occur.*
- *A modified approach to supplying water during construction for dust control and soil preparation throughout the Solar Farm site. The modified approach involves use of several temporary construction ponds for water storage at various locations around the site.*
- *Modification of the Gen-Tie Line poles from a delta to a vertical configuration to provide the opportunity to co-locate transmission lines for possible additional projects in the area.*

Red Bluff Substation

- *An emergency diesel powered generator for a back-up power source.*
- *A well to provide dust control during construction and to serve a septic system for periodic operational visits by employees.*
- *A septic system and restroom for employees during operational activities.*
- *A material yard/staging area adjacent to the substation footprint.*

The Project modifications, noted above, are incorporated into the action alternatives and reflected in the text, tables, and figures in Chapters 2, 3 and 4, unless otherwise indicated.

Alternatives Considered but Eliminated from Further Analysis

Alternatives not carried forward did not meet Project purpose and need or Project objectives, were deemed to be technically disadvantageous, or had greater environmental impacts than the currently proposed Project alternatives. These alternatives were considered but eliminated from further analysis:

- Larger Project within the Project Study Area;
- Direct Desert Tortoise Avoidance Alternative within the Project Study Area;
- Private Land in the Chuckwalla Valley;
- Contaminated Sites Near the Devers-Palo Verde Corridor;
- Alternative BLM Land;
- Alternate Nonrenewable Power Generating Technologies;
- Concentrating Solar Power Technologies;

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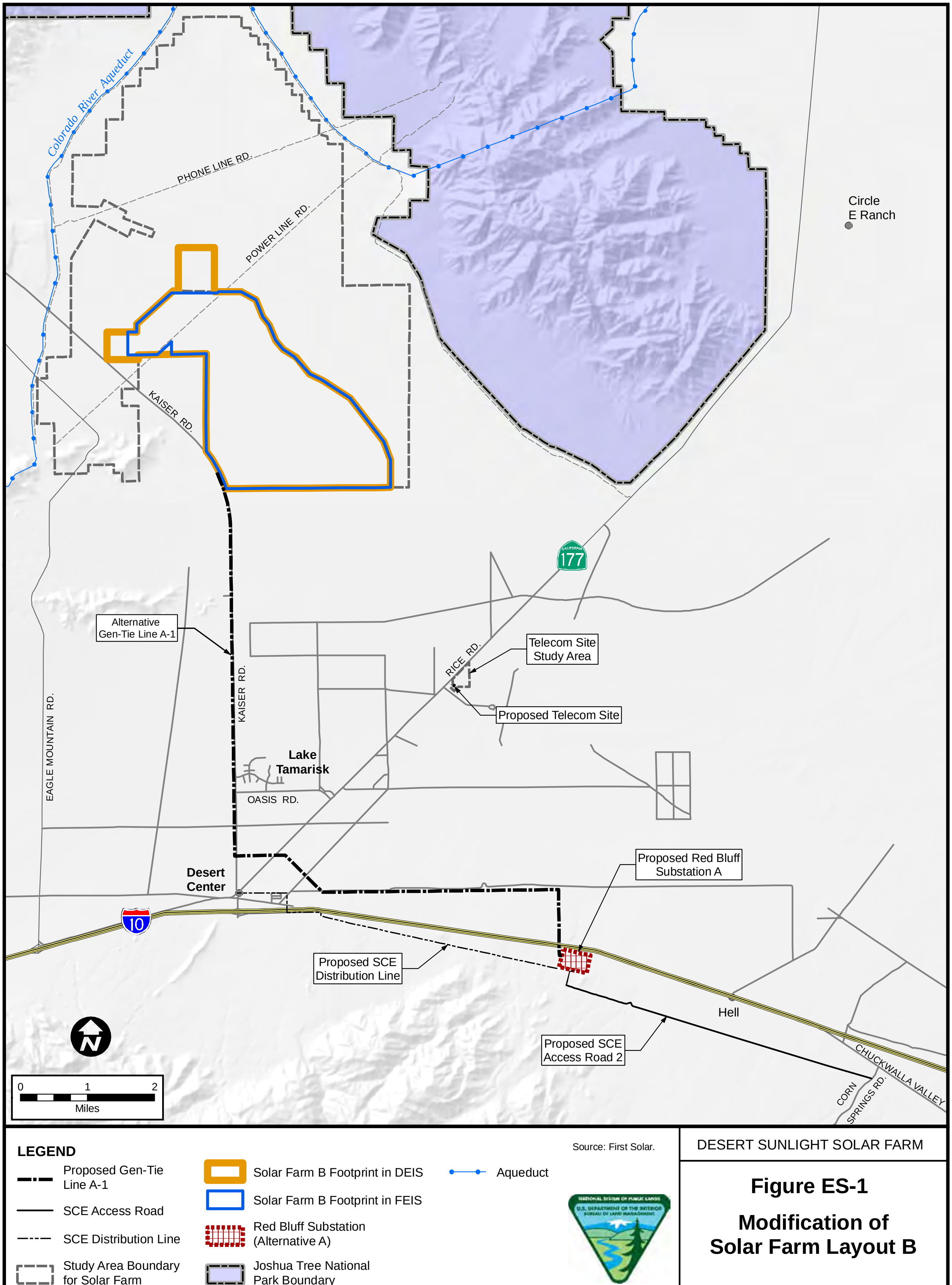

DESERT SUNLIGHT SOLAR FARM

Figure ES-1

Modification of Solar Farm Layout B

- Wind Energy;
- Alternative Transmission and Interconnection Locations;
- Distributed and Rooftop Photovoltaics; *and*
- *Underground installation of Gen-Tie Lines.*

ES.4 PUBLIC AND AGENCY COORDINATION

The BLM, DOE, and California Public Utilities Commission rely on the public to help identify key issues, to suggest a range of alternatives and appropriate mitigation, and to comment on the environmental analysis.

Public Scoping Process and Summary

The BLM published a Notice of Intent (NOI) to prepare an EIS on January 13, 2010, in the *Federal Register*, Volume 75, Number 8. Publication of the NOI began a 30-day comment period that ended February 12, 2010. The BLM established a Web site, with Project information describing the various methods for providing public comment on the Project and including an e-mail address where comments could be sent electronically. (Refer to Section 5.3.2 for the Web site and e-mail addresses.)

Notification for a public scoping meeting, held on January 28, 2010, was posted on the BLM's Web site and was e-mailed to the local newspaper, *The Desert Sun*, on January 13, 2010. In addition, notices were sent by certified mail to responsible and trustee agencies under CEQA, to all landowners within 300 feet of the Project boundary, and to other interested parties.

A public scoping meeting was held on January 28, 2010, at the University of Riverside Palm Desert Graduate Center, 75-080 Frank Sinatra Drive, Palm Desert, California. Sunlight made a presentation describing the Project, and the BLM made presentations describing the environmental review process. Twenty-two people wrote their names on a voluntary sign-in sheet.

Fourteen comment letters were received during the scoping comment period that ended on February 12, 2010. Comments were received on the following categories: purpose and need, alternatives development, air resources (air sheds), water resources (surface and groundwater), biological resources (vegetation and wildlife), cultural resources, visual resources, land use and special designations, public health and safety, noise and vibration, recreation, socioeconomics, environmental justice, and cumulative impacts. Comments received during scoping are addressed in the analysis of impacts in this EIS.

Public Outreach Activities

First Solar has engaged in additional public outreach for the Desert Sunlight Project in order to further promote public participation in the development plans for the Project. These activities include meetings held with individuals and groups commenting on the Project, additional workshops held in the local community providing direct access for the community to ask questions and comment on the Project, and discussions with local, state, and federal government officials and meetings with individual groups. Based on these discussions, First Solar conducted additional environmental studies to help further assess potential environmental effects of the Project, considered additional alternatives to provide a greater range of reasonable alternatives for the

Project, and adjusted the Project alternative boundaries to lessen the potential environmental impacts of the Project. Information collected or developed as a result of these meetings was provided to the BLM and has been incorporated into this document.

Agency Coordination

Federal, state, and local permits and approvals would be required before construction and operation of the Project, or any action alternative, could proceed. A list of the major permits, approvals, and consultations required is presented in the EIS. The Applicants (Sunlight and SCE) would be responsible for obtaining all permits and approvals required to implement any authorized activities.

Federal agencies requiring permits for one or more Project components are the following:

- BLM;
- DOE; and
- US Fish and Wildlife Service.

State agencies requiring permits for one or more Project components are as follows:

- California Department of Fish and Game;
- Regional Water Quality Control Board;
- California Independent System Operator;
- California Public Utilities Commission;
- California Department of Transportation;
- South Coast Air Quality Management District; and
- Native American Heritage Commission.

Local agencies requiring permits for one or more Project components are as follows:

- Riverside County; and
- Metropolitan Water District of Southern California.

ES.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

The analysis contained in this EIS indicates that the potential environmental effects from implementation of the proposed Project (or one of the other action alternatives) would result in adverse effects, although most can be reduced with mitigation. However, the impacts on air resources, cultural resources, and visual resources cannot be reduced to less than significant and are unavoidable.

Table ES-2 provides a summary of impacts by alternative; Table ES-3 provides a summary of all measures identified by Sunlight or SCE, measures required by law, regulation, or policy, and additional measures identified by the BLM.

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Table ES-2
Summary of Project Impacts by Alternative

Resource	Alternative 1 Proposed Action Alternative	Alternative 2 Alternate Action Alternative	Alternative 3 Reduced Footprint Alternative	Alternative 4 No Action (No ROW Grant, No PA)	Alternative 5 No Action: ROW Grant, PA to Exclude Solar	Alternative 6 No Action: No ROW Grant, PA to Allow Solar
3.2/4.2 Air Resources						
	Construction: Construction activities and associated vehicle traffic would generate emissions of criteria pollutants and hazardous air pollutants. Daily construction-related emissions for SF-B would exceed SCAQMD regional emissions significance thresholds for reactive organic compounds, nitrogen oxides, carbon monoxide, PM10, and PM2.5.	Similar to Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: Operational emissions would involve vehicle travel by Solar Farm employees or other employees conducting periodic inspections or maintenance activity along the Gen-Tie Line or at the Red Bluff Substation. Emissions would be minor.	Same as Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Emissions would be comparable in type and magnitude, but likely lower than, the construction emissions.	Same as Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.3/4.3 Vegetation						
	Construction: Permanent removal of 4,066 acres of creosote bush scrub, 96 acres of desert dry wash woodland, 6 special status plant species, and 297 acres of jurisdictional resources (includes desert dry wash woodland).	Permanent removal of 4,005 acres of creosote bush scrub, 93 acres of desert dry wash woodland, 5 special status plant species, and 290 acres of jurisdictional resources (includes desert dry wash woodland).	Permanent removal of 3,174 acres of creosote bush scrub, 97 acres of desert dry wash woodland, 6 special status plant species, and 197 acres of jurisdictional resources (includes desert dry wash woodland).	No Impact	No Impact	Similar to Proposed Action
	Operations: Changes in the site's geomorphic conditions and site hydrology could adversely affect hydrology and water quality of desert dry wash woodland and jurisdictional resources located downstream of site. Maintenance of access roads has potential to introduce dust and invasive species into areas immediately adjacent to the site.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Decommissioning activities have potential to introduce dust and invasive species into areas immediately adjacent to the site.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.4/4.4 Wildlife						
	Construction: Construction would result in permanent habitat loss for wildlife, including special status wildlife and breeding and foraging habitat for non-special status species. Construction would also result in the permanent disturbance of 190 acres of the Chuckwalla DWMA and 187 acres of the Chuckwalla desert tortoise CHU. Trash and debris generated by construction activities could attract predators of desert tortoise, common ravens, to the site.	Similar to Proposed Action. Fewer acres of Chuckwalla DWMA (56 acres) and Chuckwalla CHU (139 acres) would be affected.	Similar to Proposed Action. Similiar acres of Chuckwalla DWMA (162 acres) and Chuckwalla CHU (166 acres) would be affected.	No Impact	No Impact	Similar to Proposed Action
	Operations: Permanent occupation of the site by employees could also introduce trash into the area which could attract common ravens. Transmission line towers provide artificial perches and nest sites for raptors and ravens and, therefore, could also attract common raven to the area.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Trash and debris generated by decommissioning activities could attract predators of desert tortoise, common ravens, to the site.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.5/4.5 Climate Change						
	Construction: Construction activities and associated vehicle traffic would generate emissions of GHG pollutants.	Similar to Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: O&M activities for the Project would be small sources of on-going GHG emissions. Only the solar farm facility would have on-site employees. However, the annual GHG emissions generated by O&M activities at Project facilities would be more than off-set by the avoided greenhouse gas emissions that result from solar-based electrical power generation that effectively displaces other sources of power generation.	Same as Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Greenhouse gas emissions from facility decommissioning would be generally similar in nature to those of facility construction, but emission quantities would likely be less than those generated by construction activities.	Same as Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action

Table ES-2 (continued)
Summary of Project Impacts by Alternative

Resource	Alternative 1 Proposed Action Alternative	Alternative 2 Alternate Action Alternative	Alternative 3 Reduced Footprint Alternative	Alternative 4 No Action (No ROW Grant, No PA)	Alternative 5 No Action: ROW Grant, PA to Exclude Solar	Alternative 6 No Action: No ROW Grant, PA to Allow Solar
3.6/4.6 Cultural Resources						
	Construction: Construction would directly impact at least 57 sites within the footprint of alternative components. Twenty of the sites are potentially CRHR-eligible. In addition, construction would directly impact the potential DTC-CAMA Historic District and the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed). Construction would indirectly impact the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) by constructing modern elements that would disturb the historic setting of these resources. Native American consultation is on-going at this time and may find that sacred sites, TCPs, or traditional use areas are present within or near the Alternative 1 construction area. Construction may directly disturb Native American resources, impede access to these areas, or otherwise disrupt traditional practices.	*Construction*: Construction would directly impact 42 sites within the footprint of alternative components. Twenty-one of the sites are potentially CRHR-eligible and assumed to be NRHP-eligible. Thirteen are believed to be associated with the DTC-CAMA Historic District. All Project components would have indirect audible and visual impacts on the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed), North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) by constructing modern elements that would disturb the historic setting of these resources. Native American impacts would be the same as for the Proposed Action.	*Construction*: Construction would directly impact 41 sites within the footprint of alternative components, as well as the potential DTC-CAMA Historic district and the North Chuckwalla Petroglyph District (CA-RIV-1383, NRHP-listed). Fourteen are potentially CRHR-eligible, nine of these are believed to be associated with the DTC, and one is a contributing, NRHP-listed site in the North Chuckwalla Petroglyph District. All Project components would indirectly impact the historic landscapes of the Colorado River Aqueduct (NRHP-eligible), the North Chuckwalla Mountains Quarry District (CA-RIV-1814, NRHP-listed), and prehistoric site CA-RIV-330 (NRHP-eligible) by constructing modern elements that would disturb the historic setting of these resources. Native American impacts would be the same as for the Proposed Action.	No Impact	No Impact	Similar to Proposed Action
	Operations: O&M would primarily have indirect impacts on the historic landscapes of five resources and possibly an unknown number of Native American resources, stemming from new construction within these landscapes that would not be in keeping with the historic nature and setting of the resources. The presence of Project components may exclude Native American access to resources of traditional significance or detract from the viewshed of a sacred site, traditional use area, or TCP.	Similar to Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Decommissioning would restore the historic landscapes of three other NRHP-eligible or –listed cultural resources. Additionally, the viewshed of possible sacred sites, TCPs, and traditional use areas would be restored, as would access by Native Americans to use such areas within the Project area. However, direct impacts on one potential historic district and another NRHP- and CRHR-listed district would remain since construction of Alternative 1 would permanently impact sites that contribute to these districts.	Similar to Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action

Table ES-2 (continued)
Summary of Project Impacts by Alternative

Resource	Alternative 1 Proposed Action Alternative	Alternative 2 Alternate Action Alternative	Alternative 3 Reduced Footprint Alternative	Alternative 4 No Action (No ROW Grant, No PA)	Alternative 5 No Action: ROW Grant, PA to Exclude Solar	Alternative 6 No Action: No ROW Grant, PA to Allow Solar
3.7/4.7 Paleontological Resources						
	Construction: Construction would have low potential for direct impacts on vertebrate fossils and other scientifically valuable paleontological resources.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: Same as for construction.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Same as for construction.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.8/4.8 Geology and Soil Resources						
	Construction: Construction would increase exposure of people and/or property to seismic hazards and increase erosion of soils from wind and water.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: O&M would increase exposure of people and/or property to seismic hazards.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Same as for construction.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.9/4.9 Lands and Realty						
	Construction: Construction would develop 4,165 acres, primarily consisting of generally undeveloped BLM-administered land, including 0.0003 percent of the Chuckwalla DWMA and CHU, and a small amount of MWD and private land, precluding other uses of these lands. Additional acreage would temporarily be disturbed during construction for access roads, staging areas, and similar purposes necessary for construction to take place. All portions of the development that would be on BLM-administered land would be compatible with the CDCA Plan.	Similar to Proposed Action (4,100 acres vs 4,165 acres)	Fewer acres developed than Proposed Action (3,292 acres vs 4,165)	No Impact	No Impact	Similar to Proposed Action
	Operations: O&M would continue use of land for the proposed Project, thereby precluding other potential uses of the area.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Decommissioning would make the land available for other uses.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.10/4.10 Noise and Vibration						
	Construction: Construction activities for all Project components would generate temporary increases in local noise levels. On-site noise levels would diminish rapidly with increasing distance from the active construction operations. Noise levels from on-site construction activity and construction-related traffic would not exceed Riverside County land use compatibility standards at existing residences. Temporary noise impacts to wildlife would be limited to the construction sites and immediately adjacent locations. Ground vibrations from construction equipment would not be perceptible at existing residences near the construction sites.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: Operational noise levels at the Solar Farm would be limited to occasional vehicle use within the site, minor maintenance activities, and low equipment noise from PCS stations and the on-site substation. Daytime and nighttime operational noise levels from the Solar Farm would be comparable to existing background noise levels at the property line. GT-A-1 would have no operational noise levels. Red Bluff Substation A would generate an operational CNEL level of about 60 dBA outside the Substation property line, but there are no noise-sensitive land uses near the Substation site.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Noise and vibration impacts of facility decommissioning would be similar to those of facility construction, but noise and vibration levels would likely be less than those generated by construction activities.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action

Table ES-2 (continued)
Summary of Project Impacts by Alternative

Resource	Alternative 1 Proposed Action Alternative	Alternative 2 Alternate Action Alternative	Alternative 3 Reduced Footprint Alternative	Alternative 4 No Action (No ROW Grant, No PA)	Alternative 5 No Action: ROW Grant, PA to Exclude Solar	Alternative 6 No Action: No ROW Grant, PA to Allow Solar
3.11 / 4.11 Public Health and Safety / Hazardous Materials						
	Construction: Construction would increase the exposure of people and the environment to hazards related to: • Hazardous Materials / Hazardous Waste; • Emergency Evacuation and Emergency Response Plans; • Wildfire; and • Intentionally Destructive Acts. The 185-foot tower at the telecom site (asociated with the Red Bluff Substation) has the potential to increase hazards because of the nearby private airstrip.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: Potential increase in hazards associated with the O&M of the 185-foot telecommunication site tower.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Decommissioning of Red Bluff Substation would decrease hazards associated with the 185-foot microwave tower at the telecom site.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.12 / 4.12 Recreation						
	Construction: Construction of SF-B would close a portion of one OHV route; however, other travel options exist in the area. There are no OHV or travel routes within GT-A-1 and Red Bluff Substation A. Construction of the visitor's center could have beneficial impacts to the area.	Same as Proposed Action	Same as Proposed Action except that there would be no impact to OHV or recreational activities as construction of SF-C would not require that the three OHV routes in the vicinity be closed or rerouted.	No Impact	No Impact	Similar to Proposed Action
	Operations: Similar to construction.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Similar to construction.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.13 / 4.13 Socioeconomic and Environmental Justice						
	Construction: SF-B and the Red Bluff Substation A are situated on BLM land and, as such, the construction of these facilities would not displace either local or regional businesses or residents, nor would it result in a substantial reduction in employment or income in the regional and local economy. They would result in short-term increases in regional employment and income if the construction crew hired to work on the Project were not previously employed. It could indirectly generate increased expenditures, income, and employment in the local economies in which the construction workforce spends its earnings and would generate direct expenditures in the regional economy for equipment, supplies, and services. No impacts that could occur to environmental justice populations would be disproportionate to these populations.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: O&M for the Project would not result in measurable impacts on socioeconomics of the region or local communities. Likewise, no impacts that could result from O&M on environmental justice populations would be disproportionate to these populations. Operations would not displace either businesses or residents, nor would it substantially reduce the employment or income in the regional economy.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: The decommissioning of Project components would result in short-term impacts on the regional economy in Riverside County through an increase in employment required to decommission the DSSF. Once completely removed, potential long-term impacts include a reduction of property tax revenue because the land would no longer be developed and improved, thereby eliminating the requisite property tax.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action

Table ES-2 (continued)
Summary of Project Impacts by Alternative

Resource	Alternative 1 Proposed Action Alternative	Alternative 2 Alternate Action Alternative	Alternative 3 Reduced Footprint Alternative	Alternative 4 No Action (No ROW Grant, No PA)	Alternative 5 No Action: ROW Grant, PA to Exclude Solar	Alternative 6 No Action: No ROW Grant, PA to Allow Solar
3.14 / 4.14 Special Designations						
	Construction: Construction of SF-B and Red Bluff Substation A would cause temporary indirect impacts on the Joshua Tree Wilderness Area and Chuckwalla Mountains Wilderness. Indirect impacts would be associated with fugitive dust, noise, and nighttime lighting. Construction would not cause impacts on cultural resources within Alligator Rock ACEC.	Same as Proposed Action	Similar to Proposed Action, slightly reduced impacts for SF-C	No Impact	No Impact	Similar to Proposed Action
	Operations: O&M of SF-B would cause permanent indirect impacts on users of the Joshua Tree Wilderness Area.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Similar to construction and O&M.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.15 / 4.15 Transportation and Public Access						
	Construction: Delay at intersections would increase slightly; however, the LOS of intersections would remain at "A". Portions of the Project would overlap low-level military flight paths. The Telecom Site would be approximately 5,500 feet from the runway of the former Desert Center Airport. Project-generated traffic would contribute to deterioration of local roads. Road or lane closures, traffic rerouting, and other traffic controls (such as flaggers) would be required for short durations during construction of GT-A-1 for certain activities such as wire stringing across roads.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: Minimal traffic impacts. No impacts for other issues.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Similar to construction.	Same as Proposed Action	Same as Proposed Action	No Impact	No Impact	Similar to Proposed Action
3.16 / 4.16 Visual Resources						
	Construction: Construction would result in the permanent disturbance of approximately 4,165 acres. Impacts from construction activities, equipment, and vehicles would be visible and changes to the characteristic landscape from construction would alter visual resources. For KOPs 1, 2, and 5, the degree of contrast would comply with interim visual management Class II and III objectives. For KOPs 3, 4, and 6, the strong degree of contrast would not comply with interim visual management Class II and III objectives.	Similar to Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Operations: Impacts from O&M would be visible and changes to the characteristic landscape would alter visual resources. For KOPs 1, 2, and 5, the degree of contrast would comply with interim visual management Class II and III objectives. Due to the proximity of KOPs 3, 4, and 6 to Project components, the degree of contrast would not comply with interim visual management Class II and III objectives.	Similar to Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Decommissioning would result in rehabilitating approximately 4,165 acres. Impacts from decommissioning would be visible. Changes to the characteristic landscape from decommissioning would restore the natural visual resources to the landscape. This would not occur until the end of the Project lifespan, which could be greater than 50 years. Due to the slow pace of natural desert ecology, however, it would likely take decades after decommissioning for the landscape to resemble the existing conditions. The level of change to the characteristic landscape would comply with interim visual management Class II and III objectives. Decommissioning activities would be expected to leave the landscape in a condition that does not attract attention.	Similar to Proposed Action	Similar to Proposed Action	No Impact	No Impact	Similar to Proposed Action

Table ES-2 (continued)
Summary of Project Impacts by Alternative

Resource	Alternative 1 Proposed Action Alternative	Alternative 2 Alternate Action Alternative	Alternative 3 Reduced Footprint Alternative	Alternative 4 No Action (No ROW Grant, No PA)	Alternative 5 No Action: ROW Grant, PA to Exclude Solar	Alternative 6 No Action: No ROW Grant, PA to Allow Solar
3.17 / 4.17 Water Resources						
	Construction: Proposed Project water demand would be approximately 703 AFY for the 26-month construction period, or approximately 25 percent of the available surplus inflow to the groundwater basin (estimated to be 2,600 to 3,300 AFY). Decompaction of the soil over 36 percent of SF-B footprint would minimize any reduction in groundwater recharge caused by compacting the surface soil during construction. Drawdown in the aquifer in the vicinity of the well used to provide water for construction would be a maximum of approximately 18 feet, with minor drawdown extending more than one mile from the pumping well. Impacts would be temporary since they would occur only during construction. Construction would alter surface drainage patterns, but hydrologic modeling indicated that construction would result in minor changes in the 100-year storm characteristics. Runoff from storms could transport spilled substances off site into intermittent stream channels. Potential for flooding would not significantly increase during construction of SF-B. GT-A-1 would not increase flooding potential. Red Bluff Substation A would be constructed over the site of several intermittent stream channels. Design of the Substation incorporates diversion channels to divert runoff around the footprint of the Substation. Once constructed, the diversion channels would reduce the potential for flooding the construction site. A retention basin would also capture runon and slow and reduce peak flows.	Similar to Proposed Action	Similar to Proposed Action, although slightly reduced impacts	No Impact	No Impact	Similar to Proposed Action
	Operations: Impacts would be much less than during construction.	Similar to Proposed Action	Similar to Proposed Action, although slightly reduced impacts	No Impact	No Impact	Similar to Proposed Action
	Decommissioning: Effects of decommissioning on water resources would be similar to those described for construction. The effects would primarily be from erosion of altered and unprotected land surfaces.	Similar to Proposed Action	Similar to Proposed Action, although slightly reduced impacts	No Impact	No Impact	Similar to Proposed Action

Notes:
ACEC = Area of Critical Environmental Concern
AFY = acre-feet per year
CHU = Critical Habitat Unit
CNEL = community noise exposure level
CRHR = California Register of Historic Resources
dBA = A-weighted decibel
DTC-CAMA = Desert Training Center California-Arizona Maneuver Area
DWMA = Desert Wildlife Management Area
GHG = greenhouse gas
KOP = key observation point
NRHP = National Register of Historic Places
O&M = Operation and Maintenance
OHV = off-highway vehicle
PM10 = inhalable particulate matter
PM2.5 = fine particulate matter
SCAQMD = South Coast Air Quality Management District
TCP = traditional cultural properties

Table ES-3
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Air Resources		
	Sunlight has designed the Project to incorporate various measures that will reduce on-site construction-related emissions and emissions from construction-related traffic. *AM-AIR-1*: Sunlight shall develop and implement a dust control plan that includes the use of dust palliatives to ensure compliance with SCAQMD Rule 403. The dust control plan is expected to focus on reducing fugitive dust from construction activities. *AM-AIR-2*: Construction activity shall be phased across the Solar Farm site in a manner that would minimize the area disturbed on any single day. *AM-AIR-3*: Cut and fill quantities shall be balanced across the Solar Farm site to minimize emissions from grading activities and to avoid the need to import fill materials or to remove excess spoil. *AM-AIR-4*: Sunlight shall use power screeners to obtain sand and gravel requirements on-site, rather than having construction sand and gravel delivered to the Solar Farm site by truck. *AM-AIR-5*: Sunlight shall arrange a shuttle bus program for construction workers, with assembly points in the Palm Springs and Blythe areas. Sunlight expects this shuttle bus system to be heavily used by construction workers, with an average of 89.5 percent of construction workers accessing the Solar Farm site by shuttle bus. SCE has identified two applicant measures that will be implemented during construction of the Red Bluff Substation: *AM-AIR-6*: SCE shall develop and implement a dust control plan to ensure compliance with SCAQMD Rule 403 during substation construction. *AM-AIR-7*: SCE would require bidders for the construction contract to submit a transportation plan describing how workers would travel to the Project site.	MM-AIR-1: Sunlight and SCE shall *require all on-site construction equipment to meet EPA Tier 2 or higher emissions standards according to the following:* • *April 1, 2010, to December 31, 2011: All off-road diesel-powered construction equipment greater than 50 horsepower (hp) shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by the California Air Resources Board (CARB). Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.* • *January 1, 2012, to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.* • *Post-January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.* • *A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided when each applicable unit of equipment is mobilized.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Air Resources (cont.)		
		MM-AIR-2: Sunlight shall temporarily stockpile chipped or shredded vegetation debris from the Solar Farm site, then spread it on open areas of the site once construction activity has been completed on a subarea. *MM-AIR-3*: Sunlight shall provide *up to four* re-application of dust palliatives *per year* at the Solar Farm site to unpaved roads and parking areas and to the open areas between the rows of solar arrays. *Re-application* of dust palliatives would reduce fugitive dust from on-site vehicle travel and would reduce the net increase in wind erosion from the Solar Farm site. *MM-AIR-4: The Project construction contractor(s) shall:* • *Submit a transportation plan that describes how adherence to AM-AIR-5 will be achieved, thus minimizing daily construciton worker trips to the maximum extent feasible;* • *Appoint a construction relations officer to act as a community liason concerning on-site construction activity including resolution of any issues related to PM10 generation;* • *Where availible, use electricity from existing power poles rather than temporary diesel or gasoline power generators; and* • *Restrict construction delivery trucks to model year 2001 or newer.*
Vegetation		
	AM-BIO-1. A *Habitat Compensation Plan* is being prepared and will be implemented by the Applicant to compensate for the loss of creosote desert scrub, desert dry wash woodland, and jurisdictional resources. Compensation will be accomplished by acquisition of mitigation land or conservation easements or by providing funding for specific land acquisition, endowment, restoration, and management actions under one of several programs including the recently approved mitigation program created by SB 34 *and as required under MM-BIO-2, Off-site Compensation*. The *Habitat*	*MM-BIO-1. Construction Monitoring.* A BLM-approved biologist shall conduct construction monitoring during all construction activities to ensure that construction activities are contained within the staked and flagged construction areas at all times. The construction monitor shall also be present during all ground disturbing activities to either actively or passively relocate special status wildlife species, other than the desert tortoise, nesting bird species, and burrowing owl (e.g., rosy boa, chuckwalla, Palm Springs round-tailed squirrel, American badger, and Colorado Valley woodrat [and burro deer,

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Vegetation (cont.)		
	Compensation Plan will be reviewed and approved by BLM, the USFWS, and CDFG. The precise details of the mitigation, including mitigation ratios, will be established in the BLM ROW grant, USFWS Biological Opinion, and CDFG 2080.1 Consistency Determination. The draft plan is provided in Appendix H. At a minimum, mitigation ratios required in the NECO Plan/EIS are 1:1 for _permanent impacts_ to creosote bush scrub, 3:1 for _permanent impacts_ to desert dry wash woodland, and 5:1 for _permanent_ impacts to the Chuckwalla DWMA and Chuckwalla CHU). Mitigation ratios may be greater based upon the requirements of the USFWS and CDFG. Finally, areas occupied by the burrowing owl will be mitigated at 6.5 acres per occupied burrow (which will be covered by mitigation of creosote bush scrub habitat) and creation or enhancement of two burrows will be implemented for every active burrow. *AM-BIO-2.* A Draft *Integrated Weed Management Plan* (IWMP) has been prepared pursuant to BLM's *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (BLM 2007) and the *National Invasive Species Management Plan* (The National Invasive Species Council 2008), and will be implemented by the Applicant to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the Project. The draft plan is in Appendix H of this document and will be reviewed and approved by the BLM. The following measures are required in the Plan and will be implemented by the Applicant to monitor and control invasive species (details associated with these measures are provided in Section 4.3): • Preventative Measures During Construction • Containment and Control Measures • Monitoring	Nelson's bighorn sheep, and mountain lion if need be]), found within the construction zones to a suitable location outside of the Project footprint. _The construction monitor shall also inspect fencing and netting at all construction ponds to ensure that the ponds are not accessible to potential avian or canid desert tortoise predators or to wildlife that could drown or become entrapped within the exclosures.Netting and fencing must prevent the ponds from becoming water source "subsidies" to predators or from becoming hazards to native wildlife._ The construction monitor shall have the authority to stop work and report directly to the Applicant's Environmental Manager (EM) to ensure compliance with the Project Description, applicant-proposed measures, and mitigation measures. The construction monitor shall provide the Applicant's EM with weekly updates and quarterly monitoring reports. After construction has been completed, the construction monitor shall provide the Applicant's EM with a final monitoring report. The Applicant's EM shall provide BLM with weekly status updates on the status of construction and monitoring efforts and shall provide BLM with copies of the quarterly monitoring reports and the final monitoring report. BLM shall be responsible for ensuring that construction monitoring is conducted during all construction activities. _MM-BIO-2, Off-site Compensation: This Mitigation Measure provides further detail and specificity to the habitat compensation land requirements described in Applicant Measure AM-BIO-1. The draft Habitat Compensation Plan shall be revised to reflect acreages and habitat types as described herein, The revised habitat Compensation Plan shall be submitted for approval to BLM, USFWS, CDFG, and CPUC before its finalization and implementation. The Applicant (Sunlight or SCE) shall acquire and protect, in perpetuity, compensation habitat to mitigate impacts to biological resources listed below. The compensation lands shall be placed under conservation management to be funded through the terms described herein. The acreages and ratios shall be based upon final calculation of impacted acreage for each resource and on ratios set forth in Applicant Measure AM-BIO-1 and in the draft Habitat Compensation Plan dated 17 Dec 2010. Acreages of anticipated compensation requirements as summarized throughout_

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Vegetation (cont.)		
	• Reporting • Success Criteria *AM-BIO-3. Pre-Construction Surveys for Special Status Plant Species and Cacti.* Prior to construction, the Applicant will stake and flag the construction area boundaries, including the construction areas for the Solar Farm site, Gen-Tie Lines, and Red Bluff Substation; construction laydown, parking, and work areas; and the boundaries of all temporary and permanent access roads. A BLM-approved biologist will then survey all areas of proposed ground disturbance for special status plant species and cacti during the appropriate blooming period for those species having the potential to occur in the construction areas. All special status plant species and cacti observed will be flagged for transplantation. *All cacti observed will be flagged for transplantation and special status plant species observed will be flagged for salvage.* *AM-BIO-4. Worker Environmental Awareness Program (WEAP).* The Applicant will implement a WEAP to educate on-site workers about sensitive environmental issues associated with the Project. The program will be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The program will be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. Details of the program are provided in Section 4.3. The training will place special emphasis on the special status species that have been observed in the Project locations or have a high likelihood to occur, including special status plant species, desert tortoise and other special status reptile species, Palm Springs round-tailed ground squirrel, burrowing owl, golden eagle, nesting bird species and bat species, and the American badger.	*this measure are based on impacts analysis of Alternative 1 in Sections 4.3 and 4.4 and ratios described in Applicant Measure AM-BIO-1. Acreages shall be adjusted as appropriate for other alternatives.* • *Desert dry wash woodland (101 acres at 3:1 ratio).* • *Occupied desert tortoise habitat (2,757 acres at 1:1 ratio; 1,214 acres at 2:1 ratio; 191 acres at 5:1 ratio).* • *occupied or suitable habitat for breeding or wintering burrowing owls (13 acres for each occupied burrow, estimated as two burrows),* • *state-jurisdictional streambeds (302 acres, including the desert dry wash woodland, above, at 3:1 ratio),* • *creosote bush scrub (4,072 acres at 1:1 ratio).* • *occupied foxtail cactus habitat (estimated as two acres, at 1:1 ratio),* • *undisturbed habitat for most wildlife species including desert kit fox and American badger (i.e., away from sources of noise or other disturbance such as highways, wind farms, etc.) (4,173 acres, at 1:1 ratio),* • *occupied chuckwalla and rosy boa habitat (Red Bluff Substation A site, 149 acres, at 1:1 ratio),* • *suitable/occupied upland shrubland nesting habitat for migratory birds (4,173 acres, at 1:1 ratio),* • *suitable foraging habitat for golden eagles, and within foraging range of a known nesting site (4,173 acres, at 1:1 ratio),* • *suitable or occupied roosting habitat for special status bats (101 acres desert dry wash woodland at Solar Farm B and 149 acres rocky slopes at Red Bluff Substation A), and* • *suitable or occupied habitat for Palm Springs round-tailed ground squirrel (estimated as 92 acres, based on Gen-Tie Line A-1 disturbance), Colorado Valley woodrat (estimated as 149 acres at Red Bluff Substation A location).* *Of the resources listed above, BLM's focus would be on desert dry wash woodland, occupied desert tortoise habitat, occupied or suitable habitat for breeding or wintering burrowing owls, and state-jurisdictional streambeds.* Additional detail is provided in Section 4.3.

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Vegetation (cont.)		
	BLM will be responsible for ensuring that each construction worker at the site, throughout the duration of construction activities, receives the above training. *AM-BIO-5.* The Applicant will prepare and implement a *Vegetation Resources Management Plan* that contains the following components (additional detail is provided in Section 4.3): • A *Vegetation Salvage Plan* which discusses the methods that will be used to transplant cacti present within the Project locations following BLM's standard operating procedures, as well as methods that will be used to transplant special status plant species that occur in the Project locations if feasible. • A *Restoration Plan* which discusses the methods that will be used to restore creosote bush scrub and desert dry wash woodland habitat that is temporarily disturbed by construction activities. *The Vegetation Salvage Plan and Restoration Plan will specify success criteria and performance standards as required per MM BIO-4, Salvage and Restoration Plan Performance Standards.* BLM will be responsible for reviewing and approving the Plan and for ensuring that the Applicant implements the Plan including maintenance and monitoring required in the Plan.	*MM-BIO-3, Implement Transplantation. Cacti flagged for transplantation per AM-BIO-3 shall be transplanted per the Vegetation Salvage Plan described in AM-BIO-5 and special status plant species shall be salvaged per the Vegetation Salvage Plan described in AM-BIO-5. The Applicant and SCE shall be responsible for ensuring that all workers at the site, throughout the duration of construction, operation, and decommissioning activities, receives the training described in AM-BIO-4, above. Specific language in Mitigation Measure BIO-3 will take precedence over any discrepancy with the Applicant Measures cited herein.* *MM-BIO-4, Salvage and Restoration Plan Performance Standards. Salvage will occur prior to construction in any area of the proposed Project as described in the approved Vegetation Salvage Plan (described in AM-BIO-5). Post-Project seeding and planting (revegetation) will occur at the decommissioning phase of the Project as described under an approved Restoration Plan (AM-BIO-5). Both salvage and revegetation efforts shall be monitored yearly and shall continue for a period of no less than 10 years or until the defined performance standards are achieved (whichever is sooner).* *The following performance standards must be met by the end of the monitoring period: (a) at least 80% of the species and vegetative cover observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; (b) absolute cover and density of native plant species within the revegetated areas shall equal at least 60% of the pre-disturbance or reference vegetation cover; and (c) the site shall have gone without irrigation or remedial planting for a minimum of three years prior to completion of monitoring.* *Remediation activities (e.g., whether additional planting, removal of non-native invasive species, or erosion control) shall be taken during the 10-year period if necessary to ensure the success of the revegetation effort. If the mitigation fails to meet the established performance standards after the 10-year maintenance and monitoring period, monitoring and remedial activities shall extend beyond the 10-year period until the performance standards are met, unless otherwise specified by the BLM and CPUC.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Vegetation (cont.)		
		As needed to achieve performance standards, the project owner shall be responsible for replacement planting or other remedial action as agreed to by BLM and CPUC. Replacement plants shall be monitored with the same survival and growth requirements as required for original revegetation plantings. _If a fire or flood damages a revegetation area within the 10-year monitoring period, the owner shall be responsible for a one-time replacement. If a second fire or flood occurs, no replanting is required, unless the event is caused by the owner's activity (as determined by BLM or other firefighting agency investigation)._ _MM-BIO-5, Desert Dry Wash Woodland Monitoring and Reporting Plan. In addition to complying with MM-WAT-3 (Groundwater Level Monitoring, Mitigation, and Reporting), the Project owner shall prepare and submit a Desert Dry Wash Woodland Monitoring and Reporting Plan to BLM and CPUC for review and approval prior to commencing project-related pumping activities. Upon approval, the Project owner shall finalize and implement the Plan. Additional details are provided in Section 4.3._ _Monthly Desert Dry Wash Woodland Monitoring summary memos shall be submitted to BLM, CDFG, and CPUC during the construction period of the Project. In addition, annual Desert Dry Wash Woodland Monitoring reports shall be submitted for at least the first three years following completion of construction of the Project, if found necessary. The summary memos shall contain the monitoring data required as part of the monitoring program requirements under MM-WAT-3. In addition, each Desert Dry Wash Woodland Monitoring Report shall provide maps and text discussion of each study site, changes in plant health and vigor, changes in groundwater levels in the production wells, and the year's monitoring data._ _If results of the groundwater monitoring program under MM-WAT-3 indicate that the project pumping has resulted in water level decline of one foot or more below the baseline trend, and vegetation monitoring for plant stress, mortality, and water potential have documented one or more of the sampling sites for the four groundwater dependent plant species as reaching the threshold (above), the Project owner shall reduce groundwater pumping until water levels stabilize or recover, provide for temporary supplemental watering, or compensate for_

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Vegetation (cont.)		
		additional impacts to desert dry wash woodland at the ratio of 3:1, consistent with Mitigation Measure MM-BIO-2. Estimated acreage of additional dry wash woodland impacts shall be submitted to BLM and CPUC for approval. Upon approval, the Project owner shall initiate compensation according to the requirements and conditions for habitat compensation as described in Mitigation Measure MM-BIO-2. *At the conclusion of the three-year monitoring period for Desert Dry Wash Woodland following completion of Project construction, the Project owner, CPUC, and BLM shall jointly evaluate the effectiveness of the Desert Dry Wash Woodland Monitoring and Reporting Plan and determine if monitoring frequencies or procedures should be revised, extended to the operation and decommissioning periods, or eliminated. Should additional data be forthcoming to demonstrate that this potential impact is not verifiable or attributable to this specific project or found inconsistent with state or federal statute, it may be modified or eliminated.*
Wildlife		
	Implementation of Applicant Measures BIO-1, BIO-2, BIO-4, and BIO-5 discussed in Section 4.3, Vegetation, would reduce impacts on wildlife as well. *AM-WIL-1.* A Draft *Desert Tortoise Translocation Plan* has been prepared for the Project and will be implemented by the Applicant to ensure that construction monitoring will be conducted by a BLM-, USFWS-, and CDFG-approved biologists during all construction activities and that any desert tortoise found with the construction zone will be translocated to a suitable location outside of the Project footprint. The draft plan is in Appendix H and will be reviewed and approved by BLM. *The final plan will conform to the 2010 USFWS desert tortoise relocation guidelines entitled Translocation of Desert Tortoises (Mojave Population) From Project Sites: Plan Development Guidance. Unpublished Report dated August 2010.* The *Desert Tortoise Translocation Plan* contains an analysis of several recipient sites for desert tortoises to be translocated from the Solar Farm site and Red Bluff Substation. The final selected recipient site will be determined by BLM, the USFWS, and CDFG.	Implementation of Mitigation Measures BIO-1 through BIO-4 discussed in Section 4.3, Vegetation, would reduce impacts on wildlife as well. *MM-WIL-1.American Badger and Desert Kit Fox Protection Plan. To avoid direct impacts to American badgers or desert kit foxes, pre-construction 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 and kit fox dens in the Project area, including areas within 90 feet of all Project facilities, utility corridors, and access roads. Surveys may be concurrent with desert tortoise surveys. If dens are detected, each den shall be classified as inactive, potentially active, or definitely active.* *Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit foxes. 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*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Wildlife (cont.)		
	Desert tortoises found along the linear components of the Project, including the Gen-Tie Line, Telecommunications site, and access roads will be relocated out of harm's way pursuant to USFWS guidance*(U.S. Fish and Wildlife Service. 2009. Desert Tortoise Field Manual. Ventura Fish and Wildlife Office, Ventura, California)*. Specifically, biological monitors will be present during all construction activities to ensure that active burrows are avoided. If a desert tortoise is found, the tortoise will be allowed to passively traverse the site while construction in the immediate area is halted. If the tortoise does not move out of harm's way after approximately 20 minutes, a biologist authorized to handle desert tortoise, will actively move the animal out of harm's way. Vehicles parked in desert tortoise habitat will be inspected immediately prior to being moved. If a tortoise is found beneath a vehicle, a biologist authorized to handle desert tortoise will be contacted to move the animal out of harm's way, or the vehicle will not be moved until the desert tortoise leaves of its own accord. For desert tortoises in the Solar Farm site and Red Bluff Substation, they will be relocated using the following phased translocation process (additional details are provided in Section 4.4): • Installation of Perimeter Fencing • Clearance Surveys and Translocation • Long-term Monitoring • Reporting During the construction and operations and maintenance phases of the Project, additional BMPs will also be implemented by the Applicant, as described in Section 4.4. *AM-WIL-2. Contribute to a USFWS Regional Raven Management Plan. The Applicant shall contribute to the U.S. Fish and Wildlife Service (USFWS) Regional Raven Management Program by making a one-time payment of $105 per acre of Project disturbance to the national Fish and Wildlife Federation Renewable Energy Action Team raven control account.*	*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, and especially if high or low ambient temperatures could potentially result in harm to badger or kit fox from burrow exclusion, various passive hazing methods may be used to discourage occupants from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit foxes are trapped in the den. In the event that passive relocation techniques fail, the Applicant will contact the California Department of Fish and Game to explore other relocation options, which may include trapping.* *MM-WIL-2.Nelson's Bighorn Sheep Protection Plan. If effects to Nelson's Bighorn Sheep cannot be avoided, the Applicant shall consult with the California Department of Fish and Game (CDFG) to determine the appropriate level of restoration and mitigation for effects to essential habitat and/or travel corridors for Nelson's bighorn sheep by implementing the following measures:* *(a) The Project owner shall compensate or replace the permanent loss of Nelson's bighorn sheep habitat at a 1:1 ratio as approved by the CDFG. This may include monetary contributions or donations as mitigation which are tied to programs or activities designed to offset potential resource losses or for mitigation banking for habitat restoration, enhancement, or acquisition projects provided that an appropriate and cooperatively developed mitigation agreement has been finalized between the Applicant and CDFG.* *(b) Compensation or replacement mitigation should be oriented within or adjacent to the Project area and designed to rectify the same functions, habitat types and species being impacted wherever possible. Off-site compensation should be considered when mitigation measures cannot be applied to adjacent areas or to benefit the same species that are impacted.* *(c) All final actions associated with compensation mitigation will be approved by CDFG to insure that agreements are consistent with the CDFG's Sonoran Desert Mountain Sheep Meta-Population Plan.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Wildlife (cont.)		
	A *Raven Management Plan* has been prepared and will be implemented by the Applicant to minimize the potential for the Project to attract ravens to the Project site. The draft plan is in Appendix H and will be reviewed and approved by BLM. Additional details are provided in Section 4.4. *AM-WIL-3.* A Draft *Avian and Bat Protection Plan* has been prepared and will be implemented by the Applicant to specify necessary actions to be taken to protect nesting bird and bat species, includign burrowing owls, nesting birds, and roosting bats. The draft plan is in Appendix H and will be reviewed and approved by BLM. *The final plan will conform to the 2010 USFWS avian and bat guidelines entitled Considerations for Avian and Bat Protection Plans U.S. Fish and Wildlife Service White Paper.*Additional details are provided in Section 4.4. *AM-WIL-4. Construction Water Storage Pond Design. The temporary construction water ponds shall be designed, constructed, and operated in compliance with all applicable regulatory requirements with respect to design, operation, and maintenance, protection of migratory waterfowl, and raven management. Additional details are provided in Section 4.4.*	*(d) Any roads or permanent structures built in Nelson's bighorn sheep habitat or movement corridors must be constructed in such a way as to allow continued bighorn movement, except in the case of the Solar Farm and Substation facilities which will be fenced. Some strategies could include under- or over passes, ramps cut into steep side slopes, alternatives to continuous guard rails or fence specifications along roads that allow sheep movement. Plans for these structures will be developed in coordination with CDFG.* *MM-WIL-3.Palm Springs Round Tailed Ground Squirrel Protection Plan. If effects to Palm Springs round tailed ground squirrel cannot be avoided, the Applicant shall consult with the CDFG to determine the appropriate level of restoration or mitigation for effects to essential habitat for Palm Springs round tailed ground squirrel. Additional details are provided in Section 4.4.* *MM-WIL-4.Mojave Fringed-toed Lizard Protection Plan. If effects to Mojave Fringed-toed Lizard cannot be avoided, the Applicant shall mitigate for direct and indirect impacts to stabilized and partially stabilized sand dunes and other Mojave fringe-toed lizard habitat by compensating for lost habitat at ratios ranging from 1:1 to 5:1 depending upon (as detailed in MM-BIO-2):* *A. Species known to be present on site* *B. Habitat condition* *C. Proximity of known disturbances* *D. Vegetation type* *The Applicant shall provide funding for the acquisition, initial habitat improvements and long-term management of the compensation lands. The habitat compensation requirement, and associated funding requirements based on that acreage, will be adjusted if there are changes in the final footprint of the Project. In lieu of acquiring lands itself, the Applicant may ensure funding to complete the land acquisition by providing CDFG or USWFS, as appropriate, before ground-or vegetation- disturbing activities an irrevocable letter of credit or another form of security begins, as approved by CDFGs Office of General Counsel before ground- or revegetation-disturbing activities begin.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Wildlife (cont.)		
		Additional detail is provided in Section 4.4. *MM-WIL-5.Prepare and Implement a Bird Monitoring and Avoidance Plan. Before a ROW grant is issued, the Applicant shall retain a BLM-approved, qualified biologist to prepare a Bird Monitoring and Avoidance Plan in consultation with CDFG and USFWS. This plan shall follow the Avian Protection Plan guidelines outlined by USFWS and Avian Power Line Interaction Committee (APLIC).* *The plan will require monitoring of (1) the death and injury of birds from collisions with facility features such feeder/distribution lines and solar panels, and (2) impacts to aquatic insects from polarized light from solar panels that may affect insectivorous (insect-eating) birds. The study design shall be approved by BLM in consultation with CDFG and USFWS. Additional detail is provided in Section 4.4.* *MM-WIL-6. Prepare and Implement Golden Eagle Nesting Surveys, Nest Site Monitoring, and Adaptive Management. Additional details are provided in Section 4.4. Where details of this Mitigation Measure may conflict with Applicant Measure AM-WIL-3, this measure shall take precedence.* *MM-WIL-7.* Alternate to long-distance (greater than 500 meters) desert tortoise translocation. *The draft Desert Tortoise Translocation Plan defined under Applicant Measure AM-WIL-1 shall be updated to identify and describe, as an alternative to translocation, a strategy to remove desert tortoises on the project site from the wild and place them permanently in facilities approved by USFWS and CDFG, to be fully funded by the applicants. All suitable care or holding facilities for desert tortoises shall be listed and described in the draft plan, and capacity of each facility to accommodate desert tortoises from the project site shall be provided. The updated draft plan and shall be submitted to BLM, CPUC, USFWS and CDFG for review and approval. Upon approval of a final Desert Tortoise Translocation Plan and issuance of state and federal approvals, the applicant (Sunlight and/or SCE), shall either translocate tortoises into the wild or shall permanently place them in approved facilities, consistent with the Final Desert Tortoise Translocation Plan.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Wildlife (cont.)		
		MM-WIL-8. Plans required under Applicant Measures AM WIL-1, AM WIL-2, and AM WIL-3 shall be submitted for review and approval by USFWS, CDFG, BLM and CPUC. *MM-WIL-9. This measure applies only to Alternative 2, below. Re-orient Substation Alternative B to reduce movement corridor blockage. The substation shall be either moved to the east, or rotated 90 degrees and moved east (without moving into the Alligator Rock ACEC) so its longer side is parallel to Interstate 10. It shall remain as close as possible to Interstate 10, while avoiding existing utilities, and shall allow a corridor for wildlife movement south of the substation. If this alternative is selected, the design and location of the substation shall be developed with input from BLM's biologists to ensure that the ability of wildlife to move from east to west south of the freeway is retained, and the freeway underpass and stream channel crossings are still accessible to wildlife moving from north to south.*
Climate Change		
	Three of the five applicant measures adopted by Sunlight for Air Resources would help reduce greenhouse gas emissions in addition to reducing criteria pollutant emissions (AM-AIR-3, AM-AIR-4, and AM-AIR-5).	Two of the three mitigation measures for Air Resources would also be expected to provide some reductions in construction-related greenhouse gas emissions (MM-AIR-1 AND MM-AIR-2).
Cultural Resources		
	AM-CUL-1: A cultural resources monitoring and mitigation plan has been included as a Project design feature to minimize impacts. The plan will include a description of areas to be monitored during construction, a discovery plan that will address unanticipated cultural resources, and provisions for the education of construction workers. Responsible parties for mitigation measures will be identified.	*MM-CUL-1.* The *Memorandum of Agreement* shall detail the process for activities to proceed in areas where historic properties are now known not to exist; the process for phased completion of field investigations for the evaluation of cultural resources and assessment of effects; a historic property treatment plan (HPTP); procedures to resolve adverse effects under Section 106; coordination between the CEQA process and Section 106 compliance; procedures for *treatment of inadvertent discoveries; procedures for determining treatment and disposition of human remains*; the process for treating human remains; compliance monitoring; dispute resolution; and tribal participation. Resolution of effects to cultural resources eligible for or listed on the NRHP may include research and documentation, data recovery excavations, curation, public interpretation, use or creation of historic contexts

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Cultural Resources (cont.)		
		(especially for historic landscapes and the potential DTC-CAMA historic district), and/or report distribution. *MM-CUL-2.* On the basis of preliminary CRHR eligibility assessments, NRHP eligibility assessments made under the *Memorandum of Agreement*, or existing NRHP eligibility determinations, the BLM and CPUC may require the relocation of Project components to avoid or reduce damage to cultural resource values. Where operationally feasible, potentially NRHP-eligible resources shall be protected from direct Project impacts by Project redesign within previously surveyed and analyzed areas. *MM-CUL-3.* Where the BLM and CPUC decide that CRHR or NRHP-eligible or –listed cultural resources cannot be protected from direct impacts by Project redesign, the Applicant shall comply with appropriate mitigative treatment(s) that will be detailed in the *Memorandum of Agreement* and cultural resources mitigation and monitoring plan. *MM-CUL-4.* All CRHR-listed or eligible cultural resources (as determined by the CPUC) and all NRHP-listed or eligible cultural resources (as determined by the BLM) that will not be affected by direct impacts, but are within 50 feet of Project locations will be monitored by a qualified archaeologist. Protective fencing, or other markers, at the BLM's discretion, shall be erected and maintained to protect these resources from inadvertent trespass for the duration of construction in the vicinity. *MM-CUL-5.* The historic property treatment plan that will be included in the *Memorandum of Agreement* will, at a minimum, employ avoidance, mitigation and data recovery as mitigation alternatives. As part of the historic property treatment plan, the Applicant shall prepare a research design and a scope of work for evaluation of cultural resources and for data recovery or additional treatment of NRHP-*listed or* eligible sites that cannot be avoided. Additional content of the treatment plan will be dictated by the consultations associated with the *Memorandum of Agreement*.

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Cultural Resources (cont.)		
		MM-CUL-6. Construction work within 100 feet of cultural resources that require data-recovery fieldwork shall not begin until authorized by the BLM. *MM-CUL-7.* Archaeological monitoring shall be conducted by a qualified archaeologist familiar with the types of historical and prehistoric resources that could be encountered within the Project area, and under direct supervision of a principal archaeologist. All cultural resources personnel will be approved by the BLM through the agency's Cultural Resource Use Permitting process. A Native American monitor may be required at culturally sensitive locations specified by the BLM following government-to-government consultation with *Indian* tribes. The monitoring plan shall indicate the locations where Native American monitors will be required and shall specify the tribal affiliation of the required Native American monitor for each location. The Applicant shall retain and schedule any required Native American monitors. *MM-CUL-8.* In the event of inadvertent discoveries during construction, operation and maintenance, or decommissioning, procedures outlined in the *Memorandum of Agreement* and the monitoring and mitigation plan will be adhered to. At a minimum, this will include stop work orders in the vicinity of the find, recordation and evaluation of the find by a qualified archaeologist, notification of the find to BLM, and appropriate treatment measures, possibly including data recovery or avoidance. *MM-CUL-9. The BLM will continue to consult with Indian tribes to identify sacred sites, TCPs and traditional use areas that might be affected by the Project. If such places are identified, the BLM will consult further with tribes to resolve access impediments or other identified impacts.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Paleontological Resources		
	AM- PR-1. The Applicant shall be responsible for the following mitigation (more details are provided in Section 4.7): • A qualified paleontologist will conduct a study to characterize the paleontological sensitivity of the Project Study Area. Should the site characterization and or the site reconnaissance identify areas of high potential for paleontological resources, an additional mitigations could be implemented, as determined by the BLM. • A qualified paleontologist will develop a monitoring and mitigation plan prior to construction to mitigate adverse impacts on paleontological resources if excavation is to occur in an area of high paleontological sensitivity. The plan will include measures to be followed in the event that fossil materials are encountered during construction.	
Geology and Soil Resources		
	AM-GEO-1. The Applicant shall include, as part of the construction design plans for the Solar Farm and Gen-Tie Line, the mitigation measures provided in the Earth Systems Southwest (2010) geotechnical survey. These mitigations are summarized in Section 4.8 and in Appendix F, and are subject to BLM approval. The Applicant shall be responsible for implementing these mitigations. *AM-GEO-2.* The Applicant shall implement the following mitigation measures to reduce impacts from wind and water erosion to soils (additional details are in Section 4.8): • <u>*Implement Mitigation Measures MM-WAT-6 and MM-WAT-7, discussed in Chapter 4.17, Water Resources.*</u> • Obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 2009-0009 DWQ;	

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Geology and Soil Resources (cont.)		
	• Use nonhazardous dust suppressants approved by the BLM and water on an as-needed basis to suppress wind-blown dust generated at the site during construction. Dust palliatives also would be applied between rows of solar panels for dust suppression during operation; • Implement erosion control measures during construction; and • Use silt fences for erosion control in the event of a storm event along neighboring properties, Power Line Road and along the main drainage to the east of the Solar Farm site. *AM-GEO-3.* SCE shall undertake the following mitigation measures as part of the Substation Project: • Prior to final design of the Substation, a combined geotechnical engineering and engineering geology study shall be conducted by SCE to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering. Appropriate mitigations for identified geological hazards will be identified in the geotechnical study. • 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". • New access roads, where required, will be designed to minimize ground disturbance during grading. • Cut and fill slopes will be minimized by a combination of benching and following natural topography where feasible. • Any disturbed areas associated with temporary construction will be returned to preconstruction conditions (to the extent feasible) after the completion of Project construction.	

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Geology and Soil Resources (cont.)		
	AM-GEO-4. SCE shall implement the following mitigation measures to reduce impacts from wind and water erosion to soils (additional details are in Section 4.8): • Obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) 2009-0009 DWQ. • Use nonhazardous dust suppressants approved by the BLM to suppress wind-blown dust generated at the site during construction. • Implement erosion control measures during construction.	
Lands and Realty		
	AM-LAND-1. Property owners within 300 feet of the Project shall be notified of all major Project construction milestones, such as start of Project construction. Said property owners shall be provided with a detailed construction schedule at least 30 days before construction so that they are informed as to the time and location of disturbance. Updates shall be provided as necessary. *AM-LAND-2.* The Project shall be designed to minimize disturbance or modification of existing uses such as transmission lines, pipelines, and underground cables. If disturbance or modification of existing uses were necessary, Sunlight shall coordinate with the owners to determine an acceptable solution. Sunlight shall fund any necessary avoidance measures or modifications.	
Noise and Vibration		
	AM-NZ-1: Sunlight and SCE shall limit most construction activity to daytime hours consistent with Riverside County noise ordinance limitations. Certain electrical connection activities at the Solar Farm site would occur at night for safety reasons, but would not require any heavy equipment operations. *AM-NZ-2*: SCE shall construct a masonry security wall around the perimeter of the Red Bluff Substation. This wall would also provide localized noise shielding for adjacent areas.	*MM-NOI-1: Sunlight and SCE shall limit construction activity within a quarter mile of an inhabited dwelling to 6:00 a.m. to 6:00 p.m. during June through September and 7:00 a.m. to 6:00 p.m. during October through May. Certain electrical connection activities at the Solar Farm site would occur at night for safety reasons, but would not require any heavy equipment operations.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Public Health and Safety / Hazardous Materials		
	Sunlight shall be responsible for these mitigations: *AM-HAZ-1a:* Appropriate spill containment and clean-up kits shall be kept on site during construction and maintained during the operation of <u>*the Solar Farm and Gen-Tie Line*</u>. *AM-HAZ-1b:* In accordance with the Emergency Planning & Community Right to Know Act, the Applicant shall supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory specific to the site. The Applicant shall prepare the plan for approval by the BLM and <u>*review and comment by*</u> the County of Riverside. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11). *AM-HAZ-1c*: During construction of the Solar Farm and Gen-Tie Line, BMPs for handling, storing, and disposing of hzardous materials and waste shall be followed (additional details are in Section 4.11). *AM-HAZ-1d:*An SPCC Plan shall be developed and implemented that would identify primary and secondary containment for oil products stored on site as well as training in spill management in the event of an unexpected release. The Applicant shall prepare the plan for approval by the BLM and <u>*review and comment by*</u> the County of Riverside. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11). *AM-HAZ-1e:* The Applicant shall develop an Environmental Health and Safety Plan for the construction and operation of the Project to ensure it includes all activities and compliance to all local, state and federal regulatory requirements. Illness and Injury Prevention Programs will be developed for construction and operation. The Applicant shall prepare the plan for approval by the BLM. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11).	

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Public Health and Safety / Hazardous Materials (cont.)		
	AM-HAZ-2: Based on the preliminary information provided in the Phase I ESA and the Class I cultural inventory of the Project Site, the Applicant proposes to take the following steps to better determine the nature and extent of potential MEC issues and then take appropriate corrective action measures. *The first step is to better determine the history of military activities within the proposed Project footprint.* This would include further research regarding prior MEC removals that may have been issued in the past for certain areas by military or other investigating entities, and may include consultations with DOD personnel and archival research. *As a result of the historical occurrence of military training activities throughout the DTC-CAMA, potentially including the Project area, this MEC consultation and archival research will address the entire Project footprint, including the specific areas of concern identified by the Phase I ESA and cultural resource surveys.* With that more comprehensive understanding, the Applicant will propose, as necessary, further appropriate above and below-ground assessments, under the direction of an expert consultant team, to delineate areas for further investigation and then removal. The Applicant, under direction from the BLM, will determine which site-specific in-field investigative techniques and methodologies will be utilized to investigate and resolve potential MEC issues prior to Project construction. Finally, all construction workers will receive appropriate MEC health and safety awareness training to ensure that they know what actions to take if unanticipated MEC or other suspicious articles are encountered during construction. *AM-HAZ-3:* The Applicant shall provide the County of Riverside with a project-specific Emergency Response and Inventory Plan prior to initiating construction. The Applicant shall prepare the plan for approval by the BLM and *review and comment by* the County of Riverside. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11).	

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Public Health and Safety / Hazardous Materials (cont.)		
	AM-HAZ-4: Project facilities shall be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a project-specific fire prevention plan for both construction and operation of the Solar Farm <u>*and Gen-Tie Line*</u> will be completed prior to initiation of construction. <u>*The fire protection plan shall be approved by the BLM and provided to Riverside County for review and comment.*</u> Sunlight shall have a Project-specific fire prevention plan in place during construction, operation and decommissioning of the Project. This plan shall comply with applicable County of Riverside regulations and would be coordinated with <u>*the BLM Fire Management Officer and*</u> the local Fire Department in the Chuckwalla Valley at Tamarisk Park. *AM-HAZ-5:* An emergency response plan and site security plan shall be completed for the Project facilities <u>*by qualified professionals. These plans shall be developed in accordance with the BLM and DOE requirements (additional details are in Section 4.11).*</u> **SCE shall be responsible for these mitigations**: *AM-HAZ-2*: Same as above for Sunlight. *AM-HAZ-6a:* SCE shall implement standard fire prevention and response practices for the construction activities where hazardous materials are in use. SCE shall be responsible for implementing the approved plan (additional details are in Section 4.11). *AM-HAZ-6b:* As applicable, SCE shall follow fire codes per California Department of Forestry and Fire Protection (2008) requirements for vegetation clearance during construction of the Project to reduce the fire hazard potential.	

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Public Health and Safety / Hazardous Materials (cont.)		
	AM-HAZ-6c: Hazardous materials and waste handling shall be managed in accordance with the following plans and programs that SCE shall be responsible for implementing: • *Spill Prevention, Control and Countermeasures Plan (SPCC Plan)* • *Hazardous Materials Business Plans (HMBPs)* • *Storm Water Pollution Prevention Plan (SWPPP)* • *Health and Safety Program* • *Hazardous Materials and Hazardous Waste Handling* • *Emergency Release Response Procedures*	
	AM-HAZ-6d: Hazardous materials shall be used or stored and disposed of in accordance with Federal, State, and local regulations.	
	AM-HAZ-6e: The Substation shall be grounded to limit electric shock and surges that could ignite fires.	
	AM-HAZ-6f: All construction and demolition waste shall be removed and transported to an appropriately permitted disposal facility.	
	AM-HAZ-7: SCE shall *submit FAA Form 7460-1 and receive a Determination of No Hazard to Navigable Airspace and comply with any AC 70/7460-1K (Obstruction Marking and Lighting) requirements from the FAA* for construction of the 185-foot microwave tower associated with the Desert Center Communications Site.	
	AM-HAZ-8: SCE shall provide *the BLM and* the County of Riverside with a project-specific Emergency Response and Inventory Plan prior to initiating construction. SCE shall be responsible for implementing the approved plan (additional details are in Section 4.11).	
	AM-HAZ-9: Project facilities shall be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with	

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Public Health and Safety / Hazardous Materials (cont.)		
	County of Riverside requirements, a project-specific fire prevention plan for both construction and operation of the substation shall be completed by SCE prior to initiation of construction. *Additional detail is provided in Section 4.11.* *AM-HAZ-10*: *Develop and implement a fire prevention plan. Before the construction permit is issued, the Applicant shall develop and implement a fire protection plan for use during construction and operation. The Applicant shall submit the fire plan, along with maps of the Project site and access roads, to CAL FIRE / Riverside County Fire Department for review and approval before construction begins. Additional detail is provided in Section 4.11.*	
Recreation		
	No mitigation proposed.	
Socioeconomic and Environmental Justice		
	AM-SOCIO-1: The public shall be notified of Project activities and scheduling to inform the public of projected impacts on the surrounding area. This notification shall provide the public with the opportunity to plan their personal and business activities appropriately. *AM-SOCIO-2:* Sunlight shall align Gen-Tie lines along existing linear features (such as Kaiser Road) to minimize the social effects of potential visual impacts.	
Special Designations		
	AM-SD-1: During operation and maintenance of Red Bluff Substation, lights shall normally be off. Where needed during emergency and scheduled work during the night, lights shall be shielded, *shall* be directed downward, and shall be motion sensitive to minimize glare in surrounding areas. Mitigation measures described for Cultural Resources, would be implemented to reduce impacts on cultural resources within the Alligator Rock ACEC.	*MM-SD-1. The NPS shall be afforded the opportunity to review and comment on the following pre-construction plans required for the Project prior to approval of the plans by the BLM and CPUC: the Vegetation Resources Management Plan, the Lighting Mitigation Plan, the Dust Control Plan, the Integrated Weed Management Plan, and the Construction Traffic Control Plan. Review and comment by the NPS must be within time frames specified by the BLM.* *MM-SD-2. The Applicant shall enter into a funding agreement or other financial mechanism, as may be specified in the Record of Decision or Right-of-*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Special Designations (cont.)		
		Way Grant, to reimburse the NPS for reasonable costs incurred in the monitoring of the following measures (whether applicant-proposed or BLM-recommended) to address temporary indirect impacts on the Joshua Tree National Park: • *Fugitive dust: AM AIR 1, AM-AIR 6 and MM-VR-3, concerning the development and implementation of a dust control plan that includes the use of dust palliatives to ensure compliance with SCAQMD Rule 403; MM-AIR 3, requiring annual re-application of dust palliatives at the Solar Farm site; and AM-GEO-2 and AM-GEO-4, as they relate to the suppression of fugitive dust during construction and operation.* • *Noise: AM-NZ-1, limiting most construction activity to daytime hours.* • *Nighttime lighting: MM-VR-4, requiring the design and installation of a lighting mitigation plan concerning temporary and permanent exterior lighting.* *MM-SD-03. A Signage and Guidance Plan shall be developed for JTNP by the Applicant and reviewed and approved by both the NPS and the BLM prior to the start of construction of the Project. The intent of this plan is to address the potential indirect effects on NPS land as a result of the influx of workers associated with the mobilization, construction, and demobilization of the Project. Additional details are in Section 4.14.*
Transportation and Public Access		
	AM-TRANS-1: Sunlight shall prepare a Construction Traffic Control Plan in conjunction with Riverside County and/or Caltrans in accordance with Caltrans Manual on Uniform Traffic Control Devices and the California Joint Utility Traffic Control Manual (2010). Details are provided in Section 4.15. *AM-TRANS-2*: Sunlight shall document road conditions at the beginning and end of Project construction and decommissioning and contribute fair share cost for pavement maintenance and other needed repairs.	

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Transportation and Public Access (cont.)		
	AM-TRANS-3: Sunlight shall share Project information with the airport owners if a transmission line alternative that runs near the former Desert Center Airport's runway is selected to assure that no special precautions are needed. *AM-TRANS-4*: BLM shall coordinate with the DOD R-2508 Complex Sustainability Office, Region IX, based in San Diego, California, and with local regional military installations regarding low-level flight operations relative to the Project to assure that no special precautions are needed.	
Visual Resources		
		MM-VR-1: Revegetation. The Applicant and SCE shall minimize the amount of ground surface to be disturbed and revegetate disturbed soil areas (additional details provided in Section 4.16). No less than 30 days following the publication of the BLM's Record of Decision/ROW Issuance, whichever comes first, the Applicant and SCE shall submit to the BLM a final agency-approved revegetation plan that has been reviewed and approved by the BLM. Within 30 days after completion of Project construction, the Applicant and SCE each shall provide to the BLM for review and approval a written report identifying which items of the revegetation plan have been completed, a summary of all modifications to mitigation measures made during the Project's construction phase, and which items are still outstanding. It shall also include a plan for revegetation monitoring. *MM-VR-2: Litter and Trash Control.* During construction, all trash and food-related waste shall be placed in self-closing containers and removed weekly, as needed, from the site. *MM-VR-3: Fugitive Dust Control.* <u>*To minimize fugitive dust on the Project site, a dust control plan shall be developed that will impose limits on the speed of travel for construction vehicles, and will require that dust palliatives be applied to the site, as described in AM-AIR-1 and AM-AIR6, and in compliance with SCAQMD Rule 403.*</u>

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Visual Resources (cont.)		
		MM-VR-4: Lighting Control. Consistent with safety and security considerations, the Applicant and SCE shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the Solar Farm site, including any off-site security buffer areas; b) lighting shall not cause excessive reflected glare; c) direct lighting shall not illuminate the nighttime sky, except for required FAA aircraft safety lighting (which shall be an on-demand, audio-visual warning system that is triggered by radar technology); d) illumination of the Project and its immediate vicinity shall be minimized; and e) *skyglow caused by Project lighting will be avoided, and f)* the plan shall comply with local policies and ordinances. *All permanent light sources shall be below 2,500 Kelvin color temperature (warm white) and shall have cutoff angles not to exceed 45 degrees of nadir.* The Applicant and SCE each shall submit to the BLM *and CPUC* for review and approval a *L*ighting *M*itigation *P*lan (details provided in Section 4.16). *MM-VR-5: Surface Treatment of Project Structures/Buildings.* The Applicant and SCE shall treat the surfaces of all Project structures and buildings visible to the public such that a) their colors minimize visual contrast by blending with the characteristic landscape colors; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specula and nonreflective, and the insulators shall be nonreflective and nonrefractive. The Applicant and SCE shall comply with BLM requirements regarding appropriate surface treatments for Project elements. *MM-VR-6: Project Design.* The Applicant and SCE shall use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color (see Mitigation MM-VR-5) and texture of the landscape; and reduction of unnecessary disturbance. Additional details on design strategies are provided in Section 4.16.

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Water Resources		
	AM-WAT-1 training construction staff in the management of hazardous materials and use of spill control and cleanup equipment; AM-WAT-2 having a clear chain of command within the organizational structure with responsibility for implementing, monitoring, and correcting BMPs; AM-WAT-3 covering and containing hazardous materials so that they are not in contact with precipitation or runoff; AM-WAT-4 storing hazardous materials in one or more central areas, and instituting rules requiring all hazardous materials to be secured at the end of the day; AM-WAT-5 maintaining good inventory records; storing hazardous liquids and dispensing equipment in secondary containment; AM-WAT-6 maintaining adequate quantities of spill containment and response equipment at readily accessible points throughout the site; AM-WAT-7 identifying the worst case and most likely spill scenarios, and providing spill response equipment adequate to respond to these scenarios; AM-WAT-8 using chemicals presenting the least environmental hazard wherever possible; AM-WAT-9 storing the smallest quantities of hazardous materials possible on the site; AM-WAT-10 maintaining site security to reduce vandalism; AM-WAT-11 requiring all contractors to abide by the program BMPs and to identify any hazardous materials and specific BMPs pertaining to their trade or activity. *The SPCC Plan for the site would address storage of mineral oil contained in transformers. A SPCC Plan is required when 10,000 gallons or more of mineral oil in electrical equipment is contained on site, or when 1,320 gallons of petroleum is stored on the site, although an SPCC Plan can be voluntarily implemented for lesser quantities. The SPCC Plan would address methods and procedures for managing these products, lighting, security, containment requirements, training requirements, staff responsibilities for inspecting storage and dispensing equipment; and equipment and procedures for responding to a spill or release of stored petroleum products.* *Among the features that are incorporated into the Project design to address potential impacts on water resources are the measures identified in the Storm Water Hydrology Report for Alternative B (AECOM. 2010b; Appendix G) to reduce flooding and erosion effects associated with the 100-year design runoff event. The modeling results indicate that the most effective measure to reduce*	*MM-WAT-1 Groundwater Wells, Installation. The Applicant proposes to construct new groundwater wells in support of the Project, that would produce water from the Chuckwalla Valley Groundwater Basin (CVGB). The Project owner shall ensure that the wells are completed in accordance with all applicable state and local water well construction permits and requirements. Prior to initiation of well construction activities, the Project owner shall submit for review and comment a well construction packet to the County of Riverside and fees normally required for the County's well permit, with copies to the Compliance Project Manager (CPM). The Project shall not construct a well or extract and use groundwater until approval has been issued by the county and the CPM to construct and operate the well. Wells permitted and installed as part of pre-construction field investigations that subsequently are planned for use as Project water supply wells require CPM approval prior to their use to supply water to the Project.* *Post-Well Installation. The Project owner shall provide documentation as required under County permit conditions to the CPM that the well has been properly completed. In accordance with California's Water Code Section 13754, the driller of the well shall submit to the Department of Water Resources (DWR) a Well Completion Report for each well installed. The Project owner shall ensure the Well Completion reports are submitted. The Project owner shall ensure compliance with all County water well standards and the County requirements for the life of the wells, and shall provide the CPM with two copies each of all monitoring or other reports required for compliance with the County of Riverside water well standards and operation requirements, as well as any changes made to the operation of the well.* *MM-WAT-2 Construction Water Use. The proposed Project's use of groundwater during construction shall not exceed a total of 1,400 af during the 26 month construction period. Before groundwater can be used for construction, the Applicant shall install and maintain metering devices as part of the water supply and distribution system to document Project water use and to monitor and record in gallons per day the total volume of water supplied to the Project from this water source. The metering devices shall be operational for the life of the Project.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Water Resources (cont.)		
	runoff depth and velocity would be AM-WAT-12 decompacting the soil between solar panels to increase infiltration potential. *AM-WAT-13 Riprap increases surface roughness and slows runoff velocities, decreasing sediment transport, and increasing flow depth. Riprap would be used in conjunction with decompaction, as riprap would not mitigate flow or volume.* *AM-WAT-14 Retention basins could be located along the upstream western boundary of the Project site to intercept run on storm water flows. The intent of this measure is to reduce overall flow depths, velocities and outflow volume by retaining run-on storm water volume. They would also reduce sediment transport within the Project site.* *AM-WAT-15 Check dams can be constructed to address specific post-development hydraulic characteristics that remain after implementation of the decompaction measure. Check dams could be located near the downstream southern boundary of the Project site to intercept run off. Check dams would have an effect on the storm water upstream of each dam because the storm water would back up behind each dam. Check dams would also reduce flow velocities and would retain sediment.* *AM-WAT-16 Strip detention basins would be approximately six inches deep and 70 feet wide, and would be designed to follow the topographic contours of the site, so their lengths would be dependent on the locations of the basins on the site. These detention basins could be located near the downstream southern boundary of the Project site to intercept run off storm water flows. The intent of this measure is to reduce outflow volume by detaining run-off storm water volume, similar to the check dam measures. Strip detention basins would not have an effect on the storm water upstream of each basin but would reduce flow velocities and sediment transport leaving the Project site.*	*MM-WAT-3 Groundwater Level Monitoring, Mitigation, and Reporting. The Applicant shall submit a Groundwater Level Monitoring, Mitigation, and Reporting Plan to CPM for review and approval in advance of construction activities and before onsite groundwater supply wells are operated. The Groundwater Level Monitoring, Mitigation, and Reporting Plan shall provide detailed methodology for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and Project operation water use. The plan shall establish pre-construction and Project related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Project pumping wells and near potentially impacted existing wells. Additional details are provided in Section 4.17.* *MM-WAT-4 Mitigation for the Use of Fencing. Desert tortoise exclusion fencing and security fencing shall be installed around the entire perimeter of the Project site as described in AM-WIL-1. During construction the desert tortoise exclusion fence will be inspected on a daily basis to ensure the integrity of the fence is maintained. During operation of the Project, fence inspections shall occur at least once per month throughout the life of the Project, and within 24 hours after storms or other events that might affect the integrity and function of desert tortoise exclusion fences. Fence repairs shall be completed within two days (48 hours) of detecting problems that affect the functioning of the desert tortoise exclusion fencing. If fence damage occurs during any time of year when tortoises may be active, the Project owner shall be responsible for monitoring the site of the damaged fence until it is fully repaired, to prevent a desert tortoise from entering the Project area. All incidents of damaged tortoise exclusion fence, including dates of damage and repair; extent of damage, and monitoring summaries (methods and results), shall be reported to the BLM, CPM, CDFG, and USFWS. All wildlife found entrapped or dead in the fence shall be reported to the BLM, CPM, CDFG, and USFWS. Fencing shall be installed with breakaway design features so as not to interfere with or impede storm water or flood flows, or associated sediment loads.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Water Resources (cont.)		
		MM-WAT-5 Construction Period Storm Water Quality. As discussed previously, the waterways that would be affected as a result of Project implementation would not be considered jurisdictional waters under the federal Clean Water Act. As a result, no NPDES permits would be required within the Project area during construction or operation. Therefore, a comprehensive construction-period water quality control plan shall be generated, and recommendations of the plan shall be adhered to. The plan shall be completed by the Applicant before Project construction begins and shall include an evaluation of potential for construction-related storm water pollutant loading that could result from Project construction. The plan shall address and implement all of the issues and recommendations of the Storm Water Pollution Prevention Plan (SWPPP). This mitigation measure requires that a SWPPP for Project construction and decommissioning is prepared prior to commencing with either action. *The plan shall evaluate potential for erosion and sedimentation to occur on site and downstream as a result of construction, as well as potential for construction-related releases of fuels, oils, solvents, concrete wash-out, greases, paints, and other potential water quality pollutants to become entrained in storm water, or otherwise result in the degradation of surface water or groundwater quality. The evaluation shall implement specific measures to minimize potential effects on water quality. These measures may include, but would not be limited to, installation of temporary settling basins, stabilization of disturbed soils, replanting vegetation after disturbance, limitations on construction during wet periods, installation of temporary erosion control devices (fiber rolls, staked straw bales, detention basins, check dams, geofabric, dikes, and temporary revegetation), covering stockpiled loose material during rain events, equipment maintenance to prevent leaks, application of erosion protection to cut and fill slopes, and other BMPs. Sediment shall be retained on site by sediment basins, traps, or other measures. No disturbed surfaces shall be left without erosion control measures in place during the rainy season. Recommendations from the plan shall be applied during construction of all Project-related components.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Resource	Applicant Measures	Mitigation Measures
Water Resources (cont.)		
		MM-WAT-6 Operation Period Storm Water Flows and Quality. As discussed previously, the waterways that would be affected as a result of Project implementation would not be considered jurisdictional waters under the federal Clean Water Act. As a result, no NPDES permits would be required within the Project area during Project construction or operation. Therefore, the following mitigation measure provides for the explicit implementation of an operations period water quality control program to minimize storm water-related discharges of sediment and other pollutants from the Project site during Project operations. *A comprehensive operation-period storm water and flood drainage and water quality control plan shall be completed, and the recommendations of the plan shall be implemented by the Applicant. The plan shall evaluate potential for the Project to exceed storm water discharges during 10-year and 100-year storm events, and shall ensure that the volume of discharge emanating from the Project site during these events is limited to an increase of no more than one percent, in comparison to existing conditions. To meet this condition, storm water shall be retained in on-site storm water retention ponds, infiltration basins, or other storm water control facilities. Channel design for flood control along the Project perimeter shall be sized and designed to minimize scour and disruption to upstream and downstream hydrology, including measures to prevent headcutting, migration of channels, erosion, and downstream sedimentation, under conditions equivalent to a 100-year flood.* *The plan shall also evaluate and mitigate relevant potential sources of water quality pollution associated with Project operation. These sources include, but are not limited to, release of sediment, oils, greases, transformer fluid, fuels, paint, trash, pollutants from impervious surfaces (asphalt oils, greases, and brake dust) and other water quality pollutants arising during operation. The plan shall identify operation-period BMPs, including but not limited to implementation of operation period settlement basins, swales, infiltration basins, regularly scheduled maintenance of proposed drainage and flood control facilities to prevent erosion and sedimentation, and storm water quality control BMPs including, but not limited to, regular sweeping of impervious surfaces, equipment maintenance to prevent leaks, replanting native vegetation, and other measures as applicable to minimize potential impacts to storm water quality.*

Table ES-3 (continued)
Applicant Measures (AMs) and Mitigation Measures (MMs)

Note 1: Additional detail on some mitigation measures is provided in Chapter 4.

Notes:
ACEC = Area of Critical Environmental Concern
APLIC = Avian Power Line Interaction Committee
BACT = best available control technology
BMPs = best management practices
CARB = California Air Resources Board
CDFG = California Department of Fish and Game
CHU = critical habitat unit
CPM = compliance project manager
CRHR = California Register of Historic Resources
CVGB = Chuckwalla Valley Groundwater Basin
DOD = Department of Defense
DOE = Department of Energy
DTC-CAMA = Desert Training Center California-Arizona Maneuver Area
DWMA = Desert Wildlife Management Area
DWQ = Division of Water Quality
DWR = Department of Water Resources
EM = Environmental Manager
EPA = US Environmental Protection Agency
ESA = Environmental Site Assessment
FAA = Federal Aviation Administration
HMBP = Hazardous Materials Business Plan
HPTP = historic property treatment plan
IWMP = Integrated Weed Management Plan
MEC = Munitions of Environmental Concern
NECO Plan = Northern and Eastern Colorado Desert Plan
NPDES = National Pollutant Discharge Elimination System
NRHP = National Register of Historic Places
PM10 = inhalable particulate matter
ROD = Record of Decision
ROW = right-of-way
SB = Senate Bill
SCAQMD = South Coast Air Quality Management District
SPCC = Spill Prevention, Control, and Countermeasures Plan
SWPPP = Stormwater Pollution Prevention Plan
TCP = traditional cultural property
USFWS = US Fish and Wildlife Service
WEAP = Worker Environmental Awareness Program

CHAPTER 1 – INTRODUCTION

Desert Sunlight Holdings, LLC (Sunlight or Applicant), a wholly owned subsidiary of First Solar Development, Inc. (First Solar), proposes to construct and operate a 550-megawatt (MW), nominal capacity, alternating current (AC), solar photovoltaic (PV), energy-generating project known as the Desert Sunlight Solar Farm (DSSF). The Project consists of the PV generating facility (Solar Farm), most of the corridor for the associated 220-kilovolt (kV) generation interconnection line (Gen-Tie Line), and one of two potential sites being considered for a new substation. The Project would be located on lands administered by the US Department of the Interior (DOI), Bureau of Land Management (BLM), Palm Springs-South Coast Field Office.

The Project would develop a new 500- to 220- (500/220-) kV substation (referred to herein as the Red Bluff Substation), where the PV generating facility would interconnect with the Southern California Edison (SCE) regional transmission system. While the Red Bluff Substation is included as part of the Project for planning and environmental considerations, it would be constructed, owned, and operated by SCE, not the Applicant. In addition to approvals sought by Sunlight from federal, state, and local agencies for implementing the DSSF, SCE will seek approvals from the California Public Utilities Commission (CPUC) and other state agencies to develop the Red Bluff Substation. Under California Environmental Quality Act (CEQA) Guidelines, Section 15221, this environmental impact statement (EIS) will satisfy the CEQA requirements for those Project components that require entitlements from state and local agencies.

Because the Project would be located primarily on lands administered by the BLM, the Applicant filed a right-of-way (ROW) application with the BLM to construct, operate, *and decommission* the Project (Case File Number CACA #48649). The decision regarding the issuance of the ROW grant will be based in part on an evaluation of the Project's potential environmental effects through the environmental review process under the National Environmental Policy Act of 1969 (NEPA) and the requirements of the Federal Land Policy and Management Act of 1976 (FLPMA). As part of the ROW grant application process, the Applicant submitted a Plan of Development (POD) for the Project to the BLM on December 22, 2009. Since then, the Applicant has modified the configuration of the Project's solar arrays and developed two additional Gen-Tie Line alternatives for consideration to improve design and incorporate feedback from public agencies and other stakeholders to minimize adverse environmental impacts. A Revised Project Description (a Supplement to the POD) was submitted to the BLM on March 19, 2010 *and will be resubmitted to the BLM prior to issuance of a Notice to Proceed (NTP)*.

In compliance with NEPA, the BLM prepared this *Final* EIS to inform the public about the proposed Project and to meet the needs of federal, state, and local permitting agencies in considering the Project. BLM authorization of a ROW grant for the Project would require *an amendment* to the California Desert Conservation Area (CDCA) Plan (BLM 1980), as amended. The US Department of Energy (DOE) is a cooperating agency on the EIS pursuant to a Memorandum of Understanding (MOU) between DOE and BLM. DOE will consider Sunlight's application for a loan guarantee under Title XVII of the Energy Policy Act of 2005 (EPAct 2005), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009, Public Law (PL) 111-5 (the "Recovery Act").

In order to construct the Red Bluff Substation, SCE first must obtain *regulatory* authorization from the CPUC., which has discretionary authority to issue a Permit to Construct (PTC) for the Red Bluff

Substation, evaluated herein as a portion of the Project. As allowed by CEQA Guidelines Section 15221, the CPUC intends to use this EIS to provide the environmental review required for its consideration of SCE's PTC application under CEQA once that application is filed. The CPUC and BLM have signed an MOU that defines the relationship of the two agencies, and identifies CPUC as a cooperating agency with the BLM for preparation of this EIS. Following preparation of the EIS by BLM, the CPUC will determine whether the EIS adequately accommodates the requirements of CEQA and can be used to support its decision on the substation.

The Applicant is coordinating with other federal agencies, including the US Fish and Wildlife Service (USFWS) and the US Army Corps of Engineers (USACE), regarding potential Project approvals and any associated NEPA compliance requirements. The Applicant is also coordinating with California state and local agencies, including the California Department of Fish and Game (CDFG), California Department of Transportation (Caltrans), Metropolitan Water District of Southern California (MWD), California Regional Water Quality Control Board (RWQCB), South Coast Air Quality Management District (SCAQMD), and Riverside County, regarding potential Project approvals and any associated CEQA compliance requirements.

This EIS describes and evaluates the environmental impacts that are expected to result from construction, operation, maintenance, and decommissioning of the Project and presents recommended mitigation measures that, if adopted, would avoid, minimize, or mitigate the environmental impacts identified. In accordance with NEPA *and* CEQA requirements, this EIS also identifies alternatives that respond to the stated purpose and need for the proposed Project (including *one No Action and two No Project* Alternatives) that could avoid or minimize significant environmental impacts associated with the Project as proposed by the Applicant and SCE, and evaluates the environmental impacts associated with these alternatives. Specifically, the information contained in this EIS will be considered by the BLM in its deliberations regarding approval of the ROW grant and may also be considered by the other, applicable agencies with regard to their respective permits, including DOE, CPUC, and other federal, state, and local agencies.

1.1 PROJECT LOCATION AND OVERVIEW

The Project area is a largely vacant, undeveloped, and relatively flat land area located in the Chuckwalla Valley of the Sonora Desert in eastern Riverside County. The area proposed for the Solar Farm (Figure 1-1) is approximately six miles north of Interstate 10 (I-10) and the rural community of Desert Center and four miles north of Lake Tamarisk, between the cities of Coachella (to the west) and Blythe (to the east). The Project Area contains existing transmission lines, telephone lines, and pipelines, as well as dirt roads. Joshua Tree National Park is north, east, and west of the area; at its closest point, the Solar Farm site is approximately 1.4 miles southwest of the national park boundary. The Eagle Mountain Mine is approximately one mile west of the Project Study Area.

The Project consists of three main components associated with generating and delivering electricity and one provision that would determine the suitability of the Project application area for solar development:

- Solar Farm site (the main PV generating facility);
- 220-kV Gen-Tie (*interconnection*) Line; and
- 500/220-kV substation (the Red Bluff Substation).

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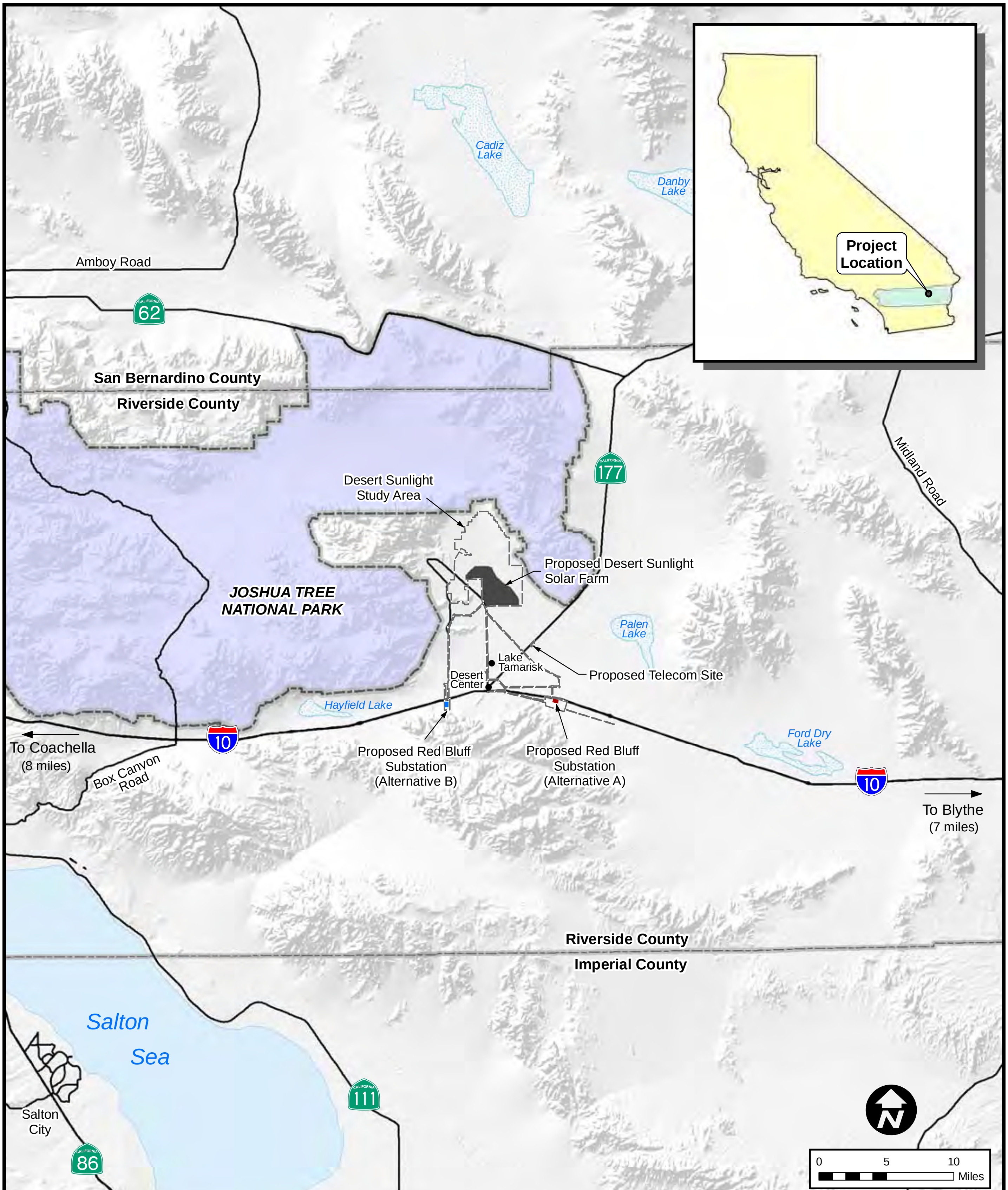

LEGEND

Desert Sunlight Study Area Boundary

Proposed Desert Sunlight Solar Farm

Joshua Tree National Park

Intermittent Water Feature

Perennial Water Feature

DESERT SUNLIGHT SOLAR FARM

Figure 1-1

Regional Map

The determination of the suitability of the project application area for solar development would be made as part of the plan amendment process, as described in Section 1.6.

The Solar Farm site, where the power would be generated, would encompass up to *3,912* acres. The Solar Farm would consist of several components:

- Main generation area, which includes PV arrays, combining switchgear, overhead lines, and access corridors;
- Operations and Maintenance (O&M) Facility;
- Solar Energy Visitor Center;
- On-site substation (where the voltage of the Solar Farm-generated electricity would be stepped up to 220 kV, which is the voltage of the Gen-Tie Line); and
- Site security and fencing.

The Gen-Tie Line would transmit the electricity generated at the Solar Farm to the regional transmission system, through the Red Bluff Substation where the power from the Solar Farm would feed into the SCE's existing Devers Palo Verde 1 (DPV1) 500-kV *interconnection* line. The Gen-Tie Line would be up to 12.2 miles long, encompassing up to 256 acres. *The 256 acres would be utilized for the entire 160-foot-wide transmission ROW; however, permanent disturbance would be up to 92 acres.* The Applicant plans to use steel monopoles for the Gen-Tie Line. Poles are expected to be 135 feet high and approximately 900 to 1,100 feet apart.

The Red Bluff Substation would consist of a 500/220-kV substation on approximately *76* acres, with up to *20* acres needed for related drainage control, up to *31* acres for access roads, up to *33* acres for *interconnection* line connections, up to 8 acres for an electric distribution line, and *up to* an acre for telecommunications facilities. It would interconnect the power from the Solar Farm (through the Gen-Tie Line) to SCE's DPV1 *interconnection* line, which passes next to the two alternative substation sites evaluated in this EIS. Red Bluff Substation features include:

- Interconnection lines to connect the substation to the DPV1 line;
- Connection of the Project's Gen-Tie Line into the substation;
- Modification of some existing Florida Power & Light (FPL) structures (towers) near the substation;
- Construction of an electric distribution line for substation light and power;
- Installation of telecommunications facilities associated with the DSSF and substation;
- Construction of drainage control features outside (but next to) the substation footprint; and
- Construction of or improvements to existing access roads.

For each of the three Project components, the Applicant has provided the following alternative configurations:

- Two Solar Farm configurations, SF-B and SF-C;
- Three Gen-Tie Line configurations, GT-A-1, A-2, and B-2; and

- Two Red Bluff Substation configurations, Alternatives A and B.

One additional Solar Farm layout (SF-A) and one additional Gen-Tie Line configuration (GT-B-1) were eliminated from further consideration because of biological and cultural resources constraints.

In addition, two access road alternatives (Access Roads 1 and 2) have been identified for Red Bluff Substation Alternative A.

To provide a sufficiently large area to evaluate a reasonable range of alternatives for the Solar Farm site, the Gen-Tie Line route, and the Red Bluff Substation, including ancillary facilities, the Applicant established a Project Study Area of over 19,000 acres (Figure 1-2). The Project Study Area includes over 16,000 acres studied for siting of the Solar Farm site, over 2,000 acres studied for siting of the Gen-Tie Line, over 650 acres studied for siting of the Red Bluff Substation, approximately 140 acres considered for access roads to the Red Bluff Substation, 40 acres for telecommunications facilities, and approximately 230 acres for the distribution line for substation light and power.

The Applicant's process for evaluating and selecting from among various areas considered for the Project Study Area was undertaken in consultation with the BLM and was based on a number of criteria, including:

- A contiguous site with flat topography (grade of less than three percent) large enough for siting a 550-MW solar PV facility with minimal cut and fill;
- Avoidance of areas that are highly pristine or biologically sensitive, such as designated Wilderness Areas, Areas of Critical Environmental Concern, Desert Wildlife Management Areas, etc.;
- Avoidance of high-quality habitat for listed species (e.g., choosing Project locations in Category III [lowest quality] desert tortoise habitat);
- Avoidance of known cultural or historic sites and recreational resource areas;
- Proximity to existing transmission facilities with sufficient capacity for Project output and suitable locations for interconnection;
- Proximity to established highway and road access;
- Availability of land for sale or lease at a reasonable cost; and
- Location within an area that has been identified as a Competitive Renewable Energy Zone (CREZ) under California's Renewable Energy Transmission Initiative (RETI), and a Solar Energy Study Area in the BLM/DOE Programmatic Solar Energy Development EIS.

Once the Project Study Area was chosen, the Applicant conducted preliminary biological, cultural, hydrological, and geological reviews of the entire Project Study Area in order to evaluate site conditions and eliminate portions of the Project Study Area considered unsuitable for development of the Project facilities. Based on the preliminary study, more thorough and detailed biological, cultural, hydrological, and geological studies were conducted on the portions of the Project Study Area considered suitable for development, including all areas considered for the three Project components. These detailed studies were done in order to determine the optimal configurations for

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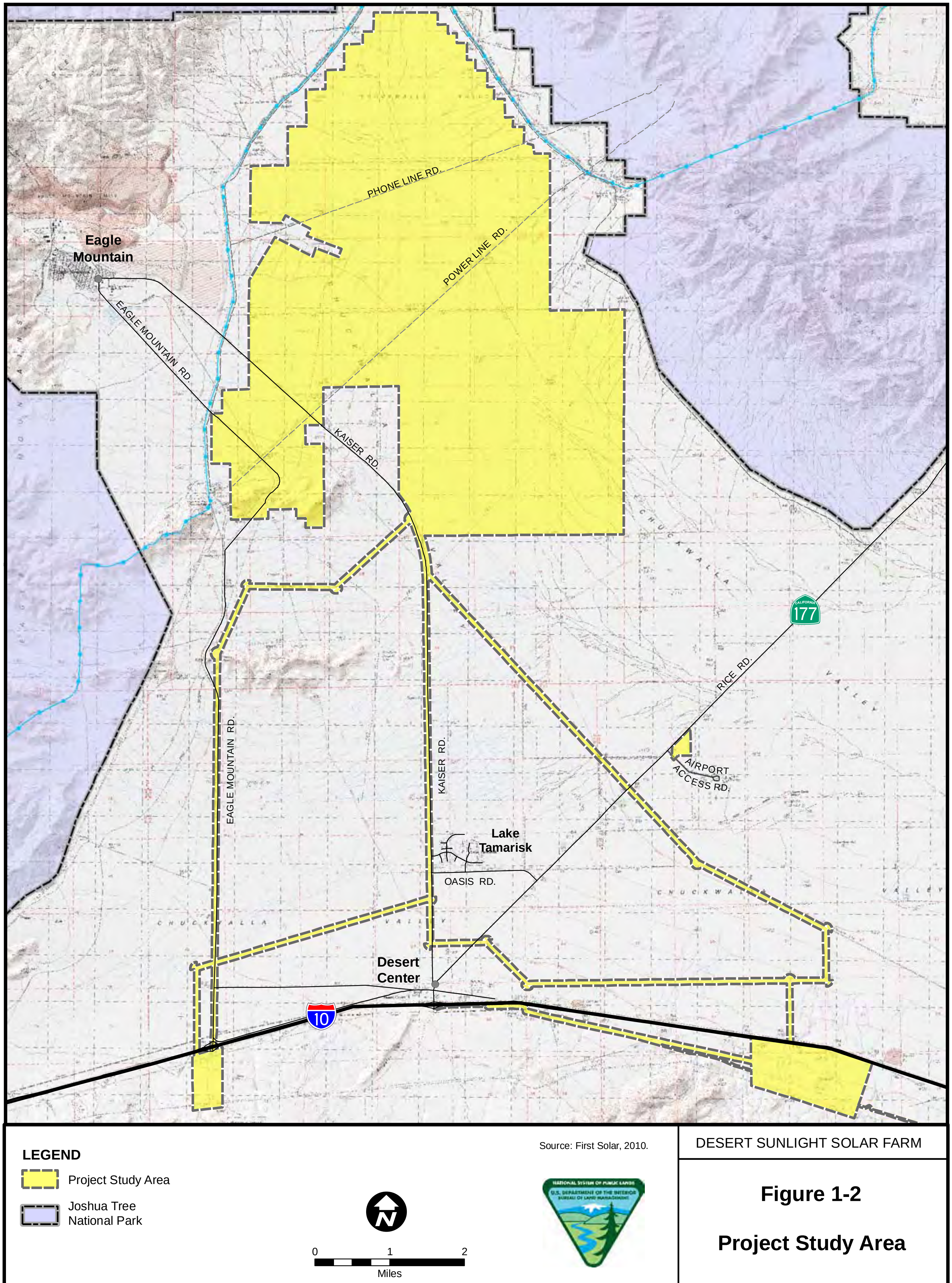

Source: First Solar, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 1-2

Project Study Area

alternatives to be considered for the Project components. The alternative configurations were sited to avoid and then minimize impacts to sensitive environmental resources to the extent possible. Further biological, cultural, hydrological, and geological reviews were conducted for areas added to the Project Study Area since the Applicant's December 2009 submittal of the POD.

1.2 Purpose of and Need for Action

Sunlight applied to the BLM for a ROW grant on federal public land, pursuant to FLPMA, to develop the Solar Farm, the Gen-Tie Line route, and the Red Bluff Substation. The Applicant also applied to the DOE for a loan guarantee under Title XVII of the Energy Policy Act of 2005 (EPAct 2005), as amended by Section 406 of the American Recovery and Reinvestment Act of 2009, PL 111-5 ("Recovery Act"). This section discusses the purpose and need for the Proposed Action, as required by NEPA, the Applicant's objectives for the Project, and CEQA project objectives for the Red Bluff Substation.

1.2.1 BLM Purpose and Need

In accordance with FLPMA (Section 103(c)), public lands are to be managed for multiple uses that take into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROW on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's multiple use mandate, the purpose and need for the proposed action is to respond to a FLPMA ROW application submitted by Desert Sunlight Holdings, LLC to construct, operate, maintain, and decommission a solar PV energy-generating facility and associated infrastructure on public lands administered by the BLM in compliance with FLPMA, BLM ROW regulations, and other applicable federal laws and policies.

In conjunction with FLPMA, the BLM's applicable authorities include the following:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner.
- *Section 211* of the Energy Policy Act of 2005 (EPAct 2005), which *states that "the Secretary of the Interior should …seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."*
- Secretarial Order 3285A1, Renewable Energy Development by the DOI, dated February 22, 2010. This Secretarial Order establishes the development of renewable energy as a priority for the DOI and creates a Departmental Task Force on Energy and Climate Change. It also announced a policy goal of identifying and prioritizing specific locations (study areas) best suited for large-scale production of solar energy. The Project Study Area is within one of the study areas identified by the BLM under this order, as shown on Figure 1-3.

The BLM will decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. Modifications may include modifying the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1)).

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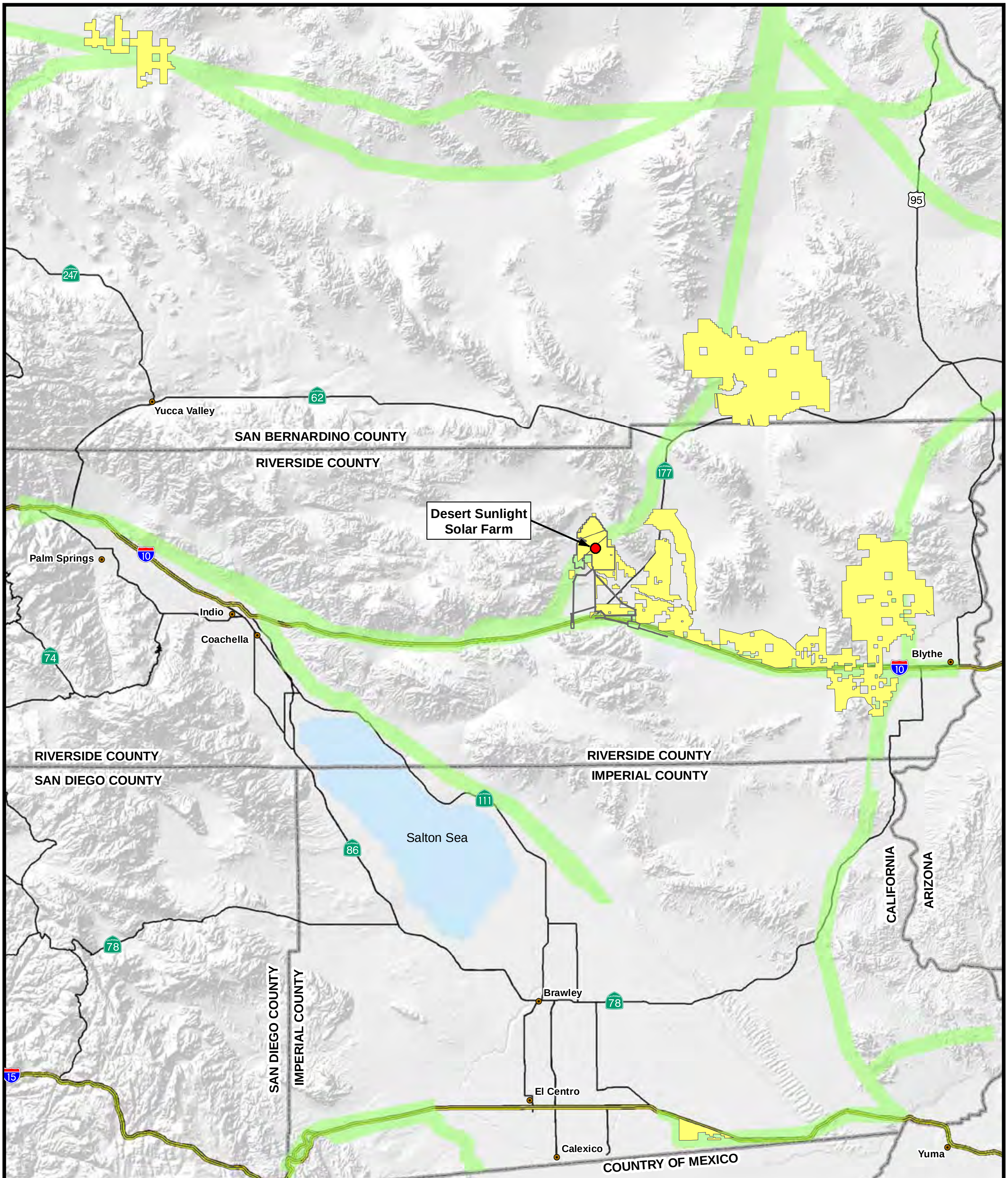

LEGEND

Solar Energy Study Areas

Designated Utility Corridor

0 10 20 Miles

Source:
Department of Energy, 2010.
Department of Interior, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 1-3

BLM Solar Energy Study Areas in Project Area

1.2.2 DOE Purpose and Need

The DOE is a cooperating agency on this EIS, in accordance with an MOU the BLM signed in January 2010. The DOE's purpose and need for agency action is to comply with its mandate under EPAct 2005 by selecting eligible projects that meet the goals of the act. The DOE's proposed action is issuance of a loan guarantee for this Project under Title XVII of the EPAct 2005, as amended by Section 406 of the Recovery Act. The Recovery Act requires that construction for the Project commence by September 30, 2011.

The DOE's purpose and need for the agency action is based on federal laws addressing the financing and promotion of renewable energy projects and need for immediate economic stimulus. The EPAct 2005 established a federal loan guarantee program within DOE for eligible energy projects. Title XVII of EPAct 2005 authorizes the Secretary of Energy to make loan guarantees for a variety of types of projects including those that ‘‘avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the U.S. at the time the guarantee is issued.” The two principal goals of the loan guarantee program are to encourage commercial use in the US of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. The EPAct 2005 was amended by the Recovery Act to create Section 1705, authorizing a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects that commence construction before September 30, 2011. The primary purposes of the Recovery Act are job preservation and creation, infrastructure investment, energy efficiency and science, assistance to the unemployed, and state and local fiscal stabilization. The Section 1705 program is designed to address the current economic conditions of the nation, in part, through renewable energy, transmission and leading edge biofuels projects.

On December 16, 2009, Sunlight submitted an application to the DOE Loan Guarantee Program for a federal loan guarantee for the Desert Sunlight Solar Farm at Desert Center, California, in response to DOE's October 7, 2009 solicitation, "Federal Loan Guarantees for Commercial Technology Renewable Energy Generation Projects under the Financial Institution Partnership Program." For this solicitation, DOE is implementing the application process by directly working with certain qualified financial institutions through a set of procedures established by DOE as its Financial Institution Partnership Program (FIPP). In general, the FIPP is intended to expedite the loan guarantee process and expand senior credit capacity for the efficient and prudent financing of eligible projects under Section 1705 of Title XVII that use commercial technologies. This objective will be primarily accomplished by additional roles defined for certain financial institutions satisfying applicable qualifications set forth by DOE. Under the FIPP program, proposed borrowers and project sponsors may not apply directly to DOE but must instead work with a financial institution that meets DOE qualification as a Lead Lender.

1.2.3 Desert Sunlight Holdings LLC Objectives for the Project

Sunlight's fundamental objective for the DSSF Project is to construct, operate, maintain and eventually decommission a 550-MW PV energy facility and associated interconnection transmission infrastructure, and to facilitate SCE's construction and operation of a substation in order to provide renewable electric power to California's existing transmission grid to help meet federal and state renewable energy supply and greenhouse gas (GHG) emissions reduction requirements. Sunlight is committed to constructing and operating the Project in an environmentally responsible manner and to providing a sustainable source of renewable energy to the state's investor-owned utilities and the public. Sunlight's specific objectives for the DSSF Project are:

- To construct and operate a cost competitive 550-MW solar PV energy facility using First Solar's proven thin-film PV technology to provide a renewable and reliable source of power to California's investor-owned utilities;
- To locate the Project on contiguous lands with high solar insolation and relatively flat terrain at sufficient scale to maximize operational efficiency while minimizing environmental impacts and water use;
- To minimize environmental impacts and land disturbance by locating the Project near existing transmission infrastructure and roads and by avoiding sensitive environmental areas, recreational resources and wildlife habitats (e.g., Desert Wildlife Management Areas, Areas of Critical Environmental Concern);
- To assist California and its investor-owned utilities in meeting the State's Renewables Portfolio Standard (RPS) and GHG emissions reduction requirements, including the requirements set forth in Senate Bill (SB) 1078 (California Renewables Portfolio Standard Program), Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006), and the Governor's Executive Order S-14-08 to increase the state's Renewable Energy Standard to 33 percent renewable power by 2020. In particular:
    - California's RPS mandate that requires the state's investor-owned utilities (IOUs) to supply 20 percent of California's total electricity through renewable energy generation by 2010, as set forth in SB 1078 (2001-2002 Reg. Sess.) (establishing the California RPS Program) and SB 107 (2005-2006 Reg. Sess.) (accelerating the 20 percent requirement to 2010). As of the first quarter of 2010, California's IOUs were obtaining only 15 percent of their electricity from renewable energy generation against the end-of-year 20 percent target. The CPUC reported that the IOUs were expected to meet the 2010 target only in 2012 or 2013, two to three years behind schedule, and that half of new RPS projects approved by the CPUC since 2002 and under development are delayed due to lack of transmission or generation permitting at the county, state, or federal level.[1]
    - Governor Schwarzenegger's issued Executive Order S-14-08 to streamline California's renewable energy project approval process and increase the state's renewable energy standard to 33 percent renewable energy by 2020. *The IOUs will have to almost quadruple their annual renewable energy procurement, from 27 terawatt-hours (TWh) in 2007 to 102 TWh by 2020 to meet this requirement.*[2]
    - California's GHG emission reduction goals set forth in AB 32 that require the state's GHG emissions be reduced to 1990 levels by 2020.
- To develop a source of renewable electric power that can be placed into service in an expeditious manner by interconnecting to SCE's existing transmission grid at DPV1 at a

[1] Renewables Portfolio Standard Quarterly Report Q4 2009, California Public Utilities Commission, pp. 4, 7-8.
[2] 33 percent Renewables Portfolio Standard Implementation Analysis Preliminary Results, June 2009, California Public Utilities Commission, p. 8.

substation location reviewed by SCE and interconnecting to the California Independent System Operator (CAISO) grid through serial interconnection queue positions as part of the Large Generator Interconnection Process (LGIP).

To assist in meeting these objectives, and after evaluating numerous potential locations and alternative Project configurations in consultation with BLM, the Applicant applied for a ROW grant to construct and operate a 550-MW solar PV energy facility on BLM-administered land at the Desert Sunlight location using its proven thin film PV technology, entered into power purchase agreements (PPAs) to supply renewable power, and obtained priority access to transmit 550 MW of renewable power on SCE's existing DPV1 *interconnection* line at the Red Bluff Substation. Sunlight also applied to DOE for a loan guarantee under Title XVII of EPAct 2005, as amended by Section 406 of the Recovery Act of 2009, to assist in financing the Project (refer to Section 1.2.2 for more information). Through this application the Applicant will assist the BLM and DOE in meeting their respective Purposes and Needs of contributing toward fulfillment of the economic stimulus and renewable energy development objectives of EPAct 2005, the Recovery Act, Presidential and Secretarial orders, and federal laws, regulations, and mandates.

1.2.4 CEQA Project Objectives

SCE proposes to construct the Red Bluff Substation in response to interconnection requests from Desert Sunlight Holdings LLC as part of the LGIP. CEQA Guidelines Section 15124(b) requires a statement of project objectives. The project objectives for the Red Bluff Substation are to:

- Respond to interconnection requests as part of the LGIP from generators in the Desert Center area by constructing a substation to interconnect with the DPV 500-kV interconnection line;
- Provide safe and reliable electrical service consistent with the North American Electric Reliability Corporation (NERC), Federal Energy Regulatory Commission (FERC), CAISO, and SCE's planning design guidelines and criteria;
- Meet project need while minimizing environmental impacts; and
- Meet project need in accordance with the Large Generation Interconnection Agreement.

1.3 AUTHORIZING ACTIONS

1.3.1 Major Authorizing Laws and Regulations

The BLM is preparing this EIS in compliance with NEPA, FLPMA and applicable regulations to inform the public about the proposed Project and to meet the needs of federal, state, and local permitting agencies in considering the Project. BLM authorization of a ROW grant for the Project would require a resource management plan amendment to the CDCA Plan (BLM 1980), as amended. DOE will also consider Sunlight's application for a loan guarantee under Title XVII of the EPAct 2005, as amended by Section 406 of the Recovery Act.

In addition, the CPUC has discretionary authority to issue a *Permit to Construct (PTC)* for the Red Bluff Substation, evaluated herein as a portion of the Project. *Because portions of the Project's alternative Gen-Tie Line routes would cross unincorporated privately owned land, MWD owned land, and/or Riverside County owned land within the jurisdiction of Riverside County, the County has authority to issue a Public Use Permit for the*

Project. Additionally, Riverside County has the authority to issue an Encroachment Permit for access to the County road ROW. As allowed by the CEQA Guidelines, the CPUC *and Riverside County* intend to use this EIS to provide the environmental review required for *their respective approvals of the relevant portions of the Project.*

The Applicant is also coordinating with other federal, state, and local agencies regarding potential Project permits and approvals and any associated NEPA or CEQA compliance requirements. Other federal as well as state and local permitting authorities may also intend to rely upon the analysis presented in this EIS for fulfillment of their respective regulatory obligations.

The following sections provide an overview of the major federal (BLM and non-BLM), state, and local policies, plans, programs, and laws that apply to the Project. Additional requirements are discussed for each environmental resource in Chapter 3.

1.3.2 Relationship to BLM Policies, Plans, Programs, and Laws

Federal Land Policy and Management Act of 1976

FLPMA provides the BLM's overarching mandate to manage the lands and resources under its stewardship based on the principles of multiple use and sustained yield. Multiple use is a concept that directs management of lands and resource values in a way that best meets the present and future needs of Americans. It is defined as "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources" (FLPMA §103[c]). In processing a land use plan amendment, BLM must also comply with the BLM Planning Regulations (43 CFR Part 1600) and the BLM Land Use Planning Handbook (H-1601-1).

California Desert Conservation Area Plan

The CDCA encompasses 25 million acres in Southern California designated by Congress in 1976 through FLPMA. The BLM manages about 10 million of those acres. Congress directed the BLM to prepare and implement a comprehensive long-range plan for the management, use, development, and protection of public lands within the CDCA. The 1980 CDCA Plan, as amended, is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan provides overall regional guidance for BLM-administered lands in the CDCA and establishes long-term goals for protection and use of the California desert.

The CDCA Plan establishes four multiple use classes, multiple use class guidelines, and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. *Project compliance with the multiple use classes is discussed in Section 4.9, Lands and Realty.* The multiple use classes are:

- Class C (Controlled Use)—About four million acres are Class C. These include 69 wilderness areas (3,667,020 acres) created by Congress with the October 1994 passage of the California Desert Protection Act. These lands are to be preserved in a natural state; access generally is limited to nonmotorized, nonmechanized means—on foot or horseback.
- Class L (Limited Use)—About four million acres are Class L. These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values.

- Class M (Moderate Use)—About 1.5 million acres are Class M. These lands are managed in a controlled balance between higher-intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and utility development are allowed. Any damage that permitted uses cause must be mitigated.
- Class I (Intensive Use)—About 500,000 acres are Class I. These lands are managed for concentrated use to meet human needs. Reasonable protection is provided for sensitive natural values and mitigation of impacts, and impacted areas are rehabilitated when possible.

Northern and Eastern Colorado Desert Coordinated Management Plan

The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan) is a Habitat Conservation Plan and amendment to the 1980 CDCA Plan that provides:

- A comprehensive framework for ecosystem management, including recovery of three populations of the desert tortoise;
- A single landscape basis for ecosystem management for three federal land administering agencies within the planning area: BLM, Joshua Tree National Park (eastern half only), and all of Chocolate Mountains Gunnery Range managed by the U.S. Navy; and
- A structure that integrates ecosystem management into a broader context of agencies' mandates, including BLM's multiple use management mission.

The NECO planning area consists of 5.5 million acres, covering portions of BLM field offices in Needles, El Centro, and Palm Springs. The plan amendment is also cooperatively joined by the California Department of Fish and Game through the statewide Sikes Act Memorandum of Agreement. *Project compliance with the NECO Plan is discussed in Section 4.9, Lands and Realty.*

1.3.3 Relationship to Other Federal Plans, Policies, Programs, and Laws

This section summarizes the other major federal plans, policies, programs, and laws that apply to the Proposed Action.

National Environmental Policy Act

NEPA (42 USC. 4321 et seq.) declares a continuing federal policy that directs "a systematic, interdisciplinary approach" to planning and decision-making and requires the preparation of environmental statements for "major Federal actions significantly affecting the quality of the human environment." The President's Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Parts 1500-1508) require federal agencies to identify and assess reasonable alternatives to proposed actions that will restore and enhance the quality of the human environment and avoid or minimize adverse environmental impacts. (See also Department of Energy Regulations, 10 CFR Part 1021.) Federal agencies are further directed to emphasize significant environmental issues in project planning and to integrate impact studies required by other environmental laws and Executive Orders into the NEPA process. The NEPA process should therefore be seen as an overall framework for the environmental evaluation of federal actions. In processing ROW applications, BLM must also comply with the Department of the Interior's regulations applicable to implementing the procedural requirements of NEPA (43 CFR Part 46), as well as BLM's NEPA Handbook (H-1790-1).

Clean Air Act

The Clean Air Act (42 USC 7401-7661), as amended, regulates air pollution to improve air quality. It regulates air emissions from area, stationary, and mobile sources. This law also authorizes the US Environmental Protection Agency to establish National Ambient Air Quality Standards to protect public health and the environment.

Clean Water Act

The Clean Water Act (CWA) (33 USC 1251-1376) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the US must obtain a state certification that the discharge complies with other provisions of the CWA. The RWQCBs administer the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredge or fill material) from a point source into waters of the US. Section 404 establishes a permit program administered by the USACE regulating the discharge of dredged or fill material into waters of the US, including wetlands. The CWA also contains the requirements under which the RWQCBs set water quality standards for all contaminants in surface waters.

Endangered Species Act of 1973

The Endangered Species Act (ESA) (16 USC 1531-1543) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. The USFWS administers the ESA. The major components of the ESA are:

- Provisions for the listing of threatened and endangered species;
- The requirement for consultation with the USFWS on federal projects that may affect listed species or their habitat;
- Prohibitions against "take" of listed species. Under the ESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct"; and
- Provisions for permits to allow the incidental taking of threatened and endangered species.

National Historic Preservation Act of 1966, as Amended

The National Historic Preservation Act (NHPA) (16 USC 470) requires federal agencies with jurisdiction over a proposed federal project to take into account the effect of the undertaking on cultural resources that are listed or eligible for listing on the National Register of Historic Places (NRHP). The act requires that the agencies afford the State Historic Preservation Office, any potentially affected Indian tribe, and the Advisory Council on Historic Preservation with an opportunity to comment on the undertaking.

1916 Organic Act, as Amended

The Secretary of the Interior is responsible for protecting units of the National Park System pursuant to the National Park Service 1916 Organic Act (16 U.S.C. 1, 2, 3 and 4) which consists of the Act of August 25, 1916 (39 Stat. 535) and amendments thereto.

1.3.4 Relationship to State and Local Laws, Plans, Policies, and Programs

This section summarizes the major state and local laws, plans, policies, and programs that apply to the Proposed Action.

Air Quality Management District

The proposed Project locations are within the jurisdiction of the South Coast Air Quality Management District (SCAQMD), which reviews the plans and specifications for construction in the proposed Project area. SCAQMD would assess emissions and possible air contamination resulting from construction and operational activities (e.g., road dust, windblown contaminants, and emissions from construction activities).

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code 2050 et seq.) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under CESA. For projects that affect a species that is both state and federally listed, compliance with the federal ESA will satisfy CESA if the CDFG determines that the federal incidental take authorization is "consistent" with CESA under Fish and Game Code Section 2080.1 and issues a Consistency Determination to that effect. For projects that will result in a take of a state-only listed species, the applicant must apply for a take permit under Section 2081(b).

California Fish and Game Code, Streambed Alteration Agreements

Sections 1601 to 1603 of the California Fish and Game Code require notifying CDFG prior to constructing any project that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental review process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes and/or mitigation to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

State Historic Preservation Office

The California State Historic Preservation Office (SHPO) reviews state programs and projects that may impact historic resources that are located on state-owned land pursuant to California Public Resources Code § 5024 and 5024.5.

California's Renewables Portfolio Standard

California's RPS requires each of the state's IOUs to supply 20 percent of its total electricity through renewable energy generation by the year 2010, as set forth in SB 1078 (2001-2002 Reg. Sess.) (establishing the California RPS Program) and SB 107 (2005-2006 Reg. Sess.) (accelerating the 20 percent requirement to the year 2010). Additionally, Governor Schwarzenegger's Executive Order S-14-08 streamlined California's renewable energy project approval process and increased the state's renewable energy standard to 33 percent renewable energy by 2020. The California Energy

Commission will certify that electricity produced by the Project is eligible for the IOUs' RPS compliance after the Project achieves commercial operation.

California Renewable Energy Transmission Initiative

The California RETI is a statewide planning process that has been underway for over two years to identify the transmission projects needed to accommodate California's renewable energy goals. Stakeholders have actively participated in the planning process. Phases 1 and 2 of the RETI project resulted in the identification and refinement of Competitive Renewable Energy Zones (CREZs), areas determined to hold the greatest potential for cost-effective and environmentally responsible renewable energy development.[3] The Project Study Area is located in an area that has been included by the RETI within the Riverside East CREZ.

California Large Generator Interconnection Process

Electricity from the Project would be delivered to customers by the CAISO, acting as a transmission provider, through the transmission system owned by SCE and Pacific Gas and Electric (PG&E). In order to obtain the right to connect to the CAISO grid, a proposed electric generating facility with more than a 20-MW capacity must first apply for a queue position with CAISO through the LGIP. Applications for the Project's queue positions were submitted in 2006, obtaining positions 146 and 147. Next, the proposed generator must obtain a Feasibility Study, a System Impact Study, and a Facility Study from CAISO, a process that often takes several years. The final Facility Study for the Project *was completed* in 2010. Finally, the proposed generator must obtain a Large Generator Interconnection Agreement (LGIA) from CAISO. *This was received in August 2010*, more than three years after obtaining the queue positions.

Riverside County General Plan

Portions of the proposed interconnection lines are within Riverside County's Desert Center Planning Area. The Riverside General Plan aims to preserve the natural character of the unincorporated areas of Riverside County and the Desert Center. The plan encourages clustering of development for the preservation of contiguous open space, aims to limit off-road vehicle use, and requires new development to comply with desert tortoise critical habitat designation requirements.

1.4 REQUIRED FEDERAL, STATE, AND LOCAL PERMITS, APPROVALS AND LICENSES

Federal, state, and local permits and approvals would be required before construction and operation of the Project could proceed. A list of the major permits, approvals, and consultations required is presented in the following sections. The Applicant would be responsible for obtaining all permits and approvals required to implement any authorized activities.

1.4.1 Federal Permits and Status

[3] Renewable Energy Transmission Initiative Phase 2B Draft Report, April, 2010, p. 1-1.

Table 1.4-1 provides a list of the federal permits, approvals, or authorizations anticipated to be required for the Project, and the status of relevant permit applications.

Table 1.4-1
Status of Project Federal Permits, Approvals, and Authorizations

Permit or Approval	Lead Agency	Agency Action or Status
FLPMA ROW Grant	BLM	The ROW Grant is subject to NEPA review and terms and conditions as set forth under FLPMA and BLM's implementing regulations. If the Project is approved, BLM will issue a ROW Grant at the end of the NEPA process. The original FLPMA Standard Form 299 (SF 299) ROW application for the Project was submitted to the BLM in November 2006; updates were submitted in February 2007, June 2009, October 2009, *February 2010*, April 2010, and August 2010. The original POD was submitted in April 2007 with an update, based on revised BLM POD guidelines, submitted in October 2008. Because of Project technology changes, another revision was submitted in December 2009, with amendments submitted in March 2010.
CDCA Plan Amendment	BLM	BLM authorization of a ROW Grant for the Project will require a CDCA Plan Amendment. The amendment will be addressed as part of the FLPMA and NEPA processes as provided for in BLM Planning Regulations (43 CFR Part 1600), and BLM Land Use Planning Handbook (H-1601-1).
Review of Sunlight's Application for a Loan Guarantee under Title XVIII of EPAct 2005	DOE	DOE is a cooperating agency in the preparation of this EIS. DOE will use the EIS as part of its review process for the loan guarantee.
Section 404 Clean Water Act (CWA) Permit	USACE	Sunlight *submitted* a jurisdictional delineation report to assess whether the Project locations contain waters or wetlands subject to federal CWA jurisdiction *on September 1, 2010. Sunlight obtained written concurrence from USACE on December 28, 2010, that the Project footprint contains no waters of the US subject to USACE/EPA jurisdiction under Section 404 of the CWA.*
Endangered/Threatened Species Consultation and Incidental Take Statement under the Federal ESA	USFWS	*The BLM submitted the Biological Assessment to the USFWS initiating the ESA Section 7 consultation process on October 15, 2010.* Biological surveys for federally listed species were conducted for the proposed Project locations, including the proposed transmission corridors and substation locations.
National Historic Preservation Act Section 106 Compliance	BLM	Identification and evaluation of cultural resources within the Project's Area of Potential Effects (APE) is ongoing. The BLM has initiated consultation with the State Historic Preservation Office and notified them of its intent to prepare a *Memorandum of Agreement (MOA)* for the Project. The *MOA* will specify the procedures to follow for the phased conclusion of additional field investigations and evaluation of cultural resources within the APE. The *MOA* will also specify the process for the assessment of effects to resources within the APE that are determined to be eligible for inclusion in the NRHP. The *MOA* will stipulate the requirement for the Historic Property Treatment Plan/Mitigation Plan to be prepared that will outline measures to avoid, minimize, or mitigate adverse effects to NRHP-eligible resources. The *MOA* will be signed prior to completion of the Record of Decision (ROD) for the Project and will ensure compliance with Section 106 of the NHPA.

Table 1.4-1 (continued)
Status of Project Federal Permits, Approvals, and Authorizations

Permit or Approval	Lead Agency	Agency Action or Status
Archaeological Resources Protection Act, Cultural Resource Use Permit	BLM, State Office	A BLM Cultural Resource Use Permit will be obtained for the purposes of testing to determine the NRHP significance of identified sites and to conduct data recovery on sites adversely affected by Project construction and operation.
Fieldwork Authorization	BLM, Palm Springs-South Coast Field Office	A BLM Fieldwork Authorization was obtained prior to conducting Class III cultural resource inventories for the Project.
Native American Consultation	BLM	Sunlight is coordinating with the BLM to support the BLM's consultation with Native American tribes for the purpose of identifying sacred sites and other places of traditional religious and cultural importance, and to incorporate appropriate mitigation measures in the event such sites are located during construction. Consultation with tribes has been initiated and will continue throughout the NEPA and Section 106 compliance processes.
Department of Defense (DOD) Review	DOD	*The BLM requested further review of the Project by the DOD for its potential impact on military overflights and operations.*

1.4.2 State Permits and Status

Table 1.4- provides a list of the state permits, approvals, or authorizations anticipated to be required for the Project, as well as the status of relevant permit applications.

Table 1.4-2
Status of Project State Permits, Approvals, and Authorizations

Permit or Approval	Lead Agency	Agency Action or Status
Endangered/Threatened Species Take Authorization under CESA and Sections 2050 (general provision for endangered species) and 2080 (take of endangered species) of the California Fish and Game Code	CDFG	CESA review and approval will be required for impacts to state listed species. Focused biological surveys for sensitive species were done for all potential Project areas. CDFG is expected to complete a Consistency Determination for the Project, concurring with the USFWS's Biological Opinion for those species listed under both the ESA and CESA.
Section 1600-1602 Streambed Alteration Agreement process under the California Fish and Game Code	CDFG	Sunlight is coordinating with the CDFG on the scope of potential jurisdictional streambeds under the Fish and Game Code Sections 1600–1602. *Sunlight submitted a Streambed Alteration Agreement Notification to CDFG on November 5, 2010.* Sunlight will work with the CDFG to prepare and implement appropriate mitigation associated with any necessary Streambed Alteration Agreement.
Storm Water requirements under California Water Code and the CWA	RWQCB	Sunlight is coordinating with the Colorado River Basin RWQCB to determine the potential scope of storm water coverage for the construction and operation of the PV facility and related infrastructure. Sunlight will incorporate best management practices for storm water management and control.
Section 401 Certification under CWA	RWQCB	CWA Section 401 certification would be required in the event that the Project requires a federal permit or license that may result in a discharge to navigable waters. If certification is required, Sunlight will apply to the RWQCB to obtain certification.

Table 1.4-2 (continued)
Status of Project State Permits, Approvals, and Authorizations

Permit or Approval	Lead Agency	Agency Action or Status
Interconnection Agreement	CAISO	*On August 9, 2010, Sunlight received SCE's and CAISO's signature pages to the Large Generation Interconnection Agreement, which is dated August 4, 2010.*
Permit to Construct (PTC)	CPUC	CPUC is a cooperating agency in the preparation of this EIS. The EIS will provide environmental review coverage pursuant to CPUC's CEQA requirements, as described in the CPUC-BLM MOU. SCE will need to obtain a PTC for Red Bluff Substation. SCE submitted the PTC application to the CPUC *on November 17, 2010.*
Encroachment Permit	Caltrans	An encroachment permit will be needed where the transmission corridor alternatives cross the I-10 and SR-177 corridors in order to reach the SCE Red Bluff Substation Site alternatives located south of I-10.
Fugitive Dust Control Plan	SCAQMD	A fugitive dust control plan will be developed in accordance with SCAQMD requirements prior to construction. Sunlight will obtain any additional permits or registrations required by the SCAQMD for the Project, as applicable.
Consultation on Sacred Areas to comply with state requirements	Native American Heritage Commission (NAHC)	The NAHC has been contacted. Follow-up contacts with Native Americans are in progress. Fourteen local tribes have been contacted and invited to participate in the Programmatic Agreement *(now a Memorandum of Agreement)* development process, and were invited to the Programmatic Agreement Development Kick-Off meeting held April 23, 2010. The BLM met with individual tribes, on request, to present information and answer questions.

1.4.3 Local Permits and Status

Table 1.4-3 provides a list and status of the local permits, approvals, and authorizations anticipated to be required for the Project, as well as the status of these permit applications.

Table 1.4-3
Status of Project Local Permits, Approvals, and Authorizations

Permit or Approval	Lead Agency	Agency Action or Status
Public Use Permit	Riverside County	Sunlight is in discussions with Riverside County to determine whether any land use permit would be required for the Project alternatives that may incorporate private land. *The County has indicated that a Public Use Permit will be required for the Project's Gen-Tie Line crossings of privately held land.*
Land License Agreement	*MWD*	*Sunlight will work with MWD to obtain a Land License Agreement with MWD to cross MWD land owned in fee.*
Encroachment or other Permits	Riverside County and MWD	Permission for crossings of Kaiser Road or MWD easements will be secured before construction begins, as necessary.

1.5 DOCUMENT ORGANIZATION AND ISSUES TO BE ADDRESSED

1.5.1 Document Organization

This document follows regulations promulgated by the Council on Environmental Quality (CEQ) for Implementing the Procedural Provisions of NEPA (40 CFR 1500-1508); the Department of the Interior's NEPA regulations, 43 C.F.R. Part 46; the BLM NEPA Handbook, H-1790-1; Sections 201, 202, and 206 of FLPMA (43 CFR 1600); the BLM Land Use Planning Handbook, H1601-1; and DOE's NEPA implementing procedures (10 CFR 1021). This EIS describes the components of and reasonable alternatives to the Proposed Action and environmental consequences of the Proposed Action and the alternatives. In addition, the document incorporates provisions of CEQA to allow the CPUC to use this EIS in its environmental review and approval process for the Red Bluff Substation. This document also addresses DOE's Floodplain and Wetland Environmental Review Requirements (10 CFR 1022).

The EIS organization is as follows:

Chapter 1 provides general background on the Project; identifies the purpose and need for action; describes the roles of the BLM, other agencies, and authorities regulating various aspects of the Project; and summarizes the public involvement process for the Project.

Chapter 2 describes the Proposed Action and draft land use plan amendment decisions to be made and the alternatives development and screening process conducted for the Project. It also presents a range of reasonable Project alternatives that address the stated purpose and need for the Project, and identifies and explains why some alternatives were considered but not analyzed in detail.

Chapter 3 describes the affected environment (existing conditions) for 16 environmental components in the Proposed Action area and identifies potential projects contributing to cumulative impacts.

Chapter 4 provides a comprehensive analysis and assessment of impacts (direct, indirect, and cumulative) and mitigation measures (by environmental component) for the Proposed Action and other alternatives (including *a No Action and two No Project* Alternatives). It also describes other aspects of BLM compliance with NEPA procedures, including a description of unavoidable adverse impacts, the relationship between short-term use and long-term productivity, and any irreversible or irretrievable commitments of resources (40 CFR 1502.16), as well as addressing CEQA requirements.

Chapter 5 identifies the persons, groups, agencies and other governmental bodies that were consulted or that contributed to the preparation of the EIS; describes Native American consultations and public participation during scoping; describes the public comment process; provides a list of EIS preparers; and lists agencies, organizations, and persons to whom the EIS will be sent or has been sent.

Chapter 6 provides the references used in preparing the EIS.

Chapter 7 includes a glossary and list of acronyms and abbreviations used in the EIS.

Chapter 8 provides an index for key words in the EIS.

Appendices contain information that supplements or supports the analyses in the body of the EIS.

1.5.2 Issues to be Addressed

The issues evaluated in this EIS include the physical, biological, cultural, socioeconomic, and other resources that have the potential to be affected by activities related to the Proposed Action and alternatives. The issues are:

- Air Resources;
- Biological Resources – Vegetation;
- Biological Resources – Wildlife;
- Climate Change;
- Cultural Resources;
- Paleontological Resources;
- Geology and Soil Resources;
- Lands and Realty;
- Noise and Vibration;
- Public Health and Safety and Hazardous Materials;
- Recreation;
- Socioeconomics and Environmental Justice;
- Special Designation Areas;
- Traffic, Transportation, and Public Access;
- Visual Resources; and
- Water Resources (Surface and Groundwater).

Resources that do not exist in the Project area and, therefore, do not warrant analysis in the EIS include:

- Grazing;
- Wild Horses and Burros; and
- Mineral Resources.

1.6 BLM Land Use Plan Amendment Process

The principal resource management plan covering the proposed Project is the BLM's California Desert Conservation Area (CDCA) Plan of 1980, as amended. The Project Study Area is within the planning area designated under a 2002 amendment to the CDCA Plan—the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan). In the CDCA and NECO Plans, the location of the proposed Project includes land that is mostly classified as Multiple Use Class M (Moderate Use) and some as Multiple Use Class L (Limited Use). *Chapter 3 (Energy Production and Utility Corridors Element) of the CDCA Plan, as amended, also requires that newly proposed power generation sites* *that are not already identified in the Plan be considered through the plan amendment process. The application area is not identified within the Plan and, therefore, a plan amendment is required to include the area as a recognized element within the Plan and to determine the suitability of the application area for solar development. This EIS acts as the mechanism for complying with NEPA for the required plan amendment and to comply with the CDCA requirements.*

CHAPTER 2—DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter provides a detailed description of the Desert Sunlight Solar Farm Project (DSSF or Project) proposed by Desert Sunlight Holdings, LLC (Sunlight or Applicant) and its alternatives. Sunlight's objective for the DSSF is to construct, operate, *maintain, and decommission* a 550-megawatt (MW) photovoltaic (PV) Solar Farm and associated generation interconnection line (Gen-Tie Line), and to facilitate the construction and operation by Southern California Edison (SCE) of the Red Bluff Substation. The Solar Farm has a minimum expected lifetime of 30 years, with an opportunity of 50 years or more with equipment replacement and repowering.

The Project has secured *a* queue position with the California Independent System Operator (CAISO) to interconnect with the existing 500-kilovolt (kV) SCE Devers-Palo Verde No. 1 (DPV1) transmission line located to the south of the Solar Farm site via the proposed Red Bluff Substation. DPV1 is the only existing transmission system in the vicinity of the proposed Project with adequate capacity to accept the projected Solar Farm output. The DPV1 transmission line runs from the Palo Verde Switchyard (in Arizona, near the Palo Verde nuclear power plant) to SCE's Devers Substation (in North Palm Springs, California). In the Project vicinity, the transmission corridor runs east-west within a half-mile south of the I-10 corridor.

This EIS analyzes the potential environmental impacts of three project alternatives, *one no action alternative, and two no project alternatives. The BLM has identified a full range of reasonable alternatives to analyze in the EIS.* The alternatives considered during the screening process include those proposed by the Applicant as part of the design of the proposed Project, those proposed by the BLM as part of environmental review, and ideas for potential alternatives suggested by *other* agencies and the public during the EIS scoping period. Retained for full analysis in the EIS were the alternatives that respond to the purpose and need *for the Proposed Action, and that otherwise meet NEPA requirements for identifying reasonable alternatives, as described in Section 6.6.1 (Reasonable Alternatives) of the BLM NEPA Handbook (H-1790-1)*. Those that did not were eliminated from further detailed analysis.

Technical information about the Project in this chapter was provided by the Applicant for the Solar Farm and Gen-Tie Line Project components and by SCE for the Red Bluff Substation. All numbers referring to land disturbance, equipment, schedule, mileage, and workforce are based on the most up-to-date engineering available from the Applicant and SCE. The numbers are based on best available information and generally represent conservative estimates for purposes of analyzing impacts*. In response to public and government agency input, the Applicant is continuing to evaluate Project design and construction methods to determine if potential environmental impacts can be further reduced. If so, the numbers may change in terms of further reductions based on the final engineering and permit requirements for the Project components.* The Applicant's information was provided primarily in the Revised Project Description for the Desert Sunlight Solar Farm, submitted on March 19, 2010, to the BLM. More detailed information has been provided from that time through January 2011. The Revised Project Description and supporting information are supplements to the Plan of Development submitted to the BLM on December 22, 2009. Initial information related to the Red Bluff Substation was provided by SCE on March 23, 2010, with supplemental information provided *through January 2011.*

This chapter provides information on the Proposed Action and Alternatives (Section 2.2), Project construction (Section 2.3), Project operation, maintenance, and decommissioning (Section 2.4), best management practices and built-in mitigation (Section 2.5), and a discussion of alternatives considered but eliminated from further analysis (Section 2.6).

Project Modifications Since Publication of the Draft EIS

Since the Project's Draft EIS was published, the Applicant has made various minor changes in the Project design that are included in this Final EIS. These changes have been made for reasons such as improving efficiency; reducing costs; avoiding and minimizing environmental impacts; and incorporating input from regulatory agencies, community members, and other stakeholders. The BLM has concluded that these revisions to the Project would not significantly increase, and in some situations would decrease, impacts compared with the impacts described in the Draft EIS.

The Project modifications include:

Solar Farm Site and Gen-Tie Line

- *A revised layout of Solar Farm facilities that reduces the footprint for Solar Farm Layout B from approximately 4,245 acres to approximately 3,912 acres while achieving the same 550-MW generating capacity. Figure ES-1 shows the change in the footprint.*
- *A revised construction approach involving the use of innovative site preparation techniques that reduce the required volume of earth movement, including (1) a "disc and roll" technique that uses farm tractors to till the soil over much of the Solar Farm site and then roll it level, and (2) "micrograding" or "isolated cut and fill and roll" of other areas of the site to trim off high spots and use the material to fill in low spots. These techniques minimize the area of the Solar Farm site where conventional cut and fill grading will occur.*
- *A modified approach to supplying water during construction for dust control and soil preparation throughout the Solar Farm site. The modified approach involves the use of several temporary construction ponds for water storage at various locations around the site.*
- *Modification of the Gen-Tie Line poles from a delta to a vertical configuration to provide the opportunity to co-locate transmission lines for possible additional projects in the area.*

Red Bluff Substation

- *An emergency diesel powered generator for a back-up power source.*
- *A well to provide dust control during construction and to serve a septic system for periodic operational visits by employees.*
- *A septic system and restroom for employees during operational activities.*
- *A material yard/staging area adjacent to the Substation footprint.*

The Project modifications, noted above, are incorporated into the action alternatives and reflected in the text, tables, and figures below and in Chapters 3 and 4, unless otherwise indicated.

2.2 PROPOSED ACTION AND ALTERNATIVES

2.2.1 Alternatives Development and Screening

Alternatives considered in the EIS were evaluated by BLM and comments received during the public scoping process. Under NEPA, the BLM is required to consider in detail a range of alternatives that are considered "reasonable," usually defined as alternatives that are realistic (not speculative), *technically* and economically feasible, and that respond to the purpose of and need for the Proposed Action. Similarly, CEQA requires a "reasonable range" of alternatives that are feasible and that satisfy most of the project sponsor's objectives. For purposes of this EIS, the alternatives provided satisfy requirements under both NEPA and CEQA.

Alternatives considered by the Applicant and the BLM, along with those suggested by the public during the scoping process, were evaluated using the following criteria:

- Does the alternative fulfill the purposes, needs, and objectives identified in Chapter 1?
- Does the alternative minimize effects on human/environmental resources?
- Is the alternative feasible to construct, operate, maintain, and decommission?

Other alternative sites and various renewable and nonrenewable generation technologies were considered but eliminated from detailed analysis under NEPA. These alternatives were eliminated from detailed analysis because one or more of the following criteria from the *BLM NEPA Handbook H-1790-1* (BLM 2008) apply:

(1) It is ineffective (it would not respond to the BLM project purpose and need);

(2) It is *technically* or economically infeasible;

(3) It is inconsistent with the basic policy objectives for the management of the area (does not conform to the California Desert Conservation Area [CDCA] Plan);

(4) Its implementation is remote or speculative;

(5) It is substantially similar in design to an alternative that is analyzed; or

(6) It would have substantially similar effects to an alternative that is analyzed.

Alternatives that met all of the criteria above were carried forward for analysis and are detailed in Section 2.2.4. Those that did not meet those criteria but met the elimination criteria above were eliminated from further analysis and are described in Section 2.6, along with the reasons for elimination.

As discussed in Section 1.1, the process for evaluating and selecting from among various areas considered for siting the Project Study Area was based on a number of criteria, considered in consultation with the BLM during the preliminary phases of the application process. These siting criteria include:

- A contiguous site, with flat topography (grade of less than three percent) large enough for siting a 550-MW solar PV facility with minimal land disturbance;

- Avoidance of areas that are pristine or biologically sensitive, such as designated Wilderness Areas, Areas of Critical Environmental Concern, and Desert Wildlife Management Areas, particularly for the Solar Farm site;
- Avoidance of high-quality habitat for listed species (e.g., choosing Project locations in Category III [lowest quality] desert tortoise habitat), particularly for the Solar Farm site;
- Avoidance of known cultural or historic sites and *high use* recreation areas;
- Proximity to transmission facilities with sufficient capacity for Project output and suitable locations for interconnection;
- Proximity to highway and road access;
- Availability of contiguous land for sale or lease at a feasible cost; and
- Location within an area identified as a California Renewable Energy Zone (CREZ) under the State's Renewable Energy Transmission Initiative (RETI) and a Solar Energy Study Area in the BLM/DOE Programmatic Solar Energy Development EIS.

Once the Project Study Area was chosen, the Applicant conducted preliminary biological, cultural, hydrological, and geological reviews to evaluate site conditions and eliminate portions of the Project Study Area considered unsuitable for developing the Project. Based on the preliminary study, more thorough and detailed biological, cultural, hydrological, and geological reviews were conducted of the portions of the Project Study Area considered suitable for development. These detailed studies were performed in order to determine the optimal configurations for alternatives to be considered for the three Project components.

Many alternative configurations for the Solar Farm site were considered for the current megawatt size, for a larger megawatt size, and for a smaller megawatt size. Alternative site configurations were developed to avoid *or* minimize impacts on sensitive environmental resources, such as biological, cultural, and visual resources, to the extent possible. Specific consideration was given to avoiding active desert tortoise areas, foxtail cactus and other sensitive plant species concentrations, burrowing owl signs, desert dry wash woodland, bighorn sheep and other wildlife corridors, major surface water drainages, including Pinto Wash, and active sand transport areas. When determining the optimum configuration for the Solar Farm site, stakeholders' comments *were also considered.*

Additional factors considered include engineering constraints, such as those for existing easements, grading, hydrological, electrical, and security; construction constraints, such as those for safety, cost, and constructability; power purchase agreement constraints; and interconnection constraints.

2.2.2 Proposed Land Use Plan Amendment Decisions and Alternatives ***Considered***

This section presents an overview of the *proposed land use plan amendment decisions and* alternatives carried forward for analysis. Three full action alternatives, *one no action alternative, and two no project alternatives* are fully analyzed in the EIS. Each of the action alternatives would require an amendment to the CDCA Plan, as would the *two no project alternatives*. *The management of BLM-administered lands in the California Desert is governed by the CDCA Plan. The CDCA Plan recognizes the potential compatibility of solar generation facilities on public lands and, if the CDCA Plan does not associate a specific site with power generation or transmission, requires consideration of a CDCA Plan amendment to make that site-specific association. The planning* *criteria for considering an amendment to the CDCA Plan are discussed in CDCA Plan Chapter 4.10, Land Use and Corridor Analysis.*

The location of the proposed Project includes land that is classified mostly as Multiple-Use Class M (Moderate Use) and some as Multiple-Use Class L (Limited Use) in the CDCA Plan. The Class M classification is managed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause. Public lands classified as Moderate Use are managed to provide a controlled balance between higher-intensity use and protection of public lands. Lands classified as Class L are managed to protect sensitive natural, scenic, ecological, and cultural resource values. They provide for generally lower intensity, carefully controlled, multiple uses that do not significantly diminish resource values.

Energy and utility development uses are allowed in both classes. Accordingly, no re-classification of the Project area is being considered. Instead, the BLM is considering whether to amend the CDCA Plan to identify the Project area as appropriate for the development of a solar energy development. Further, regardless of whether the Project is approved, the BLM could elect to amend the CDCA Plan to associate the site with energy generation or transmission.

Each action alternative consists of three main components associated with generating and delivering electricity: Solar Farm site, Gen-Tie Line, and Substation (Red Bluff Substation). Supporting facilities for the Substation include a separate telecommunications site (the Desert Center Telecommunications Site), including microwave and fiber optics, an electric distribution line to the Substation, and an access road.

Multiple alternatives were considered for each component. For the Solar Farm, there are two alternative layouts analyzed: Solar Farm Layout B (reduces impacts on desert tortoise and preferred by Sunlight) and Solar Farm Layout C (reduces project size, further reduces impacts on desert tortoise and other environmental impacts, but delays or reduces benefits of renewable energy generation). For the Gen-Tie Line, three alternative routes were analyzed: two that exit the Solar Farm and go to Substation A (identified as GT-A-1 and GT-A-2) and one that exits the Solar Farm and goes to Substation B (identified as GT-B-2). For the Red Bluff Substation, two alternative locations were analyzed: Substation A (to the east) and Substation B (to the west). *The components were grouped into specific alternative groupings or configurations (Alternatives 1, 2, and 3) to facilitate the review and the analytical process. However, the actual alternatives analysis is not limited to these groupings or configurations since the various components can be grouped into a number of other configurations. First Solar identified and performed full technical, environmental and cultural surveys for Solar Farm A and Gen-Tie Line B-1; however, these project component alternatives were not carried forward based on BLM's conclusion regarding the severity of impacts associated with these two additional component alternatives.*

In addition, there are two access road alternatives considered for Substation A only: one coming from the west via the Kaiser Road exit off I-10 and Aztec Road along a pipeline access road (Access Road 1), and the other coming from the east via Chuckwalla Valley Road, Corn Springs Road, and a pipeline access road (Access Road 2). Substation B would require a new approximately 2,000-foot access road from Eagle Mountain Road. A map showing the location of the proposed Project components and alternatives is provided in Figure 2-1.

The *proposed land use plan amendment decisions and alternatives being considered* (three full action alternatives, *one no action alternative, and two no project alternatives),* which are described in detail in Section 2.2.4, are as follows:

- Alternative 1, Proposed Action Alternative – *The CDCA Plan of 1980, as amended, would be amended to identify the footprint of the Project site that includes Solar Farm Layout B, Gen-Tie Line GT-A-1, Red Bluff Substation A, and Access Road 2 as suitable for the proposed solar energy development. This alternative is BLM's Preferred Alternative;*
- Alternative 2, Alternate Action Alternative with Land Use Plan Amendment – *The CDCA Plan of 1980, as amended, would be amended to identify the footprint of the Project site that includes Solar Farm Layout B, and Gen-Tie Line GT-B-2 as suitable for the proposed solar energy development (Red Bluff Substation B is not subject to the plan amendment as these lands are in private ownership);*
- Alternative 3, Reduced Footprint Alternative with Land Use Plan Amendment *– The CDCA Plan of 1980, as amended, would be amended to identify the footprint of the Project site that includes Solar Farm Layout C, portions of Gen-Tie Line GT-A-2, Red Bluff Substation A, and Access Road 1 as suitable for the proposed solar energy development;*
- Alternative 4, No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action) – *The CDCA Plan of 1980, as amended, would not be amended, and the Project would not be approved;*
- Alternative 5, No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Energy Development *(No Project with Plan Amendment) – The CDCA Plan of 1980, as amended, would be amended to identify the Project application area as unsuitable for any type of solar energy development, and the Project would not be approved.; and*
- Alternative 6, No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development *(No Project with Plan Amendment)* – *The CDCA Plan of 1980, as amended, would be amended to identify the Project application area as suitable for any type of solar energy development, and the Project would not be approved.*

With Alternative 4, none of the Project components (Solar Farm, Gen-Tie Line, and Substation) would be built. This alternative is equivalent to the No Project Alternative under CEQA. With Alternatives 5 and 6, none of the Project components would be built (No Project), but there would be an amendment to the CDCA Plan that would identify the Solar Farm site as either unsuitable or suitable for solar development.

2.2.3 Features Common to All Action Alternatives

This section provides a detailed description of the three Project components (Solar Farm, Gen-Tie Line, and Substation) that make up the Proposed Action, regardless of the particular layout or route selected. Where necessary, differences between alternatives are identified. Details on the construction plan for each component are provided in Section 2.3. Details regarding operation and maintenance needs and the potential decommissioning of each Project component are provided in Section 2.4.

The numbers presented in the following sections are based on the most up-to-date information available. However, they are subject to change as the result of detailed engineering.

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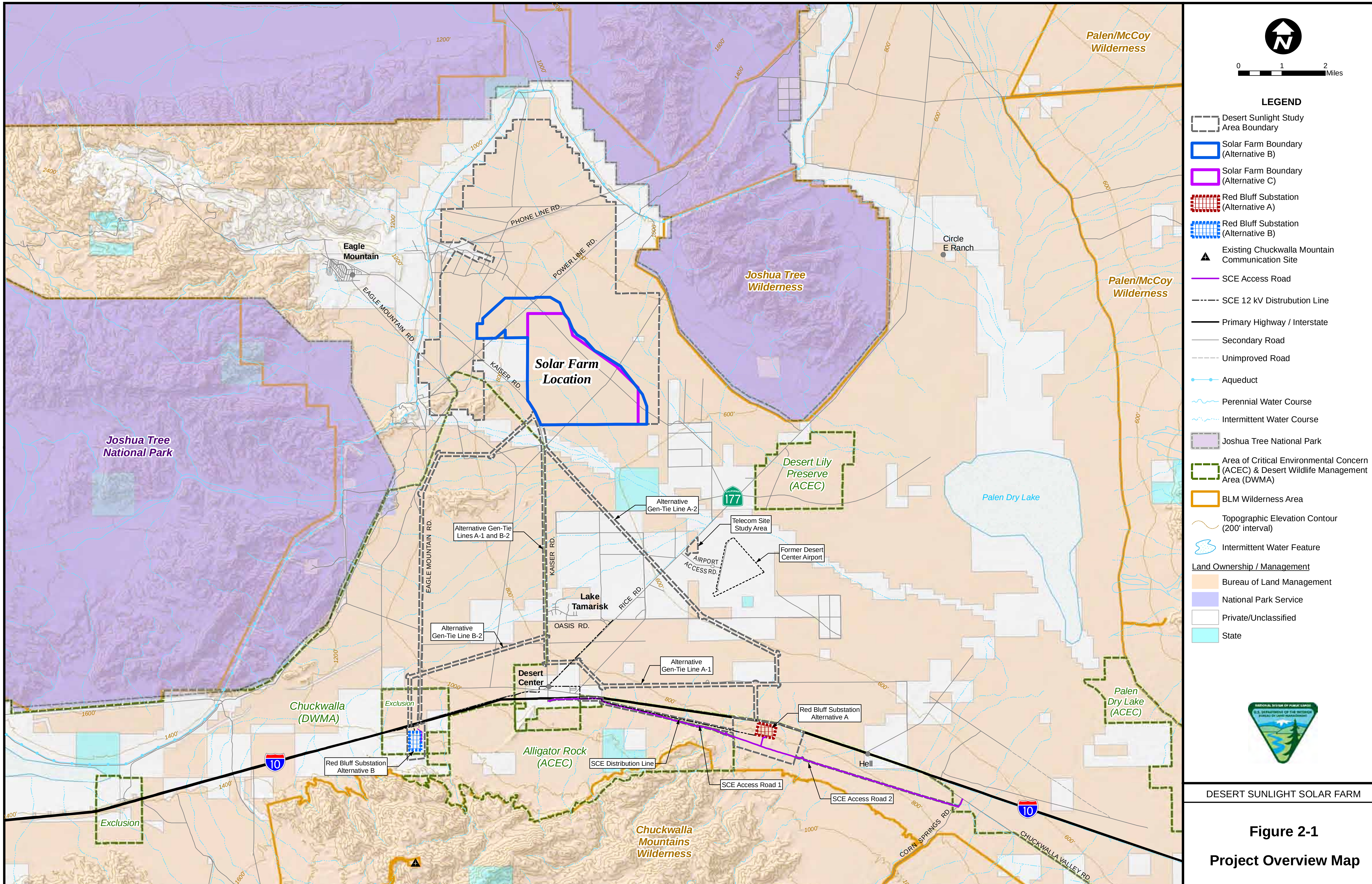

Figure 2-1

Project Overview Map

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Solar Farm Site

The Solar Farm site would consist of several main components:

- Main Generation Area—PV arrays, combining switchgear, overhead lines, and access corridors;
- Operations and Maintenance (O&M) Facility;
- Solar Energy Visitors Center;
- On-Site Substation; and
- Site Security, Fencing, and Lighting.

Main Generation Area

The Project would utilize First Solar's technology for thin film cadmium telluride (CdTe) PV modules. First Solar began commercially producing its thin film PV technology in 2002, and since that time, the company has manufactured and sold approximately 2.2 gigawatts of modules that are in use throughout the world, including desert locations in the southwestern United States. *First Solar's manufacturing facilities are ISO 14001 and 9001 certified. First Solar PV modules conform to Underwriters Laboratories Inc. (UL) and International Electrotechnical Commission (IEC) test standards. First Solar does additional accelerated life-cycle testing of its PV modules to evaluate reliability and long-term performance characteristics. Based on the results of these tests and performance in the field, First Solar provides a 5-year workmanship warranty and a 25-year power output warranty. The company conducts routine monitoring of existing deployed panels to assess durability and longevity to meet its warranty obligations.* In 2005, First Solar established a pre-funded PV module collection and recycling program, through which any module may be returned to First Solar for recycling. *The collection and recycling is at no cost to the end user. The anticipated recycling costs are pre-funded into a trust account that is managed by a third-party trustee.* The program funds are independently managed as a trust to ensure that they will be available when they are needed, regardless of the financial status of First Solar. Approximately 90 percent of all collected modules are recycled into new products, including new First Solar modules.

At the Solar Farm site, the PV modules would be organized into arrays. Each megawatt requires approximately *seven* acres. Each array would consist of PV modules, a power conversion station (PCS), and a transformer. Figure 2-2 shows an example of a PV array, and Figure 2-3 depicts a typical array configuration. Figure 2-4 shows a photograph of a typical PCS.

As discussed in Section 2.3.1, the Applicant would use construction *site preparation* techniques that adequately prepare the site for safe and efficient installation and operation of PV arrays. It is anticipated that *over more than half of the Solar Farm site, the Applicant would use site preparation techniques that would minimize the required volume of earth movement, including (1) a "disc and roll" technique that uses farm tractors to till the soil over much of the Solar Farm site and then roll it for compaction, and (2) "micrograding" or "isolated cut and fill and roll" of other areas of the site to trim off high spots and use the material to fill in low spots. These techniques would minimize the area of the Solar Farm site where conventional cut and fill grading would occur.*

The PV arrays would be arranged in groups of PV modules. Arrays are supported by vertical steel posts, spaced at no less than *10* feet apart, and driven into the ground to a typical depth of 4 to 7 feet below grade. Once mounted, the bottom of each array would be raised approximately 1.5 to 2 feet above ground, while the top would be set at approximately *4.5* to 8 feet above grade.

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Source: First Solar, 2010

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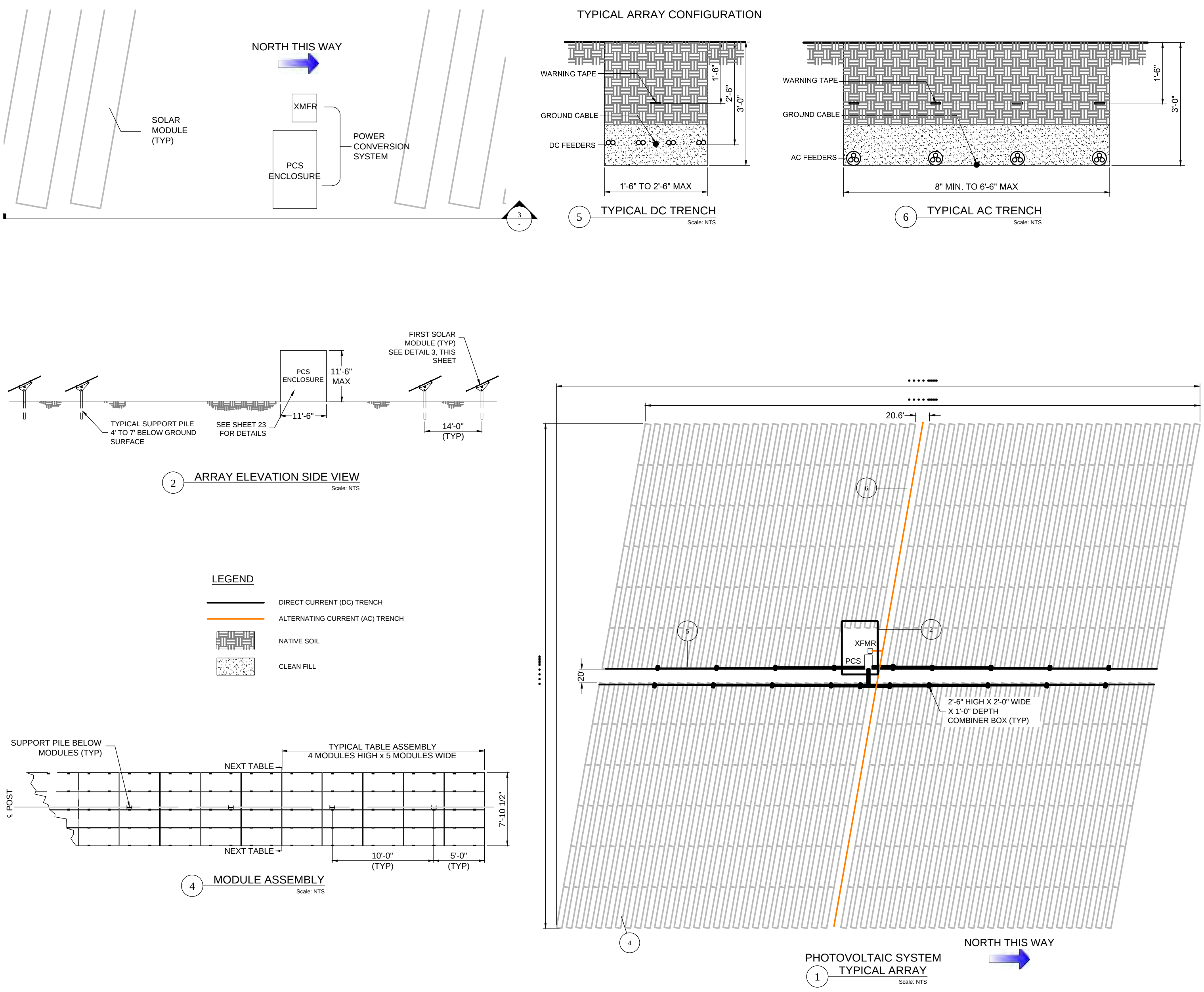
Figure 2-2

Typical Photovoltaic Array



Source: First Solar, 2011.

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Figure 2-3

Typical Array Configuration

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Source: First Solar, 2010

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Figure 2-4

Typical Power Conversion Station

The arrays would be sectioned into quadrants by two access corridors of nominal 20-foot width, one running *roughly* north to south and the other east to west (see Figure 2-3). This perimeter access corridor would be shared by adjacent arrays. These access corridors would remain unpaved and un-graveled and would be used only as necessary during operations and maintenance activities. In addition, a *20*-foot gravel access road would run through portions of the Solar Farm site. These roads would be compacted to 90 percent. During operation, the access corridors and roads would be used infrequently, for inspection and maintenance activities. Best management practices (BMPs) in accordance with South Coast Air Quality Management District requirements would be used to stabilize the soil during construction, operations, maintenance, and decommissioning of the Project, as identified in the Fugitive Dust Control Plan. This and other BMPs are found in Section 2.5.

The PV modules would be electrically connected by wire harnesses and combiner boxes that would collect power from several rows of modules and feed the Project's PCS via direct current (DC) cables placed in underground covered trenches. DC trenches would be approximately 3 feet deep and from 1.5 to 2.5 feet wide. The bottom of each trench would be filled with clean fill surrounding the DC cables and the remainder of the trench would be back-filled with native soil and compacted to 90 percent (95 percent when crossing under roadways). Power screeners may be used on site for a period of time (less than one year) to extract the required clean fill from native soils for use as bedding material in the trenches. A power screener is a motorized piece of equipment that uses moving screens to filter soils to a particular granularity. Use of this equipment has been included in the air quality analysis.

Each PCS comprises an inverter located within an enclosure (shelter) and connected to a transformer. The PV inverters would convert the DC electric input into grid-quality alternating current (AC) electric output. The AC electrical output would be transmitted from the PCS to the adjacent transformer. The transformer would step up the voltage of the AC electrical input and then would transmit the power via underground lines in covered trenches to the PV combining switchgear (PVCS). AC trenches would be approximately 3 feet deep and from 8 inches to 6.5 feet wide and would also be used to house fiber optic cables. The bottoms of the trenches would be filled with sand surrounding the fiber optic cables, and the remainder of the trench would be back-filled with native soil and compacted. The PVCS would transmit the power to overhead lines within the Solar Farm site; the overhead lines would transmit the electrical output to the On-site Substation. At the On-site Substation the voltage would be stepped up to 220 kV and routed via the Gen-Tie Line to the Red Bluff Substation.

The PCS and transformer would be located within each PV array. The PCS enclosures would be approximately 11.5 feet tall. The transformers would be approximately 6.3 feet tall. The transformer would be placed on a pre-cast concrete pad. Each pad would be delivered by flatbed truck during construction, in combination with a PCS vault, and installed by crane from the truck.

Each PVCS would collect the power from a number of arrays. The PVCS cabinets would be approximately 7.5 feet tall and would be dispersed amongst the arrays. Figure 2-5 shows a photograph of a typical PVCS. Each PVCS would be placed on pre-cast 32-foot by 14.5-foot concrete pads, delivered and installed in the same manner as transformer pads and PCS vaults.

X:\DESERT SUNLIGHT\SWITCHGEAR.CDR

Source: First Solar, 2010

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Figure 2-5

Typical Photovoltaic Combining Switchgear

High-capacity 34.5-kV collection system lines would connect the power output from the PVCS to the On-site Substation via overhead lines. These overhead lines would be supported by wooden poles approximately 52 feet above finished grade (Figure 2-6). The overhead lines would span a distance of approximately 150 feet from pole to pole. The on-site electrical collection system would be designed to minimize electrical losses within the Solar Farm site prior to delivery to the On-site Substation.

One or more meteorological stations would be installed at the Solar Farm site prior to construction in order to track weather patterns. Figure 2-7 depicts a typical meteorological station. The meteorological station(s) would be attached to the data acquisition system (DAS) to collect data for analysis and system monitoring.

Operations and Maintenance Facility

The O&M facility would be located near the On-site Substation in the southwestern portion of the Solar Farm site. This and other facilities at the Solar Farm are shown on Figure 2-19 in Section 2.2.4. The O&M facility would be designed for employee offices, parts storage, plant security systems, and Project monitoring equipment. The O&M facility would consist of an Americans with Disabilities Act-(ADA) compliant structure that would contain facilities for 15 full-time staff members. It would consist of a 120-foot-wide by 240-foot-long (approximately 0.7 acres) prefabricated building set on concrete slab-on-grade poured in place. The building would be approximately 19 feet tall at its highest point. The O&M facility would be surrounded by a path and parking area surfaced with aggregate. The path and parking area would occupy approximately 0.5 acres.

During Project operations, Sunlight currently plans to install one permanent, above-ground water storage tank (approximately 5,000 gallons) on a concrete pad adjacent to the O&M facility. A septic system and leach field would serve the Project's sanitary wastewater treatment needs and would be sited south of the O&M facility and Solar Energy Visitors Center. The specifications for the septic system would be determined by engineering code and county permit requirements. Preliminary estimates assume the septic tank would sit on a 4-foot by 5-foot concrete pad and the leach field would be approximately 4,000 square feet.

Solar Energy Visitors Center

A Solar Energy Visitors Center (Visitors Center) would be located just off the road at the main entrance to the Solar Farm site. The Visitors Center would consist of an approximately 50-foot-by-50-foot (approximately 0.06 acre) building on a concrete pad that would include items such as a scale model of the Project and exhibits on solar power designed for both students and members of the general public. The facility would comply with ADA requirements.

On-Site Substation

The On-site Substation facility would be located in an approximately *6.3*-acre fenced area in the southwest corner of the Solar Farm site. The electrical plan for the On-Site Substation is shown in Figure 2-8 and a section view of it is provided in Figure 2-9. The footprint of the Substation structure itself would be approximately *3.9* acres. At the On-site Substation, the voltage of the Solar Farm-generated electricity would be stepped up to 220 kV, which is the voltage of the Gen-Tie Line that would interconnect Project output with the Red Bluff Substation. The main 25-foot-wide graveled access road for the Solar Farm from Kaiser Road would run past, and provide access to, the On-site Substation.

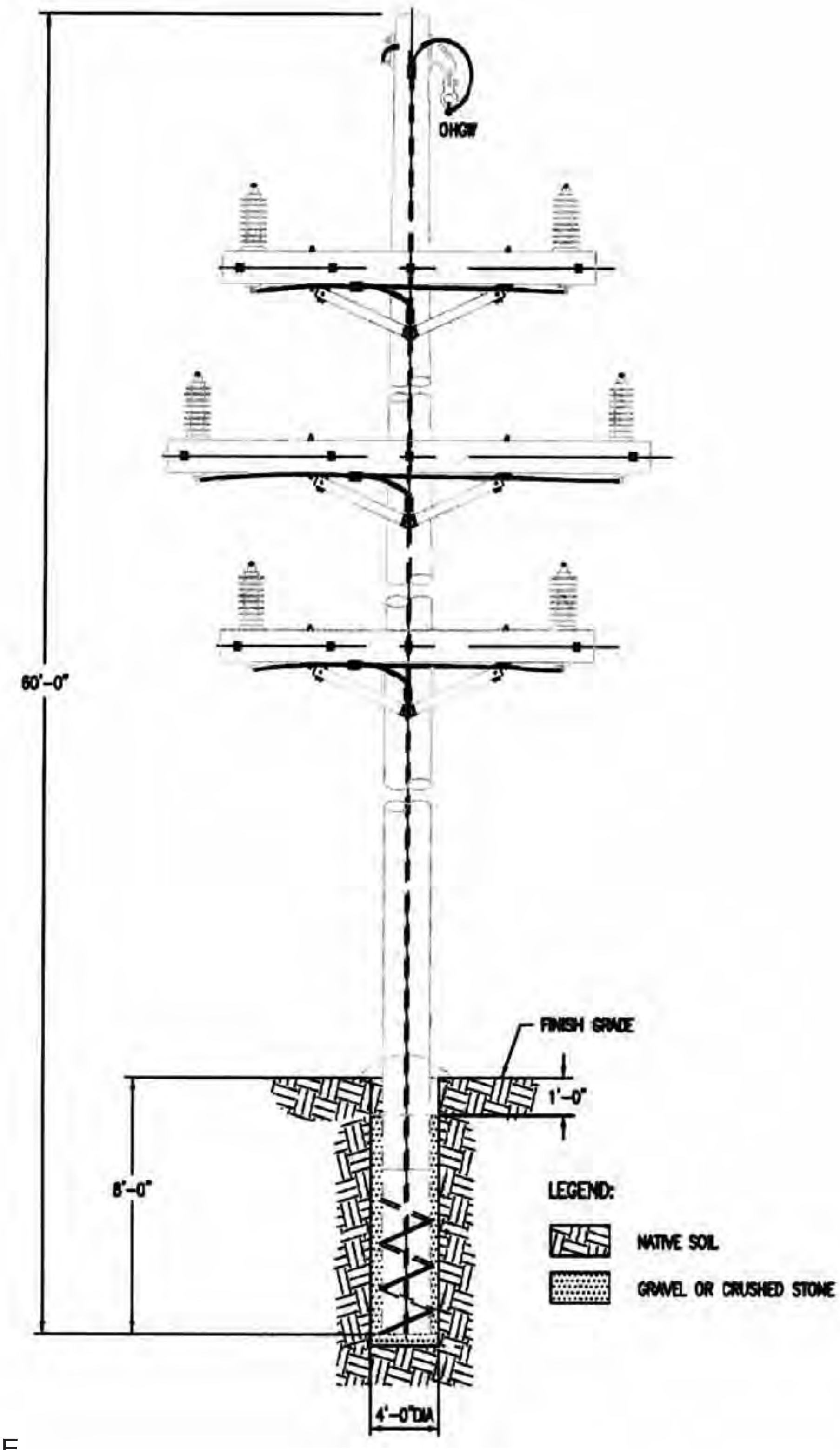

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Figure 2-6

Typical 34.5 kV Pole

Source: First Solar, 2010

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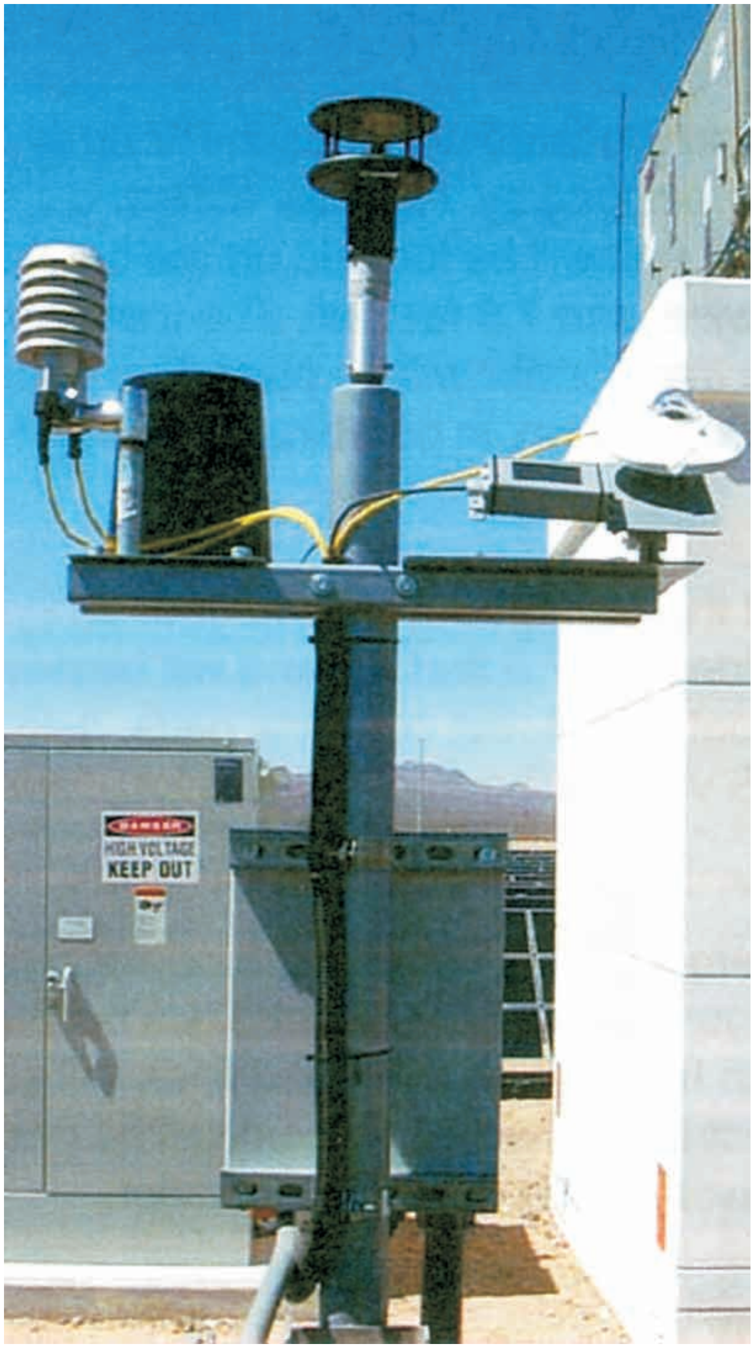

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Figure 2-7

Typical Meteorological Station

Source: First Solar, 2010

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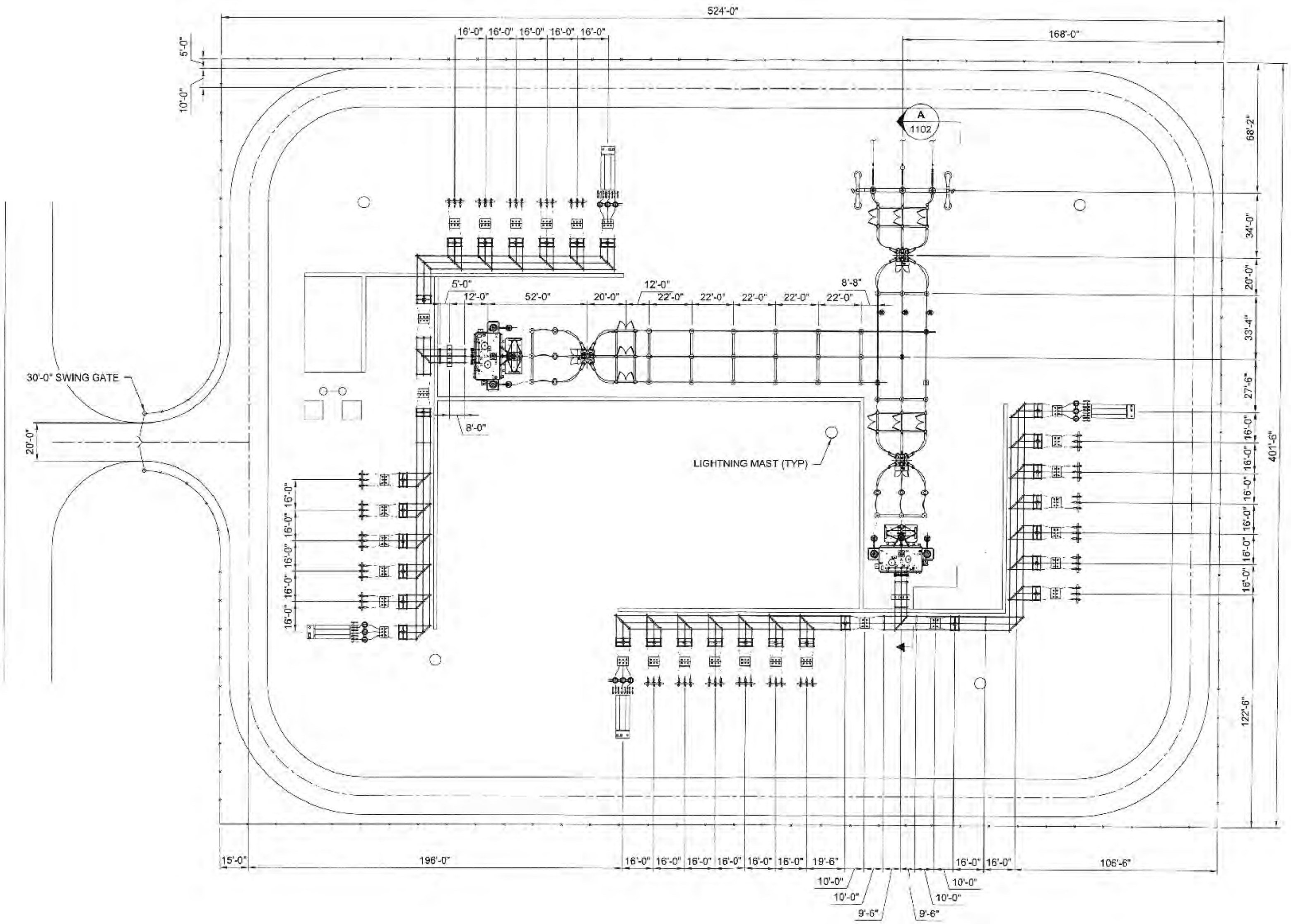

Source: First Solar, 2010

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Figure 2-8

Electrical Plan for On-Site Substation

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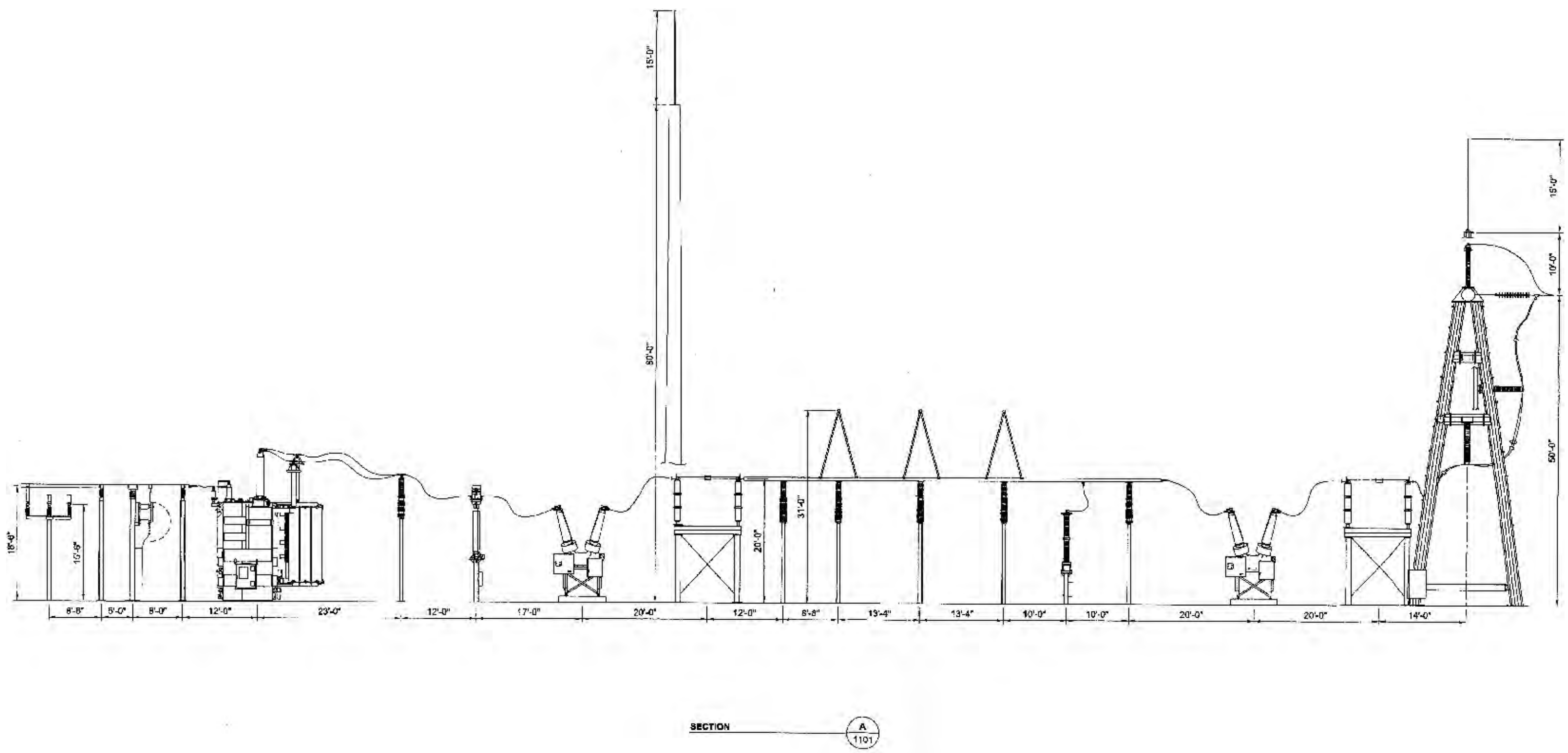

Source: First Solar, 2010

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Figure 2-9

Section View of On-Site Substation

Site Security, Fencing, and Lighting

The proposed Solar Farm site boundary would be fenced to facilitate Project and equipment security. Surveillance methods such as security cameras, motion detectors, or heat sensors may be installed at locations along the Project boundary. Gates would be installed at the roads entering or exiting the Solar Farm site. Limiting access to the Project would be necessary both to ensure the safety of the public and to protect the equipment from potential theft and vandalism. The perimeter of the Solar Farm site would be fenced with a 6-foot-tall chain-link security fence topped with barbed wire. In addition, 6- to 7-foot-tall chain-link fencing would surround the Project's On-site Substation.

A tortoise exclusion fence would be located adjacent to (and just outside) the perimeter fence. The Solar Farm site would be designed, operated, and maintained so that stormwater flow would not undermine the integrity of the perimeter fence or the desert tortoise exclusion fencing.

Except as provided below, lighting during construction would be limited to the staging area for the construction trailers, parking area, and site security facilities. Lighting would be located on temporary service poles approximately 18 feet in height. Power would come from a connection to the local distribution system or from the construction office trailer generator. While lighting is not planned for construction activities, if required, lighting would be limited to that needed to ensure safety. It would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area.

During operations, lighting would be limited to shielded area-specific lighting for security purposes for the O&M facility and the onsite Substation. Power for the lights would come from the onsite Substation and/or the existing electrical distribution service. *Service lighting would be placed in key safety-sensitive areas, such as the switchyard of the On-site Substation.* The level and intensity of lighting during operations would be the minimum needed for security and safety purposes. *Security* lights would *use* motion sensor *technology* that would be triggered by movement at a human's height during maintenance or emergency activities. There would be no lights around the Project perimeter, in order to minimize the Project's visual impact on surrounding receptors and roads. Sensors on the security fencing would alert security personnel of possible intruders. Lights on the site would be shielded and focused downward and toward the interior of the site to minimize lighting impacts on the night sky and to neighboring areas. Portable lighting may be used occasionally and temporarily for maintenance activities during operations.

Transmission Line (Gen-Tie Line)

The Project would interconnect with the regional transmission system via a 220-kV single-circuit Gen-Tie Line that would exit the southwestern portion of the Solar Farm site and follow a 160-foot-wide transmission right-of-way (ROW) to SCE's planned Red Bluff Substation to be located south of the Solar Farm site near I-10. An additional fan-shaped area with a radius of 450 feet would be required as part of the ROW (beyond the 160-foot corridor) at each turn in the Gen-Tie Line. These areas would be required during construction for wire stringing along the Gen-Tie Line.

The Applicant plans to use steel *self-weathering* monopoles for the Gen-Tie Line. Poles are expected to be approximately 135 feet tall. Typical 220-kV poles *designed with a vertical configuration* are shown in

Figure 2-10 and Figure 2-11. Typical spacing between structures would be approximately 900 to 1,100 feet. Self-weathering steel would be used for the monopoles, which would blend with the surrounding mountains better than other potential finishes. Self-weathering steel is composed of a special alloy that forms an oxide, which prevents further rusting. The finish appears as a matte patina and is commonly used in environmentally sensitive areas where a shiny appearance would be undesirable. *All towers and poles would be designed to be avian-safe in accordance with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC 2006).*

Based on the Project requirements, access, terrain, and limited available geotechnical information, it is expected that direct embedded foundations would be used for tangent structures and anchor bolted drilled shaft foundations for angle and dead-end structures. Vibrated casing foundations may also be used, depending on the results of planned further geotechnical investigation. A geotechnical investigation for the Gen-Tie Line would be completed before final design and construction of the Project.

Overland Travel (Typically 14 Feet Wide)

Temporary 14-foot-wide overland travel corridors would be used for access during construction. After construction, some of these areas would no longer be needed for access and would be decommissioned. Others of these areas would be permanent overland travel areas that would be used for ongoing maintenance access during operations. Where these areas abut existing roadways, an approach area would be constructed that is 14 feet wide by 25 feet long with 20-foot radii on each side.

Transmission Structure Footprint and Foundation Area

A 7-foot-diameter permanent footprint was assumed for estimating the Gen-Tie structure footprint for tangent structures. A 12-foot-diameter permanent footprint was assumed for estimating the Gen-Tie structure footprint for angle and dead-end structures. The structure areas for angles or dead-end structure types would have a single vertical foundation up to 12 feet in diameter by 40 feet deep. The structure areas for tangent structure types would have a single vertical foundation up to 7 feet in diameter by 25 feet deep. The temporary structure erection areas that surround each proposed Gen-Tie structure location would typically be 160 feet by 160 feet.

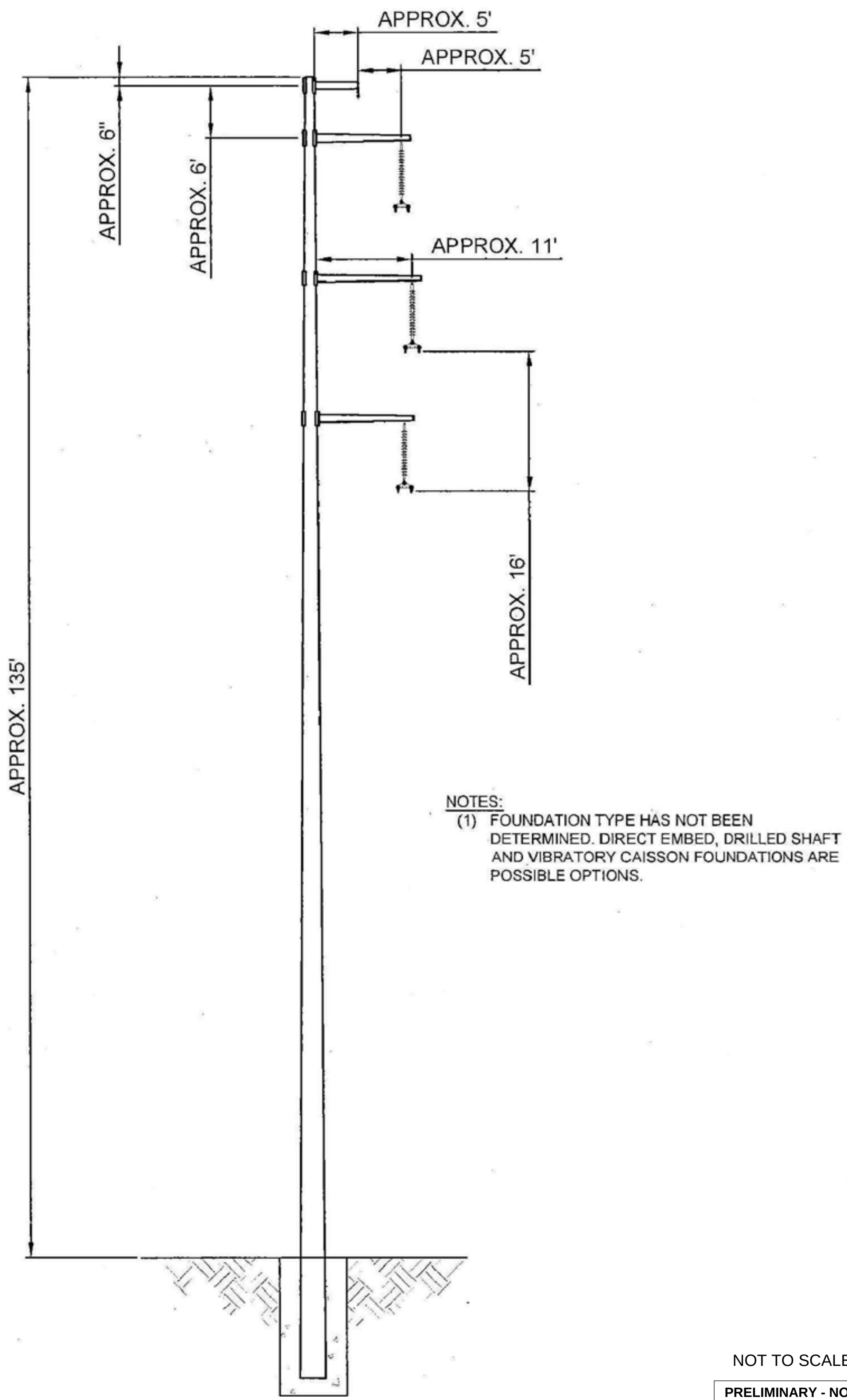
Splicing Area

The area needed temporarily for splicing would typically be 100 feet by 450 feet. Within this area would be a permanently graded area of approximately 75 feet by 250 feet.

Stringing Area

A temporary 450-foot radius area would be required at line stringing areas, and a 75-foot by 200-foot permanent area would also be required. The stringing area may have up to 12 galvanized-steel helical anchors that are drilled into the native soil at approximately a 45 degree angle up to 45 feet deep. These anchors are temporary during wire stringing and would be removed.

Guard structures would require the temporary use of a 50-foot by 100-foot area. They would consist of two vertical poles embedded in the ground and back-filled with native soil. The estimated depth of ground disturbance for pole embedment is up to 15 feet deep by up to a 42-inch diameter.



NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

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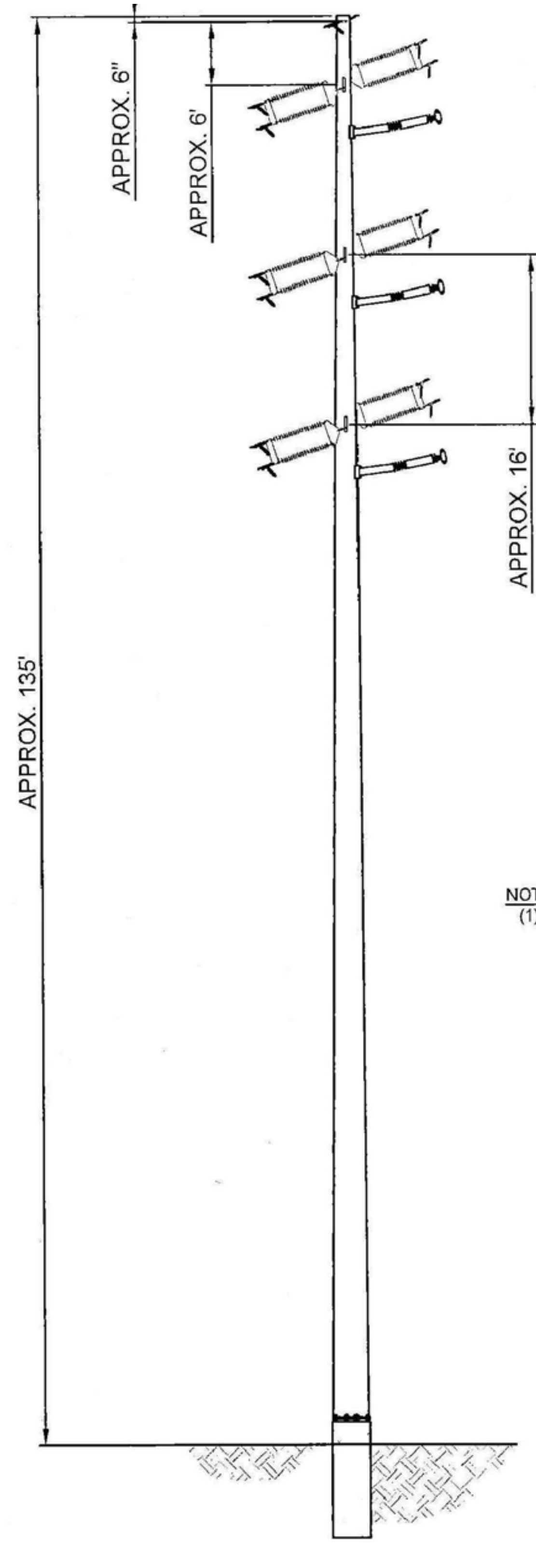
Figure 2-10

Typical 220-kV Line Monopole Single-Circuit Tangent Structure

Source: AECOM, 2010



NOTES:
(1) FOUNDATION TYPE HAS NOT BEEN DETERMINED. DIRECT EMBED, DRILLED SHAFT AND VIBRATORY CAISSON FOUNDATIONS ARE POSSIBLE OPTIONS.

NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

DESERT SUNLIGHT SOLAR FARM

Figure 2-11

Typical 220-kV Line Monopole Single-Circuit Deadend Structure

Source: AECOM, 2010

Guard Structure

Red Bluff Substation Project

SCE proposes to construct the Red Bluff Substation to interconnect the 550-MW DSSF Project to SCE's existing Devers-Palo Verde No. 1 (DPV1) 500-kV transmission line. The Red Bluff Substation would also be used to interconnect other renewable generation facilities in the area with the transmission grid (refer to Section 3.18 for a discussion of cumulative projects and to each environmental consequences section for a discussion of impacts). The DPV1 500-kV transmission line would connect to the Red Bluff Substation by looping the line into the Substation. Additionally, based on current design information, the DSSF 220-kV Gen-Tie Line would be extended to just west of proposed Red Bluff Substation A or north of proposed Red Bluff Substation B and connect to a single dead-end structure, from where the line would be extended inside the Red Bluff Substation Site.

For the Red Bluff Substation, there are two alternative locations proposed: Substation A (to the east) and Substation B (to the west). Both Substation sites would be located approximately 7 to 8 miles from the entrance to the proposed DSSF site.

Under both alternatives, the Red Bluff Substation would consist of a number of components:

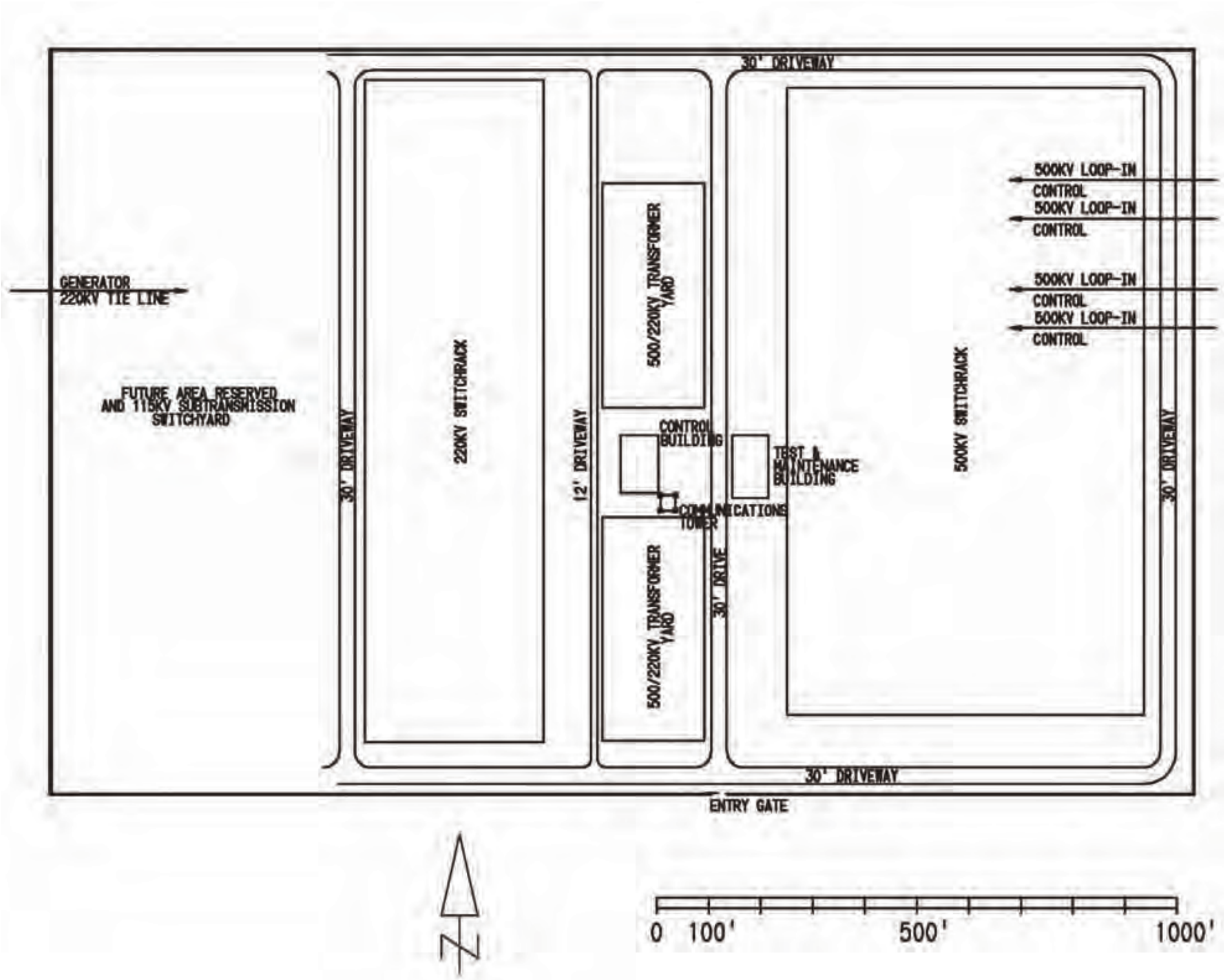
- Red Bluff Substation
- Transmission Lines (to connect Substation to DPV1)
- Gen-Tie Line Connection
- Modification of Existing 220-kV Structures
- Distribution Line for Substation Light and Power
- Telecommunications Facilities
- Drainage Facilities
- Access Road

Additional components for the Substation site include a staging area, a water well, a septic system that complies with state and county standards for septic design, and an emergency generator. Specific details, including the sizes and lengths of the Project components and access for each Substation alternative, are described in the following sections.

Red Bluff Substation

At either Substation site, the Red Bluff Substation would be a 1,120 mega-volt ampere (MVA), 500/220-kV substation measuring approximately 1,500 feet by 2,200 feet (approximately *76* acres) to loop the DPV1 500-kV transmission line and provide for Sunlight's one 220-kV Gen-Tie Line position for the DSSF Project. The entire *76* acres would be graded and leveled. The Substation would be surrounded by a wall with two gates. A schematic layout for Substation A is shown in Figure 2-12, and for Substation B in Figure 2-13.

Additional acreage would be required for drainage improvements and the access road. Additional detail is provided as part of the construction discussion in Section 2.3.2.



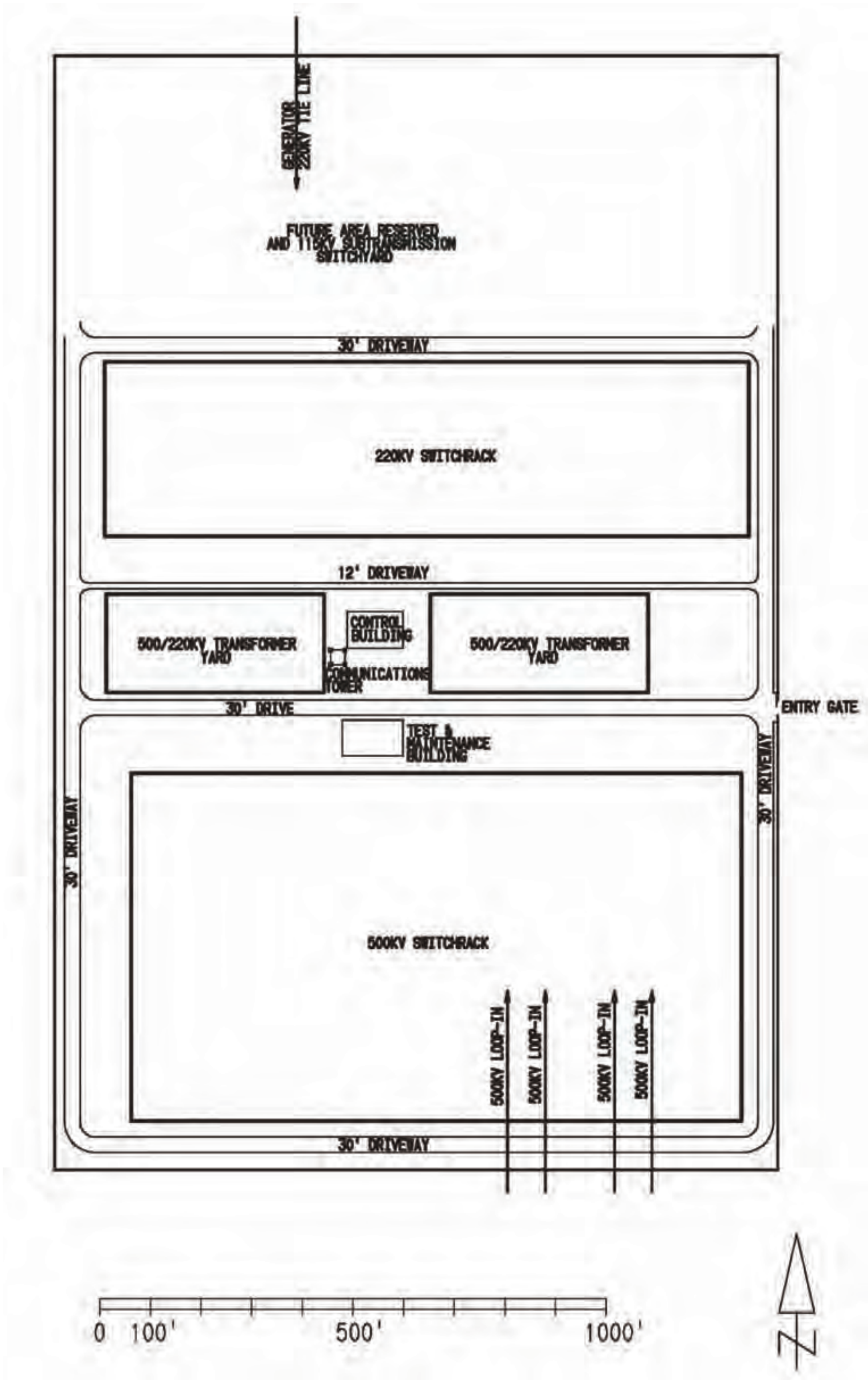
Note: Dimensions are approximate and may vary with site conditions.

Source: Southern California Edison, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 2-12

Proposed Red Bluff Substation A Layout



Note: Dimensions are approximate and may vary with site conditions.

Source: Southern California Edison, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 2-13

Proposed Red Bluff Substation B Layout

The 500-kV switchrack would have a total of six positions. Four positions would be utilized in the initial design: one position on a breaker and a half configuration would be to loop the existing DPV1 500-kV transmission line to create the Colorado River – Red Bluff and Devers – Red Bluff 500 kV lines, two positions would be reserved to loop the future Colorado River – Red Bluff No. 2 and Colorado River- Devers No. 2 (DPV2) 500-kV transmission lines, and one position would be for a AA-bank position for generation interconnection. The remaining two positions would be available for future expansion.

The 220-kV switchrack would have a total of four positions: one position for the AA-bank, one position for the Project Gen-Tie Line and the remaining two positions for future expansion.

Red Bluff Substation would be initially equipped with:

- Two (2) 500-kV operating buses covering six positions;
- Twenty-seven (27) single-phase 500-kV circuit breakers;
- Fifty-four (54) single-phase 500-kV disconnect switches;
- Four (4) single-phase, 373-MVA, 500-/220-kV transformers;
- Two (2) 220-kV operating buses covering four positions;
- Five (5) 220-kV circuit breakers;
- Ten (10) 220-kV group-operated disconnect switches;
- One (1) 220-kV motor-operated disconnect switch:
- A Mechanical Electrical Equipment Room (MEER);
- Station light and power transformers;
- Station lighting; and
- 750 kVA generator.

500-kV Transmission Line Loop-In

The proposed Red Bluff Substation would be connected to the existing DPV1 500-kV transmission source line via a loop-in line. The loop-in line would dissect the main line and change it into two line segments: the Colorado River-Red Bluff and the Devers-Red Bluff 500-kV transmission lines. The new piece of each line segment into the Red Bluff Substation would be approximately 2,500 feet long for Substation A and 500 feet long for Substation B.

The new 500-kV line segments would be constructed using approximately eight transmission structures for Substation A and four for Substation B. Of these, six structures for Substation A and two for Substation B would be single-circuit lattice steel tower (LST) (Figure 2-14) or tubular steel pole (TSP) (Figure 2-15), and two (either Substation) would be modified double-circuit LSTs (Figure 2-16).

The 500-kV double-circuit structures would be utilized just outside of the Substation wall (but within Red Bluff Substation Site). The purpose of the double-circuit tower is two-fold in that it requires a smaller ‘footprint’ in the Substation vicinity and it places the conductors in a vertical arrangement, facilitating phasing at the Substation racks. To achieve this, this tower would be approximately 40 feet taller than the single-circuit towers.

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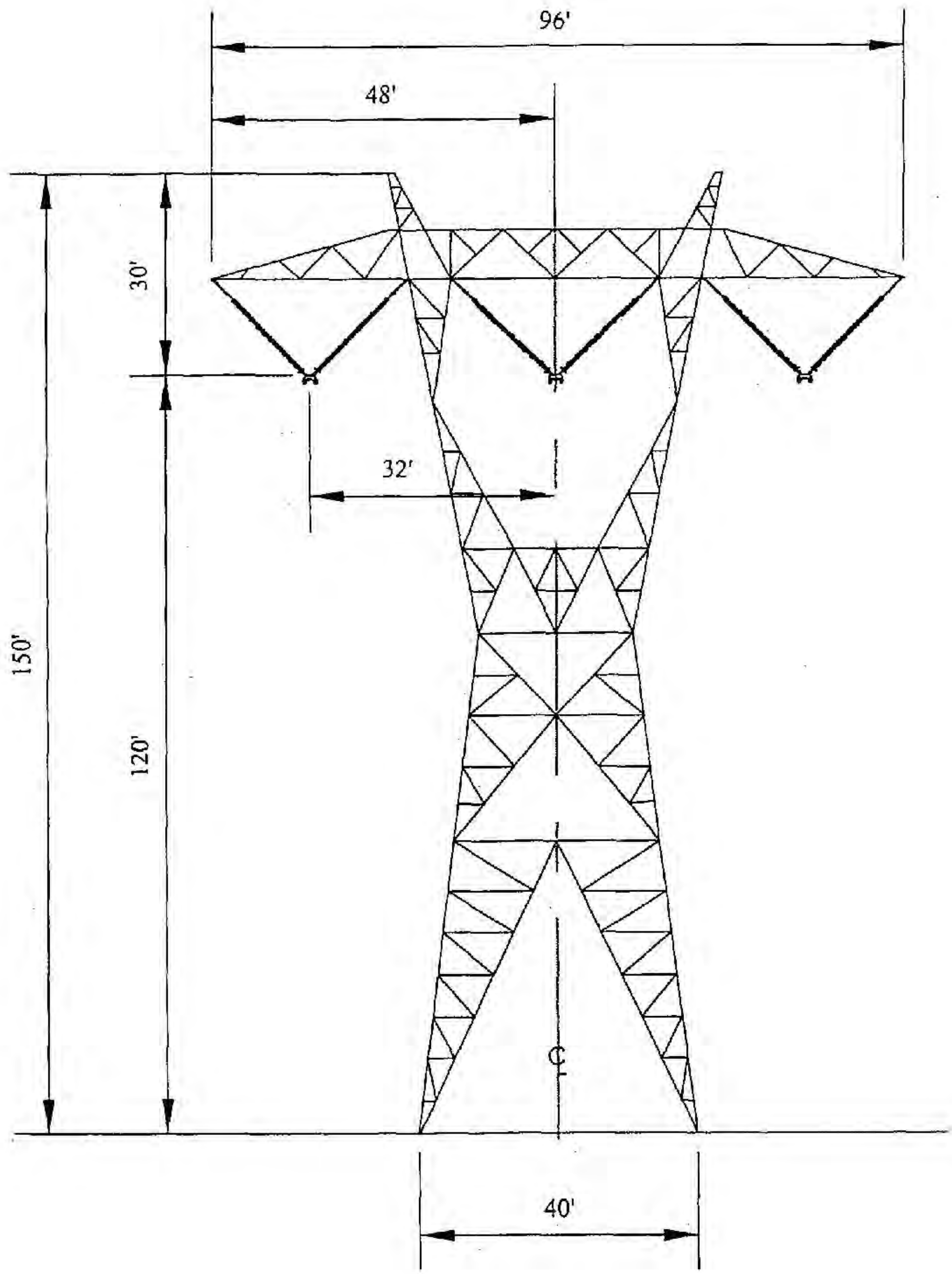

Note: Dimensions are approximate and may vary with site conditions.

Source: Southern California Edison, 2010

DESERT SUNLIGHT SOLAR FARM

Figure 2-14

Typical 500-kV Single-Circuit Lattice Steel Tower

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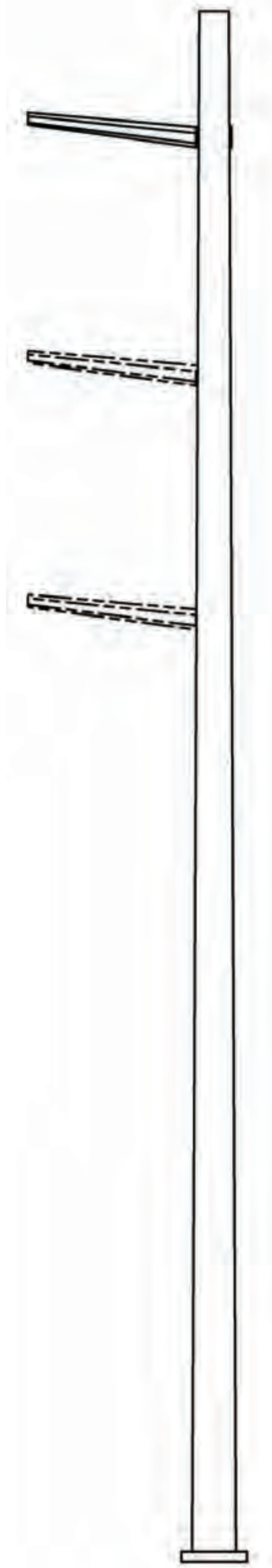

Source: Southern California Edison, 2010

DESERT SUNLIGHT SOLAR FARM

Figure 2-15

Typical 500-kV Single-Circuit Tubular Steel Tower

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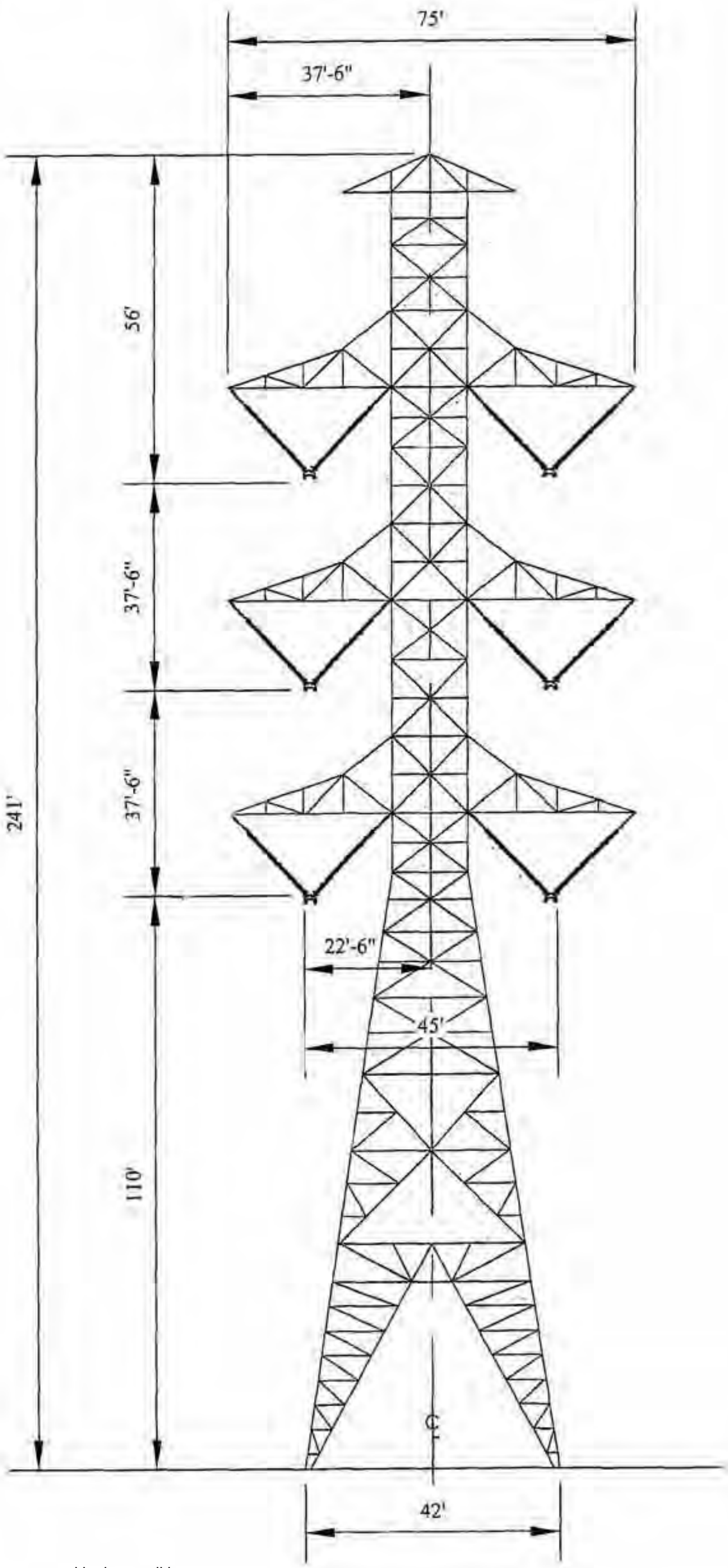

Note: Dimensions are approximate and may vary with site conditions.

Source: Southern California Edison, 2010

DESERT SUNLIGHT SOLAR FARM

Figure 2-16

Typical 500-kV Double-Circuit Lattice Steel Tower

The new single-circuit transmission structures would require a right of way, approximately 590 feet wide, along that portion of the new single-circuit transmission lines between SCE's existing DPV1 ROW and the new Red Bluff Substation Site. Other transmission structures would be within SCE's existing ROW. For Substation A, three dead-end structures and one suspension structure would be required for each line segment (a total of eight structures for both lines), to reach the edge of the Red Bluff Substation Site. Substation B would require three dead-end structures for each line segment (a total of six structures for both lines).

Gen-Tie Line Connection

The proposed Red Bluff Substation design includes bringing the final span from the DSSF 220-kV Gen-Tie Line into the switchrack, just west of the Red Bluff Substation for Substation A and just north of the Red Bluff Substation for Substation B. There would be one single-circuit lattice steel (LST) or tubular steel pole (TSP) structure just west (or north) of the Red Bluff Substation Site for the connection of DSSF's Gen-Tie Line to a 220-kV position inside Red Bluff Substation.

The last Gen-Tie structure constructed for DSSF would be located just off the Red Bluff Substation Property and would be a dead-end structure; SCE would work with Sunlight to integrate final design. SCE would construct, own, operate, and maintain the final span of the circuit from the Substation dead-end structure to the tower connection at the last DSSF structure.

Modification of Existing 220-kV Structures

The proposed routes for the new 500-kV transmission loop-in line segments would require crossing over the Florida Power & Light (FPL) Buck-Julian Hinds 220-kV transmission line. The height of the 500-kV towers would be selected to comply with the CPUC General Order No. 95 (GO 95) Grade A crossing requirement. Depending on the exact location selected for the Red Bluff Substation footprint, crossing over the FPL line with the 500-kV line loop-in segments may require tower modifications to the FPL line to comply with GO 95. If a modification to the FPL-220 kV transmission line is needed, new lower transmission structures would be inter-set within the Project Study Area along the FPL ROW, adjacent to the 500-kV loop-in line segments. The inter-set towers would lower the height of the FPL 220-kV conductors at the crossing location. If necessary, existing FPL transmission towers may be removed to provide the proper clearance between the existing 220-kV line and the new 500-kV loop-in line segments.

The detailed modifications to the FPL 220-kV transmission line, if required to accommodate the 500-kV loop-in lines, are unknown until detailed engineering is completed. The exact type and size of the inter-set towers and footings would depend on survey information, weather studies, soil analysis, and final transmission engineering. However, the inter-set structures likely would be of the same general type as the existing FPL transmission line structures. The existing FPL structures are built from spun cast pre-stressed concrete poles, with H-frame construction with a rectangular steel cross-arm attached by bolts and brackets to the poles.

Distribution Line for Substation Light and Power

An extension of the existing, SCE-owned, Desert Center 12-kV circuit would be required to provide the station light and power for the Red Bluff Substation. This line is located on BLM-administered land. Poles for this line would be single wooden poles approximately 29 to 39 feet tall (Figure 2-17).

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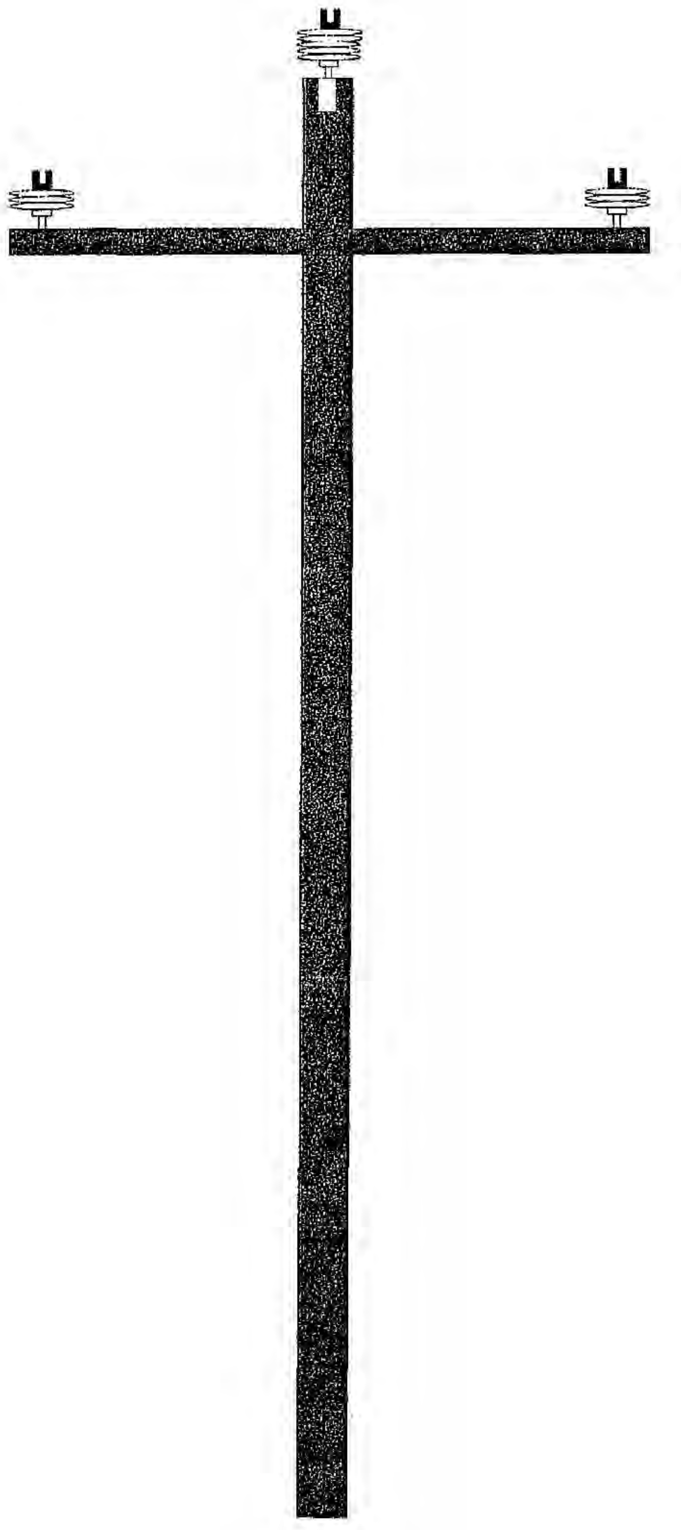


Source: Southern California Edison, 2010

DESERT SUNLIGHT SOLAR FARM

Figure 2-17

Red Bluff Substation Distribution System Pole

Additionally, a new pad-mounted 750-kVA station light and power transformer would be installed within the Substation boundaries. Details on the location and features of this line for each Substation are provided in Section 2.3.2 (Construction Plan for Red Bluff Substation Project).

Telecommunications Facilities

A telecommunication system would also be required in order to provide monitoring and remote operation capabilities of the electrical equipment at Red Bluff Substation, and for transmission line protection. This system includes electrical equipment that would be installed: at the Desert Sunlight On-Site Substation, along the Gen-Tie Line, at the Red Bluff Substation, and at the existing Chuckwalla Mountain Communications Site. In addition, a new Desert Center Communications Site (Telecom Site) would be constructed (but would not be co-located with the Red Bluff Substation). This new microwave repeater station would be located on the north side of Airport Access Road approximately 600 feet east of Rice Road, and west of the former Desert Center Airport (refer to Figure 2-1). This former Riverside County airport is currently a private special-use airport (with one operational runway) that is used in conjunction with a private road-course racing facility.

To provide this system, SCE would build and operate the following:

- Line protection, supervisory control and data acquisition (SCADA) and telecommunications circuits from the Desert Sunlight (On-Site) Substation to the Red Bluff Substation and Devers Substation utilizing optical ground wires on Sunlight's 220-kV Gen-Tie Line (note that SCE uses the term SCADA and First Solar uses the term DAS for the same equipment).
- Line protection, SCADA and telecommunications circuits from Red Bluff Substation to Devers Substation and Colorado River Substation.

SCE would build these circuits using some existing infrastructure, as well as the following new infrastructure:

- An optical system between the Desert Sunlight (On-Site) Substation and Red Bluff Substation.
- A microwave (wireless) system between Red Bluff Substation and the new Desert Center Communications Site (Telecom Site).
- A microwave system between the new Desert Center Communications Site and the existing Chuckwalla Mountain Communications Site, located 5 miles west-southwest of Desert Center. The Chuckwalla Mountain Communications Site is managed by the Metropolitan Water District of Southern California (MWD) on land administered by the BLM. The building needed for this Project is owned by SCE.

SCE would install the following equipment:

- New microwave equipment in a new 25-foot by 40-foot communications room inside the MEER at Red Bluff Substation.
- New 185-foot lattice steel microwave tower at Red Bluff Substation. This tower would be located near the communications room inside the MEER. The tower base would be a square with 35-foot sides. The concrete tower anchors would be about 6 feet in diameter.

- The new Desert Center Communications Site would have a 185-foot tower identical to the one at Red Bluff Substation. It would have microwave equipment and dishes for paths to the Red Bluff Substation and Chuckwalla Mountain Communications Site (Figure 2-18). The disturbed area for the Desert Center Communications Site, including an 8-foot-high by 10-foot-wide berm around three sides of the facility and an access road, would consist of an area approximately 150 feet by 70 feet. Enclosed within the disturbed area would be a fenced in area of 100 feet by 50 feet. Within the fenced area there would be a 12-foot by 36-foot communication room and the 185-foot-tall microwave tower and two 10-foot-diameter microwave antennas. Power would be provided from a tap into the nearest 12-kV line and would require the installation of about seven wooden poles to span about 750 feet.
- Microwave equipment and a dish at the existing Chuckwalla Mountain Communications Site. A new 120-foot tower would be constructed in order to provide a mounting space for the dish so that it can "see" the Desert Center Communications Site.

Laydown areas would include SCE's proposed Red Bluff Substation and the area adjacent to the proposed microwave repeater station. A 20-foot-wide by 30–foot-long access road would be built to this new Desert Center Communications Site.

Drainage Facilities

At both Red Bluff Substation sites, surface stormwater runoff would need to be redirected around the Substation. Drainage improvements and related grading due to topography would require between *14* and 20 acres, depending on the Red Bluff Substation alternative selected. Alterations to existing natural drainage channels within the Substation A footprint would be considerable, requiring extensive rerouting of three deep channels.

Around the Telecom Site, an 8-foot-high berm would need to be constructed on three sides, as the site is prone to flooding. This area required for the berm is included in the area previously described for the Telecom Site.

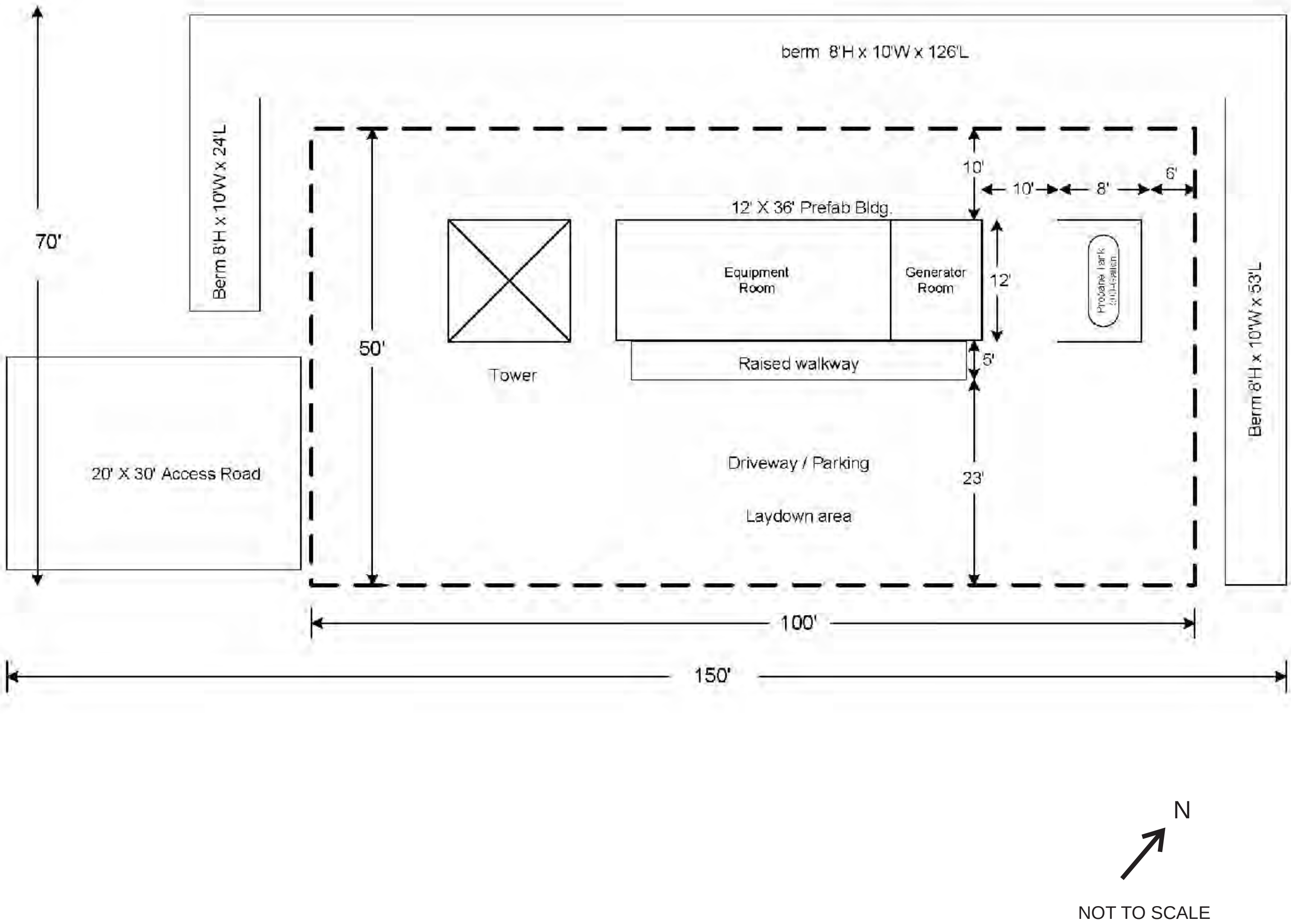
Access Roads

There are two proposed access road alternatives considered for Substation A: one coming from the west via the Kaiser Road exit off I-10 and Aztec Road along a pipeline access road (Access Road 1 – requiring approximately *31* acres of disturbance), and the other coming from the east via Chuckwalla Valley Road, Corn Springs Road, and a pipeline access road (Access Road 2 – requiring approximately *31* acres of disturbance). Substation B would require a new access road from Eagle Mountain Road, requiring approximately 1.3 acres of disturbance).

Staging Areas

Up to 10 acres may be necessary for temporary equipment storage and material staging areas associated with transmission lines and related structures. The staging area would be located adjacent to the Substation site.

Proposed Desert Center Communications Site located on BLM land, east of Hwy 177 and north of access road to airport.
Coordinates: 33° 45' 30.4" N
-115° 20' 36.8" W



Source: Southern California Edison, 2010

DESERT SUNLIGHT SOLAR FARM

Figure 2-18

Desert Center Communications Site - Microwave Repeater Site

Lighting and Perimeter Features

Lighting at the proposed Red Bluff Substation would consist of high-pressure sodium, low intensity lights located in the switchyards, around the transformer banks, and in areas of the yard where operating and maintenance activities may take place during evening hours for emergency/scheduled work. Maintenance lights would be controlled by a manual switch and would normally be in the "off" position. The lights would be directed downward, and shielded to reduce glare outside the facility.

The proposed Substation would be enclosed on four sides by an 8-foot-high wall with two 24-foot-wide rolling gates. A band of at least three strands of barbed wire would be affixed near the top of the perimeter wall inside of the Substation and would not be visible from the outside.

Additional Features

A water well would be drilled on or adjacent to the Substation site. The final location of the well would be identified by future testing. Water would be used for construction purposes, including dust control, and as potable water during the life of the Substation. A septic system that meets state and county regulations for septic design would also be installed on the Substation site for employee use during operations and maintenance. An emergency diesel-powered generator would also be installed at the Substation.

Operations and Maintenance

Once constructed, the Red Bluff Substation would be unmanned, and electrical equipment within the Substation would be remotely monitored. SCE personnel would visit the Substation three to four times a month for routine maintenance purposes. Routine maintenance would include equipment testing, monitoring, and repair.

The SCE transmission lines would be maintained in a manner consistent with CPUC General Order No. 165. SCE maintains an inspection frequency of the energized overhead facilities a minimum of once per year via ground and/or aerial observation. Maintenance would include activities such as repairing conductors, replacing insulators, and access road maintenance.

2.2.4 Alternatives Analyzed

Alternative 1 – Proposed Action Alternative with Land Use Plan Amendment: Solar Farm Layout B, Gen-Tie Line Route GT-A-1, Red Bluff Substation A, and Access Road 2

With the Proposed Action, shown on Figure 2-19, the Applicant is requesting a ROW grant for the following configurations of the three Project components:

- Solar Farm Layout B (SF-B);
- Gen-Tie Line A-1 (GT-A-1);
- Red Bluff Substation A, with Access Road 2.

This alternative would require an amendment to the CDCA Plan. *This alternative is BLM's Preferred Alternative.*

This section includes a brief overview of each Project component. Project details are provided in Section 2.2.3 (Features Common to All Action Alternatives). Construction, operation, and maintenance, and decommissioning information is provided in Sections 2.3 and 2.4.

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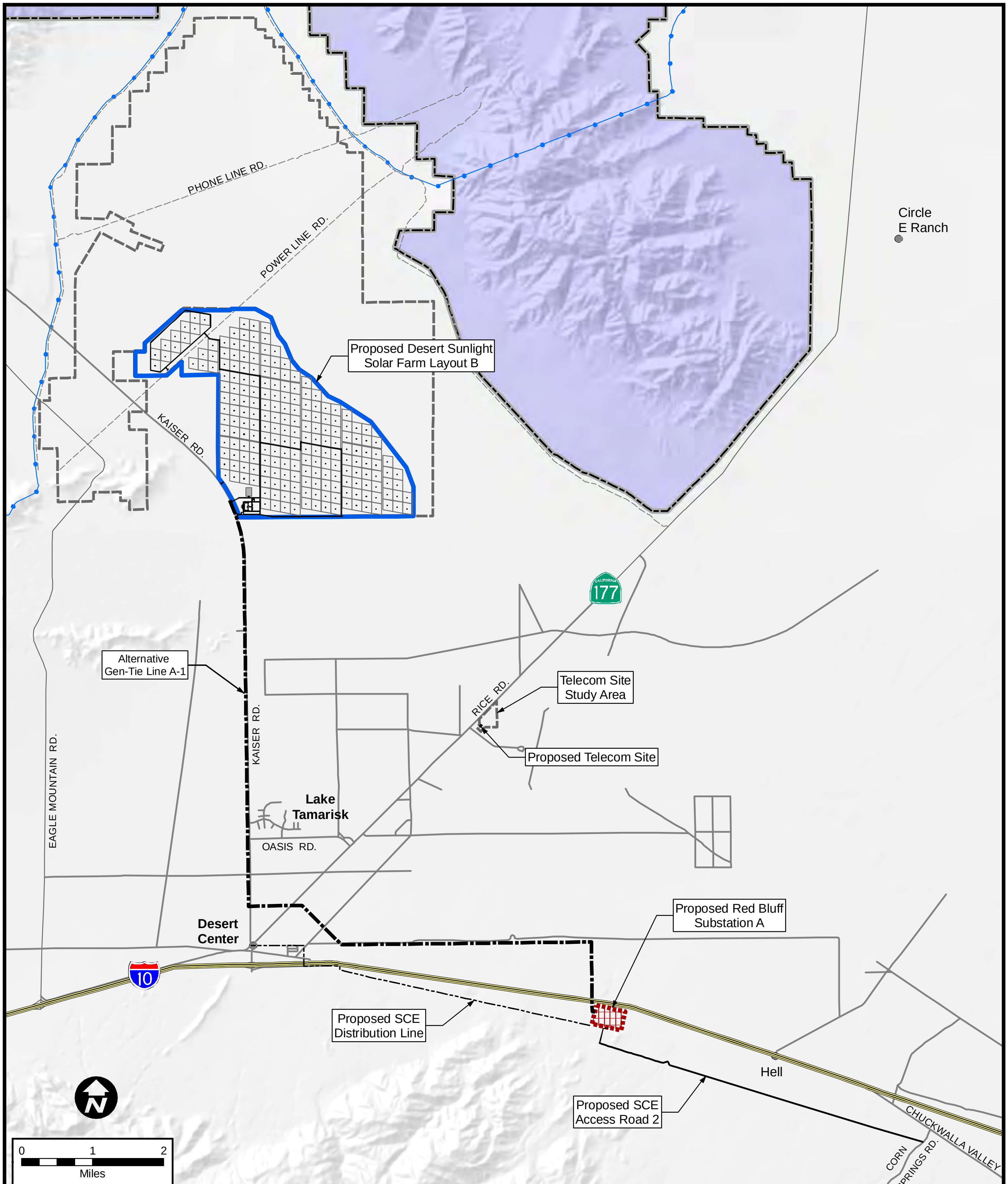

LEGEND

- Proposed Gen-Tie Line A-1
- SCE Access Road
- SCE Distribution Line
- Study Area Boundary for Solar Farm
- Solar Farm Boundary (Alternative B)
- Red Bluff Substation (Alternative A)
- Joshua Tree National Park Boundary
- Aqueduct

Source: First Solar, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 2-19

Alternative 1: Proposed Action Layout

Table 2.2-1 provides a summary of permanent ground disturbance associated with each Project component and related element for Alternative 1. Table 2.2-2 provides a summary of water use during construction and operation for each major Project component.

Table 2.2-1
Summary of Permanent Ground Disturbance for Alternative 1 – Proposed Action Alternative

Project Component/Element	Approximate Acreage
Solar Farm Layout B[1]	*3,912*
Gen-Tie Line A-1[2]	*92*
Red Bluff Substation A	*76*
Red Bluff Substation-related features	*-*
- Drainage/Sideslopes	*14*
- Access Road[3]	*31*
- Transmission System[4]	*33*
- *Material Yard/Staging Area*	*9*
- Distribution Line System[5]	*8*
- Telecom Site[6]	*<1*
TOTAL	***4,176***

[1] Includes area for all Solar Farm-related facilities.
[2] Permanent disturbance of 92 acres occurs within the ROW corridor totaling 256 acres (12.1 miles long by 160 feet wide with additional fan-shaped areas at corners for stringing).
[3] Assume 24,000-foot by 30-foot-wide road from Corn Springs Road.
[4] Includes transmission system associated with connecting Red Bluff Substation to Gen-Tie Line and DPV1.
[5] Distribution system for Substation power and light, including new access road.
[6] New Desert Center Communications Site.

Table 2.2-2
Summary of Water Use for Alternative 1 – Proposed Action Alternative

Project Component/Element	Construction		Operation	
	Total (acre-feet)	Peak Daily (gpd)[1]	Annual (acre-feet)	Peak Daily (gpd)
Solar Farm B	*1,200 to 1,300*	252,000 to 1.3 million	0.2	<300
Gen-Tie Line A-1	6.25	40,000	0	0
Red Bluff Substation A	*300*	*330,000*	*<0.1*	<100
TOTAL	***1,506 to 1,606***	***622,000 to 1.67million***	***<0.3***	***<400***

Note: (1) Demand would vary over the construction period and (2) water use estimates are preliminary and based on current information.

Solar Farm Layout B is six miles north of the Desert Center and four miles north of Lake Tamarisk, northwest of and next to Kaiser Road, and southwest of Pinto Wash. SF-B encompasses approximately *3,912* acres entirely on BLM-administered land. Elevation at SF-B varies from approximately 619 to _845_ feet above mean sea level. Access would be provided by Kaiser Road. Once fully operational, it would produce 550 MW of power.

Table 2.2-3 provides a general list of Solar Farm components along with the acreage they would require for SF-B. Figure 2-20 shows a schematic layout of SF-B. In addition to the main generation area, which takes up most of the Project acreage, the largest permanent land uses on the Solar Farm site are internal access corridors, the O&M facility, the On-Site Substation, and the Visitors Center. Security and desert tortoise fencing would require _14.4_ miles of fencing.

Table 2.2-3
Solar Farm Layout B – Dimensions of Project Facilities

Project Facility or Component	Approximate Total Area	Percent of Total Solar Farm Site (3,912 acres)
Total Project Footprint	**_3,912 acres_**	**100**
Total footprint of piles	_0.3 acre_	<0.1
Access Corridors	_162.7 acres_	_4.2_
Gravel Access Roads	_25.4 acres_	0.7
O&M Facility	0.7 acre	<0.1
Solar Energy Visitors Center	0.06 acre	<0.1
On-Site Substation	_6.3 acres_	0.2
Area Disturbed by Trenching	_30.6 acres_	0.8
Area Permanently Covered by At-Grade items (footprint of piles, PCS, transformer, PVCS, On-Site Substation, On-Site Overhead Line poles, Visitors Center, M&M Facility)	_9.2 acres_	_0.2_
Total footprint for on-site overhead line poles	0.1 acre	<0.1
Area shaded by PV modules (indirect disturbance) (at solar noon)	_2,869 acres_	_73_
Area shaded by PV modules (indirect disturbance) (Scenario – Dec. 21, 9:00 am)	_2,917 acres_	_75_
Security Fencing	Length: _14.4_ miles	N/A

Gen-Tie Line A-1

As shown in Figure 2-21, GT-A-1 exits the southwest of the Solar Farm site, runs south along the west side of Kaiser Road, turns east just north of Desert Center, and then runs south across I-10 to the eastern location being considered for the Red Bluff Substation (Red Bluff Substation A). Along Kaiser Road, the center of the 160-foot transmission line ROW would be located approximately 120 to 130 feet from the centerline of the paved roadbed, within the county road ROW on BLM land. Approximately 1 mile south of Oasis Road, the line turns east, running along the north side of the section lines dividing BLM-managed land from private land. After approximately 0.7 mile, the line turns southeast for approximately 0.7 mile, then due east for approximately 3.5 miles, then south for approximately 0.8 mile to the Substation. The transmission line travels parallel and to the south of an existing BLM open route, along BLM-administered land. The access road would be adjacent to the Gen-Tie Line and within the ROW.

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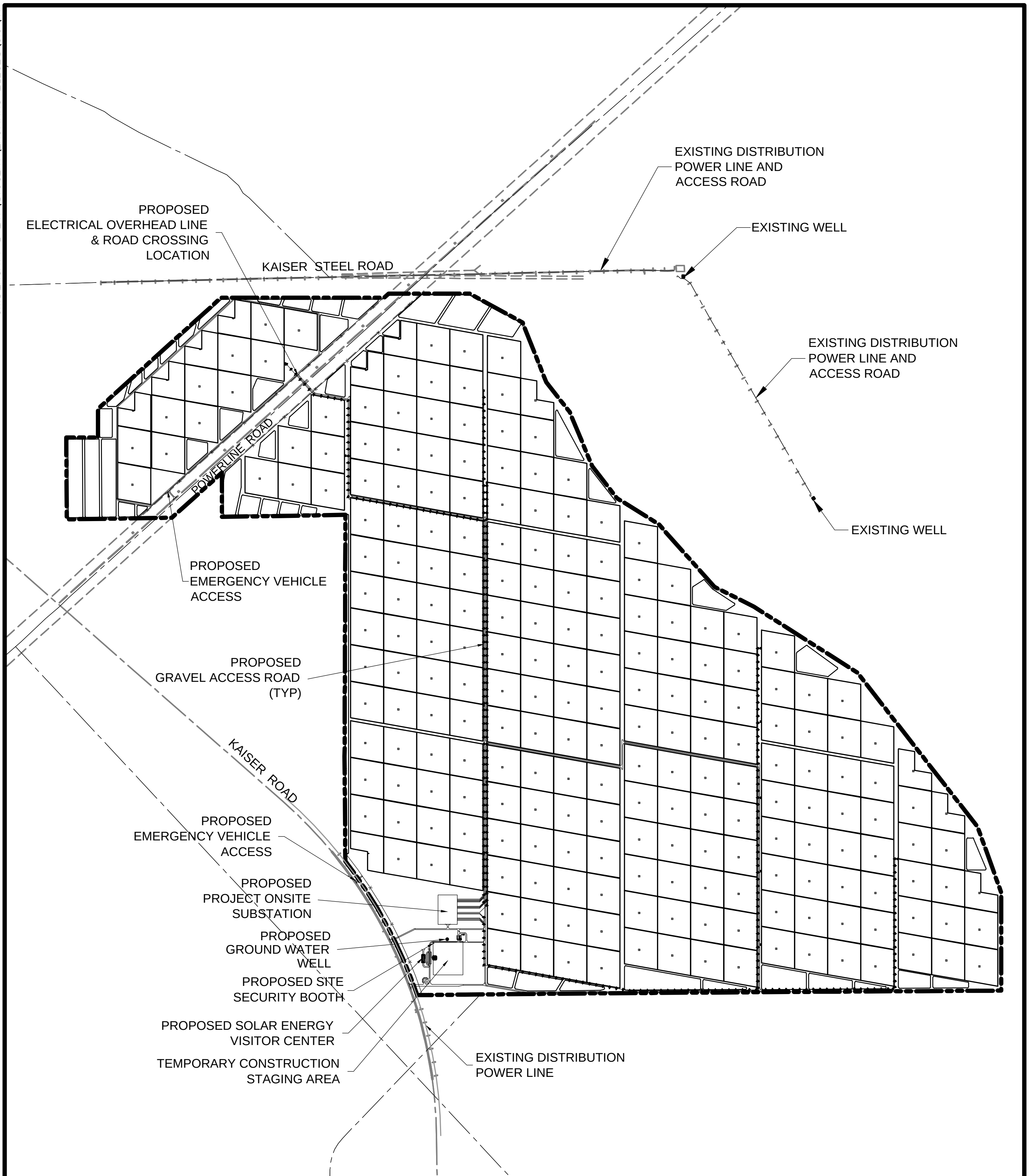

LEGEND

- SOLAR FARM SITE BOUNDARY *
- FENCE LINE
- EXISTING ROAD
- EXISTING DISTRIBUTION LINE
- TYPICAL PV ARRAY

Source:
First Solar, 2011.

Note:
* The solar farm site will include approximately 3,912 acres.

N

0 1,500 3,000
SCALE IN FEET

DESERT SUNLIGHT SOLAR FARM

Figure 2-20

Solar Farm Layout B

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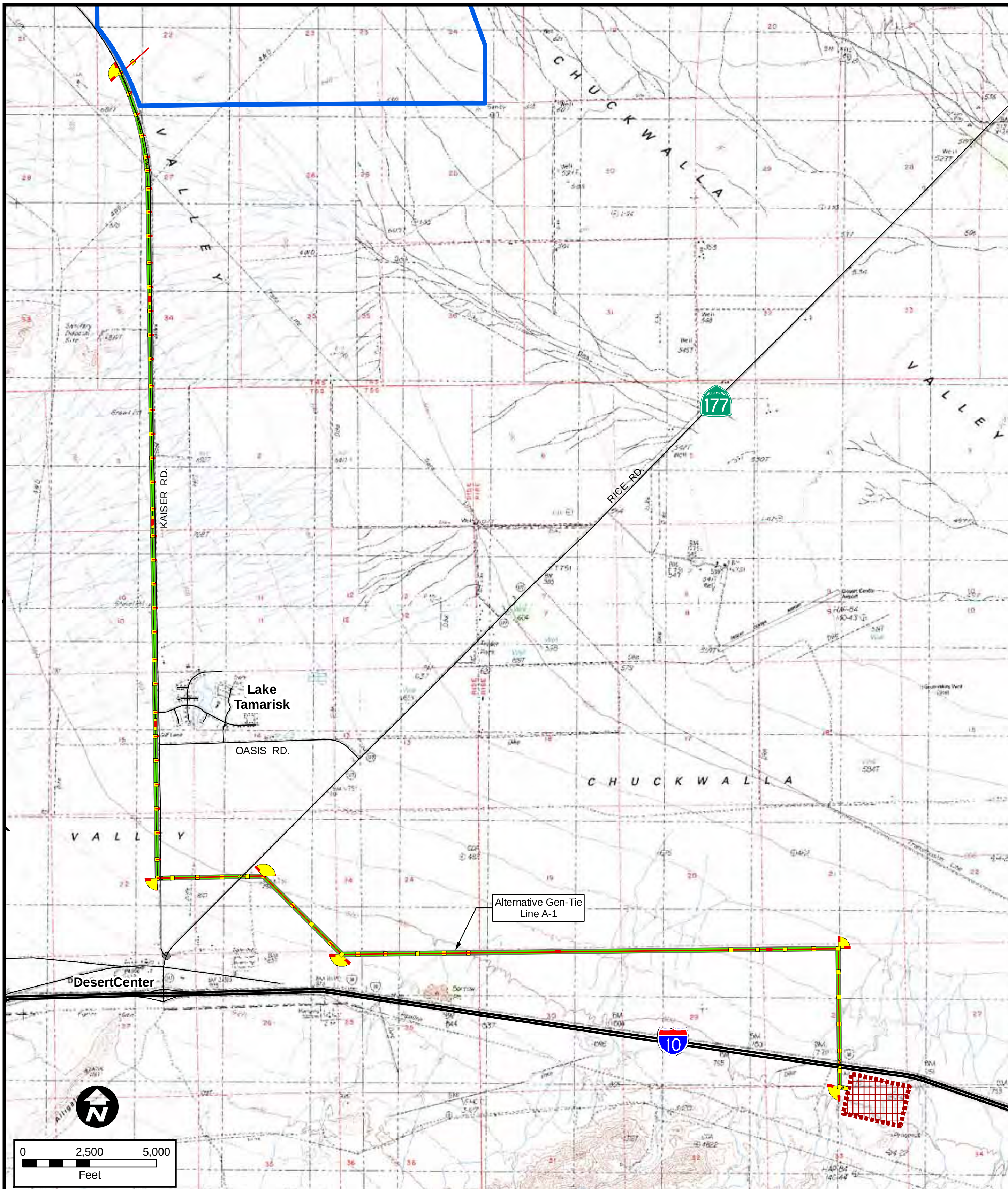

LEGEND

- Solar Farm Boundary (Alternative B)
- Permanent Disturbance Area
- Temporary Disturbance Area
- Alternative Gen-Tie Line A-1 Corridor
- Red Bluff Substation (Alternative A)

Source: First Solar, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 2-21

Gen-Tie Line A-1

Of the 12*.1*-mile ROW, approximately 11.4 miles would be on BLM land, approximately 0.6 mile would be on land owned in fee by MWD *and approximately 0.5 mile would be on land owned in fee by Riverside County.* First Solar would enter into a land license agreement, *lease, or permanent easement* with MWD for the portions on land owned in fee by MWD, which would rely on this EIS to satisfy the CEQA obligations of MWD. *Riverside County would issue an Encroachment Permit for the portions on land owned in fee by the County and for access into the County road ROW, in addition to issuing a Public Use Permit for the MWD land. Riverside County would rely on this EIS to satisfy the CEQA obligations of the County.*

The 160-foot-wide corridor and additional fan-shaped areas at corners used for wire stringing for GT-A-1 would encompass approximately 256 acres. The total length of GT-A-1 is approximately 12.1 miles. The elevation of GT-A-1 varies from approximately 690 to 833 feet above mean sea level. Approximately 73 transmission structures would be required for this alternative, including 65 tangents and 8 dead-ends. Five splicing locations and 20 guard structures would be used during construction. Permanent access roads would be constructed in order to provide access for maintenance of the Gen-Tie, as needed. Table 2.2-4 provides a list of major Gen-Tie components, along with the acreage required for each component.

Table 2.2-4
Gen-Tie Line A-1 – Project Facilities, Components, and Percent of Gen-Tie Corridor

Project Facility or Component	Dimensions	Percent of Gen-Tie Corridor
Gen-Tie Line Corridor	Width: 160 feet plus additional fan-shaped areas at corners Length: 12.1 miles *ROW* Area: *up to* 256 acres	100
Permanent disturbance *(within corridor)*	*92 acres*	*35.9*
Total transmission structure footprint	2,743 square feet (0.06 acres)	<0.1
Individual transmission structure footprint	Tangent structure: 28.3 square feet; dead-end: 113.1 square feet.	<0.1
Permanent access roads	Width: 14 feet Length: 7.3 miles 12.4 acres	4.8
Temporary access roads	Width: 14 feet Length: *13.1* miles *22.2* acres	*8.7*

The Applicant proposes to use steel monopoles for the Gen-Tie Line. Poles are expected to be approximately 135 feet tall. Typical spacing between structures would be approximately 900 to 1,100 feet. Self-weathering steel would be used for the monopoles, which are intended to blend with the surrounding mountains.

Based on the Project requirements, access, terrain, and limited available geotechnical information, it is expected that direct embedded foundations would be used for tangent structures and anchor-bolted drilled shaft foundations for angle and dead-end structures. Vibrated casing foundations may also be used, depending on the results of planned further geotechnical investigation.

Red Bluff Substation A

Red Bluff Substation A (Figure 2-22) would be on approximately *76* acres of BLM-administered land approximately four miles southeast of California State Route 177, just south of I-10. The Substation would be constructed within the central portion of the parcel. Other Substation-related Project elements would require additional acreage, as summarized in Table 2.2-1 and as described in more detail below.

The following is a summary of the Red Bluff Substation components:

- Red Bluff Substation: Construct a 500-/220-kV substation on approximately *76* acres of land.
- Transmission Lines: Loop the existing DPV 500-kV transmission line into Red Bluff Substation A by adding a total of approximately 5,000 feet of new transmission lines (two lines of approximately 2,500 feet each), creating the Colorado River-Red Bluff and Devers-Red Bluff 500-kV transmission lines.
- Gen-Tie Line Connection: Connect the Sunlight-built Gen-Tie Line into the Red Bluff Substation property.
- Modification of Existing 220-kV Structures: The necessary crossing of the new FPL Buck-Julian Hinds 220-kV transmission lines under the proposed SCE 500-kV loop-in lines may require tower modifications. New tubular steel poles (types to be determined) to modify the construction at the crossing location may replace the existing poles.
- Electric Distribution Line for Substation Light and Power: Rebuild the Desert Center 12-kV circuit overhead distribution line along the south frontage of I-10, approximately 20,000 feet, to upgrade the circuit from single-phase to three-phase construction and then extending approximately 1,000 feet underground toward the Substation. This rebuild would require the replacement of approximately 100 poles, assuming the span between each pole is approximately 200 feet.
- Telecommunications Facilities: Install optical ground wire (OPGW) on the Gen-Tie Line and connect to associated equipment installed inside both Red Bluff and Sunlight's On-Site Substation. Construct new Desert Center Communications Site (not co-located with the Substation), which includes new microwave repeater equipment, consisting of a new 12-foot by 36-foot communications room and associated equipment, along with a new 185-foot-tall lattice steel microwave communications tower and two 10-foot-diameter microwave antennas.

Additional Project components for the Substation site include a water well, a septic system that meets state and county regulations for septic design, and an emergency generator. A material yard/staging area would be located adjacent to the Substation footprint. Two alternative access roads are being considered for Substation A: one from the west via Kaiser Road and Aztec Road (Access Road 1), and the second from the east via Corn Springs Road and Chuckwalla Valley Road (Access Road 2).

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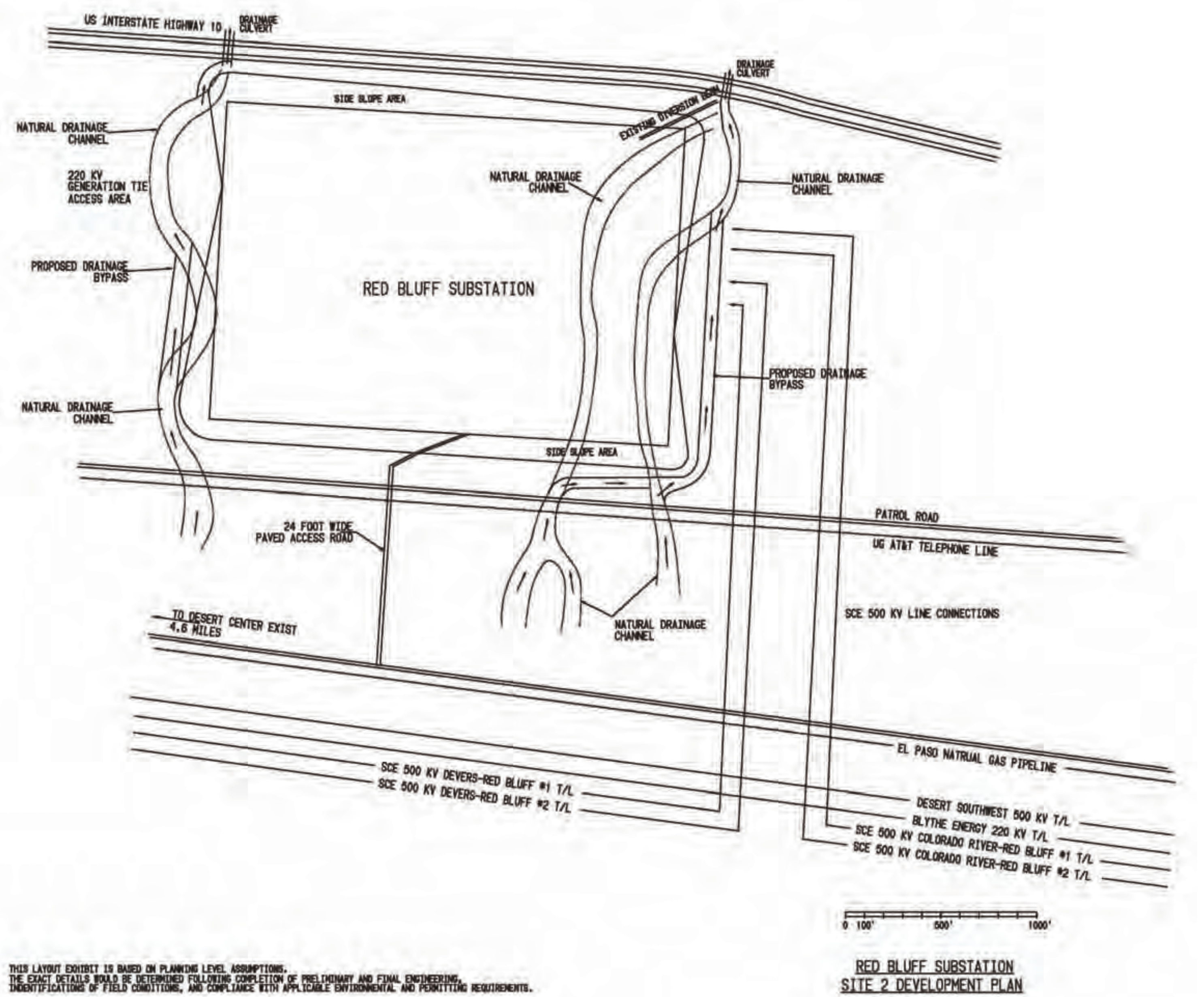

Source: Southern California Edison, 2010.

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Figure 2-22

Red Bluff Substation A

Access Road 2 to Substation A via Corn Springs Road and Chuckwalla Valley Road

Access to Substation A under this alternative would be provided from the Corn Springs exit off I-10 via a 3,800-foot-long paved section of Chuckwalla Valley Road, heading east along the southern frontage of the freeway (refer to Figure 2-23). From this point, the access would head south along a 1,100-foot-long section of Corn Springs Road, then would turn west through 30-foot wide roadway improvements to approximately 24,000 feet of the existing dirt pipeline patrol road to the Substation site. As a result of the potential for surface flooding over a 17,000-foot portion of the gas line patrol road, additional improvements may be necessary to protect the road. The resulting land disturbance would be approximately *31* acres.

Land Disturbance

Estimated land disturbance for Substation A is presented in Table 2.2-5. Factors used to estimate land disturbance for Substation A are presented in Table 2.3-9, Table 2.3-11, Table 2.3-14, Table 2.3-19, and Table 2.3-23 in Section 2.3.2 (Construction Plan for Red Bluff Substation). Land disturbance estimates are based on planning level assumptions. Additional details would be determined following completion of preliminary and detailed engineering, identification of field conditions, labor availability, equipment, and compliance with applicable environmental and permitting requirements. A detailed discussion of Red Bluff Substation B is included under Alternative 2 in this section of the EIS.

Table 2.2-5
Red Bluff Substation A Estimated Land Disturbance Summary

PROJECT ELEMENT	SUBSTATION SITE A (acres)
	Permanent
Substation System[1]	*130*
Transmission System[2]	*32.83*
Distribution System[3]	*8.31*
Telecommunication System[4]	*<0.25*
Total Disturbance	***171.39***

[1]Refer to Tables 2.3-9 and 2.3-11 for more detailed information *(permanent disturbance includes 76 acres for the Substation, 14 acres for drainage control, and 31 acres for access road, and 9 acres for a material laydown yard)*
[2]Refer to Table 2.3-14 for more detailed information.
[3]Refer to Table 2.3-19 for more detailed information.
[4]Refer to Table 2.3-23 for more detailed information.

Site Drainage

Because the Red Bluff Substation A is downslope of the Chuckwalla Mountains, surface runoff in the form of eroded channels traverses the site. Three of these channels would need to be altered in order to protect the Substation's southern exposure from flooding. Preliminary engineering suggests that a trapezoidal channel would be required to convey the stormwater runoff around both sides of the Substation, discharging the flow through two existing culverts under I-10. Other surface flow at the south end of the Substation would be directed into the new trapezoidal channels by earthen berms placed along the southern edge of the Substation wall. These drainage improvements would disturb an area of approximately *14* acres.

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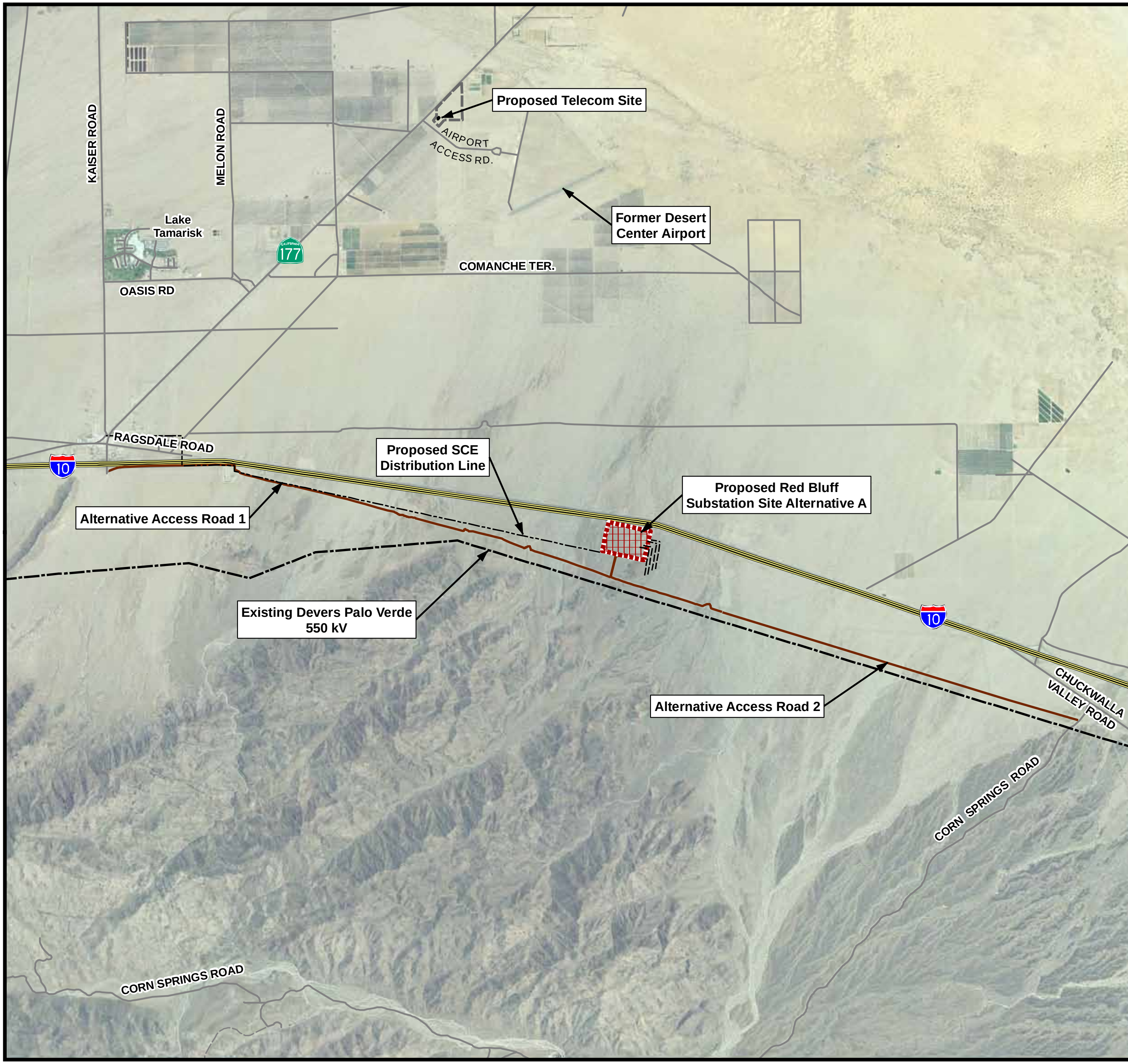

N

0 3,500 7,000 Feet

LEGEND

- Alternative Access Roads 1 and 2
- SCE Distribution Line
- Transmission Loop-In Line
- Devers-Palo Verde Transmission Line (DPV1)
- Interstate Highway
- State Highway/Local Road
- Unimproved Road
- Red Bluff Substation (Alternative A)

Source:
Southern California Edison, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 2-23

Access Road Alternatives for Substation A

Alternative 2—Alternate Action Alternative with Land Use Plan Amendment: Solar Farm Layout B, Gen-Tie Line GT-B-2, and Red Bluff Substation B

With the Alternate Action Alternative, shown on Figure 2-24, the following configurations of the three Project components are proposed:

- Solar Farm Layout B (SF-B);
- Gen-Tie Line B-2 (GT-B-2); and
- Red Bluff Substation B.

This alternative would require an amendment to the CDCA Plan.

This section includes a brief overview of each Project component. Project details are provided in Section 2.2.3 (Features Common to All Action Alternatives). Construction, operation and maintenance, and decommissioning information is provided in Sections 2.3 and 2.4. Table 2.2-6 provides a summary of permanent ground disturbance associated with each Project component and related element for Alternative 2. Table 2.2-7 provides a summary of water use during construction and operation for each major Project component.

Table 2.2-6
Summary of Permanent Ground Disturbance for Alternative 2 – Alternate Action Alternative

Project Component/Element	Approximate Acreage
Solar Farm Layout B[1]	*3,912*
Gen-Tie Line B-2[2]	*68*
Red Bluff Substation B	*76*
Red Bluff Substation-related features	-
- Drainage/Sideslopes	*20*
- Access Road[3]	*1*
- Transmission System[4]	*22*
- Material Yard*/Staging Area*	*10*
- Distribution System[5]	*<1*
- Telecom Site[6]	<1
TOTAL	***4,110***

[1]Includes area for all Solar Farm-related facilities.
[2]Permanent disturbance *of 68 acres occurs within a corridor totaling 203 acres* (10 miles *long* by 160 *feet* wide plus additional fan-shaped areas at corners *for stringing*).
[3]Assume 2,000-foot by 18-foot-wide road from Eagle Mountain Road.
[4]Includes transmission system associated with connecting Red Bluff Substation to Gen-Tie Line and DPV1.
[5]Distribution system for Substation power and light.
[6]New Desert Center Communications Site.

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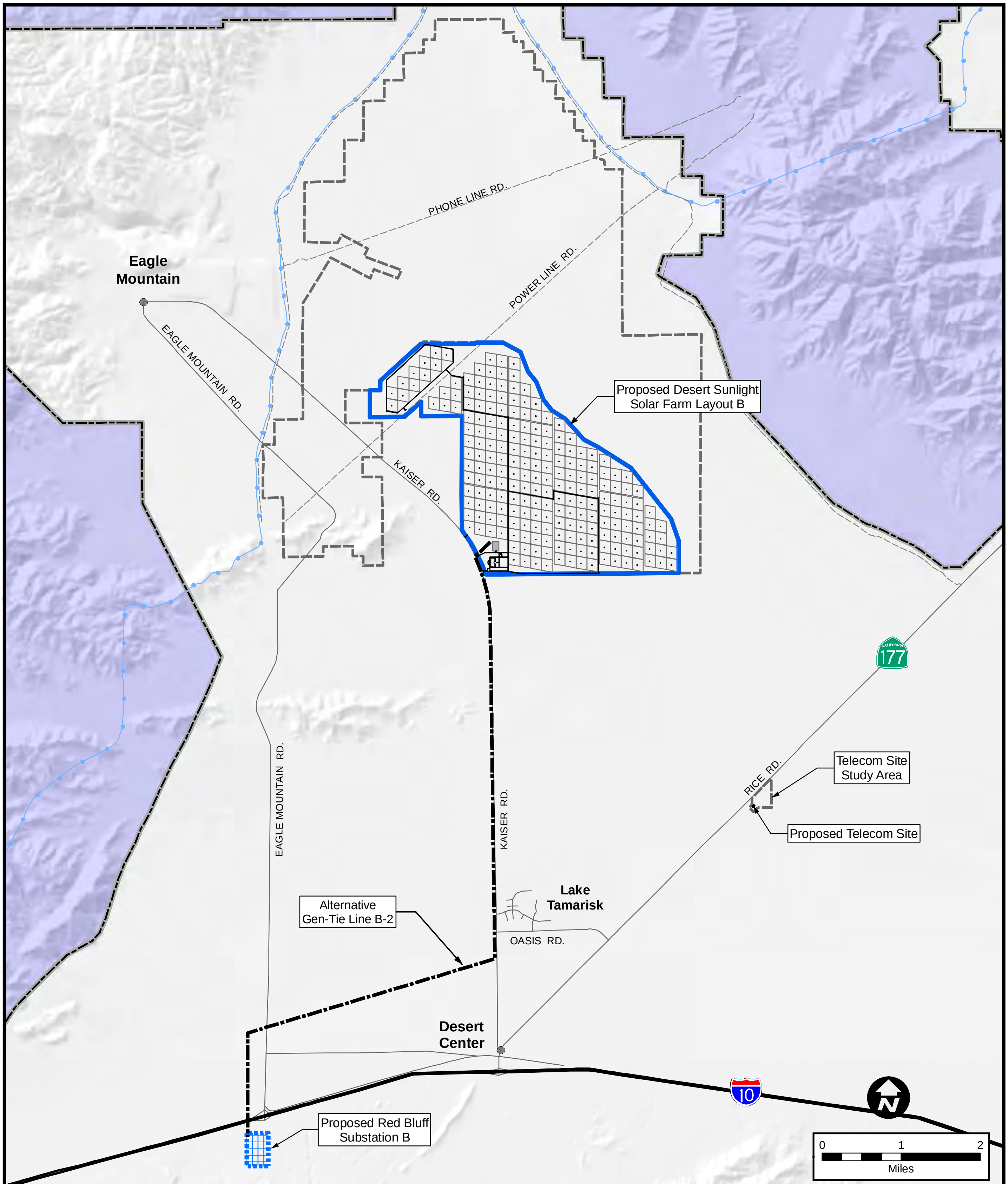

LEGEND

- Proposed Gen-Tie Line B-2
- Study Area Boundary for Solar Farm
- Solar Farm Boundary (Alternative B)
- Red Bluff Substation (Alternative B)
- Joshua Tree National Park Boundary
- Aqueduct

Source: First Solar, 2010.

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Figure 2-24

Alternative 2: Alternate Action Layout

Table 2.2-7
Summary of Water Use for Alternative 2 – Alternate Action Alternative

Project Component/Element	Construction Total (acre-feet)	Operation Peak Daily (gpd)[1]	Operation Annual (acre-feet)	Operation Peak Daily (gpd)
Solar Farm B	*1,200 to 1,300*	252,000 to 1.3 million	0.2	<300
Gen-Tie Line B-2	3.3	40,000	0	0
Red Bluff Substation B	*300*	*330,000*	*<0.1*	*<100*
TOTAL	***1,503 to 1,603***	***622,000 to 1.67 million***	***<0.3***	*<400*

Notes: (1) Demand would vary over the construction period and (2) Water use estimates are preliminary and based on current information.

Solar Farm Layout B

SF-B would be as described under Alternative 1 above.

Gen-Tie Line B-2

As shown in Figure 2-25, GT-B-2 would exit the southwest corner of the Solar Farm site, run south along the west side of Kaiser Road, then turn southwest, approximately 1.2 miles north of Desert Center, traveling across Eagle Mountain Road, finally turning south across I-10 to the location of the Red Bluff Substation B (Figure 2-24). Along Kaiser Road, the center of the 160-foot transmission line ROW would be located approximately 120 to 130 feet from the centerline of the paved roadbed, within the county road ROW on BLM land. Approximately 0.3 mile south of Oasis Road, the line turns southwest, running along an existing BLM-designated open route. After approximately 3.2 miles, the line crosses Eagle Mountain Road then turns south for approximately 1.3 miles to the Substation. The transmission line travels through BLM-administered land. Once the Gen-Tie Line leaves the Kaiser Road ROW, the access road would be adjacent to the Gen-Tie Line and within the ROW.

Of the 10-mile ROW, approximately 9.4 miles would be on BLM land, approximately 0.6 mile would be on land owned in fee by the MWD*, and approximately 0.5 mile would be on land owned in fee by Riverside County.* First Solar would enter into a land license agreement*, lease, or permanent easement* with MWD for the portions on land owned in fee by MWD, which would rely on this EIS to satisfy the CEQA obligations of MWD. *Riverside County would issue an Encroachment Permit for the portions on land owned in fee by the County and for access into the County road ROW, in addition to issuing a Public Use Permit for the MWD land. Riverside County would rely on this EIS to satisfy the CEQA obligations of the County.*

The 160-foot-wide Gen-Tie corridor and additional fan-shaped areas at corners used for wire stringing would encompass approximately 203 acres. The total length of GT-B-2 would be approximately 10 miles. The elevation of GT-B-2 varies from approximately 690 to 1,192 feet above mean sea level. Approximately 58 transmission structures would be required for this alternative, including 53 tangents and 5 dead-ends. Five splicing locations and 18 guard structures would be used during construction of the line. Permanent access roads would be constructed in order to provide access for maintaining the Gen-Tie, as needed. Table 2.2-8 below provides a list of major Gen-Tie components, along with the acreage requirements for each component.

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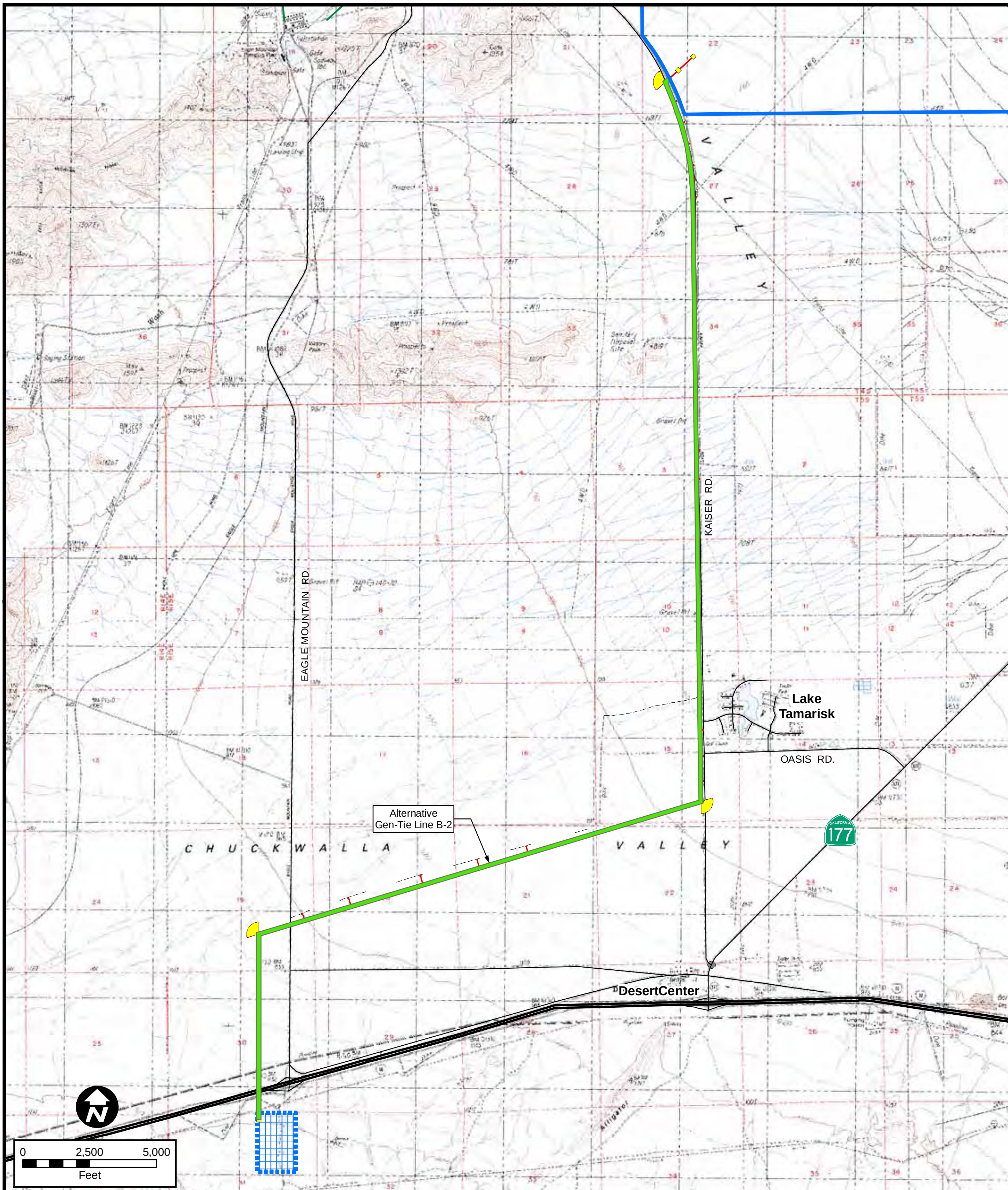

LEGEND

Alternative Gen-Tie Line B-2 Corridor

Temporary Disturbance Area

Permanent Disturbance Area

Solar Farm Boundary (Alternative B)

Red Bluff Substation (Alternative B)

Source: First Solar, 2010.

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Figure 2-25

Gen-Tie Line B-2

Table 2.2-8
Gen-Tie Line B-2—Project Facilities, Components, and Percent of Gen-Tie Corridor

Project Facility or Component	Dimensions	Percent of Gen-Tie Corridor
Gen-Tie Line Corridor	Width: 160 feet and additional fan-shaped areas at corners Length: 10 miles Area: 203 acres	100
Permanent Disturbance	*68 acres*	*33.5*
Total transmission structure footprint	2,065 square feet (0.05 acre)	<0.1
Individual transmission structure footprint	Tangent structure = 28.3 square feet Dead-end = 113.1 square feet	<0.1
Permanent access roads	Width: 14 feet Length: 4.3 miles Area: 7.3 acres	3.6
Temporary access roads	Width: 14 feet Length: *11.7* miles Area: *19.8* acres	*9.8*

Red Bluff Substation B

Red Bluff Substation B would be within a 160-acre parcel of land south of I-10 at Eagle Mountain Road. This Substation is expected to require approximately *76* acres and would be generally located in the center of the parcel (Figure 2-26). Other Substation-related elements would require additional acreage, as summarized in Table 2.2-1, and as described in more detail below.

This Substation site is on a parcel of privately-owned land that would be acquired and owned by SCE. The land is zoned Controlled Development, which allows for two single-family dwellings per 10 acres. The General Plan Designation is Open Space – Rural. The surrounding land use is Vacant – Open Space.

The components of Red Bluff Substation B are identical to those previously described for Substation A (under Alternative 1), except for two components:

- Transmission Lines: Loop the existing DPV 500-kV transmission line into Red Bluff Substation B by adding a total of approximately 1,000 feet of new transmission lines (two lines of approximately 500 feet each), creating the Colorado River-Red Bluff and Devers-Red Bluff 500-kV transmission lines.
- Electric Distribution Line for Substation Light and Power: Construct approximately 750 feet of 12-kV overhead distribution line and approximately 1,000 feet of underground distribution line (connecting the existing distribution system along Eagle Mountain Road to Red Bluff Substation) to provide Substation light and power.

Access from Eagle Mountain Road

Access to the Red Bluff Substation B would be from the Eagle Mountain exit from I-10. A new 18-foot wide access road would be constructed from the highway off-ramp angling approximately 800 feet toward the northeast Substation corner, then would continue south approximately

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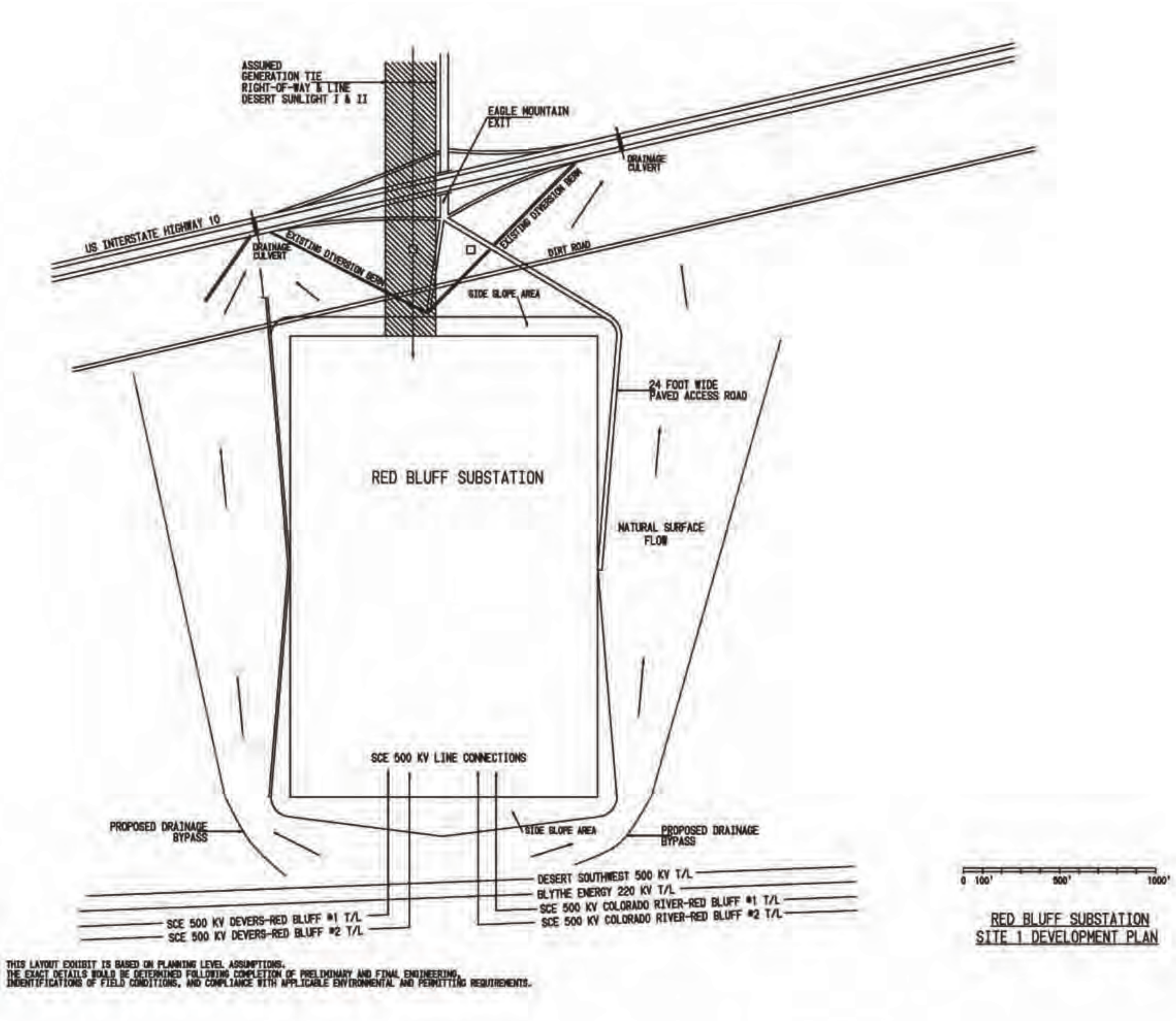

Source: Southern California Edison, 2010.

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Figure 2-26

Red Bluff Substation B

1,200 feet to the main Substation entry gate. A description of access road construction and permanent roadway disturbance is in Section 2.3.2 (Construction Plan for Red Bluff Substation Project).

Land Disturbance

Estimated land disturbance for the Red Bluff Substation B site is presented in Table 2.2-9. Factors used to estimate land disturbance for the two alternate sites are presented in Tables 2.3-9, 2.3-12, 2.3-15, 2.3-21, and 2.3-23 in Section 2.3.2 (Construction Plan for Red Bluff Substation Project). Land disturbance estimates are based on planning level assumptions. Additional details would be determined following completion of preliminary and detailed engineering, identification of field conditions, labor availability, equipment, and compliance with applicable environmental and permitting requirements.

Table 2.2-9
Red Bluff Substation B Estimated Land Disturbance Summary

Project Element	Substation Site B (acres)
	Permanent
Substation System[1]	*107.3*
Transmission System[2]	*22.33*
Distribution System[3]	*0.15*
Telecommunication System[4]	*0.25*
Total Disturbance	***130.03***

[1]Refer to Tables 2.3-9 and 2.3-12 for more detailed information *(permanent disturbance includes 76 acres for the Substation, 20 acres for drainage control, and 1.3 acres for access road, and 10 acres for a material laydown yard).*
[2]Refer to Table 2.3-15 for more detailed information.
[3]Refer to Table 2.3-21 for more detailed information.
[4]Refer to Table 2.3-23 for more detailed information.

Site Drainage

The Red Bluff Substation B *would be* located *north* of the Chuckwalla Mountains, which contribute to surface stormwater runoff through the proposed site. An ephemeral drainage runs south to north through the center of the proposed Substation site. Although this appears to be a minor drainage feature, it would be necessary to redirect this flow around the Substation. The Substation's southern boundaries would be protected from surface runoff by installing a berm designed to direct the flow around both sides of the Substation pad. These drainage improvements could disturb an area approximately 80 feet wide around three sides of the fenced Substation, resulting in a total permanent disturbance area of approximately 20 acres.

Alternative 3—Reduced Solar Farm Footprint Alternative with Land Use Plan Amendment: Solar Farm Layout C, Gen-Tie Line GT-A-2, Substation A, and Access Road 1

With the Reduced Solar Farm Footprint Alternative, shown on Figure 2-27, the following configurations of the three Project components are proposed:

- Solar Farm Layout C (SF-C);

- Gen-Tie Line A-2 (GT-A-2); and
- Red Bluff Substation A, with Access Road 1.

This alternative would require an amendment to the CDCA Plan.

This alternative would be in the same general location as Solar Farm Site B but would be reduced in size to reduce overall environmental impacts, particularly to the desert tortoise. The acreage required for this layout would be 3,045 acres, and the power output would be 413 MW. The construction schedule would be 26 months, the same as for Solar Farm Layout B.

This section includes a brief overview of each Project component. Project details are provided in Section 2.2.3 (Features Common to all Action Alternatives). Construction, operation and maintenance, and decommissioning information is provided in Sections 2.3 and 2.4. Table 2.2-10 provides a summary of permanent ground disturbance associated with each Project component and related element for Alternative 3. Table 2.2-11 provides a summary of water use during construction and operation for each major Project component.

Table 2.2-10
Summary of Permanent Ground Disturbance for Alternative 3—Reduced Footprint Alternative

Project Component/Element	Approximate Acreage
Solar Farm Site C [(1)]	3,045
Gen-Tie Line A-2 [(2)]	86
Red Bluff Substation A	76
Red Bluff Substation-related features	-
- Drainage/Sideslopes	14
- Access Road [(3)]	31
- Material Yard	9
- Transmission System [(4)]	33
- Distribution System [(5)]	8
- Telecom Site [(6)]	1
TOTAL	***3,303***

[1]Includes area for all Solar Farm-related facilities.
[2]Permanent disturbance *of 86 acres occurs within a corridor totaling 226 acres* (10.5 mile*s long* by 160 *feet* wide plus additional fan-shaped areas at corners *for stringing*).
[3]Assume 24,000-foot by 30-foot-wide road improvements from *Kaiser Road and Aztec* Road.
[4]Includes transmission system associated with connecting Red Bluff Substation to Gen-Tie Line and DPV1.
[5]Distribution system for Substation power and light, including new access road.
[6]New Desert Center Communications Site.

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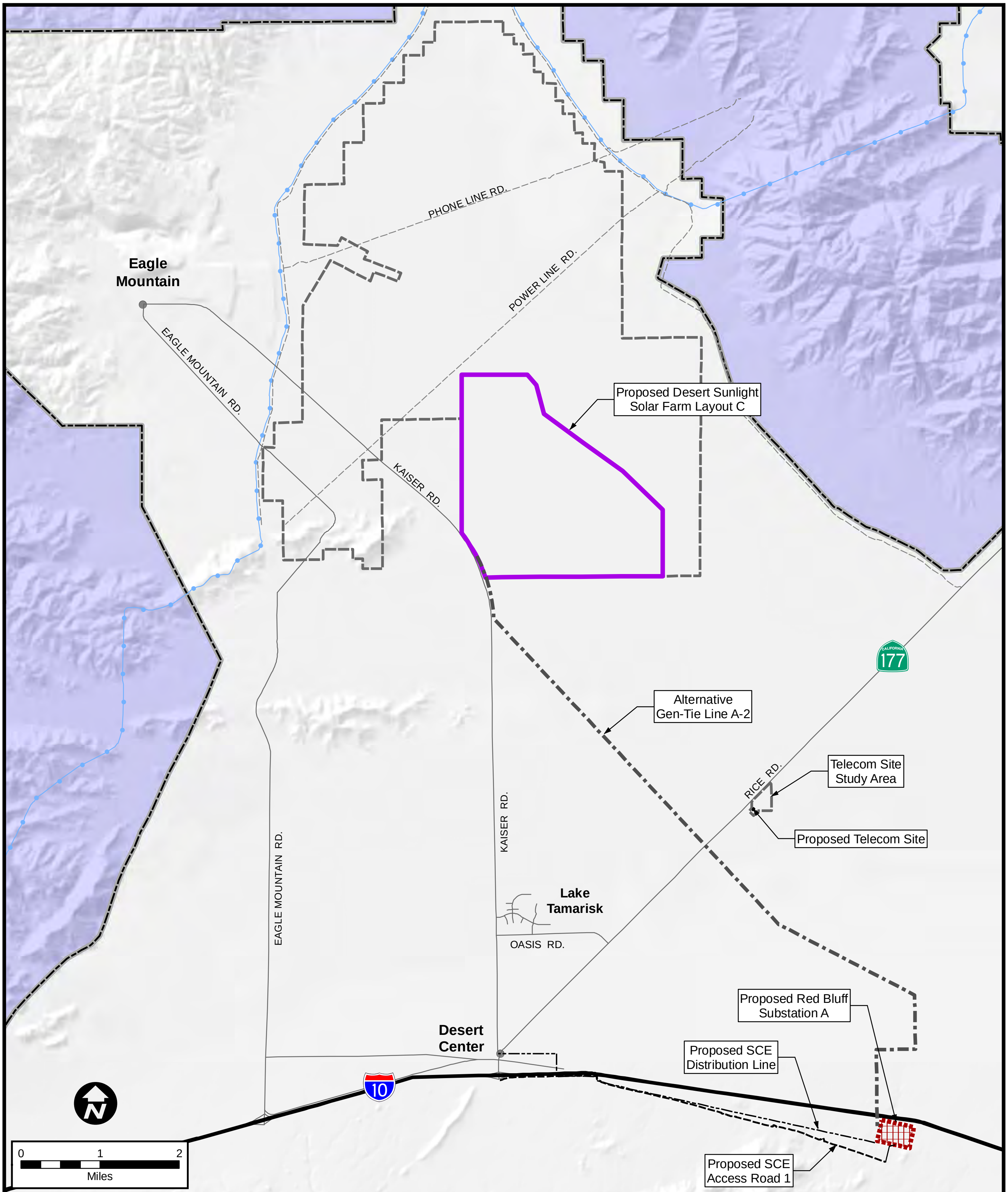

LEGEND

- Proposed Gen-Tie Line A-2
- SCE Access Road
- SCE Distribution Line
- Study Area Boundary for Solar Farm
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Joshua Tree National Park Boundary
- Aqueduct

Source: First Solar, 2010.

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Figure 2-27

Alternative 3: Reduced Footprint Layout

Table 2.2-11
Summary of Water Use for Alternative 3—Reduced Footprint Alternative

	Construction		Operation	
Project Component/Element	Total (acre-feet)	Peak Daily (gpd)[1]	Annual (acre-feet)	Peak Daily (gpd)
Solar Farm C	900 to 1,000	252,000 to 1.3 million	0.2	<300
Gen-Tie Line A-2	8.6	40,000	0	0
Red Bluff Substation A	300	330,000	<0.1	100
TOTAL	***1,209 to 1,309***	***622,000 to 1.67 million***	***<0.3***	*<400*

[1]Demand Notes: (1) Demand would vary over the construction period, and (2) water use estimates are preliminary and based on current information.

Solar Farm Layout C

SF-C is approximately six miles north of Desert Center and four miles north of Lake Tamarisk, northwest of and next to Kaiser Road and southwest of Pinto Wash. SF-C encompasses approximately 3,045 acres, located entirely on BLM land. Elevation at SF-C varies from approximately 622 to 766 feet above mean sea level. Access would be provided by Kaiser Road. Once fully operational, it would produce 413 MW of power.

Table 2.2-12 provides a general list of Solar Farm components, along with the acreage they would require for SF-C. Figure 2-28 shows a schematic layout of SF-C. In addition to the main generation area, which takes up most of the Project acreage, the largest permanent land uses on the Solar Farm site are access corridors, the O&M facility, the On-Site Substation, and the Visitors Center. Security and desert tortoise fencing would require 9.5 miles of fencing.

Table 2.2-12
Solar Farm Layout C—Dimensions of Project Facilities

Project Facility or Component	Approximate Total Area	Percent of Total Solar Farm Site (3,045 acres)
Total project footprint	3,045 acres	100
Total footprint of piles	0.2 acres	<0.1
Access corridors	273 acres	9
Gravel access roads	23.9 acres	0.8
O&M facility	0.7 acre	<0.1
Solar energy Visitors Center	0.06 acre	<0.1
On-site Substation	9.3 acres	0.3
Area disturbed by trenching	33.2 acres	1.1
Area permanently covered by at-grade items (footprint of piles, PCS, transformer, PVCS, On-Site Substation, On-Site Overhead Line poles, Visitors Center, O&M Facility)	12.6 acres	0.4
Total footprint for On-Site Overhead Line Poles	0.05 acre	<0.1
Areas of decompaction between the rows	1,192.4 acres	39.2
Area shaded by PV modules (indirect disturbance) (at solar noon)	1,037.2 acres	34.1
Area shaded by PV modules (indirect disturbance) (scenario – Dec. 21, 9:00 am)	2,024 acres	66.5
Security fencing	Length: 9.5 miles	N/A

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Source: Southern California Edison, 2010

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Figure 2-28

Solar Farm Layout C

Gen-Tie Line A-2

As shown on Figure 2-29, GT-A-2 would exit the southwest corner of the Solar Farm site and run for approximately 4,400 feet along the east side of Kaiser Road, until it intersects with the ROW of an existing SCE transmission line. Then it would run to the southeast along the existing transmission ROW for approximately 7.2 miles, then turn south for approximately 0.6 mile, continuing due west for approximately 0.5 mile until it finally turns south across I-10 and continues approximately 1,000 feet (not along any existing feature) to Red Bluff Substation A. The center of the new line would be located approximately 140 to 150 feet from the centerline of the existing SCE line, but would not be within the SCE ROW.

Along Kaiser Road, the center of the 160-foot transmission line ROW would be located approximately 120 to 130 feet east from the center of the paved roadbed, on BLM land. The new transmission line would cross over or under the existing SCE line, subject to agreement with SCE, and then turn southeast along the south side of the corridor. The land ownership of the 160-foot-wide transmission easement would be as follows:

- The first approximately 0.4 mile on BLM land;
- From approximately mile 0.4 to approximately mile 0.9 on MWD land;
- From approximately mile 0.9 to approximately mile 2.7 on BLM land;
- From approximately mile 2.7 to approximately mile 5.4 on private land;
- From approximately mile 5.4 to approximately mile 6.0 on BLM land;
- From approximately mile 6.0 to approximately mile 7.0 on private land; and
- From approximately mile 7.0 to approximately mile 10.5 on BLM land into the Substation.

Of the 10.5-mile ROW, a total of 6.5 miles would be on BLM land and 4.0 miles would be on private land. For the portions on private land, 21 separate parcels would be crossed. First Solar has not acquired land rights for *all* of these parcels, *and is continuing to* pursue easements through negotiations with the owners. Title review has commenced for these parcels. *Riverside County would issue a Public Use Permit for the MWD land and private land crossings and an Encroachment Permit for access into the County road ROW. Both MWD and the County would rely on this EIS to satisfy their CEQA obligations.*

The 160-foot-wide corridor and additional fan-shaped areas at corners used for wire stringing for GT-A-2 would encompass approximately 226 acres. The total length of GT-A-2 is approximately 10.5 miles. The elevation of GT-A varies from approximately 592 to 765 feet above mean sea level. Approximately 59 transmission structures would be required for this alternative, including 51 tangents and 8 dead-ends. Four splicing locations and 16 guard structures would be used temporarily during construction. Permanent access roads would be constructed in order to provide access for maintenance of the Gen-Tie, as needed. Table 2.2-13 below provides a list of major Gen-Tie components, along with the acreage required for each component.

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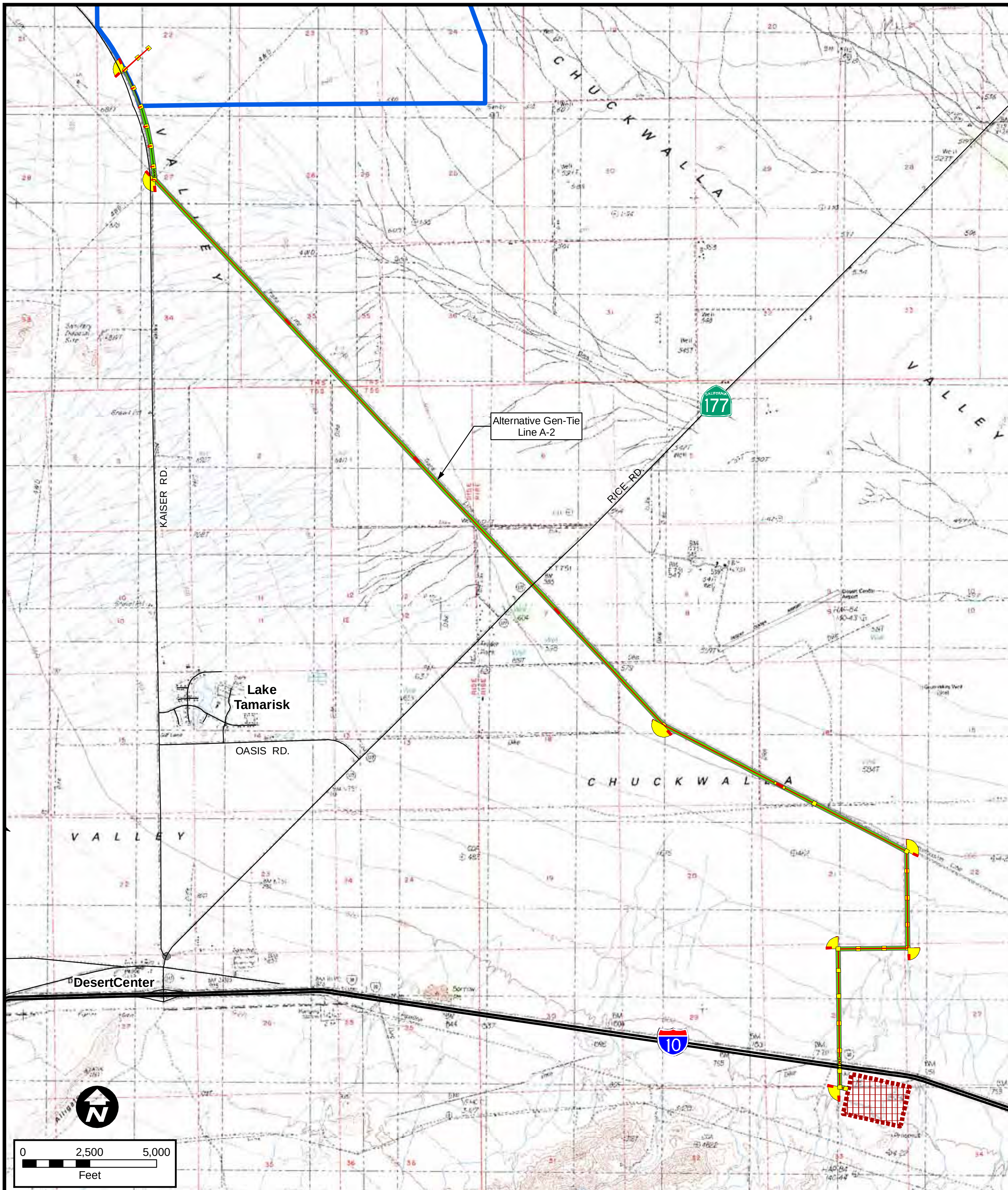

LEGEND

- Permanent Disturbance Area
- Temporary Disturbance Area
- Alternative Gen-Tie Line A-2 Corridor
- Solar Farm Boundary (Alternative B)
- Red Bluff Substation (Alternative A)

Source: First Solar, 2010.

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BUREAU OF LAND MANAGEMENT

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Figure 2-29

Gen-Tie Line A-2

Table 2.2-13
Gen-Tie Line A-2—Project Facilities, Components, and Percent of Gen-Tie Corridor

Project Facility or Component	Dimensions	Percent of Gen-Tie Corridor
Gen-Tie Line Corridor	Width: 160 feet and additional fan-shaped areas at corners Length: 10.5 miles Area: 226 acres	100
Permanent disturbance	*86 acres*	*38.1*
Total transmission structure footprint	2,345 square feet (0.05 acre)	<0.1
Individual transmission structure footprint	Tangent Structure: 28.3 square feet Dead-end: 113.1 square feet	<0.1
Permanent access roads	Width: 14 feet Length: 9.9 miles Area: 16.8 acres	7.4
Temporary access roads	Width: 14 feet Length: *10.8* mile Acres: *18.2* acres	*8.1*

Red Bluff Substation A

Red Bluff Substation A would be as described under Alternative 1 above, with the exception of the access road, as described below.

Access Road 1 to Substation A via Kaiser Road and Aztec Road

Access from I-10 is anticipated to be provided from the west via the Kaiser Road exit off I-10 and then via Aztec Road, along a pipeline access road, along the southern frontage of the freeway. This route would require approximately 24,000 feet of new access road (Access Road 1) to the Substation site, as shown in Figure 2-22, resulting in approximately *31* acres of disturbance. Access road construction and permanent disturbance are described in Section 2.3.2 (Construction Plan for Red Bluff Substation Project).

Alternative 4—No Issuance of a Right-of-Way Grant and No Land Use Plan Amendment (No Action)

Under NEPA, the No Action Alternative is used as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the Proposed Action and the alternatives. With this No Action Alternative, the Desert Sunlight Solar Project would not be approved (all components of the Project would be denied), no ROW grant would be issued, and no CDCA Plan amendment would be approved that would make the land available for large-scale solar development. This would be the same as the No Project Alternative under CEQA.

This No Action Alternative under NEPA defines the scenario that would exist if the proposed Desert Sunlight Solar Farm Project, including the Solar Farm, Gen-Tie Line, and Red Bluff Substation, were not constructed and no plan amendment were issued. If this No Action Alternative were selected, the construction and operational impacts of the Desert Sunlight Solar Project would not occur, assuming no other project was developed at the site. There would be no disturbance of the ground at the site, no disturbance of desert vegetation and habitat, and no installation of power generation and transmission equipment. This No Action Alternative would also eliminate the Project's contributions to cumulative impacts on natural resources and environmental parameters in Riverside County and in the Sonora Desert as a whole, associated with various projects under consideration, assuming no other project was built in Riverside County or in the Sonora Desert to replace the renewable energy generating capacity of the proposed Project.

This No Action Alternative does not preclude future solar development on the Project locations; therefore, it is possible that another solar project proponent would submit a ROW application to the BLM for use of the site. Project impacts from another project would likely be similar to those that would result from the proposed Project.

However, in the absence of the Desert Sunlight Solar Farm Project, other power plants, both renewable and nonrenewable, may have to be constructed to serve the demand for electricity and to meet the California Renewables Portfolio Standard (RPS). Existing gas-fired plants may operate longer in order to meet the demand for energy. The impacts of these other facilities may be similar to those of the proposed Project because they require land areas comparable in size and environmental impacts comparable in degree to those required for the Desert Sunlight Solar Farm, whether for energy production or fuel extraction. Additionally, the environmental impacts of developing transmission capacity for such other power plants may be greater, especially where no transmission capacity exists or where energy production cannot be geographically concentrated to minimize the number of new transmission lines needed.

If the Project were not built, California utilities would not receive the 550-MW contribution to the renewable state-mandated energy portfolio.

Governor Schwarzenegger's Executive Order S-14-08 streamlines California's renewable energy project approval process and increases its Renewable Energy Standard to 33 percent renewable energy by 2020. *Although 33 percent is not statutorily mandated or required by regulation in California (20 percent by the year 2010 is currently the law as of the date of this writing), legislation mandating 33 percent is currently pending as of the writing of this EIS. To meet this pending requirement, the investor-owned utilities (IOUs) will have to almost triple their annual renewable energy procurement, from 33 terawatt-hours (TWh) in 2010 to 87 TWh by 2020.* The Project is expected to generate at least 1 TWh of renewable energy annually over its lifetime, a small but significant portion of the necessary new generation. Under the No Action Alternative, California would not benefit from the reduction in greenhouse gases that the Project would provide, and California utilities would not receive the 550-MW contribution to the state-mandated renewable energy portfolio. The achievement of California's RPS requirements *could* be further delayed.

Less than 12,400 MW of renewable generating capacity (mostly wind), including less than 4,500 MW of solar generating capacity, are under evaluation by the CAISO in the Large Generator Interconnection Process (LGIP) serial queue for interconnection by 2015[1] *and an additional 2,200 MW of solar generating capacity that are outside the serial queue process have recently signed interconnection agreements, with dozens more in progress.* The Project, at 550 MW, represents *about 8* percent of the solar generation capacity in the CAISO's active serial queue *LGIP*, and *6* percent of the LGIP solar generation capacity that has an interconnection agreement that either has been executed or is in

[1] The California ISO Controlled Grid Generation Queue as of January 8, 2010.

process. Under the No Action Alternative, a significant portion of the solar generating capacity expected to be interconnected in the short term would be delayed.

The California RETI *was* a statewide planning process that *was* underway *from late 2007 through 2010. RETI's purpose was* to identify the transmission projects needed to accommodate anticipated renewable development in California. The RETI process garnered active participation by *diverse* stakeholders throughout the process. Phases 1 and 2 of the RETI project resulted in the identification and refinement of CREZs that hold the greatest potential for cost-effective and environmentally responsible renewable energy development.[2] The Project Study Area is in the Riverside East CREZ, *which was scored in the RETI Phase 2B report as the seventh best (for least environmental impact) out of the 32 CREZs evaluated.*

The U.S. Department of the Interior (DOI) BLM and the U.S. Department of Energy (DOE) have jointly prepared the "Draft Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States" (Solar PEIS). For the BLM, the PEIS is evaluating the agency's proposed actions to establish a new BLM Solar Energy Program applicable to utility-scale solar energy development on BLM-administered lands in six southwestern states (Arizona, California, Colorado, Nevada, New Mexico, and Utah). For DOE, the PEIS evaluated the agency's proposed action to develop new program guidance relevant to DOE-supported solar projects. The Project Study Area is also in a Draft PEIS-designated proposed Solar Energy Zone or SEZ (the Riverside East SEZ). The No Action Alternative would *result in reduced development within the Riverside East area.*

Alternative 5—No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Unsuitable for Solar Development (No Project with Plan Amendment)

With this No *Project* Alternative, the Desert Sunlight Solar Project would not be approved (all components of the Project denied), no ROW grant would be issued to the Applicant, and the CDCA Plan would be amended to make the Project Study Area unavailable for large-scale solar energy development. This No *Project* Alternative has impacts similar to those described for the first No Action Alternative (described above). However, for this alternative, the CDCA Plan would be amended so that the Project locations would not be available for any future use for solar energy development. Additionally, this No Action Alternative would cause land identified as a CREZ and a Solar Energy Study Area to be unavailable for solar energy production.

As a result of this No Action Alternative, the Project locations would be available for other types of uses allowable on BLM land. This may include mining, recreation, utilities, and other energy development allowed on lands classified as Multiple Use Class M (Moderate Use), which constitutes most of the Project locations, and lower-intensity uses in the areas designated as Multiple Use Class L (Limited Use).

Alternative 6—No Issuance of a Right-of-Way Grant with Land Use Plan Amendment to Identify the Area as Suitable for Solar Development (No Project with Plan Amendment)

Under this No Project Alternative, the Desert Sunlight Solar Project is not approved (all components of the Project denied), and no ROW grant is issued to the Applicant, but the CDCA Plan is amended to make the Project Study Area available for large-scale solar energy development. In this case, the impacts described for the No Action Alternative would initially be similar to those for this No *Project* Alternative. However, because the CDCA Plan would be amended to allow for

[2] Renewable Energy Transmission Initiative Phase 2B Draft Report, April, 2010, p. 1-1.

solar energy development at this site, *a similar solar project could be proposed on the project site.* Project impacts associated with such a future project would *be analyzed at the time a project is proposed through submission of a ROW grant.*

2.2.5 Identification of the BLM's Preferred Alternative

The BLM's preferred alternative is the Proposed Action without modification.

2.2.6 Identification of the CPUC Environmentally Superior Alternative

CEQA Guidelines Section (§)15126.6 requires an Environmental Impact Report (EIR) to consider a range of reasonable alternatives to the proposed project, or to the location of the project, that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. The Red Bluff Substation alternatives evaluated in Chapter 4 of this EIS were compared because this EIS may be used by the CPUC in lieu of an EIR in determining whether to issue a permit for the Red Bluff Substation. In addition, because CEQA §15378(a) requires the lead agency to consider the whole of an action, not simply its constituent parts, when determining whether it will have a significant environmental effect (*Citizens Assoc. For Sensible Development of Bishop Area v. County of Inyo* (1985) 172 Cal.App.3d 151), the effects of the Gen-Tie route alternatives were compared with the Solar Farm site alternatives. The details of this comparison are provided in Appendix C. In addition, the discussion in Appendix C identifies the environmentally superior action alternative and compares it with the CEQA No Project Alternative (No Action Alternative, identified as Alternative 4), as required by CEQA §15126.6(e)(1).

Based on the comparisons provided in Appendix C, the CPUC believes the environmentally superior action alternative under CEQA is a combination of Substation A with Access Road 2, Gen-Tie GT-A-2, and either Solar Farm Layout B or C. As previously described in this chapter, three full action alternatives (representing three of seven possible combinations of all Solar Farm site, Gen-Tie, and Substation alternatives) were considered in full detail in the EIS.

The remaining four combinations of project components were not identified or compared by environmental discipline in Chapter 4. However, the other four combinations are technically feasible. As described in Appendix C, none of the three combinations of alternatives defined in the Project Description (Alternatives 1 through 3) is considered the environmentally superior action alternative. In addition, the No Project Alternative is not found to be superior, as described in Section C.2.7.

2.2.7 Comparison of Alternatives

Table 2.2-14 provides a comparison summary of the expected permanent footprint for each of the three action alternatives. A summary of impacts and mitigations for each alternative is provided in the Executive Summary.

Table 2.2-14
Comparison Summary of Permanent Ground Disturbance for Action Alternatives 1, 2, and 3 (Acres)

Project Component/Element	Alternative 1: Proposed Action	Alternative 2: Alternate Action	Alternative 3: Reduced Solar Farm Footprint Alternative
Project Power Output	550 MW	550 MW	314 MW
Solar Farm Layout B (1)	*3,912*	*3,912*	-
Solar Farm Layout C (1)	-	-	3,045
Gen-Tie Line A-1 (2a)	*92*	-	-
Gen-Tie Line A-2 (2b)	-	-	*86*
Gen-Tie Line B-2 (2c)	-	*68*	-
Red Bluff Substation A	*76*	-	76
Red Bluff Substation-related features	-	-	-
- Drainage/Sideslopes	*14*	-	*14*
- Access Road (3a)	*31*	-	*31*
- Material Yard*/Staging Area*	*9*		*9*
- Transmission System (4)	*33*	-	*33*
- Distribution System (5)	8	-	8
- Telecom Site (6)	<1	-	<1
Red Bluff Substation B	-	*76*	-
Red Bluff Substation-related features	-	-	-
- Drainage/Sideslopes	-	*20*	-
- Access Road (3b)	-	*1*	-
- Material Yard*/Staging Area*		*10*	
- Transmission System (4)	-	*22*	-
- Distribution System (5)	-	*<1*	-
- Telecom Site (6)	-	<1	-
TOTAL ACREAGE	***4,176***	***4,110***	***3,303***

Notes: (1) Includes area for all Solar Farm-related facilities

(2a) Permanent disturbance *of 92 acres occurs within the ROW corridor totaling 256 acres (*12.1 mile*s long* by 160 *feet* wide with additional fan-shaped areas at corners *for stringing).*

(2b) Permanent disturbance *of 68 acres occurs within a corridor totaling 203 acres (*10 mile*s long* by 160 feet wide plus additional fan-shaped areas at corners *for stringing).*

(2c) Permanent disturbance *of 86 acres occurs within a corridor totaling 226 acres* (10.5 mile*s long* by 160 *feet* wide plus additional fan-shaped areas at corners *for stringing*).

(3a) Assume 24,000-foot by 30-foot-wide road from Kaiser Road for Alternative 1 and 24,000 by 30-foot wide road from Chuckwalla Valley Road/Corn Springs Road for Alternative 2; although acreage amount allows for additional disturbance for adequate engineering and unknown site constraints

(3b) Assume 2,000-foot by 18-foot road from Eagle Mountain Road

(4) Includes transmission system associated with connecting Red Bluff Substation to Gen-Tie Line and DPV1

(5) Distribution system for Substation power and light, including new access road

(6) New Desert Center Communications Site

2.3 PROJECT CONSTRUCTION

The construction of the Project would begin once all applicable approvals and permits have been obtained. Project construction is expected to take approximately 26 months. Appendix B provides a construction schedule showing sequencing and overlapping of tasks. The Red Bluff Substation would be constructed on a schedule that allows interconnection and partial energization of the Solar Farm before Project construction is complete.

Separate construction crews are expected to build the Solar Farm, the Gen-Tie Line, the On-Site Substation, and the Red Bluff Substation (and associated facilities). Sunlight-managed construction crews would be responsible for completing the Solar Farm and Gen-Tie Line. Construction of the Solar Farm and Gen-Tie Line is discussed in Section 2.3.1. SCE-managed construction crews would be responsible for the Red Bluff Substation and associated elements and the interconnection from the Gen-Tie Line to the Red Bluff Substation. Construction of the Red Bluff Substation is discussed in Section 2.3.2.

2.3.1 Construction Plan for Solar Farm and Gen-Tie Line

Construction Workforce

The majority of the Project construction workforce would be employed to construct the Solar Farm. The Solar Farm construction workforce is expected to average approximately 350 to 400 craft workers over the 26-month Solar Farm construction period, with a peak on-site craft workforce of approximately 500 craft workers during Months 5 through 16 of the construction period. In addition to craft workers, an average of 40 management and non-craft employees are expected on site. This equates to an average of 390 to 440 and a peak of 540 total on-site workers for the Solar Farm construction.

The workforce for the Gen-Tie Line is expected to average 25 employees over the 20-month Gen-Tie construction period, with a peak of approximately 60 employees (during Months 6 to 8), including both craft and non-craft workers. The workforce for the On-site Substation is expected to average 10 people, with a peak of 30 employees (during Months 6 to 7).

Including the crews for all the separate tasks, excluding construction of the Red Bluff Substation (see Section 2.3.2), the total Project workforce is expected to peak at around 630 employees. The peak would likely occur during Months 6 to 8 of the 26-month construction period. The construction workforce would be recruited from within Riverside County and elsewhere in the surrounding region as much as practicable.

Typical construction work schedules are expected to be 8 hours per day Monday through Friday. Typically, the work day would consist of one shift beginning at 7:00 AM and ending at 3:30 PM. The work schedule may be modified throughout the year to account for changing weather conditions (e.g., starting the work day earlier in summer months to avoid work during the hottest part of the day for health and safety reasons).

Construction Workforce Vehicles

Project construction workforce traffic would involve construction worker commuting vehicles and miscellaneous trips by Project staff. Peak vehicular traffic volumes on the roads leading to the Solar Farm site would coincide with the peak of construction employment. Peak traffic volumes during construction of the Solar Farm site and Gen-Tie Line are provided below. The Applicant intends to use shuttle buses to transport construction workers to the site.

At the peak of construction (Months 6 to 8), it is assumed that 25 three-axle shuttle buses carrying 20 people or less each will be used and that approximately 50 to 60 employees would continue to drive personal vehicles. In total, 85 commute vehicles are expected to make one trip per day to and from the Solar Farm site for the workforce constructing the Solar Farm site, including the On-site Substation.

At the peak of Gen-Tie Line construction (Months 6 to 8), it is assumed that 40 workers from the Gen-Tie Line workforce continue to take personal vehicles and one shuttle bus with a capacity of 20 people is used; 41 commute vehicles are expected to travel to the Gen-Tie construction area each day.

Shuttle assembly areas are likely to be located in regional population centers, such as Blythe and in the Palm Springs area, at existing parking areas with sufficient parking for the number of workers expected to be taking the shuttle. Approximately 3 acres of construction parking would also be provided at the Solar Farm site.

Construction Equipment and Vehicles

Most construction equipment and vehicles would be brought to the Solar Farm site at the beginning of the construction process during construction mobilization and would remain on site throughout the duration of the construction activities for which they were needed. Generally, the equipment and vehicles would not be driven on public roads while in use for the Project. In addition to construction worker commuting vehicles, as discussed above, construction traffic would include periodic truck deliveries of materials and supplies, recyclables, trash and other truck shipments.

Solar Farm

Truck access to the site would be from I-10 and then north on Kaiser Road to the site access gate. Approximately 14,000 to 15,000 truck deliveries are expected over the 26-month Solar Farm construction period.

Table 2.3-1 provides a breakdown of material deliveries expected during construction of the Solar Farm. Construction truck deliveries and shipments would typically avoid the peak traffic hours in the morning and afternoon, so it is unlikely that Project deliveries would represent a substantial increase in traffic volumes during the morning and evening peak commuting hours. Material would typically be delivered starting two weeks before the start of the associated task with the exception of electrical gear (PCSs, PVCs, etc.), which would be drop-shipped just before installation.

Table 2.3-2 lists the type and maximum number of construction/equipment vehicles expected to be in use on the Solar Farm site, broken down by the various phases of the Solar Farm construction period.

Table 2.3-1
Material Deliveries during Construction – Solar Farm

Delivered Material	Approx. # of Truck Deliveries	Direction of Origin	Truck Type	# of axles	# per day (avg.)	Construction Phase
First Solar Modules	~6000	10W	40-ft. container trailer hitch	5	16	System Installation (Modules)
Hardware and Superstructure	2430	10E	48-53 ft. Flatbed	5	<1	System Installation (Tilt Brackets, Tables, Wire Harnesses, Combiner Boxes)
Steel Posts	1,315	10E	48-ft. Flatbed	5	4	Post Installation
Electrical Equipment (PVCS)	456	10E	48-ft. Flatbed	5	<1	System Installation (PVCS, PCS Shelters and Transformers)
Cable	172	10E	53-ft. Flatbed	5	<1	Underground work (AC/DC/Fiber trenching)
PCS Vaults and Transformer Pads	29	10E	Lowboy	5	<1	Underground work (PCS Vaults and Transformer Pads)
Construction Office Buildings	40	10W	53-ft. Flatbed	5	<1	Set-up Office & Site Services
Fencing	13	10W	53-ft. Flatbed	5	<1	Fencing
Gravel	3,500	10E/W	Dump Truck	3	10	Site Preparation, Grading, Final Soil Stabilization
Concrete	800	10E/W	10 yard Mixer	3	3	System Installation (except tilt brackets and tables), Fencing
Cardboard (off-haul)		10E/W	40 yard roll-off on flatbed	3	2	System Installation (Modules)
Equipment Deliveries	70	10E/W	48-53 ft. Flatbed	5	<1	All

Note: For each delivery, the first delivery would come 2 weeks before the corresponding construction phase and continue throughout that construction phase until the phase is complete.

Table 2.3-2
Construction Equipment & Vehicles – Solar Farm

Construction Phase	Equipment	# of pieces	Duration of Use (Hours/Day)	Purpose
Site Preparation, Initial Access Roads, and Grading	8,000-Gallon Water Truck	5	8-10	Dust Control / Compaction
	Motor Graders	5	8	Excavation
	Tractor with Disc Harrow	*2*	*8*	*Smoothing*
	25-Cubic Yard Paddle Scrapers	2	8	Excavation
	631 Scrapers	12	8	Excavation
	10-Ton Rollers	4	6	Dust Control / Compaction
	D9 Dozers	1	8	Excavation
Set up Office & Site Services	35-kW Generator	2-12	24	Power
	ATV	15	4	Transportation
Survey	ATV	6	4	Survey
	Pickup Trucks	3	4	Management Transportation

Table 2.3-2 (continued)
Construction Equipment & Vehicles – Solar Farm

Construction Phase	Equipment	# of pieces	Duration of Use (Hours/Day)	Purpose
Fencing	Skid Steer/Auger	5	8	Material Staging
	10-Yard Concrete Mixer Truck	1	2	Foundation Pours
	Pickup Trucks	4	8	Management Transportation
Post Installation	Pile Driver	10	8	Post Installation
	4-Ton Forklifts	6	8	Material Transportation
	4,000-Gallon Water truck	3	8	Dust mitigation
	Spray Truck	2	6	Dust Palliative Application
Underground work (AC/DC/Fiber trenching)	Trencher	2	8	Excavation
	3-4-Cubic Yard Front End Loader	5	8	Excavation/Processing
	Small Sheepsfoot Roller	4	6	Compaction
	Power Screener	3	6	Soil Processing
	Cable Plow	1	8	U/G Cable Installation
Underground work (PCS Vaults and Transformer Pads)	Back-hoe	1	8	Excavation
	100-Ton crane	1	4	Drop Shipping Vaults and Pads
	Small Sheepsfoot Roller	1	4	Compaction
System Installation (Tilt Brackets, Tables, Wire Harnesses, Combiner Boxes)	4-Ton 4x4 Forklift	6	8	Material Staging
	ATV	40	4	Transportation
	Pickup Trucks	15	4	Management Transportation
System Installation (Modules)	4-Ton 4x4 Forklift	4	8	Material Staging
	ATV	10	4	Transportation
	Pickup Trucks	5	4	Management Transportation
System Installation (PVCS, PCS Shelters and Transformer Pads)	Back-hoe	1	4	Excavation
	100-Ton Crane	1	4	Drop Shipping and Pads
	Small Sheepsfoot Roller	1	4	Compaction
Commissioning/pre-functional and functional testing	Pickup Trucks	10	7	Transportation
	5-kW Generator	30	7	Testing
Soil Stabilization	Spray Truck/Trailer/De-compactor	2	8	Dust Palliative/Hydroseed
	Motor Grader	2	6	Final Cleanup

Note: Two 35-kW generators would be used for the main construction site offices; up to 10 additional generators could be used for temporary construction trailers.

A total of approximately 240 material deliveries are expected during the construction period for the On-Site Substation. Material deliveries expected during construction are detailed in Table 2.3-3. All material deliveries are expected to arrive via I-10 from the west.

Table 2.3-4 provides details on the equipment to be used for construction of the On-site Substation.

Table 2.3-3
Material Deliveries during Construction – On-Site Substation

Material Delivered	Approximate # of Truck Deliveries	Truck Type
Substation Structures	14	Semi-Truck w/ Flatbed
Transformers	6	Semi-Truck w/ Flatbed
Control House	5	Semi-Truck w/ Flatbed
Major Equipment	11	Semi-Truck w/ Flatbed
Concrete	140	Concrete Truck
Grading Materials	50	Concrete Truck
Miscellaneous Materials	15	Semi-Truck w/ Flatbed

Table 2.3-4
Construction Equipment & Vehicles – On-Site Substation

Construction Phase	Equipment and Quantity	# of pieces	Duration of Use (Hours/Day)	Purpose
Site Preparation and Grading	Survey Trucks (Gasoline)	1	6	Survey
	Dozer (Diesel)	1	4	Grading
	Loader (Diesel)	2	4	
	Scraper (Diesel)	1	3	
	Grader (Diesel)	1	4	
	Water Truck (Diesel)	2	3	
	4x4 Backhoe (Diesel)	2	2	
	Tool Truck (Gasoline)	1	2	
	4x4 Pickup (Gasoline)	1	2	
	Bobcat (Diesel)	1	8	Fencing
	Flatbed Truck (Gasoline)	1	2	
	Crewcab Truck (Gasoline)	1	4	
Below-Grade Construction	Excavator (Diesel)	1	4	Civil
	Foundation Auger (Diesel)	1	5	
	Backhoes (Diesel)	2	3	
	Dump Truck (Diesel)	2	2	
	Skip Loader (Diesel)	1	3	
	Water Truck (Diesel)	1	3	
	Bobcat Skid Steer (Diesel)	2	3	
	Lull-Forklift (Diesel)	1	4	
	17-Ton Crane (Diesel)	1	3	
	Whacker (Gasoline)	1	3	
	Tool Truck (Gasoline)	1		
Above-Grade Construction	Scissor Lifts (Propane)	2	3	Electrical
	Manlifts (Propane)	4	3	
	Reach Manlift (Propane)	4	3	
	15-Ton Crane (Diesel)	1	3	
	Tool Trailer	1	3	
	Crew Trucks (Gasoline)	3	2	

Table 2.3-4 (continued)
Construction Equipment & Vehicles – On-Site Substation

Construction Phase	Equipment and Quantity	# of pieces	Duration of Use (Hours/Day)	Purpose
Control/Power Cables & Terminators	Manlift (Propane)	1		Wiring
	Tool Trailer	1	4	
	Pickups (Gasoline)	2	3	
Clean Up & Punch List	Maintenance Trucks (Gasoline)	2	4	Maintenance Crew Equipment Check
Testing & Commissioning	Crew Truck (Gasoline)	2	4	Testing

Gen-Tie Line

A total of approximately 240 material deliveries are expected during the construction period for the Gen-Tie Line. Material deliveries expected during Gen-Tie Line construction are detailed in Table 2.3-5. All material deliveries are expected to arrive via I-10 from the west. The equipment expected to be used on-site during Gen-Tie Line construction is detailed in Table 2.3-6.

Table 2.3-5
Material Deliveries during Construction – Gen-Tie Line

Material Delivered	# of Truck Deliveries	Truck Type	Duration	Construction Phase
Transmission Structures	54	Semi-Truck w/ Flatbed	1.5 months	Beginning at mobilization through Foundation Installation
Conductor, Groundwire, Optical Groundwire	27	Semi-Truck w/ Flatbed	1 month	Beginning at mobilization through Foundation Installation
Concrete	147	Concrete Truck	2 months	Foundation Installation
Miscellaneous Materials	10	Semi-Truck w/ Flatbed	1 month	Beginning at mobilization through Foundation Installation

Table 2.3-6
Construction Equipment & Vehicles – Gen-Tie Line

Construction Phase(s)	Equipment	# of pieces	Average Hours Used per Day	Purpose
Start of Foundation Installation through Wire installation	5,000-Gallon Water Truck	1	8	General Servicing and Dust Mitigation
	Service Truck	1	8	
	Mechanic Truck	2	8	
Stake Structures, and Foundation Installation	Enclosed Material Trailers	4	Parked	Material Handling and Material Yard/ Hauling Equipment
	40-Ton Crane	1	4	
	4x4 Forklifts	2	4	
Stake Structures, Foundation Installation, ROW Restoration & Cleanup	1-Ton Crew Cab	1	8	Access Road/ Clearing Crew/ ROW Restoration
	¾-Ton Pickup	2	8	
	Bulldozers	2	8	
	Backhoes	1	4	

Table 2.3-6 (continued)
Construction Equipment & Vehicles – Gen-Tie Line

Construction Phase(s)	Equipment	# of pieces	Average Hours Used per Day	Purpose
	Dump Truck	1	4	
	Steel Wheel/ Smooth Drum Roller	1	6	
	Road Grader	1	2	
	10,000-Gallon Water Truck	1	4	
Foundation Installation	1-Ton Crew Cab	4	8	Foundation Crews (2)
	¾-Ton Pickup	3	8	
	Drilling Rig	2	8	
	40-Ton Crane	2	4	
	Forklifts	2	4	
	Towed Trailers	2	Parked	
	Water Pump	2	1	
	Bulldozers	2	2	
	Front-End Wheel Loaders	2	6	
	Road Tractor w/ Lowboy Trailer	2	2	
	Air Compressors	2	2	
	Rock Hammer	1	As Required	
	Mobile Mixer	1	As Required	
	Water Truck or Transportable Holding Tank with sufficient capacity to retrieve polymer slurry	1	As Required	
	1-Ton Crew Cab	2	8	Setting Crew
	¾-Ton Pickup	1	8	
	100-Ton Crane	1	8	
	Forklift	1	6	
	Air Compressor	1	5	
	Boom Truck	1	6	
Frame Structures and Erect Structures	1-Ton Crew Cab	1	8	Framing Crew
	¾-Ton Pickup	1	8	
	Semi-Truck w/ Flatbed Trailer	2	8	
	40-Ton Crane	1	8	
	Forklift	1	5	
	Air Compressor	1	4	
	Set of Hydraulic Jacks	1	4	
Wire Installation	1-Ton Crew Cab	1	8	Grounding Crew
	¾-Ton Pickup	1	8	
	Backhoe	1	6	
	Air Compressor	1	3	
	1-Ton Crew Cab	6	8	Stringing Crew – Stringing, Splicing, Sagging, Clipping, and Dead-ending
	¾-Ton Pickup	4	8	
	Boom Trucks	4	5	

Table 2.3-6 (continued)
Construction Equipment & Vehicles – Gen-Tie Line

Construction Phase(s)	Equipment	# of pieces	Average Hours Used per Day	Purpose
	Bullwheel Tensioner	1	6	
	4-Drum Rope Machine	2	2	
	5-Drum Lead Line Machine	1	2	
	Bulldozers	2	1	
	Sleeving Rig	1	2	
	6x6 Road Trucks w/ Wire Trailers	4	4	
	5-Ton Static Reel Truck	1	2	
	Static Tensioner	1	2	
	60-ft Bucket Truck	2	5	
	105-ft. Elevator Bucket Truck	2	5	
	H/L Puller (Bundled Pulling Capacity)	1	4	
	3-Drum H/L Puller	1	4	
Erect Structures and Wire Installation	1-Ton Crew Cab	1	8	Guard Pole Crew
	¾-Ton Pickup	1	8	
	Derrick Digger	1	8	
	Semi-Truck w/ Flatbed	1	4	

Construction Approach

The procedures and sequencing of construction activities for the Solar Farm site and Gen-Tie Line are described below.

Solar Farm Site

Construction of the Solar Farm site would be completed in four phases: 1) construction mobilization and site preparation, 2) construction and installation of Project components, 3) commissioning, and 4) final soil stabilization. Construction activities would be completed in overlapping phases. The discussions below of the various phases of construction apply to all three Solar Farm alternatives being considered, unless otherwise noted.

Phase 1: Construction Mobilization and Site Preparation

Initial activities in the construction process would include installation of desert tortoise fencing and preconstruction biological resource surveys; installation of access roads and construction laydown and parking areas; and setting up offices and site services.

Desert Tortoise Exclusion Fencing and Preconstruction Surveys

Prior to beginning preconstruction surveys, desert tortoise exclusion fencing would be constructed in specified areas. Preconstruction activities would include clearance surveys for desert tortoise and other sensitive species; relocation for desert tortoise; seasonal avoidance of nesting birds, including short-eared and burrowing owls; passive relocation of burrowing owls, as necessary; and possible transplantation of sensitive plant species including foxtail cactus.

Preconstruction survey work would also consist of staking and flagging the following: 1) ROW and construction area boundaries, 2) construction laydown, parking, and work areas, 3) final grade, 4) access and roads, and 5) foundation structures for facilities. Staking and flagging would be maintained until completion of site preparation.

Access Roads and Construction Laydown and Parking Areas

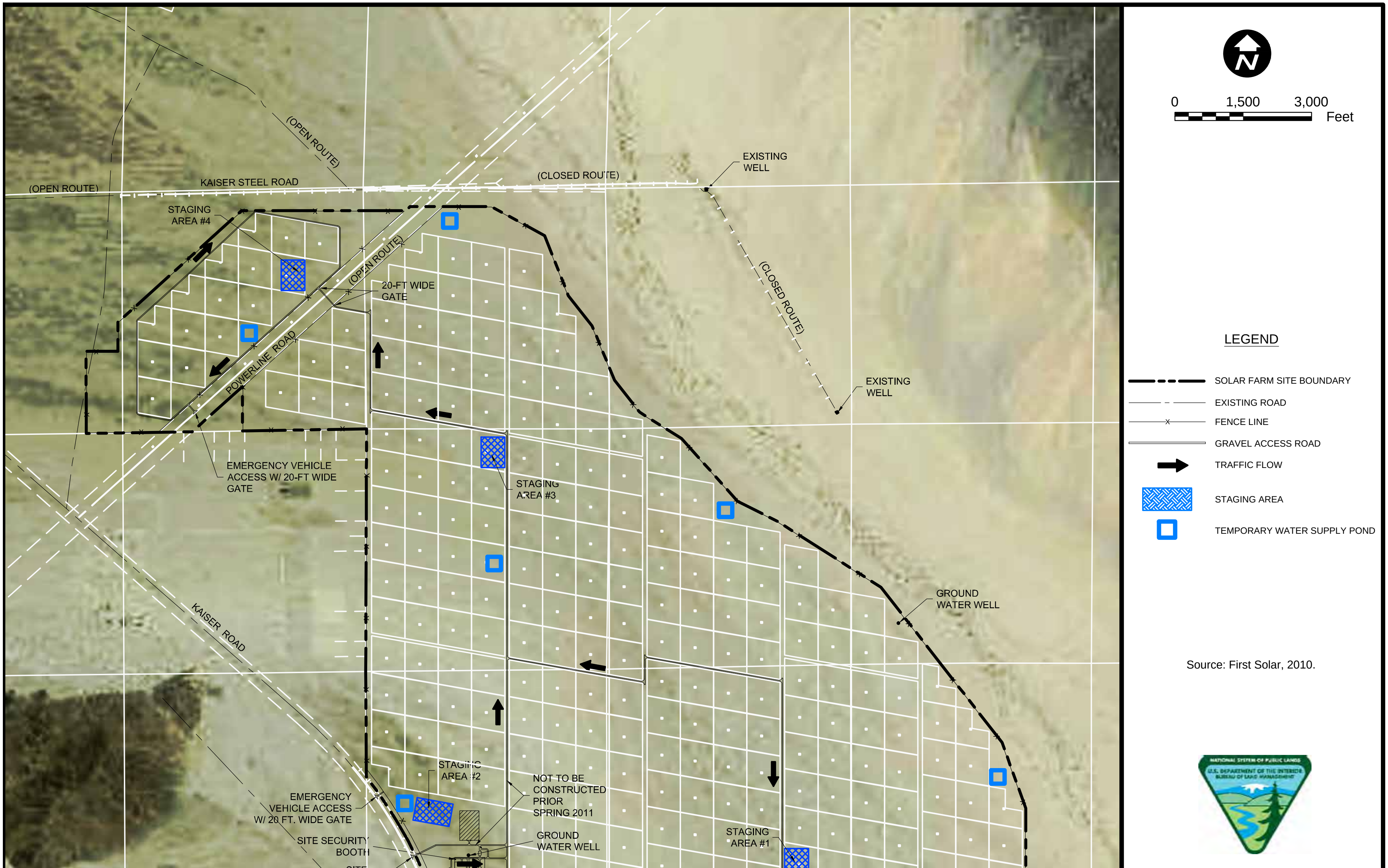
The two main access roads to the Solar Farm site would be *20* feet wide and enter the site via the southwest corner of the Solar Farm. The access roads would be cleared, graded, covered with aggregate and compacted to 90 percent. These graded, graveled, all-weather roads would also be required in selected locations within the Solar Farm site during construction to bring equipment and materials from the staging areas to the construction work areas. These roads would be maintained for long-term Project operation and maintenance. The area of road disturbance is provided in the discussion of the project alternatives in Section 2.2.4.

Four temporary construction staging areas would be utilized in phases throughout the 26-month Project construction period (Figure 2-30). Each staging area would be approximately 8 acres, for a total of 32 acres. The staging areas within the Solar Farm site would include material laydown and storage areas and an equipment assembly area. The staging areas would be un-paved and un-graveled but would be treated with a BLM-approved dust palliative and water periodically to control dust. The staging areas within the Solar Farm site, except Staging Area #2, would be replaced with PV arrays once the areas are no longer needed for staging. Staging Area #2 would be decommissioned after use.

Construction materials in the laydown areas would be stored in uncovered rows grouped according to the type of material. Heavy equipment such as transformers, PVCSs, and PCSs would be drop shipped shortly before installation to the locations where they would be installed, rather than stored in the laydown areas. Aggregate would be delivered at a rate proportional to spreading for access roads, building foundations, and other equipment foundations.

Construction Offices and Site Services

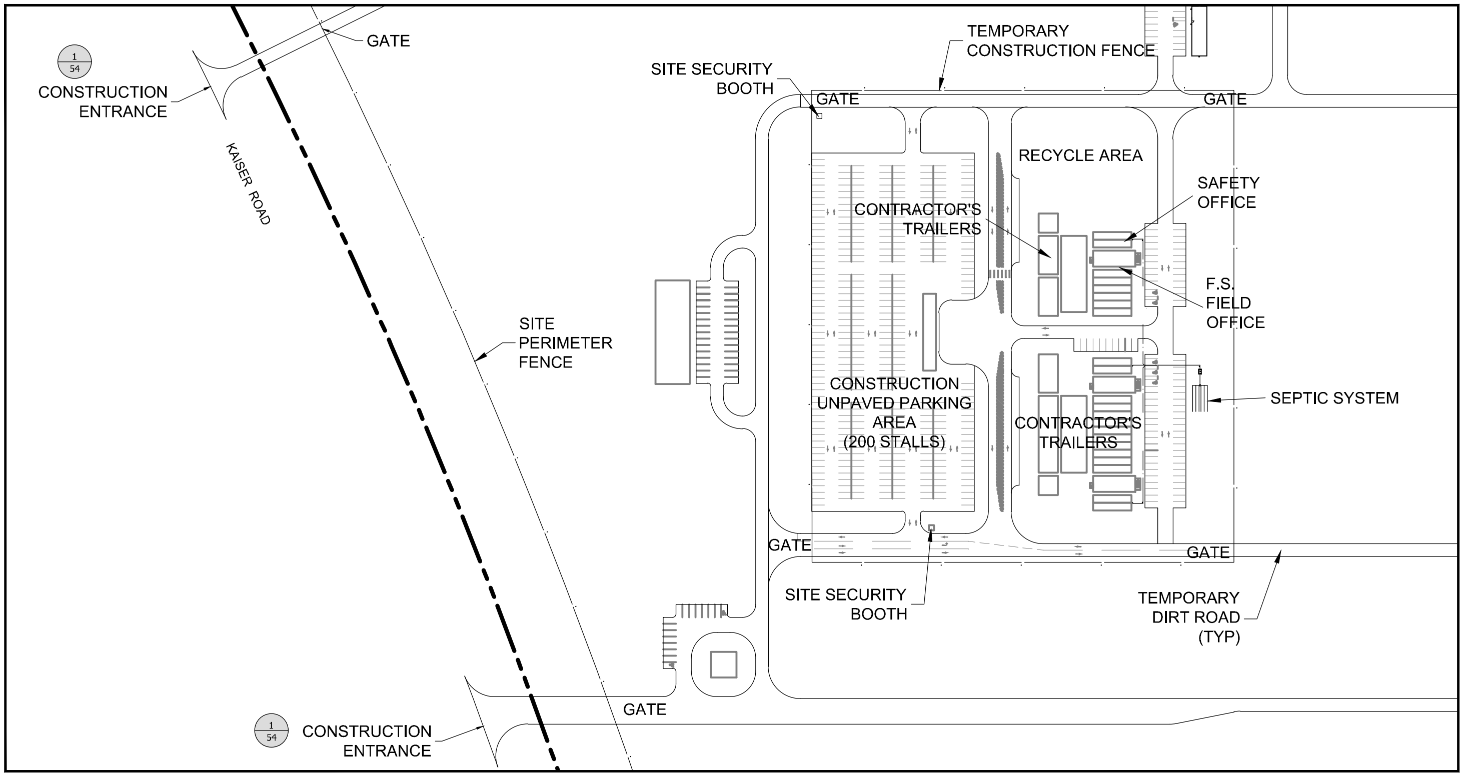
Near Staging Area #1, the Applicant would construct the main construction site offices and services area. This area would be fenced with temporary construction fencing and would include temporary construction trailers, the safety office, the Applicant’s field office, recycling areas, and employee and visitor parking (Figure 2-31). Additional temporary construction trailers may be utilized, which could potentially require generators for power. No more than 10 of these temporary construction trailers/generators would be used. Approximately 3 acres would be available for employee and visitor parking. Access to the construction area would be controlled by site security. A security booth would be located near the entrance to the site. Approximately 5 acres is needed temporarily during construction for the main construction site offices and services area.

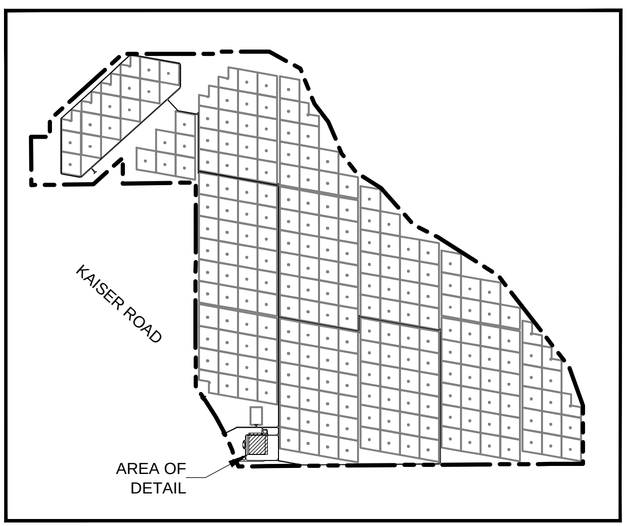


DESERT SUNLIGHT SOLAR FARM

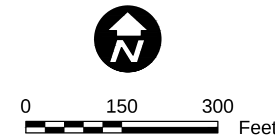
Figure 2-30

Preliminary Construction Staging Plan - Solar Farm Site





KEY MAP
NOT TO SCALE



Source: First Solar, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 2-31

Typical Construction Staging Area-
Solar Farm Site

Phase 2: Construction and Installation of Solar Farm Components

After construction mobilization and site preparation, construction of the solar arrays would begin. Construction and installation activities would include surveying the array and component locations; clearing, grading, and compacting the array areas; trenching and installation of underground cables; post installation; and installation of the balance of the system. In general, the work tasks would follow in close sequence across the site, moving from south to north. The construction schedule provided as Appendix B provides detail relative to the sequencing of the overlapping tasks.

Construction Survey

Construction would include ongoing survey work similar to that described under Desert Tortoise Exclusion Fencing and Preconstruction Surveys above. This task would include survey for the locations of the fence, trenches, posts, access corridors, and electrical components such as transformers, PVCSs, and PCSs.

Clearing, Grading, and Compaction

The Applicant would utilize *site preparation* techniques that adequately prepare the site for safe and efficient installation and operation of PV arrays. The discussion below *describes the site preparation techniques currently expected to be employed at the Project site. These methods are meant to improve construction worker safety by creating a relatively level surface and eliminating trip hazards. The planned approach to Project site preparation, which involves the use of "disc and roll" and micrograding techniques, reflects the results of the Applicant's field testing of various site preparation techniques at an off-site location near the Project site, as well as their experience with construction projects in other desert locations in Southern California and Nevada. The Applicant has been using this experience to adjust and optimize its site preparation and construction methods.*

Clearing.

The Applicant prioritizes providing a safe working environment for construction personnel. In addition, construction vehicles would need to access the site for site preparation and array installation. For the reasons previously stated, the surface vegetation may need to be removed from the site. *Vegetation would not be removed until the onset of a given construction phase. Within the solar field, plant roadways, and areas around the operations and maintenance building, vegetation would be disced under, mulched or composted, and retained onsite to assist in erosion control and limit waste disposal. In some areas to be graded outside of the solar field, native vegetation may be harvested for replanting to augment soil stabilization.*

Vegetation would be cleared from roadways, access ways, and where concrete foundations are used for inverter equipment, substations, and the operations and maintenance building. Vegetation would be cleared for construction of the drainage controls. Organic matter would be mulched and redistributed within the construction area (except in trenches and under equipment foundations). Plant root systems would be left in place to provide soil stability except where grading and trenching are required for placement of solar module foundations, underground electric lines, inverter and transformer pads, road and access ways, and other facilities.

During the site clearing process, the site would also be cleared of refuse, as necessary. Materials would be recycled or disposed of.

Grading.

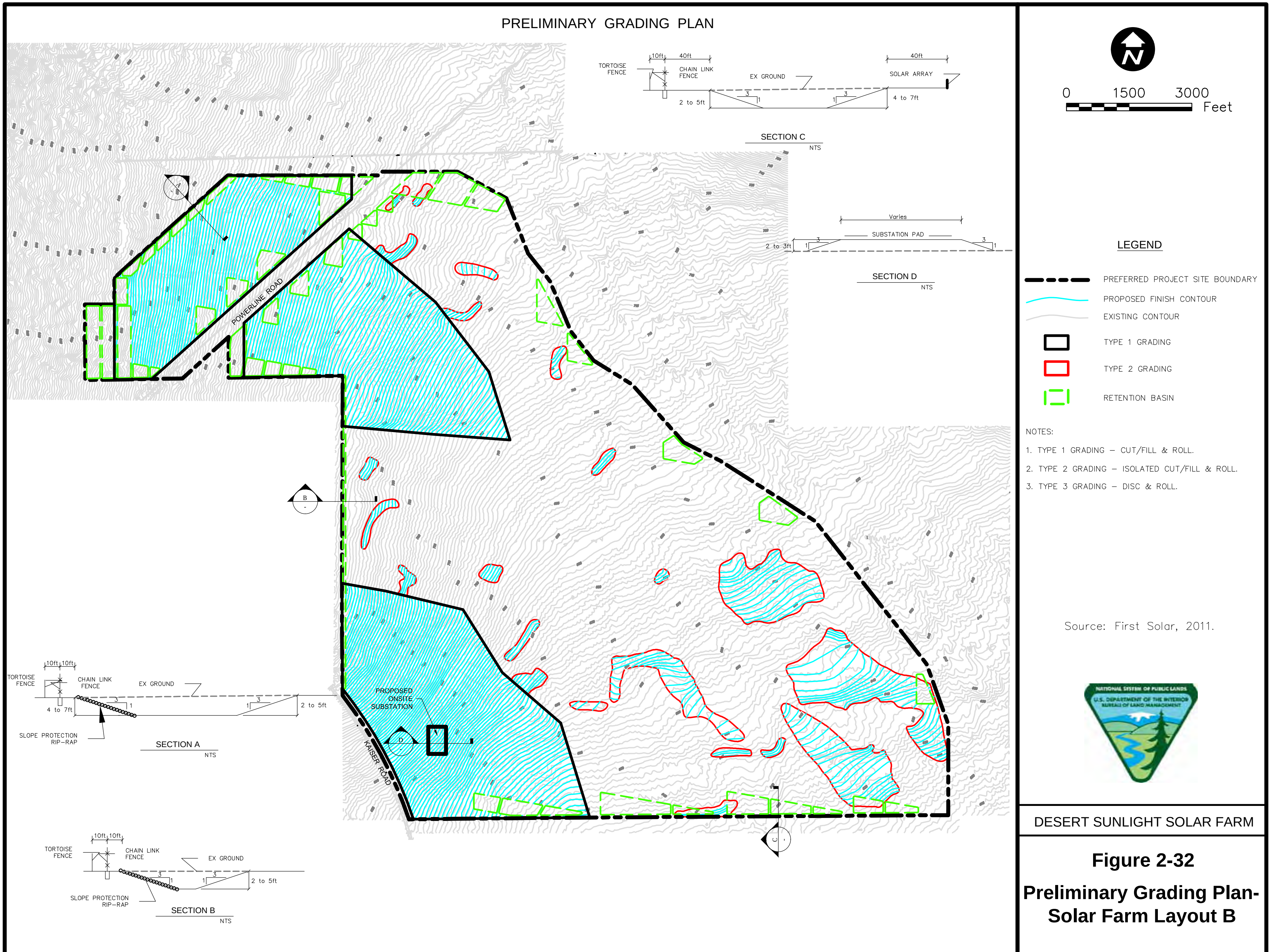
The Applicant plans to employ a low-impact design that allows water to sheet flow across the site with negligible impact on surface water flow upstream and downstream of the site. In addition, the site design must allow a smooth ground surface free of tripping hazards so workers can safely carry glass PV modules on-site. For both reasons, it is anticipated that *a combination of three site preparation techniques* would be performed across the full Solar Farm site *to prepare the site for safe and efficient installation and operation of PV arrays.*

As shown on Figure 2-32, areas that make up more than half of the solar field (approximately 2,249 acres) would be prepared using conventional farming equipment including tractors with discing equipment and vibratory rollers. This technique is referred to on Figure 2-32 as "disc and roll" or Type 3 grading. With this approach, rubber-tired farming tractors towing disc harrow equipment would disc the top 5 to 7 inches of soil. A water truck would follow closely alongside the tractor to moisten the soil to hold fugitive dust emissions to acceptable levels. The tractor may make several passes to fully disc the vegetation into the topsoil, preserving the underground root structure, topsoil nutrients and seed base; once the soil has been wetted on the first pass, additional water would not be needed for subsequent passes. A drum roller would then be used to flatten the surface and return the soil to a compaction level similar to the preconstruction stage. The intent of the roller would be to level the soil under the solar field area and even out the surface after the discing is complete.

In dispersed sections of the solar array field totaling approximately nine percent of the site (approximately 363 acres), there would be limited use of scrapers to perform micrograding. This technique is referred to on Figure 2-32 as "isolated cut/fill and roll" or Type 2 grading. In general, these portions of the site would be contour graded level; the macro-level topography and stormwater drainage would remain unchanged, but within each solar array, "high spots" would be graded and the soil cut from these limited areas used to fill "low spots" within the same array. Limited use of scrapers for micrograding would be employed only where needed to produce a more level surface than can be produced by the disc and roll technique.

Standard cut and fill techniques (shown as Type 1 grading on Figure 2-32) would be used in areas of the site where soil conditions do not lend themselves to discing. These techniques would be used over approximately 31 percent of the site (approximately 1,218 acres). The overall objective of the earth moving would be to produce a consistent grade in each solar field area. Standard cut and fill techniques would be utilized within specific arrays to limit slope to within 3.0 percent.

In total, some level of grading activities will be required on approximately 3,830 acres of the Solar Farm site (including roads). Approximately 755,000 cubic yards, or approximately 193 cubic yards per acre, would need to be cut and filled across the Solar Farm site for Solar Farm Layout B. This amount compares to an estimated 1.35 million cubic yards that would have to be cut and filled if conventional grading were used. Essentially, the Solar Farm site would be graded to a sufficiently level topography using the least practicable amount of conventional cut and fill grading. The grading plan would utilize hydrology analysis to identify and protect areas that are susceptible to scour from stormwater runoff, and otherwise manage stormwater runoff to maintain plant facilities and safety and to ensure that off-site drainage conditions upstream and downstream of the site are as close as practicable to preexisting conditions. Work over the *site preparation* period would be paced so that grading of an area takes place shortly before trenching and post installation are ready to begin. This would minimize the area of open, uncovered ground present at any one time during construction, and thereby minimize dust and erosion issues.



DESERT SUNLIGHT SOLAR FARM

Figure 2-32

Preliminary Grading Plan-Solar Farm Layout B

Compaction.

The Solar Farm construction process would require moving equipment across the site, including delivery trucks, pile driving equipment, and cranes. Soil would be compacted to a level that allows this equipment to move across the site. After grading and underground work, most areas would be compacted to approximately 85 percent. Dust palliative and water would also be applied to graded areas, as needed. Access roads would be treated with palliative and sprayed with water as needed during construction.

Trenching and Cable Installation.

After the array areas have been surveyed, cleared and graded, trenches would be dug for the underground AC and DC cabling. Trench locations and typical trench cross-sections are shown on Figure 2-3. Underground DC cables would connect rows of arrays with the PCS. Underground AC cables would connect the PCSs, transformers, and PVCSs. The total area to be disturbed for trenching would be approximately *30.6* acres for SF-B.

Post Installation.

After trenching is complete in a work area, construction crews would install vertical support posts for the module tables.

Balance of System (BOS) Installation.

After posts are installed, crews would begin to install the components comprising the BOS. PV modules and module framing assemblies would arrive at a construction staging area in containers on tractor trailers. The tractor trailers would utilize the gravel access roads to deliver the modules and the framing assemblies to the array areas. PV modules and the assemblies would be lifted from the tractor-trailers by forklifts and placed adjacent to the array locations.

Tilt brackets would be installed on the posts, and module framing assemblies would be connected to the brackets. PV modules would be installed onto the module framing assemblies and wired to the PCS.

Wiring harnesses would electrically connect several rows of modules to a combiner box. Combiner boxes would be wired via underground DC cables to the PCS enclosure. These wires then would be connected to the inverters, switchgear, and other electrical equipment inside each PCS enclosure. Each inverter would convert the DC power to three-phase AC power. Output voltage from the inverter would feed into a transformer to be stepped up for distribution.

PCS enclosures would be installed at locations within each array and then connected to incoming lines from the combiner boxes. After the arrays are installed and commissioned in a particular area, traffic is expected to be limited to infrequent low-impact traffic in the aisle ways between PV blocks for inspection, maintenance, and repair purposes.

Phase 3: Commissioning

During the final system validation and commissioning process, the DAS and monitoring systems would be brought online, the equipment tested, and operational readiness verified. Once commissioning is complete, the Project would be brought online and connected to the grid.

Phase 4: Final Soil Stabilization

In the Applicant's experience, soil in the array areas achieves stabilization after *project* installation because the PV glass acts as a windbreak, and little additional work is required in these areas. Any roads or open areas would be stabilized with palliative, as required.

Gen-Tie Line

The construction approach for the Gen-Tie Line is provided below. Construction of the Gen-Tie Line would cause both temporary and permanent disturbance within a construction corridor estimated at a width of 160 feet, plus additional fan-shaped areas at each turn in the Gen-Tie Line with radii of 450 feet needed for wire stringing. The permanent disturbance associated with the Gen-Tie Line would be limited to the foundations of the transmission structures, the footprint of the access road, and two 75-foot by 200-foot areas associated with each fan-shaped stringing area, as described previously.

Preconstruction Surveys

Preconstruction survey work would consist of preconstruction biological clearance surveys, staking structure locations, and flagging the ROW.

Construction Mobilization

Upon notice to proceed, the contractor and construction management would assemble their on-site management and construction staff at an office including phone, fax, and data lines, to be located in the Project area. The contractor and construction subcontractors would have separate field offices.

A laydown yard would be prepared for storage of materials. A material manager would inventory received material. Yard staff would load the transport trailers that will deliver the material to the field. Additional yards may be established to serve as material marshalling facilities, crew assembly locations, and equipment yards. *These yards would all be within the Project footprint and would not require any additional ground disturbance.*

Gen-Tie Access Road Clearing and Construction

Access roads would be developed to access the Gen-Tie Line facilities. This would include the permanent roads to the new transmission structure locations and temporary roads for construction. Larger temporary areas around the structures would be necessary during construction to accommodate pole assembly and erection. Clearing and grading would also be needed for wire setup sites. Puller and tensioner sites would require a large relatively level area to safely accommodate all the equipment required on a wire stringing operation. It is assumed that each location of a tensioner and conductor would occupy an area 100 feet in width by 450 feet in length. These sites may be constructed in conjunction with the access roads and would be determined once the wire pulls have been planned. A cleared area directly behind each outside angle of dead-end towers is required to maintain the 3:1 wire-stringing ratio. During the construction period, no disturbance beyond the clearing limits shall be permitted.

Preventative measures to minimize wind transport of soil would be implemented. Dust abatement would be accomplished through watering.

Foundation Installation

Three types of foundations may be used for construction of the Gen-Tie Line: drilled shaft anchor-bolted foundations, drilled shaft embedded foundations, and vibrated steel casings. The first two methods involve constructing the foundations on-site. The third method involves using pre-fabricated components for the foundation. One or more of these methods would be utilized for construction of the Gen-Tie Line.

Grounding

The grounding crew would follow behind the erection crew, installing the grounding. Grounding consists of connecting the electrically conductive elements of a transmission line to the earth. This is done in order to create a path of least resistance in case there is an electrical failure or lightning strike along the line. Typical grounding consists of installation of a ground rod and connecting the rod to the structure with a wire.

Framing Structures

Structures would be hauled, assembled and erected at the designated site in the conventional manner. Structures would be picked up from the material storage yard, hauled to various structure sites or marshalling yards and unloaded. Structures would be assembled in sections on cribbing that would provide for the proper alignment of the steel members. Steel sections would be laid out with hydraulic cranes. The pole base and top sections would be assembled at each structure site.

Setting Structure/Erection

A crane would be used for pole erection to set the pole base sections on the anchor bolts or into the drilled shaft hole, depending on the type of foundation. The crew would have an air compressor and air guns for tightening anchor bolt nuts while maintaining level and plumb.

Guard Structures

Wood pole guard structures would be erected at each road or utility line crossing or at other areas along the ROW where guard structure crossing structures are required. Guard poles would be required at all energized crossings and roads where there is a hazard to people and traffic. Guard pole structures are temporary and would be removed after the conductors have been dead-ended and clipped.

Wire Stringing

For this Project, conventional wire stringing has been assumed. Wire stringing includes all activities associated with the installation of conductors onto transmission structures and includes the installation of primary conductor, ground wire, and hardware assemblies. A standard wire stringing plan includes a sequenced program of events starting with determination of the length of wire pulls and wire pull equipment set-up positions. Wire pulling is one of the stringing activities and requires special equipment to pull the wire through wire sheaves and rollers temporarily installed on the transmission structures. Wire splicing is needed to splice together conductor wire (or ground wire) to form longer segments of conductor between pulling locations.

Final inspection and testing would need to be coordinated with functional checkout and commissioning of the Substation equipment at each end of the line.

The Gen-Tie Line ROW would be cleared of all construction materials and equipment before the Project is complete.

Aggregate and Concrete Needs

Aggregate would be used for a base for concrete pads and as road base. This is assumed for all Project alternatives. Aggregate may be processed on-site from native materials using the power screener or may be obtained from a local vendor or vendors.

Concrete would be used for foundations of Solar Farm structures, fence footings, and transmission structures, as detailed in previous sections of this document. Both pre-cast and poured-in-place concrete pads/foundations would be used. Concrete would likely be obtained from local sources, as practicable.

Table 2.3-7 provides details on the concrete and aggregate needs of the Project for Solar Farm Sites B and C, as well as for the Gen-Tie Line alternatives.

Table 2.3-7
Concrete and Aggregate Needs for Solar Farm Sites B and C and Gen-Tie Line Alternatives

Area/Purpose	Volume of Concrete (cubic yards)	Volume of Aggregate (cubic yards)
SF-B – Total	6,687	22,353
Base for Concrete Pads – SF-B	*N/A*	1,825
Road Base – SF-B	*N/A*	20,528
SF-C – Total	7,960	64,372
Base for Concrete Pads – SF-C	*N/A*	*3,285*
Road Base – SF-C	*N/A*	*61,087*
GT-A-1-Total	1,100	3,571
GT-A-2 – Total	985	3,000
GT-B-2 – Total	748.8	3,397
GT Laydown Yard – Staging Area #2	N/A	2,100

Construction Water Use and Storage

Solar Farm

Project water demand would be met by local groundwater from a new well or wells to be constructed on the Solar Farm site. Sunlight proposes to construct two wells, *one of which would continue to be used* for operation. Both wells would be available for use during construction to provide flexibility in the *water supply and in the* event of a well malfunction. *Current pumping of groundwater from the local groundwater basin has been estimated to be up to 10,000 acre-feet per year (AFY), as discussed in Sections 3.17 and 4.17 (Water Resources). Water use in the area peaked in 1986 at an estimated 21,000 AFY, primarily as the result of agricultural activities in the area.* The water usage during that period dwarfs the expected use by the DSSF, both during construction and operation. *As an alternative to new wells, Sunlight may explore using* nearby active wells that have a *reported individual (per well)* production capacity of between 800 and 2,200 AFY (First Solar 2009).

During the approximately 26-month construction period, an estimated total of between 900 and *1,300* acre-feet of water would be needed for such uses as soil compaction, dust control, and sanitary needs for construction of the Solar Farm, depending on the configuration selected. The majority of the construction water use would occur during site grading operations. The daily water demand during construction of the Solar Farm is estimated to range from a low of 251,000 gallons per day (gpd) to a peak of approximately 1.3 million gpd. The Project's maximum well extraction rate over any 24-hour period is not expected to exceed 880 gallons per minute.

Temporary construction ponds would be used for water storage at various locations around the site. Use of temporary ponds rather than relying entirely on stand tanks and water trucks would reduce the amount of vehicle travel around the site by water trucks (and associated exhaust and dust), reduce the rate of groundwater extraction during construction, and also improve capability to respond quickly and effectively to mitigate fugitive dust emissions caused by unexpected high wind events.

A total of seven temporary water storage ponds are planned around the construction (Solar Farm) site. It is anticipated that each pond would occupy approximately one acre and would hold approximately 2 million gallons. The ponds would be connected to the supply wells and would involve 6-inch HDPE pipe runs along on-site access roads or the Solar Farm site perimeter from the wells to the ponds. No more than two or three ponds would be operating at any one time; one pond would be open for every roughly 400 acres that are actively undergoing site preparation activities at any one time. The temporary ponds would be approximately 6 to 8 feet deep and would be fenced and lined for safety. The temporary ponds would be covered with netting to deter ravens and would be designed, constructed, and operated to comply with all applicable regulatory requirements with respect to design, operation and maintenance, protection of migratory waterfowl, and raven management. To minimize earth work, most of the ponds would be co-located with planned retention basins that would be used during Project operation.

The ponds would be filled by pumps running 24 hours per day at up to 600 gallons per minute. A float valve in each pond would control overflow. Water would be pumped from the pond into large temporary storage tanks (stand tanks) using hurricane pumps. Water would be transferred directly to trucks from the stand tanks, as needed for dust control and compaction during construction.

The Applicant would perform the necessary studies and secure the necessary permissions to install the well(s). In addition, sampling and analysis in accordance with established protocols and with appropriate analytical test methods would be performed to assess water sufficiency and quality at each active well of appropriate capacity. An analysis of impacts of Project water consumption on water availability in the Chuckwalla Groundwater Basin is provided in Section 4.17 of this EIS.

Gen-Tie Line

The total amount of water needed for dust abatement and moisture conditioning of soils to facilitate overland travel during construction of the transmission line for the various alternatives is estimated to range from 1 million gallons for GT-B-1 to 2.64 million gallons for GT-A-2. The peak water use would be 40,000 gallons per day and would come during the foundation installation period (this period includes the time between mobilization and foundation installation). Water would also be used during the wire installation process, but at a lower level. Water would be collected from the Solar Farm site and transported to the work area. It is assumed there would be one 5,000-gallon water truck making four trips each working day and one 10,000-gallon water truck making two trips per day during peak use period.

Construction Waste and Hazardous Materials Handling

There would be limited hazardous materials stored or used on site. Appropriate spill containment and clean-up kits would be kept on site during construction and maintained during the operation of the DSSF. The primary chemicals/petroleum products expected to be present on the Project locations during construction are identified in Table 2.3-8.

Table 2.3-8
Chemicals/Petroleum Products at Project Locations during Construction

Product	Use
Diesel Fuel	Vehicles
Gasoline	Vehicles
Motor Oil	Vehicles
Hydraulic Fluids and Lube Oils	Vehicles and Equipment
Vegetable/Mineral Oil	Transformers
Dust Palliative	Fugitive Dust Mitigation

The DSSF would generate minimal wastes during operation. During construction of the Project, the only wastes produced would be typical construction wastes, such as wood, concrete, and miscellaneous packaging materials, in addition to broken or defective PV modules. Construction wastes would be disposed of in accordance with local, state, and federal regulations, while recycling would be used to the greatest reasonable extent. Broken or defective PV modules are not hazardous waste under federal regulations. Under California law, modules that were delivered to the Solar Farm site in a broken or defective condition or were damaged during installation would be considered retrograde materials and would be returned to First Solar's manufacturing facility for recycling within one year, in accordance with local, state, and federal regulations. Portable toilets would be used during construction. The waste from the toilets and would be regularly pumped out, hauled away, and disposed of by appropriately licensed organizations.

2.3.2 Construction Plan for Red Bluff Substation Project

This section describes the proposed construction features for the various Red Bluff Substation Project components:

- Red Bluff Substation, including an access road (two alternative access roads are being considered);
- Transmission system construction (including transmission line access road and related structures, such as modification of existing 220-kV structure, 500-kV loop-in, and Gen-Tie Line connection);
- Distribution line for Substation light and power; and
- Telecommunications facilities and access road.

For the entire Red Bluff Substation Project (the Substation itself and all related facilities), the estimated land disturbance summary is presented in Table 2.3-9. The numbers presented in this section are based on the most up-to-date information available. However, they are subject to change as the result of detailed engineering.

Table 2.3-9
Red Bluff Substation Project Estimated Land Disturbance Summary

Facility Component	Substation Site A (acres)	Substation Site B (acres)
Substation System (1)	_130_	_107.30_
Transmission System (2)	_32.83_	_22.33_
Distribution System (3)	_8.31_	_0.15_
Telecommunication System (4)	_0.25_	_0.25_
Total Disturbance	**_171.39_**	**_130.03_**

Notes: (1) Refer to Tables 2.3-11 and 2.3-12 for more detailed information
(2) Refer to Tables 2.3-14 and 2.3-15 for more detailed information
(3) Refer to Tables 2.3-19 and 2.3-21 for more detailed information
(4) Refer to Table 2.3-23 for more detailed information

Red Bluff Substation

Two potential Substation sites, Red Bluff Substation A and Red Bluff Substation B, are described in detail in Section 2.2.4 under Alternative 1 and Alternative 2, respectively. Construction of the Red Bluff Substation would be similar in scope for both alternative Substation locations. This is a general discussion of Substation construction with the differences between sites identified.

Grading and Drainage

For both Substation sites, the land would be prepared by clearing existing vegetation and installing a temporary chain-link fence to surround the construction site. The site would be graded in accordance with approved grading plans. The area to be enclosed by the proposed Substation perimeter wall would be graded to a slope that varies between one and two percent and compacted to 90 percent of the maximum dry density.

At both Substation sites, surface stormwater runoff would need to be redirected around the Substation. Drainage improvements would require 14 acres for Substation A and 20 acres for Substation B of permanent disturbance, depending on the alternative selected. This is described in more detail for each Substation in Section 2.2.4.

For both Substation sites, internal surface runoff would be directed toward _one or more_ detention basins within the enclosed Substation. The basin or basins would measure approximately 120 feet by 200 feet occupying approximately one-half acre and would be enclosed by an 8-foot-high chain-link fence and one 20-foot-wide double drive gate.

If required, the final site drainage design would be subject to the conditions of the grading permit obtained from the County of Riverside.

SCE proposes to construct a new well adjacent to the perimeter fence around the Substation to be used for dust control during construction. It would be located on ground that is planned to be disturbed during grading. Water use for dust control during construction is estimated to be approximately 360 AF over the two-year construction period.

Table 2.3-10 provides the approximate volume and type of earth materials to be used or disposed of at both Substation locations (within the Substation wall and the required drainage structures outside/around the Substation).

Table 2.3-10
Substation and Access Road -
Ground Surface Improvement Materials and Estimated Volumes

Element	Material	Approximate Volume (yd3) Substation A	Approximate Volume (yd3) Substation B
Site Cut (1)	Soil	800,000	800,000
Site Fill (1)	Soil	600,000	600,000
Waste Removal (export)	Soil/Vegetation	23,000	23,000
Substation Equipment Foundations	Concrete	14,000	14,000
Equipment and cable trench excavations (2)	Soil	15,500	15,500
Cable Trenches (3)	Concrete	200	200
Internal Driveway	Asphalt concrete	3,200	3,200
	Class II aggregate base	4,800	4,800
External Driveway	Asphalt concrete	12,000	700
	Class II aggregate base	12,000	1,100
	Concrete for culverts	2,000	
Substation Rock Surfacing	Rock, nominal 1 to 1-1/2 inch per SCE Standard	33,000	33,000

Notes: (1) The design concept would be intended to balance the earthwork quantities, utilizing the site cut as site fill.
(2) Excavation "spoils" would be placed on site during the below-ground construction phase and used to the extent possible for the required on-site grading.
(3) Standard cable trench elements are factory fabricated, delivered to the site and installed by crane. Intersections are cast in place concrete.

Staging Areas

Land disturbance (up to approximately 10 acres) adjacent to the Red Bluff Substation property may be necessary for temporary equipment storage and material staging areas associated with transmission lines and related structures.

Geotechnical Studies

Prior to the start of construction, SCE would prepare a geotechnical study of the Red Bluff Substation site and the transmission line routes that would include an evaluation of the depth to the water table, evidence of faulting, liquefaction potential, physical properties of subsurface soils, soil restivity, slope stability, and the presence of hazardous materials.

Below Grade Construction

After the Red Bluff Substation site is graded, below grade facilities would be installed. Below grade facilities include a ground grid, underground conduit, trenches, and all required foundations.

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.

Hazards and Hazardous Materials

Construction of the Red Bluff Substation and related elements would require the limited use of hazardous materials, such as fuels, lubricants, and cleaning solvents. All hazardous materials would be stored, handled and used in accordance with applicable regulations.

The Stormwater Pollution Prevention Plan (SWPPP) prepared for the Red Bluff Substation Project would provide the locations for storage of hazardous materials during construction, as well as protective measures, notifications, and cleanup requirements for any incidental spills or other potential releases of hazardous materials.

Waste Management

Construction of the Red Bluff Substation Project would result in the generation of various waste materials that can be recycled and salvaged. Waste items and materials would be collected by construction crews and separated into roll off boxes at the materials staging area. All waste materials that are not recycled would be categorized by SCE in order to assure appropriate final disposal. Non-hazardous waste would be transported to local authorized waste management facilities.

The Red Bluff Substation grading plan is designed to balance cut and fill quantities, so that soil excavated for the Red Bluff Substation would be used as fill on-site. In the unlikely event that there is excess soil from grading, it would be disposed of off-site at an approved licensed facility.

Post-Construction Cleanup

Any damage to existing roads as a result of construction would be repaired once construction is complete, 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 Red Bluff Substation Project to as close to preconstruction conditions as possible, or, where applicable, to the conditions agreed upon between the landowner (or land manager) and SCE. In addition, all construction materials and debris would be removed from the area and recycled or properly disposed of off-site at local authorized waste management facilities. SCE would conduct a final inspection to ensure that cleanup activities were successfully completed.

Access and Land Disturbance

Table 2.3-11 and Table 2.3-12 provide an estimate of permanent land disturbance related to construction of the Substation *site* at both Substation A and B, respectively, including required drainage structures, access road, and a *material yard* (staging area) outside/around the Substation, based on the most current information available. *This does not include disturbance associated with the transmission and distribution system, and telecommunication site.*

Table 2.3-11
Substation Site A Construction – Estimated Land Disturbance

Construction Activity	Acres Permanently Disturbed
Substation grading	*76*
Drainage/side slopes	*14*
Preferred access road (1)	*31*
Material Yard/Staging Area	*9*
Total Acres Disturbed	***130***

Notes: (1) Both alternate access roads would require grading of an area at least *24,000* feet long by 30 feet wide. With additional grading possibly needed for an adequate road, it is assumed that approximately *31* acres of total disturbance would be required.

Table 2.3-12
Substation Site B Construction – Estimated Land Disturbance Summary

Construction Activity	Acres Permanently Disturbed
Substation Grading	76
Drainage/Side Slopes	20
Access Road	1.3
Material Yard/Staging Area	10
Total Acres Disturbed	107.3

Notes: (1) Based on road dimensions of about 2,000 feet long by 30 feet wide.

Some additional grading would be required at Substation A due to site topography and a longer access road. Two options are proposed for access to Substation A, both of which would be relatively flat and wide enough to accommodate the delivery of transformers to the site. Both would use portions of existing roadways but would require additional grading as follows: (1) for the western access, a new approximately *24,000*-foot-long access road would be constructed; or (2) for the eastern access road, approximately 24,000 feet of improvements would be made to an existing dirt pipeline patrol roadway. With additional grading potentially needed to develop an adequate road, it is assumed that both access road alternatives would require approximately *31* acres of total disturbance.

Substation B would require a new approximately 2,000-foot access road from Eagle Mountain Road.

New access roads*, as well as improved existing roads,* are anticipated to be 24 feet in width with 3-foot-wide shoulders on each side, for a total of 30 feet. Construction would include compaction of the sub-soil and the placing a 6-inch-thick layer of compacted aggregate road-base over the 24-foot-wide road. In order to accomplish the above road improvements, an average width of 30 feet has been assumed including allowances for side slopes and surface runoff control, resulting in a total land disturbance of approximately *31* acres for either access road to Substation A (Access Road 1) and *<1* acre for Substation B (refer to Table 2.3-11 and Table 2.3-12). *For improvements to existing roads, existing culverts would be improved as necessary. For new roads, culverts would be added as necessary.*

Access road gradients would be leveled so that any sustained grade does not exceed 12 percent. At the end of Project construction, the access roads would be left in a condition equal to or better than the condition that existed prior to the start of construction. Loose rock and slide material would be removed from existing roads and used to construct dikes, fill washouts, or flatten fill slopes. All washouts, ruts, and irregularities would be filled or obliterated.

Construction Equipment and Labor

The estimated elements, materials, number of personnel and equipment required for construction of the Substation at either location are summarized in Table 2.3-13. In addition, a temporary office trailer and equipment trailer may be placed within the proposed Substation construction area during the construction phase of the Project. The numbers presented in the table are based on the most up-to-date information available. However, they are subject to change as the result of additional detailed engineering.

Table 2.3-13
Substation (both Locations) Construction Equipment and Labor Estimates

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)	60	1-Dozer .... (Diesel) 2-Loader .... (Diesel) 1-Scraper.. (Diesel) 1-Grader .... (Diesel) 2-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)	90	1-Excavator....................................... (Diesel) 1-Foundationauger........................... (Diesel) 2-Backhoes.. (Diesel) 1-Dump 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 3 3 3 4 2 hours/day for 45 days 3
MEER (6 people)	60	1-Carry-all Truck ....(Gasoline) 1-tool truck ....(Gasoline) 1-Stake Truck................................(Gasoline)	3 2 2
Electrical (10) people)	120	2-Scissor Lifts .... (Propane) 2-Manlifts .... (Propane) 1-Reach Manlift .... (Propane) 1-15 ton Crane................................. (Diesel) 1-Tool Trailer 3-Crew Trucks ....(Gasoline)	3 3 4 3 3 2
Wiring (Substation A = 6 people) (Substation B = 2 people)	90	1-Manlift....................................... (Propane) 1-Tool Trailer	4 3
Maintenance Crew Equipment Check (2 people)	30	2-MaintenanceTrucks ....(Gasoline)	4
Testing (2 people)	90	1-Crew Truck............................... (Gasoline)	3
Asphalting (6 people)	40	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

SCE anticipates a total of approximately 25 construction personnel working on any given day. SCE anticipates that crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would be dependent upon governing agency permitting requirements, material availability, and construction scheduling. For example, electrical equipment (such as Substation MEER, wiring, and circuit breaker) installation may occur while transmission line construction proceeds.

Construction activities would generally be scheduled during daylight hours in accordance with applicable noise abatement ordinances. In the event construction activities needed to occur on different days or hours, SCE would obtain variances as necessary from appropriate jurisdiction where the work would take place.

Transmission System Construction (including Transmission Line and Related Structures, such as Modification of Existing 220-kV Structure, 500-kV Loop-in, and Gen-Tie Line Connection)

Staging Areas

For the transmission line and related structures, a temporary equipment and material staging area would be established for short-term utilization within the Red Bluff Substation property.

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; and
- Commonly used Best Management Practices materials such as straw wattles, gravel, sandbags, and silt.

The size of the temporary equipment and material staging area would be dependent upon a detailed site inspection. An area of approximately 0.5 to 1.5 acres may be required. Additional temporary areas may be required for crew assembly yards and would be used for temporary parking. Following completion of construction, land disturbed at the temporary equipment and material staging area would be restored to as close to preconstruction conditions as possible *or, where* applicable, to the conditions agreed upon by the BLM and SCE following the completion of construction.

Access and Spur Roads

This Substation portion of the Project involves construction within existing and new ROWs. It is assumed that existing public roads as well as existing transmission line roads would be used as much as possible during construction of this Project. Construction of the Substation may also 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. *Access or spur roads will be identified in the Plan of Development prior to an issuance of a Notice to Proceed for this portion of the Project.*

Rehabilitation work may be necessary in some locations along the existing transmission line roads to accommodate construction activities. This work *would* include the re-grading and repair of existing access roads, spur roads and associated drainage hardware. The graded road would have a minimum drivable width of 14 feet, with 2 feet of shoulder on each side (depending upon field conditions) for a total road width of 18 feet.

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, soil would be re-deposited where necessary, and roads would be recompacted to provide a smooth and dense riding surface capable of supporting 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 *constructed* so that any sustained grade does not exceed 12 percent. 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.

Modifications of Existing Transmission Structures

Any LST or TSP modifications would begin with hauling and stacking bundles of steel at tower locations per engineering drawing requirements. This activity requires use of several tractors with 40-foot trailers and a rough terrain forklift. After steel is delivered and stacked, crews would proceed with the structure modifications, as necessary. 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 modification process.

Removal and Replacement of Existing 500-kV Transmission Structures

Transmission line facilities to be removed include existing 500-kV transmission structures and associated hardware. The existing access routes would be used to reach structure sites, but some rehabilitation work on these roads 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. For each structure, a crane truck or rough terrain crane would be used to support 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-foot by 50-foot (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 500-kV conductor to temporary structures during the removal and replacement of the existing 500-kV structures. Upon completion of the construction of the 500-kV replacement structures and dismantling of the existing 500-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 500-kV structures.

Construction of New 500-kV and 220-kV Transmission Structures and 220-kV Gen-Tie Line Structure

The new 500-kV and 220-kV structure locations and 220-kV Gen-Tie Line structure locations 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. Site preparation for the temporary laydown area required for the assembly of the 500-kV and 220-kV structures would also be cleared of vegetation and graded as required. This area is approximately 200 feet by 200 feet (0.92 acre). 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-foot by 50-foot (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 detailed engineering.

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 property would be sub-partitioned from the temporary equipment and material staging area within the Red Bluff Substation Site for a temporary concrete batch plant.

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. 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.

SCE's water usage estimates presented in Tables 2.2-2 and 2.2-7 are preliminary and are based on current information. *SCE is proposing to install a well to supply water needed for construction and operation of the Substation.*

Wire Stringing of 500-kV and 220-kV Conductor

Wire stringing includes all activities associated with the installation of conductors. This activity includes 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) are typically attached during the steel erection process.

A standard wire-stringing plan includes a sequenced program 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 needed for ensuring that safe and quick installation of wire is accomplished.

The dimensions of the area needed for the stringing setups associated with wire installation are variable and depends upon terrain. The preferred minimum area needed for tensioning equipment set-up sites requires approximately an area of 150 feet by 500 feet (1.72 acres); the preferred minimum area needed for pulling equipment set-up sites requires approximately an area of 150 feet by 300 feet (1.03 acres); however, crews 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.

An OHGW for shielding would be installed on the transmission line. The OHGW would be installed in the same manner as the conductor.

Housekeeping and Construction Site Cleanup

Any damage to existing roads as a result of construction would be repaired once construction is complete.

SCE would restore all areas that are temporarily disturbed by Project activities (including equipment and material staging yard, pull and tension sites, and structure laydown and assembly sites) to as close to preconstruction conditions as possible or, where applicable, to the conditions agreed on between the landowner (or land manager) and SCE. 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.

Land Disturbance

Table 2.3-14 and Table 2.3-15 provide estimates of temporary and permanent land disturbance areas related to construction of the transmission lines for both Substation sites.

Table 2.3-14
Red Bluff Substation A
Transmission System Construction – Land Disturbance

Project Feature	Site Quantity (Estimated)	Disturbed Acreage Calculation (L x W)	Acres Permanently Disturbed
Modify Existing 500 kV Lattice Steel Tower (1)	2	150' x 150'	1.03
Remove Existing 500 kV Lattice Steel Tower (1)	2	150' x 150'	1.03
Temporary Conductor Field Snub/Transfer Area (2)	8	200' x 150'	5.51
Construct New 500 kV Lattice Steel Tower (3)	8	200' x 200'	*7.36*
Construct New 220 kV Lattice Steel Tower (4)	2	200' x 200'	*1.84*
Conductor & OPGW Stringing Setup Area - Puller (5)	4	300' x 150'	4.13
Conductor & OPGW Stringing Setup Area - Tensioner (5)	4	500' x 150'	6.89
New Access/Spur Roads (6)	2	linear miles x 14' wide	*1.70*
Red Bluff Sub - Material & Equipment Staging Area	1	approx. 1.5 acres	1.50
Guard Structures	8	100' x 100'	1.84
Total Estimated Disturbed Acres (7)			***32.83***

Notes: 1. Includes the removal of existing conductor, teardown of existing structure, and removal of foundation 2 feet 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 and OHGW attachment; a majority of the area to be restored after construction; a portion of ROW beneath and within 35 feet of the LST to remain permanently cleared of vegetation and access area of 25 feet around structures; area to be permanently disturbed for each 500 kV LST equals 0.32 acres.

Table 2.3-15
Red Bluff Substation B
Transmission System Construction – Land Disturbance

Project Feature	Site Quantity	Disturbed Acreage Calculation (L x W)	Acres Permanently Disturbed
Modify Existing 500-kV Lattice Steel Tower (1)	2	150' x 150'	1.03
Remove Existing 500-kV Lattice Steel Tower (1)	2	150' x 150'	1.03
Temporary Conductor Field Snub/Transfer Area (2)	8	200' x 150'	5.51
Construct New 500-kV Lattice Steel Tower (3)	2	200' x 200'	*1.84*
Construct New 220-kV Lattice Steel Tower (4)	2	200' x 200'	*1.84*
Conductor & OPGW Stringing Setup Area - Puller (5)	3	300' x 150'	3.10
Conductor & OPGW Stringing Setup Area - Tensioner (5)	3	500' x 150'	5.17
New Access/Spur Roads (6	0.5	linear miles x 18' wide	*0.85*
Red Bluff Sub - Material & Equipment Staging Area	1	approx. 1.5 acres	*1.50*
Guard Structures	2	100' x 100'	0.46
Total Estimated Disturbed Acres (7)			***22.33***

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 structures; area to be permanently disturbed for each 500-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; area to be permanently disturbed for each LST equals 0.2173 acres.
5. Based on 9,000' conductor reel lengths, number of circuits, and route design.
6. Based on length of road in miles x road width of 18'.
7. The disturbed acreage calculations are estimates based upon SCE's preferred area of use for the described Project feature, the width of the existing ROW, or the width of the proposed ROW and, they do not include any new access/spur road information.

Construction Equipment and Labor

Construction of the Project would be performed by SCE crews or contract personnel, with SCE responsible for Project administration and inspection. The estimated number of persons and types of equipment required for each phase of transmission line construction for the Red Bluff Project is shown in Tables 2.3-16, 2.3-17, and 2.3-18. The equipment and workforce estimates presented in these tables are approximately the same for construction of the transmission line and related structures on both Site A and Site B since the line construction areas of disturbance and associated work activities would be approximately the same.

Table 2.3-16
Red Bluff Substation A
Construction Equipment and Workforce Estimates by Activity
to Construct New 500-KV Loop-in Lines

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**		**0.5 Mile**
3/4-Ton Pick-up Truck, 4x4	200	Gas	2		4	8	1 Mile/Day
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 (3)				**5**	5		**0.5 Mile & 8 Pads**
1-Ton Crew Cab, 4x4	300	Diesel	2		5	2	
Road Grader	350	Diesel	1		5	4	
Backhoe/Front Loader	350	Diesel	1		5	6	
10-cu. yd. Dump Truck	350	Diesel	2		5	8	0.5 Mile/Day & 0.66 Structure Pads/Day
Drum Type Compactor	250	Diesel	1		5	4	
Track Type Dozer	350	Diesel	1		5	6	
Lowboy Truck/Trailer	500	Diesel	2		2	2	
Install LST Foundations (4)				**9**	**12**		**8 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		12	2	
30-Ton Crane Truck	300	Diesel	1		10	5	

Table 2.3-16 (continued)
Red Bluff Substation A
Construction Equipment and Workforce Estimates by Activity
to Construct New 500-KV Loop-in Lines

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	200	Diesel	1		12	8	0.50 LST/Day
Auger Truck	500	Diesel	1		10	8	
10-cu. yd. Dump Truck	350	Diesel	2		10	8	
10-cu. yd. Concrete Mixer Truck	425	Diesel	4		10	5	
LST Steel Haul (5)				6	8		8 LSTs
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		8	2	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		8	6	1 LST/Day
40' Flat Bed Truck/ Trailer	350	Diesel	1		8	8	
LST Steel Assembly (6)				7	64		8 LSTs
3/4-Ton Pick-up Truck, 4x4	300	Diesel	3		64	4	0.25 LST/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		64	4	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		64	6	
30-Ton Crane Truck	300	Diesel	2		64	8	
Compressor Trailer	350	Diesel	2		64	6	
LST Erection (7)				8	47		8 LSTs
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		47	5	0.25 LST/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		47	5	
Compressor Trailer	120	Diesel	1		47	6	
80-Ton Rough Terrain Crane	350	Diesel	1		47	6	
Guard Structure Installation (8)				6	2		8 Structures
3/4-Ton Pick-up Truck, 4x4	300	Gas	1		2	6	4 Structures/Day
1-Ton Crew Cab, 4x4	300	Diesel	1		2	6	
Compressor Trailer	120	Diesel	1		2	6	
Auger Truck	500	Diesel	1		2	6	
Extendable Flat Bed Pole Truck	350	Diesel	1		2	6	
30-Ton Crane Truck	500	Diesel	1		1	8	
80ft. Hydraulic Man-lift/Bucket Truck	350	Diesel	1		1	4	

Table 2.3-16 (continued)
Red Bluff Substation A
Construction Equipment and Workforce Estimates by Activity
to Construct New 500-KV Loop-in Lines

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
Install Conductor & OPGW (9)				16	27		1.5 Circuit Miles
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		27	8	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		27	8	
Wire Truck/Trailer	350	Diesel	2		27	2	
Dump Truck (Trash)	350	Diesel	1		27	2	
20,000 lb. Rough Terrain Fork Lift	350	Diesel	1		27	2	
22-Ton Manitex	350	Diesel	1		27	8	
30-Ton Manitex	350	Diesel	2		27	6	
Splicing Rig	350	Diesel	1		24	2	
Splicing Lab	300	Diesel	1		24	2	0.25 mile/day
Spacing Cart	10	Diesel	1		24	8	
Static Truck/ Tensioner	350	Diesel	1		27	2	
3 Drum Straw line Puller	300	Diesel	1		27	4	
60lk Puller	525	Diesel	1		27	3	
Sag Cat w/ 2 winches	350	Diesel	1		27	2	
580 Case Backhoe	120	Diesel	1		27	2	
D8 Cat	300	Diesel	1		24	3	
Lowboy Truck/Trailer	500	Diesel	1		4	2	
Restoration (10)				7	4		0.5 Miles
1-Ton Crew Cab, 4x4	300	Diesel	2		4	2	0.5 Mile/Day
Road Grader	350	Diesel	1		4	6	
Backhoe/Front Loader	350	Diesel	1		4	6	
Drum Type Compactor	250	Diesel	1		4	6	
Track Type Dozer	350	Diesel	1		4	6	
Lowboy Truck/Trailer	300	Diesel	1		4	3	

Notes on Crew Size Assumptions:

#1 Survey = one 4-man crew
#2 Temporary Equipment & Material Staging Area = one 4-man crew; note this information is duplicated on the 220 kV Loop-in & 500kV & Gen-Tie WF & E Tables
#3 Roads and Landing work = one 5-man crew
#4 Install Foundations for LSTs = one 9-man crew
#5 LST Steel Haul = one 4-man crew
#6 LST Steel Assembly =one 7-man crew
#7 LST Erection = one 8-man crew
#8 Guard Structure Installation = one 6-man crew
#9 Conductor & OPGW Installation = two 8-man crews
#10 Restoration = one 7-man crew

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 labor, material, and equipment, and any environmental and permitting requirements.

Table 2.3-17
Red Bluff Substation B
Construction Equipment and Workforce Estimates by Activity to Construct New 500-kV Loop-In Lines

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		**0.5 Miles**
3/4-Ton Pick-up Truck, 4x4	200	Gas	2		4	8	1 Mile/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		
10,000 lb Rough Terrain Fork Lift	200	Diesel	1			5	
Truck, Semi, Tractor	350	Diesel	1			1	
Roads & Landing Work (3)				**5**	2		**0.5 Miles & 4 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	
10-cu. yd. Dump Truck	350	Diesel	2		2	8	0.5 Miles/Day & 0.66 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 LST Foundations (4)				**9**	8		**4 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		8	2	
30-Ton Crane Truck	300	Diesel	1		8	5	
Backhoe/Front Loader	200	Diesel	1		6	8	
Auger Truck	500	Diesel	1		6	8	0.50 LST/Day
10-cu. yd. Dump Truck	350	Diesel	2		8	8	
10-cu. yd. Concrete Mixer Truck	425	Diesel	4		6	5	

Table 2.3-17 (continued)
Red Bluff Substation B
Construction Equipment and Workforce Estimates by Activity
to Construct New 500-kV Loop-In Lines

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**
LST Steel Haul (5)				6	6		6 LSTs
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		6	2	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		6	6	1 LST/Day
40' Flat Bed Truck/ Trailer	350	Diesel	1		6	8	
LST Steel Assembly (6)				7	21		6 LSTs
3/4-Ton Pick-up Truck, 4x4	300	Diesel	3		21	4	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		21	4	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		21	6	0.28 LST/Day
30-Ton Crane Truck	300	Diesel	2		21	8	
Compressor Trailer	350	Diesel	2		21	6	
LST Erection (7)				8	15		6 LSTs
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		15	5	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		15	5	0.4 LST/Day
Compressor Trailer	120	Diesel	1		15	6	
80-Ton Rough Terrain Crane	350	Diesel	1		15	6	
Guard Structure Installation (8)				6	1		8 Structures
3/4-Ton Pick-up Truck, 4x4	300	Gas	1		2	6	
1-Ton Crew Cab, 4x4	300	Diesel	1		2	6	
Compressor Trailer	120	Diesel	1		2	6	
Auger Truck	500	Diesel	1		2	6	4 Structures
Extendable Flat Bed Pole Truck	350	Diesel	1		2	6	
30-Ton Crane Truck	500	Diesel	1		2	8	
80ft. Hydraulic Man-lift/Bucket Truck	350	Diesel	1		2	4	
Install Conductor & OPGW (9)				16	13		1.5 Circuit Miles
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		13	8	
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		13	8	0.25 miles/day
Wire Truck/Trailer	350	Diesel	2		13	2	

Table 2.3-17 (continued)
Red Bluff Substation B
Construction Equipment and Workforce Estimates by Activity
to Construct New 500-kV Loop-In Lines

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**
Dump Truck (Trash)	350	Diesel	1		13	2	
20,000 lb. Rough Terrain Fork Lift	350	Diesel	1		13	2	
22-Ton Manitex	350	Diesel	1		13	8	
30-Ton Manitex	350	Diesel	2		13	6	
Splicing Rig	350	Diesel	1		13	2	
Splicing Lab	300	Diesel	1		13	2	
Spacing Cart	10	Diesel	1		13	8	
Static Truck/ Tensioner	350	Diesel	1		13	2	
3 Drum Straw line Puller	300	Diesel	1		11	4	
60lk Puller	525	Diesel	1		11	3	
Sag Cat w/ 2 winches	350	Diesel	1		11	2	
580 Case Backhoe	120	Diesel	1		11	2	
D8 Cat	300	Diesel	1		11	3	
Lowboy Truck/Trailer	500	Diesel	1		4	2	
Restoration (10)				**7**	**3**		**0.5 Miles**
1-Ton Crew Cab, 4x4	300	Diesel	2		3	2	0.5 Mile/Day
Road Grader	350	Diesel	1		3	6	
Backhoe/Front Loader	350	Diesel	1		3	6	
Drum Type Compactor	250	Diesel	1		3	6	
Track Type Dozer	350	Diesel	1		3	6	
Lowboy Truck/ Trailer	300	Diesel	1		3	3	

Notes on Crew Size Assumptions:

#1 Survey = one 4-man crew
#2 Temporary Equipment & Material Staging Area = one 4-man crew; note this information is duplicated on the 220-kV Loop-in & 500-kV & Gen-Tie WF & E Tables
#3 Roads and Landing work = one 5-man crew
#4 Install Foundations for LSTs = one 9-man crew
#5 LST Steel Haul = one 4-man crew
#6 LST Steel Assembly =one 7-man crews
#7 LST Erection = one 8-man crew
#8 Guard Structure Installation – one 6-man crew
#9Conductor & OPGW Installation = two 8-man crews
#10 Restoration = one 7-man crew

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 labor, material, and equipment, and any environmental and permitting requirements.

Table 2.3-18
Red Bluff Substation Sites A and B
Construction Equipment and Workforce Estimates by Activity
for 500-kV and 220-kV Transmission Line Structure Modification/Replacement

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**		**3 Structures**
3/4-Ton Pick-up Truck, 4x4	200	Gas	2		2	8	2 Mile/Day
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			8	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1			5	
Truck, Semi, Tractor	350	Diesel	1			1	
Roads & Landing Work (3)				**5**	**3**		**.5 Miles & 3 Pads**
1-Ton Crew Cab, 4x4	300	Diesel	2		3	2	0.5 Miles/Day & 2 Structure Pads/Day
Road Grader	350	Diesel	1		2	4	
Backhoe/Front Loader	350	Diesel	1		2	6	
Drum Type Compactor	250	Diesel	1		2	4	
Track Type Dozer	350	Diesel	1		2	6	
Lowboy Truck/Trailer	500	Diesel	1		2	2	
LST Removal (4)				**8**	**4**		**3 LSTs**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		4	6	0.75 LST/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		4	6	
Compressor Trailer	120	Diesel	1		4	6	
80-Ton Rough Terrain Crane	350	Diesel	1		4	6	
Install LST Foundations (5)				**9**	**8**		**3 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		8	2	0.50 LST/Day
30-Ton Crane Truck	300	Diesel	1		8	5	
Backhoe/Front Loader	200	Diesel	1		6	8	
Auger Truck	500	Diesel	1		8	8	

Table 2.3-18 (continued)
Red Bluff Substation Sites A and B
Construction Equipment and Workforce Estimates by Activity
for 500-kV and 220-kV Transmission Line Structure Modification/Replacement

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**
10-cu. yd. Dump Truck	350	Diesel	2		8	8	
10-cu. yd. Concrete Mixer Truck	425	Diesel	3		8	5	
LST Steel Haul (6)				**4**	**3**		**3 LSTs**
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	1		3	2	1 LST/Day
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		3	6	
40' Flat Bed Truck/ Trailer	350	Diesel	1		3	8	
LST Steel Assembly (7)				**7**	**14**		**3 LSTs**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		14	4	0.25 LST/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	1		14	4	
10,000 lb Rough Terrain Fork Lift	200	Diesel	1		12	6	
30-Ton Crane Truck	300	Diesel	1		14	8	
Compressor Trailer	350	Diesel	1		12	6	
LST Erection (8)				**8**	**5**		**3 LSTs**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		5	5	1 LST/Day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		5	5	
Compressor Trailer	120	Diesel	1		3	6	
80-Ton Rough Terrain Crane	350	Diesel	1		5	6	
Conductor Transfer (9)				**16**	**5**		**.5 Circuit Miles**
3/4-Ton Pick-up Truck, 4x4	300	Diesel	2		5	8	1 tower/day
1-Ton Crew Cab Flat Bed, 4x4	300	Diesel	2		5	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		5	2	
22-Ton Manitex	350	Diesel	1		5	8	
30-Ton Manitex	350	Diesel	2		5	6	

Table 2.3-18 (continued)
Red Bluff Substation Sites A and B
Construction Equipment and Workforce Estimates by Activity
for 500-kV and 220-kV Transmission Line Structure Modification/Replacement

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**
Splicing Rig	350	Diesel	1		5	2	
Splicing Lab	300	Diesel	1		3	2	
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		5	2	
D8 Cat	300	Diesel	1		5	3	
Lowboy Truck/ Trailer	500	Diesel	1		2	2	
Restoration (10)				**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	
Drum Type Compactor	250	Diesel	1		1	6	
Track Type Dozer	350	Diesel	1		3	6	
Lowboy Truck/Trailer	300	Diesel	1		2	3	

Notes on Crew Size Assumptions:

#1 Survey = one 4-man crew
#2 Temporary Equipment & Material Staging Area = one 4-man crew, this information is duplicated on 220kV Loop-in & Gen-Tie modification WF&E Tables
#3 Roads & Landing Work = one 5-man crew
#4 LST Removal = one 8-man crew
#5 Install Foundations for LSTs = one 9-man crew
#6 LST Steel Haul = one 4-man crew
#7 LST Steel Assembly =one 7-man crews
#8 LST Erection = one 8-man crew
#9 Conductor Transfer = two 8-man crews
#10 Restoration = one 7-man crew

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 labor, material, and equipment, and any environmental and permitting requirements.

Distribution Line for Substation Light and Power

Substation Site A

Placement of the Substation at Site A would require rebuilding the Desert Center 12-kV circuit overhead along the south frontage of the freeway approximately 20,000 feet to upgrade the circuit from single-phase to three-phase construction and then extending approximately 1,000 feet underground (south) towards the Substation. This rebuild would require replacement of approximately 100 poles, assuming each span of 200 feet.

Table 2.3-19 provides an estimate of the permanent land disturbance related to construction of the distribution system for station light and power at the Red Bluff Substation Site A. The estimated number of workers and equipment required to construct the distribution system for station light and power is presented in Table 2.3-20.

Table 2.3-19
Distribution System for Station Power and
Light Construction Substation Site A – Estimated Land Disturbance

Construction Activity	Acres Permanently Disturbed
Access Road (1)	8.26
12 kV Overhead Circuit on 100 poles (2)	0.02
Underground 12 kV line (3)	0.03
Total disturbance	**8.31**

Notes: (1) Based on road dimensions of 20,000 feet long by 18 feet wide.
(2) Each pole requires a land disturbance of approximately one square foot.
(3) 12-kV underground line is 1,000 feet long by 1.5 feet wide.

Table 2.3-20
Construction Equipment and Workforce and Estimates by Activity to Construct the Distribution System for Station Light and Power – Substation Site A

Work Activity						Activity Production	
Primary Equipment Description	Estimated Horse-Power	Probable fuel type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Estimated Average Duration of Use (Hrs/Day)	Estimated Production Per Day
Trenching, Structure Excavation (1)				4	2		
1-ton crew cab	300	Diesel	1			2	
Backhoe front loader	300	Diesel	1			6	
Overhead Line (2)				8	30		
1-ton crew cab 4x4	300	Diesel	2	5		2	
55-foot double bucket truck	350	Diesel	2			6	
50-foot digger derrick	350	Diesel	2			4	
Underground Cable Pulling (3)				4	1		
1-ton crew cab, 4x4	300	Diesel	1			2	
Router placer truck	350	Diesel	1			6	

Table 2.3-20 (continued)
Construction Equipment and Workforce and Estimates by Activity to Construct the Distribution System for Station Light and Power – Substation Site A

Work Activity						Activity Production	
Primary Equipment Description	Estimated Horse-Power	Probable fuel type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Estimated Average Duration of Use (Hrs/Day)	Estimated Production Per Day
Hydraulic rewind puller	300	Diesel	1		1	6	
Underground Cable Makeup				4	5		
1-to crew cab, 4x4	300	Diesel	1			2	
55-foot double-bucket truck	350	Diesel	1			4	

Notes: (1) Trenching and conduit installation = one 4-man crew
(2) Overhead Line Work = one 4-man crew
(3) Underground Cable Pulling – one 4-man crew

Substation Site B

The Red Bluff Substation B requires extending the existing Desert Center 12-kV circuit overhead south on Eagle Mountain Road approximately 750 feet by installing approximately 7 poles outside of the Substation perimeter wall. The line would then be extended north underground along Red Bluff Substation driveway approximately 1,000 feet to Red Bluff Substation.

A laydown area within the Red Bluff Substation Site *would* be required to store any materials needed during construction. Crews would work Monday through Friday in one 8- to 10-hour shift each day. Two line trucks with 3-person crews (6 people total) would be called upon to perform the work. A new access road may be required to support the new over head distribution lines along Eagle Mountain Road from the existing Desert Center 12-kV circuit to Red Bluff Substation. The access road would be approximately 300 feet long and approximately 18 feet wide.

Table 2.3-21 provides an estimate of the permanent land disturbance related to construction of the distribution system for station light and power. The estimated number of workers and equipment required to construct the distribution system for station light and power is presented in Table 2.3-22.

Table 2.3-21
Distribution System for Station Power and Light Construction Substation Site B – Estimated Land Disturbance

Construction Activity	Acres Permanently Disturbed
Access road (1)	0.12 acres
12kV overhead circuit on 7 poles (2)	0.00 acres
Underground 12kV line (3)	*0.03 acres*
Total Disturbance	*0.15 acres*

Notes: (1) Based on road dimensions of 300 feet long x 18 feet wide.
(2) Each pole requires a permanent land disturbance of 1 square foot.
(3) 12kV underground line is a 1,000-foot long by 1.5-foot wide trench.

Telecommunications Facilities

As previously discussed, a telecommunication system would be required in order to provide monitoring and remote operation capabilities of the electrical equipment at the Red Bluff Substation and transmission line protection. Sunlight would be responsible for constructing the duct bank from the last transmission tower on the Gen-Tie Line to the MEER building within the Red Bluff Substation. The construction activities associated with the duct bank have been incorporated into Sunlight's Gen-Tie Line numbers. SCE would be responsible for constructing the new Desert Center Communications Site (also referred to as a microwave repeater site) located on a BLM parcel adjacent to State Route 177 to house microwave transmission equipment. The total area needed for the site, access road and surrounding berm would be approximately 150 feet by 70 feet. Within that parcel, a 100-foot by 50-foot area would be fenced and graded. It would consist of a 12-foot by 36-foot prefabricated building with a 5-foot by 30-foot raised concrete walkway, and a 499-gallon propane tank on a 12-foot by 8-foot concrete pad. The building would have a separate generator room containing a 20-kW propane-powered generator to ensure safe operation of the Desert Sunlight 220-kV Gen-Tie Line in the event of an outage on the Desert Center 12-kV distribution line (refer back to Figure 2-11).

Table 2.3-22
Construction Equipment and Workforce and Estimates by Activity to Construct the Distribution System for Station Light and Power – Substation Site B

Work Activity						Activity Production	
Primary Equipment Description	**Estimated Horse-Power**	**Probable fuel type**	**Primary Equipment Quantity**	**Estimated Workforce**	**Estimated Schedule (Days)**	**Estimated Average Duration of Use (Hrs/Day)**	**Estimated Production Per Day**
Trenching, Structure Excavation (1)				4	2		
1-ton crew cab	300	Diesel	1			2	
Backhoe front loader	300	Diesel	1			6	
Overhead Line (2)				6	5		
1-ton crew cab 4x4	300	Diesel	1			2	
55-foot double bucket truck	350	Diesel	1			6	
50-foot digger derrick	350	Diesel	1			4	
Underground Cable Pulling (3)				4	2		
1-ton crew cab, 4x4	300	Diesel	1			2	
Router placer truck	350	Diesel	1			6	
Hydraulic rewind puller	300	Diesel	1			6	
Underground Cable Makeup				4	5		
1-to crew cab, 4x4	300	Diesel	1			2	
55-foot double-bucket truck	350	Diesel	1			4	

Notes: Trenching and conduit installation = one 4-man crew
Overhead Line Work = one 4-man crew
Underground Cable Pulling – one 4-man crew

A 185-foot microwave communications tower would be constructed, requiring four concrete anchors for support, which would typically be 6 feet in diameter and 40 feet deep.

The access road from the site to Airport Access Road would be a graded dirt road, 20 feet wide, and 30 feet long. Since the site would be located in an area subject to flooding, an 8-foot-high berm would be constructed on the north, west and south sides. Soil from excavation of the site would be used to construct the berm.

The primary source of electrical service would be from a tap into the nearest 12-kV line, which would require the installation of about 7 wooden poles for approximately 730 feet to the northeast.

Table 2.3-23 provides estimates of temporary and permanent land disturbances related to construction of the telecommunication system.

Table 2.3-23
Telecommunication System Construction –
Estimated Land Disturbance (Sites A and B)

Construction Activity	Acres Permanently Disturbed
Duct from Red Bluff MEER to first 220kV tower outside station (1)	*0.03*
Desert Center Microwave Repeater Site (2)	0.19
Access Road (3)	0.01
12 kV Distribution Line (4)	0.02
Total Acres Disturbed	***0.25***

Notes: (1) 1,000 feet long by 1.5-foot wide trench.
(2) Based on a graded site area of 120 feet by 70 feet.
(3) Based on road dimensions of 30 feet long by 20 feet wide.
(4) Based on 730-foot long line with one pole per 100 feet and 1.5 square feet of disturbance per pole

Table 2.3-24 provides estimates for the construction workforce and type of equipment expected to be used in constructing the proposed telecommunications facilities.

Table 2.3-24
Construction Equipment and Workforce Estimates by Activity to
Construct the Telecommunication System (Sites A and B)

Construction Activity	Number of Personnel	Number of Days	Equipment Requirements
Building and Tower Foundation	6	10	2-crew trucks (gas/diesel) 1-backhoe (diesel) 1-stakebed truck (diesel) 1-concrete mixer (diesel)
Building Shell	4	2	2-crew trucks (gas/diesel) 1-crane (diesel) 1-lowbed truck (diesel)
Tower Construction Crew	4	10	2-crew trucks (gas/diesel) 1-100 ft crane (diesel) 1-100 ft bucket truck (diesel)
Microwave Dish Installation Crew	4	10	2-crew trucks (gas/diesel) 1-100 ft crane (diesel) 1-100 ft bucket truck (diesel)
Telecommunications Installation Crew	2	10	1-2 ton truck (gas/diesel) 1-crew truck (gas)

2.4 PROJECT OPERATION, MAINTENANCE, AND DECOMMISSIONING

2.4.1 Operation and Facility Maintenance Needs for Solar Farm and Gen-Tie Line

Solar Farm

The DSSF is designed to have essentially no moving parts, no thermal cycle, and no water use for electricity generation or PV module cleaning. After completion of the construction phase of the DSSF, the only water use would be for domestic purposes (drinking, washing, toilets) in the O&M Facility and the Solar Energy Learning Center (Visitors Center). This simple design would require only limited maintenance throughout its lifetime. A discussion of anticipated maintenance activities is provided below.

Maintenance Activities

It is not anticipated that the PV modules themselves would require cleaning. First Solar studies have shown that the PV modules function within acceptable design parameters without cleaning. Therefore, DSSF maintenance activities are contemplated to be limited to all-weather road maintenance; vegetation management; scheduled maintenance of inverters, transformers, and other electrical equipment; and occasional replacement of faulty modules or other site electrical equipment. The DSSF's all-weather access roads would be regularly inspected, and any degradation due to weather or wear and tear would be repaired. The Applicant would apply a dust palliative on dirt access roads. This is expected to be needed only once every two to five years. Except as needed to mix the palliative, no water would be needed for dust control during operations.

Operations and Workforce and Equipment

After the construction period, the workforce for O&M and security is estimated at 10 to 15 full-time workers. A work week would likely be composed of seven or eight employees working 10 hours per day. If night-time work is required, the shifts would be adjusted to assign the required number of personnel to 10-hour evening shifts. In addition, there would be 24-hour on-site security, likely consisting of two employees on the day shift and two on the night shift (12 hours each).

During operations, potable water would be drawn from the on-site well installed during construction of the Solar Farm. The water would be stored in a permanent, approximately 5,000-gallon, aboveground potable water storage tank would be installed adjacent to the O&M facility. The water storage tank would be covered. Because of the DSSF's small operating workforce, water demand would be no more than a few hundred gallons per day (approximately 0.2 acre-feet per year). The O&M workforce would generate small amounts of sanitary wastewater that would be handled by an on-site septic system and leach field. It is expected that sanitary water demand during operations would be obtained from the on-site well.

Only limited deliveries will be necessary for replacement PV modules and equipment during DSSF operation. For PV module replacement, six 53-foot-long trailers (5 axles) per year are assumed. Garbage and recycling would be collected by truck once per week each (two trucks per week total). Delivery of mail is expected once or twice a day, and delivery of miscellaneous supplies and spare parts is expected once a week, or as needed.

Waste and Hazardous Materials Management during Operations

First Solar PV modules and other products used during operation of the DSSF are not hazardous and are not subject to California or Federal hazardous material management regulations.

There would be limited hazardous materials stored or used on site as shown in Table 2.4-1. Appropriate spill containment and clean-up kits would be kept on site during construction and maintained during the operation of the DSSF.

Table 2.4-1
Chemicals at DSSF Locations during Operations

Product	Use
Diesel Fuel	Vehicles
Gasoline	Vehicles
Motor Oil	Vehicles
Mineral Oil	Transformers

The DSSF would generate minimal wastes during operation. Electrical generating activities would not produce hazardous or other industrial waste. Small amounts of universal waste and recycled batteries are expected to be stored on site during operations. PV modules that become damaged or defective would be identified through periodic inspections and routine power performance monitoring and recycled at an off-site recycling facility in accordance with local, state, and federal regulations.

An on-site septic system and leach field near the on-site O&M facility would be used to manage sanitary waste during DSSF operation. Permits for the septic system would be obtained, as needed. Soil percolation tests would be performed in order to demonstrate that an on-site septic system and leach field is feasible at the planned location. Additional testing may be performed in accordance with applicable regulations prior to final leach field design. The specific location of the leach field and septic system may be adjusted based on the results of preliminary percolation tests.

Gen-Tie Line and On-Site Substation

DSSF operations and maintenance personnel would perform periodic maintenance of the proposed Gen-Tie Line and On-site Substation. The proposed Project would not require any additional personnel. The Project's operation and maintenance personnel would operate and maintain all of the proposed Project Gen-Tie Line and On-Site Substation components in accordance with procedures consistent with recommendations in the vendor reference manuals.

Operation and maintenance of the proposed Project Gen-Tie Line would involve periodic inspection via helicopter or truck. The transmission lines would be maintained on an as-needed basis and would include maintenance of access roads and erosion/drainage control structures.

The proposed On-Site Substation would be unmanned, and the electrical equipment within the Substation would be monitored and controlled remotely by a power management system from the DSSF control room or a centrally located operation control center. Due to the remote operation of the On-Site Substation, personnel would generally visit for electrical switching and routine maintenance. Routine maintenance would include equipment testing, equipment monitoring and repair, as well as emergency and routine procedures for reliability and preventive maintenance. Operations and maintenance personnel would generally visit the On-Site Substation two to three times per week. The Project would also implement a stormwater management plan and hazardous materials business plan to minimize the potential for accidental release of hazardous materials during operation of the Substation.

The installation of telecommunications infrastructure would not change staffing for the existing telecommunication sites. All telecommunications equipment would be operated and maintained by site personnel. Preventative maintenance of telecommunications infrastructure, which would be located at the On-Site Substation and on the Gen-Tie Line between the On-Site Substation and Red Bluff Substation, would typically be scheduled every year to ensure system reliability and performance.

2.4.2 Operation and Facility Maintenance Needs for Red Bluff Substation

The Red Bluff Substation would be unmanned, and electrical equipment within the Substation would be remotely monitored. SCE personnel would visit for routine maintenance purposes. Routine maintenance would include equipment testing, monitoring, and repair. SCE personnel would generally visit the Substation three to four times per month*. The well that would be used for dust control during construction would also be used as potable water for the life of the Substation. A septic system would also be installed to manage the sanitary waste of employees during operation and maintenance of the Substation. Water demand associated with the periodic visits by Substation employees is estimated at no more than 100 gallons per month. The septic system would be located inside the perimeter fencing.*

The transmission lines would be maintained in a manner consistent with CPUC General Order No. 165. SCE maintains an inspection frequency of the energized overhead facilities a minimum of once per year via ground and/or aerial observation. 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. Maintenance would include activities such as repairing conductors, replacing insulators, and access road maintenance.

An emergency diesel-powered generator would be installed inside the perimeter fencing and remotely tested once a month. The generator would be a 500-kV generator and would meet all Air Quality Control District regulations for emergency generators of this size and type.

2.4.3 Decommissioning of Facilities

The DSSF has a minimum expected lifetime of 30 years, with an opportunity for a lifetime of 50 years or more with equipment replacement and repowering. When the DSSF concludes operations, the wire, steel, and modules of which the system is comprised would be recycled to the extent feasible. The DSSF components would be deconstructed and recycled or disposed of safely, and the Solar Farm site could be converted to other uses in accordance with applicable land use regulations in effect at the time of closure. As required by BLM ROW regulations, a detailed Decommissioning and Reclamation Plan (Decommissioning Plan) will be developed in a manner that both protects public health and safety and is environmentally acceptable.

Decommissioning Plan

Solar Farm and Gen-Tie Line

Conditions are likely to change over the course of a DSSF lifespan of 30 years or more, and a final Decommissioning Plan would be developed in the future prior to facility closure based on conditions as they occur at that time. The reclamation measures provided in the Decommissioning Plan would be developed to ensure protection of the environment and public health and safety and to comply with applicable laws, ordinances, regulations, and standards.

In general, the Project Decommissioning Plan would address:

- Proposed decommissioning and reclamation measures for the Project and associated facilities;
- Activities necessary for site restoration/re-vegetation, if removal of equipment and facilities is needed;
- Procedures for reuse, recycling, or disposal of facility components; collection and disposal of hazardous wastes; and use or disposal of unused chemicals;
- Costs associated with the planned decommissioning activities and the source of funding for these activities; and
- Conformance with applicable laws, ordinances, regulations, and standards.

The Decommissioning Plan would be developed in coordination with the BLM and submitted to the BLM for review and approval prior to final closure of the facility.

Red Bluff Substation

Before decommissioning the SCE facilities (Red Bluff Substation and related elements) or within a reasonable timeframe following termination of the BLM ROW grant, SCE would prepare a decommissioning plan for BLM review and approval. The decommissioning plan would address the following:

- The decommissioning of SCE facilities from the permitted area;
- Any requirements for habitat restoration and revegetation;
- Activities and procedures for proper disposal of materials associated with the removal effort (if required); and
- Compliance with applicable laws, regulations, and policies.

Temporary Reclamation of Disturbed Areas

After closure, measures would be taken to stabilize disturbed areas once equipment and structures are decommissioned and removed from the Project locations. These measures would be outlined fully in the Decommissioning Plan. When Project structures are removed upon facility closure, the resulting disturbed soil would be stabilized using standard erosion control BMPs (e.g., use of mulch, fiber rolls, silt fences, reseeding, etc., as applicable) until final reclamation measures may be implemented. Only a small portion of the Solar Farm site contains structures that would be in direct contact with the ground and thus would create surface disturbance during removal; these include access roads, the O&M facility, the Visitors Center, septic system and leach field, and associated parking areas. Removal of the solar arrays would create minimal ground disturbance due to the small footprint of their pile foundation design. Final reclamation measures would be implemented as soon as practicable after facility closure.

Removal of Power Generation and Substation Facilities

The PCSs, PV combing switchgear cabinets, a Gen-Tie Line, the On-Site Substation, and the Red Bluff Substation would be de-energized, decommissioned, dismantled, and removed in accordance with all federal, state, and local regulatory requirements. Where feasible, Project components would be recycled or reused. PV modules would be recycled at an off-site recycling facility, in accordance with local, state, and federal regulations.

Performance and Reclamation Bond

If the Project is approved, any ROW authorizations would include a required "Performance and Reclamation" bond to ensure compliance with the terms and conditions of the ROW authorization, consistent with the requirements of 43 CFR 2805.12(g). The "Performance and Reclamation" bond would consist of three components. The first component would be hazardous materials, the second component would be decommissioning and removal of improvements and facilities, and the third component would address reclamation, revegetation, restoration and soil stabilization.

2.5 BEST MANAGEMENT PRACTICES AND BUILT-IN MITIGATION

This section describes those features of the Project that, when implemented as part of Project construction or operation, would reduce or eliminate potential significant impacts of the Project. In addition, as part of the analysis for each resource topic discussed in Chapter 4, Applicant Measures and Mitigation Measures have been identified to reduce impacts. Applicant Measures (AMs) are defined as those proposed by Sunlight or SCE as part of the Project and those measures required by law, regulation, or policy. Mitigation Measures (MMs) are additional measures required by BLM to further reduce impacts. The specifics of these measures are provided in each relevant environmental resource discussion in Chapter 4. *A list of the Applicant Measures is provided in Table 2.5-1 below, and a complete list of the Applicant Measures and Mitigation Measures is provided in the Executive Summary.*

Solar Farm and Gen-Tie Line

Stormwater Pollution Prevention Plan

Sunlight prepared a hydrology study for the Project, which includes a drainage and stormwater analysis. The study modeled pre- and post-development stormwater flows under various conditions, up to and including 10-year and 100-year floods. First Solar is preparing an SWPPP for Project construction and coordinating with the Colorado River Basin RWQCB regarding potential coverage under the general permit for Stormwater Discharges Associated with Construction Activities, the Construction General Permit (Water Quality Order 2009-0009-DWQ, effective July 1, 2010). The SWPPP would identify structural and non-structural BMPs to manage the offsite discharge of stormwater from the Solar Farm site. Structural BMPs are devices such as silt fences, de-silting basins or swales; non-structural BMPs refer to operating practices on the site, such as covering and storing potential pollutant source materials in a manner that avoid discharges to the stormwater system. A Post-Construction Stormwater Management Plan (i.e., a Site Runoff Control *P*lan composed of structural and non-structural BMPs) would also be prepared.

Table 2.5-1
Applicant Measures

Resource	*Applicant Measures*
Air Resources	
	Sunlight has designed the Project to incorporate various measures that will reduce on-site construction-related emissions and emissions from construction-related traffic. *AM-AIR-1: Sunlight shall develop and implement a dust control plan that includes the use of dust palliatives to ensure compliance with SCAQMD Rule 403. The dust control plan is expected to focus on reducing fugitive dust from construction activities.* *AM-AIR-2: Construction activity shall be phased across the Solar Farm site in a manner that would minimize the area disturbed on any single day.* *AM-AIR3: Cut and fill quantities shall be balanced across the Solar Farm site to minimize emissions from grading and to avoid the need to import fill materials or to remove excess spoil.* *AM-AIR-4: Sunlight shall use power screeners to obtain sand and gravel requirements on-site, rather than having construction sand and gravel delivered to the Solar Farm site by truck.* *AM-AIR-5: Sunlight shall arrange a shuttle bus program for construction workers, with assembly points in the Palm Springs and Blythe areas. Sunlight expects this shuttle bus system to be heavily used by construction workers, with an average of 89.5 percent of construction workers accessing the Solar Farm site by shuttle bus.* *SCE has identified two applicant measures that will be implemented during construction of the Red Bluff Substation:* *AM-AIR-6: SCE shall develop and implement a dust control plan to ensure compliance with SCAQMD Rule 403 during Substation construction.* *AM-AIR-7: SCE would require bidders for the construction contract to submit a transportation plan describing how workers would travel to the Project site.*
Vegetation	
	AM-BIO-1. A Habitat Compensation Plan is being prepared and will be implemented by the Applicant to compensate for the loss of creosote desert scrub, desert dry wash woodland, and jurisdictional resources. Compensation will be accomplished by acquisition of mitigation land or conservation easements or by providing funding for specific land acquisition, endowment, restoration, and management actions under one of several programs including the recently approved mitigation program created by SB 34 and as required under MM-BIO-2, Off-site Compensation. The Habitat Compensation Plan will be reviewed and approved by BLM, USFWS, and CDFG. The precise details of the mitigation, including mitigation ratios, will be established in the BLM ROW grant, USFWS Biological Opinion, and CDFG 2080.1 Consistency Determination. The draft plan is provided in Appendix H. *At a minimum, mitigation ratios required in the NECO Plan/EIS are 1:1 for permanent impacts to creosote bush scrub, 3:1 for permanent impacts to desert dry wash woodland, and 5:1 for permanent impacts to the Chuckwalla DWMA and Chuckwalla CHU). Mitigation ratios may be greater based on the requirements of USFWS and CDFG. Finally, areas occupied by the burrowing owl will be mitigated at 6.5 acres per occupied burrow (which will be covered by mitigation of creosote bush scrub habitat) and creation or enhancement of two burrows will be implemented for every active burrow.* *AM-BIO-2. A Draft Integrated Weed Management Plan (IWMP) has been prepared pursuant to BLM's Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2007) and the National Invasive Species Management Plan (The National Invasive Species Council 2008), and will be implemented by the Applicant to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the Project. The draft plan is in Appendix H of this document and will be reviewed and approved by the BLM.*

Table 2.5-1 (continued)
Applicant Measures

Resource	Applicant Measures
Vegetation (cont.)	
	The following measures are required in the Plan and will be implemented by the Applicant to monitor and control invasive species (details associated with these measures are provided in Section 4.3): • Preventative Measures During Construction • Containment and Control Measures • Monitoring • Reporting • Success Criteria AM-BIO-3. Preconstruction Surveys for Special Status Plant Species and Cacti. Before construction, the Applicant will stake and flag the construction area boundaries, including the construction areas for the Solar Farm site, Gen-Tie Lines, and Red Bluff Substation; construction laydown, parking, and work areas; and the boundaries of all temporary and permanent access roads. A BLM-approved biologist will then survey all areas of proposed ground disturbance for special status plant species and cacti during the appropriate blooming period for those species having the potential to occur in the construction areas. All special status plant species and cacti observed will be flagged for transplantation. All cacti observed will be flagged for transplantation and special status plant species observed will be flagged for salvage. AM-BIO-4. Worker Environmental Awareness Program (WEAP). The Applicant will implement a WEAP to educate on-site workers about sensitive environmental issues associated with the Project. The program will be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The program will be implemented during site mobilization, ground disturbance, grading, construction, operation, and closure. Details of the program are provided in Section 4.3. The training will place special emphasis on the special status species that have been observed in the Project locations or have a high likelihood to occur, including special status plant species, desert tortoise and other special status reptile species, Palm Springs round-tailed ground squirrel, burrowing owl, golden eagle, nesting bird species and bat species, and the American badger. BLM will be responsible for ensuring that each construction worker at the site, throughout the duration of construction activities, receives the above training. AM-BIO-5. The Applicant will prepare and implement a Vegetation Resources Management Plan that contains the following components (additional detail is provided in Section 4.3): • A Vegetation Salvage Plan which discusses the methods that will be used to transplant cacti present within the Project locations following BLM's standard operating procedures, as well as methods that will be used to transplant special status plant species that occur in the Project locations if feasible. • A Restoration Plan which discusses the methods that will be used to restore creosote bush scrub and desert dry wash woodland habitat that is temporarily disturbed by construction activities. The Vegetation Salvage Plan and Restoration Plan will specify success criteria and performance standards as required per MM-BIO-4, Salvage and Restoration Plan Performance Standards. BLM will be responsible for reviewing and approving the plan and for ensuring that the Applicant implements the plan including maintenance and monitoring required in the plan.

Table 2.5-1 (continued)
Applicant Measures

Resource	***Applicant Measures***
Wildlife	
	Implementation of Applicant Measures AM-BIO-1, AM-BIO-2, AM-BIO-4, and AM-BIO-5 discussed in Section 4.3, Vegetation, would reduce impacts on wildlife as well. Where there is a conflict between provisions of the Mitigation Measures recommended for wildlife impacts and the following Applicant Measures, the Mitigation Measures take precedence. *AM-WIL-1. A Draft Desert Tortoise Translocation Plan has been prepared for the Project and will be implemented by the Applicant to ensure that construction monitoring will be conducted by a BLM-, USFWS-, and CDFG-approved biologists during all construction activities and that any desert tortoise found with the construction zone will be translocated to a suitable location outside of the Project footprint. The draft plan is in Appendix H and will be reviewed and approved by BLM. The final plan will conform to the 2010 USFWS desert tortoise relocation guidelines entitled Translocation of Desert Tortoise (Mojave Population) From Project Sites: Plan Development Guidance. Unpublished Report dated August 2010.* *The Desert Tortoise Translocation Plan contains an analysis of several recipient sites for desert tortoises to be translocated from the Solar Farm site and Red Bluff Substation. The final recipient site will be selected by BLM, the USFWS, and CDFG.* *Desert tortoises found along the linear components of the Project, including the Gen-Tie Line, Telecommunications site, and access roads will be relocated out of harm's way pursuant to USFWS guidance (U.S. Fish and Wildlife Service. 2009. Desert Tortoise Field Manual. Ventura Fish and Wildlife Office, Ventura, California). Specifically, biological monitors will be present during all construction activities to ensure that active burrows are avoided. If a desert tortoise is found, the tortoise will be allowed to passively traverse the site while construction in the immediate area is halted. If the tortoise does not move out of harm's way after approximately 20 minutes, a biologist authorized to handle desert tortoise, will actively move the animal out of harm's way. Vehicles parked in desert tortoise habitat will be inspected immediately before they are moved. If a tortoise is found beneath a vehicle, a biologist authorized to handle desert tortoise will be contacted to move the animal out of harm's way, or the vehicle will not be moved until the desert tortoise leaves of its own accord.* *For desert tortoises in the Solar Farm site and Red Bluff Substation, they will be relocated using the following phased translocation process (additional details are provided in Section 4.4):* • *Installation of Perimeter Fencing* • *Clearance Surveys and Translocation* • *Long-term Monitoring* • *Reporting* *During the construction and operations and maintenance phases of the Project, additional BMPs will also be implemented by the Applicant, as described in Section 4.4.* *AM-WIL-2. Contribute to a USFWS Regional Raven Management Plan. The Applicant shall contribute to the U.S. Fish and Wildlife Service (USFWS) Regional Raven Management Program by making a one-time payment of $105 per acre of project disturbance to the national Fish and Wildlife Federation Renewable Energy Action Team raven control account.* *A Raven Management Plan (Ironwood Consulting 2010e) has been prepared and will be implemented by the Applicant to minimize the potential to attract ravens to the Project site. Additional details are provided in Section 4.4 and in Appendix H.*

Table 2.5-1 (continued)
Applicant Measures

Resource	***Applicant Measures***
Wildlife (cont.)	
	AM-WIL-3. A Draft Avian and Bat Protection Plan has been prepared and will be implemented by the Applicant to specify necessary actions to be taken to protect nesting bird and bat species, including burrowing owls, nesting birds, and roosting bats. The draft plan is in Appendix H and will be reviewed and approved by BLM. The final plan will conform to the 2010 USFWS avian and bat guidelines entitled Considerations for Avian and Bat Protection Plans U.S. Fish and Wildlife Service White Paper. Additional details are provided in Section 4.4. *AM-WIL-4. Construction Water Storage Pond Design. The temporary construction water ponds shall be designed, constructed, and operated in compliance with all applicable regulatory requirements with respect to design, operation, and maintenance, protection of migratory waterfowl, and raven management. Additional details are provided in Section 4.4.*
Climate Change	
	Three of the five applicant measures adopted by Sunlight for Air Resources would help reduce greenhouse gas emissions in addition to reducing criteria pollutant emissions (AM-AIR-3, AM-AIR-4, and AM-AIR-5).
Cultural Resources	
	AM-CUL-1: A cultural resources monitoring and mitigation plan has been included as a Project design feature to minimize impacts. The plan will include a description of areas to be monitored during construction, a discovery plan that will address unanticipated cultural resources, and provisions for the education of construction workers. Responsible parties for mitigation measures will be identified.
Paleontological Resources	
	AM- PR-1. The Applicant shall be responsible for the following mitigation (more details are provided in Section 4.7): • *A qualified paleontologist will conduct a study to characterize the paleontological sensitivity of the Project Study Area. Should the site characterization and or the site reconnaissance identify areas of high potential for paleontological resources, an additional mitigations could be implemented, as determined by the BLM.* • *A qualified paleontologist will develop a monitoring and mitigation plan prior to construction to mitigate adverse impacts on paleontological resources if excavation is to occur in an area of high paleontological sensitivity. The plan will include measures to be followed in the event that fossil materials are encountered during construction.*
Geology and Soil Resources	
	AM-GEO-1. The Applicant shall include, as part of the construction design plans for the Solar Farm and Gen-Tie Line, the mitigation measures provided in the Earth Systems Southwest (2010) geotechnical survey. These mitigations are summarized in Section 4.8 and in Appendix F, and are subject to BLM approval. The Applicant shall be responsible for implementing these mitigations. *AM-GEO-2. The Applicant shall implement the following mitigation measures to reduce impacts from wind and water erosion to soils (additional details are in Section 4.8):* • *Implement Mitigation Measures MM-WAT-6 and MM-WAT-7, discussed in Chapter 4.17, Water Resources.* • *Obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) Water Quality Order 2009-0009 DWQ;* • *Use nonhazardous dust suppressants approved by the BLM and water on an as-needed basis to suppress wind-blown dust generated at the site during construction. Dust palliatives also would be applied between rows of solar panels for dust suppression during operation;*

Table 2.5-1 (continued)
Applicant Measures

Resource	*Applicant Measures*
Geology and Soil Resources (cont.)	
	• *Implement erosion control measures during construction; and* • *Use silt fences for erosion control in the event of a storm event along neighboring properties, Power Line Road and along the main drainage to the east of the Solar Farm site.* *AM-GEO-3. SCE shall undertake the following mitigation measures as part of the Substation Project:* • *Before the final design of the Substation, a combined geotechnical engineering and engineering geology study shall be conducted by SCE to identify site-specific geologic conditions and potential geologic hazards in sufficient detail to support sound engineering. Appropriate mitigations for identified geological hazards will be identified in the geotechnical study.* • *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".* • *New access roads, where required, will be designed to minimize ground disturbance during grading.* • *Cut-and-fill slopes will be minimized by a combination of benching and following natural topography where feasible.* • *Any disturbed areas associated with temporary construction will be returned to preconstruction conditions (to the extent feasible) after the completion of Project construction.* *AM-GEO-4. SCE shall implement the following mitigation measures to reduce impacts from wind and water erosion to soils (additional details are in Section 4.8):* • *Obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit) 2009-0009 DWQ.* • *Use nonhazardous dust suppressants approved by the BLM to suppress wind-blown dust generated at the site during construction.* • *Implement erosion control measures during construction.*
Lands and Realty	
	AM-LAND-1. Property owners within 300 feet of the Project shall be notified of all major Project construction milestones, such as start of Project construction. Said property owners shall be provided with a detailed construction schedule at least 30 days before construction so that they are informed as to the time and location of disturbance. Updates shall be provided as necessary. *AM-LAND-2. The Project shall be designed to minimize disturbance or modification of existing uses such as transmission lines, pipelines, and underground cables. If disturbance or modification of existing uses were necessary, Sunlight shall coordinate with the owners to determine an acceptable solution. Sunlight shall fund any necessary avoidance measures or modifications.*
Noise and Vibration	
	AM-NZ-1: Sunlight and SCE shall limit most construction activity to daytime hours consistent with Riverside County noise ordinance limitations. Certain electrical connection activities at the Solar Farm site would occur at night for safety reasons, but would not require any heavy equipment operations. *AM-NZ-2: SCE shall construct a masonry security wall around the perimeter of the Red Bluff Substation. This wall would also provide localized noise shielding for adjacent areas.*

Table 2.5-1 (continued)
Applicant Measures

Resource	*Applicant Measures*
Public Health and Safety/Hazardous Materials	
	Sunlight shall be responsible for these mitigations: *AM-HAZ-1a: Appropriate spill containment and clean-up kits shall be kept on site during construction and maintained during the operation of the Solar Farm and Gen-Tie Line.* *AM-HAZ-1b: In accordance with the Emergency Planning & Community Right to Know Act, the Applicant shall supply the local emergency response agencies with a Hazardous Materials Management Plan and an associated emergency response plan and inventory specific to the site. The Applicant shall prepare the plan for approval by the BLM and review and comment by the County of Riverside. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11).* *AM-HAZ-1c: During construction of the Solar Farm and Gen-Tie Line, BMPs for handling, storing, and disposing of hazardous materials and waste shall be followed (additional details are in Section 4.11).* *AM-HAZ-1d: An SPCC Plan shall be developed and implemented that would identify primary and secondary containment for oil products stored on site as well as training in spill management in the event of an unexpected release. The Applicant shall prepare the plan for approval by the BLM and review and comment by the County of Riverside. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11).* *AM-HAZ-1e: The Applicant shall develop an Environmental Health and Safety Plan for the construction and operation of the Project to ensure it includes all activities and compliance to all local, state and federal regulatory requirements. Illness and Injury Prevention Programs will be developed for construction and operation. The Applicant shall prepare the plan for approval by the BLM. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11).* *AM-HAZ-2: Based on the preliminary information provided in the Phase I ESA and the Class I cultural inventory of the Project Site, the Applicant proposes to take the following steps to better determine the nature and extent of potential MEC issues and then take appropriate corrective action measures. The first step is to better delineate the history of military activities within the proposed Project footprint. This step would include further research regarding prior MEC removals that may have been issued in the past for certain areas by military or other investigating entities, and may include consultations with DoD personnel and archival research. As a result of the historical occurrence of military training activities throughout the DTC-CAMA, potentially including the Project area, this MEC consultation and archival research will address the entire Project footprint, including the specific areas of concern identified by the Phase I ESA and cultural resource surveys. With that more comprehensive understanding, the Applicant will propose, as necessary, further appropriate above and below-ground assessments, under the direction of an expert consultant team, to delineate areas for further investigation and then removal. The Applicant, under direction from the BLM, will determine which site-specific in-field investigative techniques and methodologies will be used to investigate and resolve potential MEC issues before Project construction. Finally, all construction workers will receive appropriate MEC health and safety awareness training to ensure that they know what actions to take if unanticipated MEC or other suspicious articles are encountered during construction.* *AM-HAZ-3: The Applicant shall provide the County of Riverside with a project-specific Emergency Response and Inventory Plan before construction begins. The Applicant shall prepare the plan for approval by the BLM and review and comment by the County of Riverside. The Applicant shall be responsible for implementing the approved plan (additional details are in Section 4.11).*

Table 2.5-1 (continued)
Applicant Measures

Resource	*Applicant Measures*
Public Health and Safety/Hazardous Materials (cont.)	
	AM-HAZ-4: Project facilities shall be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a project-specific fire prevention plan for both construction and operation of the Solar Farm and Gen-Tie Line will be completed prior to initiation of construction. The fire protection plan shall be approved by the BLM and provided to Riverside County for review and comment. *Sunlight shall have a Project-specific fire prevention plan in place during construction, operation and decommissioning of the Project. This plan shall comply with applicable County of Riverside regulations and would be coordinated with the BLM Fire Management Officer and the local Fire Department in the Chuckwalla Valley at Tamarisk Park.* *AM-HAZ-5: An emergency response plan and site security plan shall be completed for the Project facilities by qualified professionals. These plans shall be developed in accordance with the BLM and DOE requirements (additional details are in Section 4.11).* ***SCE shall be responsible for these mitigations*:** *AM-HAZ-2: Same as above for Sunlight.* *AM-HAZ-6a: SCE shall implement standard fire prevention and response practices for the construction activities where hazardous materials are in use. SCE shall be responsible for implementing the approved plan (additional details are in Section 4.11).* *AM-HAZ-6b: As applicable, SCE shall follow fire codes per California Department of Forestry and Fire Protection (2008) requirements for vegetation clearance during construction of the Project to reduce the fire hazard potential.* *AM-HAZ-6c: Hazardous materials and waste handling shall be managed in accordance with the following plans and programs that SCE shall be responsible for implementing:* • *Spill Prevention, Control and Countermeasures Plan (SPCC Plan)* • *Hazardous Materials Business Plans (HMBPs)* • *Storm Water Pollution Prevention Plan (SWPPP)* • *Health and Safety Program* • *Hazardous Materials and Hazardous Waste Handling* • *Emergency Release Response Procedures* *AM-HAZ-6d: Hazardous materials shall be used or stored and disposed of in accordance with federal, state, and local regulations.* *AM-HAZ-6e: The Substation shall be grounded to limit electric shock and surges that could ignite fires.* *AM-HAZ-6f: All construction and demolition waste shall be removed and transported to an appropriately permitted disposal facility.* *AM-HAZ-7: SCE shall submit FAA Form 7460-1 and receive a Determination of No Hazard to Navigable Airspace and comply with any AC 70/7460-1K (Obstruction Marking and Lighting) requirements from the FAA for construction of the 185-foot microwave tower associated with the Desert Center Communications Site.*

Table 2.5-1 (continued)
Applicant Measures

Resource	Applicant Measures
Public Health and Safety/Hazardous Materials (cont.)	
	AM-HAZ-8: SCE shall provide the BLM and the County of Riverside with a project-specific Emergency Response and Inventory Plan before construction begins. SCE shall be responsible for implementing the approved plan (additional details are in Section 4.11). AM-HAZ-9: Project facilities shall be designed, constructed, and operated in accordance with applicable fire protection and other environmental, health and safety requirements. In compliance with County of Riverside requirements, a project-specific fire prevention plan for both construction and operation of the Substation shall be completed by SCE prior to initiation of construction. Additional detail is provided in Section 4.11. AM-HAZ-10: Develop and implement a fire prevention plan. Before the construction permit is issued, the Applicant shall develop and implement a fire protection plan for use during construction and operation. The Applicant shall submit the fire plan, along with maps of the Project site and access roads, to CAL FIRE/Riverside County Fire Department for review and approval before construction begins. Additional detail is provided in Section 4.11
Recreation	
	No mitigation proposed.
Socioeconomic and Environmental Justice	
	AM-SOCIO-1: The public shall be notified of Project activities and scheduling to inform the public of projected impacts on the surrounding area. This notification shall provide the public with the opportunity to plan their personal and business activities appropriately. AM-SOCIO-2: Sunlight shall align Gen-Tie lines along existing linear features (such as Kaiser Road) to minimize the social effects of potential visual impacts.
Special Designations	
	AM-SD-1: During operation and maintenance of Red Bluff Substation, lights shall normally be off. Where needed during emergency and scheduled work during the night, lights shall be shielded, shall be directed downward, and shall be motion sensitive to minimize glare in surrounding areas. Mitigation measures described for Cultural Resources, would be implemented to reduce impacts on cultural resources within the Alligator Rock ACEC.
Transportation and Public Access	
	AM-TRANS-1: Sunlight shall prepare a Construction Traffic Control Plan in conjunction with Riverside County or Caltrans in accordance with Caltrans Manual on Uniform Traffic Control Devices and the California Joint Utility Traffic Control Manual (2010). Details are provided in Section 4.15. AM-TRANS-2: Sunlight shall document road conditions at the beginning and end of Project construction and decommissioning and contribute fair share cost for pavement maintenance and other needed repairs. AM-TRANS-3: Sunlight shall share Project information with the airport owners if a transmission line alternative that runs near the former Desert Center Airport's runway is selected to assure that no special precautions are needed. AM-TRANS-4: BLM shall coordinate with the DoD R-2508 Complex Sustainability Office, Region IX, based in San Diego, California, and with local regional military installations regarding low-level flight operations relative to the Project to assure that no special precautions are needed.
Visual Resources	
	No mitigation proposed.

Table 2.5-1 (continued)
Applicant Measures

Resource	Applicant Measures
Water Resources	
	AM-WAT-1 training construction staff in the management of hazardous materials and use of spill control and cleanup equipment; AM-WAT-2 having a clear chain of command within the organizational structure with responsibility for implementing, monitoring, and correcting BMPs; AM-WAT-3 covering and containing hazardous materials so that they are not in contact with precipitation or runoff; AM-WAT-4 storing hazardous materials in one or more central areas, and instituting rules requiring all hazardous materials to be secured at the end of the day; AM-WAT-5 maintaining good inventory records; storing hazardous liquids and dispensing equipment in secondary containment; AM-WAT-6 maintaining adequate quantities of spill containment and response equipment at readily accessible points throughout the site; AM-WAT-7 identifying the worst case and most likely spill scenarios, and providing spill response equipment adequate to respond to these scenarios; AM-WAT-8 using chemicals presenting the least environmental hazard wherever possible; AM-WAT-9 storing the smallest quantities of hazardous materials possible on the site; AM-WAT-10 maintaining site security to reduce vandalism; AM-WAT-11 requiring all contractors to abide by the program BMPs and to identify any hazardous materials and specific BMPs pertaining to their trade or activity. The SPCC Plan for the site would address storage of mineral oil contained in transformers. A SPCC Plan is required when 10,000 gallons or more of mineral oil in electrical equipment is contained on site, or when 1,320 gallons of petroleum is stored on the site, although an SPCC Plan can be voluntarily implemented for lesser quantities. The SPCC Plan would address methods and procedures for managing these products, lighting, security, containment requirements, training requirements, staff responsibilities for inspecting storage and dispensing equipment; and equipment and procedures for responding to a spill or release of stored petroleum products. Among the features that are incorporated into the Project design to address potential impacts on water resources are the measures identified in the Storm Water Hydrology Report for Alternative B (AECOM. 2010b; Appendix G) to reduce flooding and erosion effects associated with the 100-year design runoff event. The modeling results indicate that the most effective measure to reduce runoff depth and velocity would be AM-WAT-12 decompacting the soil between solar panels to increase infiltration potential. AM-WAT-13 Riprap increases surface roughness and slows runoff velocities, decreasing sediment transport, and increasing flow depth. Riprap would be used in conjunction with decompaction, as riprap would not mitigate flow or volume. AM-WAT-14 Retention basins could be located along the upstream western boundary of the Project site to intercept run on storm water flows. The intent of this measure is to reduce overall flow depths, velocities and outflow volume by retaining run-on storm water volume. They would also reduce sediment transport within the Project site. AM-WAT-15 Check dams can be constructed to address specific post-development hydraulic characteristics that remain after implementation of the decompaction measure. Check dams could be located near the downstream southern boundary of the Project site to intercept run off. Check dams would have an effect on the storm water upstream of each dam because the storm water would back up behind each dam. Check dams would also reduce flow velocities and would retain sediment. AM-WAT-16 Strip detention basins would be approximately six inches deep and 70 feet wide, and would be designed to follow the topographic contours of the site, so their lengths would be dependent on the locations of the basins on the site. These detention basins could be located near the downstream southern boundary of the Project site to intercept run off storm water flows. The intent of this measure is to reduce outflow volume by detaining run-off storm water volume, similar to the check dam measures. Strip detention basins would not have an effect on the storm water upstream of each basin but would reduce flow velocities and sediment transport leaving the Project site.

Dust Control Plan

Sunlight will prepare a dust control plan incorporating appropriate best practices for management of dust during construction activities for the Solar Farm site and Gen-Tie Line.

Hazardous Materials Management Plan

This plan would be prepared, if necessary, prior to construction and/or operations according to applicable regulations.

Geotechnical Investigation

Sunlight will complete a geotechnical investigation for the Gen-Tie Line before final design and construction of the Project (one has already been completed for the Solar Farm site).

Sulfur Hexafluoride (SF6) Management Plan

Sunlight will prepare a management plan, incorporating appropriate best practices for management of SF6, in accordance with EPA guidelines.

Spill Prevention Control and Countermeasure Plan

Sunlight will prepare an SPCC Plan due to the presence on the site of oil-containing transformers. Prior to Project operation, a SPCC Plan will be prepared based on current EPA 40 CFR Part 112 rule.

Waste Management Plan

All construction and operational wastes produced at the Project locations would be properly collected, recycled (if possible), treated (if necessary), and disposed of in an appropriate manner and in full compliance with all regulatory requirements. Project wastes would include sanitary wastewater, nonhazardous waste, and potentially small quantities of hazardous waste, primarily liquid. Domestic waste streams such as showers and toilets would be treated using a septic tank and leach field. Heavy solids would settle to the bottom of the septic tank to undergo anaerobic decomposition and slight compaction, and will be removed, as necessary. Liquid effluent from the septic tanks will be distributed to a leach field. It is expected that the leach field will satisfy the needs of the DSSF for its entire service life. The leach field would be constructed of open tile drains laid in trenches filled with gravel or crushed stone. The trenches permit downward percolation or upward evaporation and transpiration.

Biological Resources Plans

The following biological resources management plans are being prepared for the Project. Drafts of these plans are provided in Appendix H.

Avian and Bat Protection Plan

The Avian and Bat Protection Plan (ABPP) is intended to reduce the potential risks for avian and bat mortality caused by actions performed by Sunlight in construction and operation of the Solar Farm and Gen-Tie Line; and by SCE in construction and operation of its Project components (Red Bluff Substation and associated access road, distribution line and telecommunications site).

This plan is modeled on the recommendations of the U.S. Fish and Wildlife Service (USFWS or Service) in its *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities*. Although this document is applicable to wind energy, rather than solar energy, projects, USFWS recommends that this template be used, to the extent appropriate, for solar projects. This plan also follows the Avian and Bat Protection Plan Guidelines developed jointly by Edison Electric Institute's Avian Power Line Interaction Committee (1994, 2006) and the USFWS (2000, 2003, 2010). Additionally, the ABPP is consistent with applicable federal and state regulations established by the BLM and other regulatory agencies such as the *Northern and Eastern Colorado Desert Coordinated Management Plan* (NECO Plan, BLM and CDFG 2002).

Common Raven Management Plan

The primary objective of this Raven Management Plan is to protect the juvenile and hatchling desert tortoises from predation by common ravens. They would be protected by eliminating or minimizing all aspects of human impact that attract ravens (garbage, surface water, animal and plant waste materials, perching sites, nesting sites, and roosting sites).

The secondary objective is to avoid lethal removal of ravens by installing passive bird deterrents. The final objective of this plan is to comply with the regional management actions of the agencies cooperating in the effort to promote tortoise recovery pursuant to the *Final Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise* (USFWS 2008a).

Habitat Compensation Plan

The Applicant will compensate for impacts identified to sensitive biological resources either by acquiring mitigation land or conservation easements in areas accepted and approved by the relevant agencies, or by providing funding for land acquisition, endowment, restoration, and management actions under one of several programs, including the recently approved mitigation program created by California Senate Bill 34 (SB 34). The precise details of the mitigation will be established in the BLM Right of Way Grant, USFWS Biological Opinion, and CDFG 2080.1 Consistency Determination.

Desert Tortoise Translocation Plan

The desert tortoise (*Gopherus agassizii*) is a federally and state-listed threatened species known to inhabit the Proposed Action location and immediately surrounding areas. The purpose of the *Desert Tortoise Translocation Plan* is to describe the translocation effort for the Proposed Action. The goals of the plan are to (1) translocate desert tortoises from the Solar Farm site and Substation to identified recipient sites; (2) minimize take of desert tortoises from Project activities; and (3) assess the effectiveness of the translocation effort through a long-term monitoring program.

Integrated Weed Management Plan

Sunlight is currently in the process of developing a plan for vegetation management at the Solar Farm site. Several different options for revegetating the site after construction are being considered. Sunlight is coordinating with the BLM, USFWS, CDFG, Riverside County, and the California Native Plant Society to determine the best methods and species to employ in the revegetation plan. An Integrated Weed Management Plan will be developed and implemented to control invasive exotic weeds and will comply with existing BLM plans and permits including the *Vegetation Treatments Using Herbicides* (2007) and *Vegetation Treatment Final EIS* (2007).

Health and Safety Plan

The DSSF would follow OSHA and CalOSHA requirements in its construction and operating activities. A safety and compliance director would be assigned to the DSSF to ensure that safety is given the highest priority. A site-specific Health and Safety Plan would be developed prior to construction, identifying the roles and responsibilities of every employee with respect to safety on the DSSF. The Plan would be kept on-site at all times.

Environmental Inspection and Compliance Monitoring Plan

Sunlight will develop an Environmental Inspection and Compliance Monitoring program and plan for the DSSF, covering both construction and operation. A qualified individual would be designated to serve as the DSSF's Environmental Manager. The Environmental Manager would be responsible for development and implementation of the DSSF's compliance program. They would be responsible for communication and coordination with the applicable regulatory agencies and ensuring compliance with the various conditions and requirements of the full range of Project permits and approvals. The Environmental Manager would be responsible for the necessary record keeping and reporting required by DSSF permits. They would ensure that all applicable plans are up-to-date (e.g., DSSF SPCC Plan). The Environmental Manager's role would include advising Project management of actual and potential compliance/non-compliance issues and for ensuring that Project planning takes appropriate account of compliance issues in advance.

Cultural Resources Monitoring and Mitigation Plan

A cultural resources monitoring and mitigation plan would be developed prior to construction that would identify areas to be monitored during construction by a qualified archaeologist. A discovery plan would be included in the monitoring and mitigation plan that describes procedures to be followed in the event that subsurface archaeological materials are encountered during construction. The monitoring and mitigation plan would also include provisions for the education of construction workers about the importance of preserving significant cultural properties, and a process would be established for the workers to report and protect suspected discoveries. Curation of recovered archaeological materials would be arranged with an accredited curation facility.

Paleontological Resources Monitoring and Mitigation Plan

A paleontological resources monitoring and mitigation plan would be developed prior to construction that identifies areas to be monitored during construction by a qualified paleontological professional. The plan would include measures to be followed in the event that fossil materials are encountered during construction. The plan would include worker awareness training to ensure that the construction personnel understand requirements and procedures to be followed in the event of suspected fossil discoveries. Curation of recovered fossils will be arranged with an appropriate curation facility.

Fire Protection during Construction

The Applicant would have a Project fire prevention plan in place during construction. This plan would comply with applicable Riverside County regulations and would be coordinated with the local

Fire Department in the Chuckwalla Valley at Tamarisk Park. During construction, the following steps would be taken to identify and control fires and similar emergencies:

- A network of access roads would be constructed for adequate fire control and emergency vehicle access to the construction areas.
- Electrical equipment that is part of the DSSF would only be energized after the necessary inspection and approval, so there is minimal risk of any electrical fire during construction.
- Project staff would monitor fire risks during construction and operation to ensure that prompt measures are taken to mitigate identified risks. The Applicant's staff vehicles would be equipped with fire extinguishers.
- Transformers located on site would be equipped with non-toxic, mineral-oil-based coolant that is non-flammable, biodegradable and contains no polychlorinated biphenyls or other toxic compounds.
- Nonnative species would be managed per a Weed Management Plan prepared for the Project locations.

Red Bluff Substation

Geotechnical Study

Before the start of construction, SCE would prepare a geotechnical study of the Substation site and associated elements that would include 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.

Hazardous Materials and Waste Management

Construction of the Red Bluff Substation and related elements would require the limited use of hazardous materials, such as fuels, lubricants, and cleaning solvents. All hazardous materials would be stored, handled and used in accordance with applicable regulations.

The SWPPP prepared for the Red Bluff Substation Project would provide the locations for storage of hazardous materials during construction, as well as protective measures, notifications, and cleanup requirements for any incidental spills or other potential releases of hazardous materials.

Construction of the Red Bluff Substation Project would result in the generation of various waste materials that can be recycled and salvaged. Waste items and materials would be collected by construction crews and separated into roll-off boxes at the materials staging area. All waste materials that are not recycled would be categorized by SCE in order to ensure appropriate final disposal. Nonhazardous waste would be transported to local authorized waste management facilities.

Dust Control Plan

SCE will prepare a dust control plan incorporating best practices for controlling dust during construction of the Red Bluff Substation.

Health and Safety Plan

Before construction, SCE will implement a plan including a worker safety and environmental training program.

Environmental Monitoring Plan

An environmental inspection and monitoring plan for construction of the Red Bluff Substation will be developed and implemented. The plan will include a cultural resources and biological resources mitigation monitoring plan including a Workers Environmental Awareness Program.

Post-Construction Cleanup

Any damage to existing roads as a result of construction would be repaired once construction is complete, 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 Red Bluff Substation Project to as close to preconstruction conditions as possible, or, where applicable, to the conditions agreed on between the landowner (or land manager) and SCE. In addition, all construction materials and debris would be removed from the area and recycled or properly disposed of off-site at local authorized waste management facilities. SCE would conduct a final inspection to ensure that cleanup was successfully completed.

2.6 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

An integral part of the search for a suitable site included an evaluation *by Sunlight* of the availability of electric transmission capacity throughout SCE's service territory. California's transmission grid system poses a number of challenges to the interconnection of a power plant. Many potential locations for the interconnection of a power plant would require lengthy and expensive system upgrades in order to integrate the new capacity into the transmission system. By contrast, SCE's Devers-Palo Verde transmission line provides a unique opportunity to interconnect the Project at a point on the system with available electric transmission capacity. The Devers-Palo Verde line runs from the Devers Substation located near Desert Hot Springs in Riverside County, through the Coachella Valley and along the I-10 corridor through the Chuckwalla Basin, and eventually into the Palo Verde Substation in La Paz County, Arizona.

Several factors, including incompatible uses on public land and highly subdivided private land, eliminated the western end of the Devers-Palo Verde line from consideration for the Project. Much of the area near the Devers end of the transmission line has already been developed with wind farms. The land along Devers-Palo Verde line between Desert Hot Springs and Coachella is composed of multiple, densely populated cities and productive agricultural land, and is divided into relatively small parcels. Land in that region is thus more expensive and poses challenges for assembling a contiguous site large enough for a cost-effective interconnection to the transmission line. Within the Coachella Valley itself, many of the properties are subject to agricultural conservation contracts under the Williamson Act, preventing solar development on those parcels. Together, these factors eliminated the Devers-Coachella Valley portion of the transmission line.

From the Coachella Valley east along the Devers-Palo Verde line to the Chuckwalla Valley, the I-10 corridor is characterized by steep terrain unsuitable for solar development and interrupted by scattered private parcels. As a result, the Coachella Valley to Chuckwalla Valley portion of the Devers-Palo Verde line was not considered appropriate for the proposed Project.

From the Chuckwalla Valley east toward Blythe along the I-10 corridor, most of the *unencumbered* BLM land is subject to first-in-time applications by other solar projects for rights of way, which would take priority over the proposed Project. There is very little private land available, with the exception of the private parcels excluded from further consideration because they are contained within the Palen Dry Lake, which is a unique environmental feature that is unsuitable for development, in part due to flood hazard. The agricultural community around Blythe is almost entirely active farming land, highly subdivided and largely subject to conservation contracts under the Williamson Act, rendering much of it unavailable for renewable energy development. Much of the remainder of the land area between the Chuckwalla Valley and Blythe is within Desert Tortoise Critical Habitat or Areas of Critical Environmental Concern. One alternative near Blythe on BLM-administered land was eliminated from further consideration, for reasons described below.

Alternatives not carried forward did not meet *one or more of the criteria identified above. They include alternative solar field layouts at the proposed site, other locations on private land, other locations on BLM-administered land, alternative generating technologies, alternative transmission and interconnection locations, and underground gen-tie lines*.

2.6.1 Alternative Layouts in Solar Farm Study Area

Several additional alternatives were considered for siting of the Solar Farm site and the Gen-Tie Lines within the Solar Farm Study Area. The alternatives described below were not carried forward for analysis.

Alternative Layout within Project Study Area (Solar Farm Layout A)

An additional Solar Farm layout was considered within the Project Study Area (SF-A). SF-A is in the same general location as SF-B, though the boundaries of the site are slightly different. SF-A encompasses approximately 4,186 acres, located entirely on BLM land. Elevation at SF-A varies from approximately 619 to 880 feet above mean sea level. The primary difference is in the site's northwest boundary, which pushes farther into occupied desert tortoise habitat and areas of higher concentrations of foxtail cactus. The northwestern portion of the site also contains higher concentrations of burrowing owl. Whereas the footprint of SF-B is estimated to contain approximately 10 to 14 live tortoises, the footprint of SF-A is estimated to contain approximately 24 to 32 live tortoises. Within the footprint of SF-A, 18 individual foxtail cacti were found, whereas within SF-B, 3 were found, and for SF-C, only 1 was found.

Conclusion. Since this layout did not provide any advantage over SF-B and would result in greater impacts to the desert tortoise and foxtail cactus, it was eliminated from consideration.

Larger Project (1,000 MW Project)

Initially, Sunlight applied to the California Independent System Operator (CAISO) to interconnect 1,000 MWs. This includes the current 550MWs proposed for the Project along with additional application for a 450-MW project. A 1,000-MW project in the Project Study Area would have an approximately 8,000-acre footprint and would require land on the east side of Pinto Wash *and to the north of the existing Solar Farm alternatives, SF-B and SF-C*.

Pinto Wash is a large central drainage east of the Solar Farm site that may provide a movement corridor for numerous large mammal species. In addition, the eastern portion of the Solar Farm Study Area (east of Pinto Wash) supports pockets of Sonoran desert scrub on aeolian sand deposits that have been stabilized by shrub and herbaceous vegetation. Approximately 20 acres of active sand dune deposits, which are relatively barren expanses of moving sand and do not support extensive stabilizing vegetation, are located approximately 1 mile east of the Solar Farm alternatives. These dunes are located at the base of the southwest-facing bajada below the Coxcomb Mountains. The 20 acres of stabilized and active sand dunes east of Pinto Wash are suitable habitat for Mojave fringe-toed lizard *and several special-status species*. The Study Area for the proposed Sunlight and SCE components, all located west of Pinto Wash, do not support aeolian sand deposits and therefore are not expected to support *these* species.

The area to the north of the Solar Farm site supports habitats and features that have been demonstrated to support higher densities of desert tortoise in the Project region. Surveys of this area conducted in 2008 determined that the area north of SF-B and SF-C supports higher numbers of desert tortoises and burrowing owls than SF-B and SF-C, and at least one large population of foxtail cactus. The area north of the Solar Farm site supports a number of deep washes with steep banks that support dry desert wash woodlands and may provide movement corridors for large mammal species.

Conclusion. Based on the environmental constraints *identified above*, *the siting of a solar farm in the area to the east and north of proposed SF-B and SF-C* would have greater environmental impacts than the proposed action alternatives *without any technological advantages and is therefore not an appropriate location for siting a large-scale solar energy development project. For this reason*, this alternative was not considered for further analysis.

Direct Desert Tortoise Avoidance Alternative

The Applicant considered a 550-MW alternative that avoided all active tortoise sign, including live tortoise and active burrows found within the area of the Solar Farm Study Area. This alternative also avoided Pinto Wash, the area east of Pinto Wash and the *possible* Bighorn Sheep Corridor located north of the aqueduct in the northern portion of the Solar Farm Study Area. This alternative required a portion of the Project arrays to be located in the southwestern portion of the Solar Farm Study Area.

During the biological surveys conducted for the Project Study Area, no active tortoise sign was found in the southwestern portion of the Solar Farm Study Area; however, just above this southwestern area the Applicant found the highest concentration of desert tortoise within the Solar Farm Study Area. The southwestern portion of the Solar Farm Study Area is located just to the north of the Chuckwalla DWMA. Siting of Project arrays within this area would effectively eliminate the majority of the wildlife corridor between the DWMA and the area of the highest concentration of desert tortoise within the Solar Farm Study Area.

Conclusion. This alternative was determined to have greater environmental impact than the currently proposed project alternatives *without any technological advantages* due to the effective elimination of the wildlife corridor. *In coordination with BLM's partner agencies, CDFG and USFWS, the impacts to the wildlife corridor were considered to be detrimental.* Therefore, this alternative was not carried forward.

2.6.2 Privately Owned Land

Private lands were considered for siting the Solar Farm as well as BLM-administered lands *(see below)*. *The BLM does not typically analyze a non-federal application on public lands because such an alternative does not respond to the BLM's purpose and need to consider an application for the authorized use of public lands for renewable energy development. However,* the use of private lands was identified during scoping. The BLM, to inform the analysis, considered them but did not analyze them in detail.

Private Land within the Chuckwalla Valley

Within the Chuckwalla Valley, three potential sites on private land were eliminated from further consideration. The first site, Desert Center West, is approximately 4 miles west of the town of Desert Center. This site consists of approximately 44 semi-contiguous parcels totaling approximately 4,000 acres and owned by approximately 36 separate owners. The average size of the parcels is approximately 160 acres. The Desert Center West site is not under cultivation and is designated as Desert Tortoise Critical Habitat, so would likely have environmental impacts similar to or greater than those of the Project Study Area. While the Desert Center West site is near the western Red Bluff Substation alternative, existing transmission lines that cross the site further decrease the acreage available for solar development. The total site area available would be less than half of the area necessary for the proposed Project. Developing a portion of the Project here and a portion at another site would *not reduce* environmental impacts and *would* decrease the Project's feasibility by duplicating transmission lines and interconnection facilities.

The second private site eliminated from further consideration, Desert Center Central, lies southeast of the Project Study Area, 3.5 miles northeast from the town of Desert Center, and is composed of mostly disturbed agricultural land. This site is transected by an existing SCE 161kV transmission line. Some of the land is subject to conservation contract under the Williamson Act, preventing current solar development on those parcels. The site is also part of a sand transport corridor, making it less suitable for development. Additionally, the site contains approximately 464 different parcels, owned by approximately 228 owners. The average parcel size is approximately 25 acres. Due to the small parcels and scattered ownership, it would be difficult and expensive, if not impossible, to acquire sufficient contiguous acreage at Desert Center Central for the Project, so it was eliminated from consideration.

The third private site eliminated from further consideration is Desert Center East, located 7.5 miles east of the town of Desert Center. This site consists of 14 parcels totaling approximately 1,800 acres. The average parcel size is approximately 160 acres. Although largely consisting of disturbed land, the total area available would be less than half of the area necessary for the Project. Developing a portion of the Project here and a portion at another site would *not reduce* environmental impacts and *would* reduce Project feasibility by duplicating transmission lines and interconnection facilities. Accordingly, this site was eliminated from further consideration.

Conclusion. *For all three private sites considered, they were eliminated because they do not meet Project objectives, the purpose and need for the Project, or are otherwise not reasonable alternatives (as described above). Therefore, they are not analyzed in further detail.*

Contaminated Sites near the Devers-Palo Verde Corridor

In response to EPA's scoping comments for the proposed Project, *sites were considered as* identified by the EPA in its Renewable Energy Interactive Mapping Tool as contaminated and potentially contaminated Renewable Energy Sites for PV Utility Solar facilities. There were only two sites in the general region of the Devers-Palo Verde line. A 43-acre site identified as "Square D Company" is located in Beaumont, CA approximately 20 miles west of the Devers Substation. A second 35-acre site, "Woten Aviation Services Inc.," is located seven miles southwest of Blythe, CA, and 5 to 10 miles from the proposed Midpoint Substation. Both sites are part of the Resource Conservation and Recovery Act (RCRA) program. However, due to their *small* size, they would not *come close to* *meeting the energy production of the Proposed Action and would require* multiple additional projects to be constructed in order to achieve an amount of renewable energy generation equivalent to the proposed Project, multiplying the impacts of developing interconnection facilities for the equivalent generating capacity.

***Conclusion**. The use of contaminated sites for the proposed Project was eliminated from consideration because it does not meet Project objectives, the purpose and need for the Project, or is otherwise not a reasonable alternative (as described above). Therefore, it is not analyzed in further detail.*

2.6.3 Alternative BLM-Administered Land

Much of the BLM-administered land in the areas with the highest solar energy production potential is precluded from development by special designations such as ACEC, DWMA, wilderness, etc. Many potentially suitable areas outside these designated areas are precluded because they are in use or are proposed for other energy projects (primarily solar).

As described above, most BLM-administered land along the I-10 corridor was eliminated from consideration. An alternative site was considered on BLM-administered land to the southwest of Blythe, known as the Quartzite site. However, the cost of interconnecting a project the size of Desert Sunlight to the Devers-Palo Verde line from Quartzite would have been almost $75 million more than the cost of interconnecting from the Project Study Area. A smaller project is being considered in that area. As a result, the Quartzite site (as previously proposed) was eliminated from further consideration as an alternative to the DSSF Project.

Moving the interconnection point to a different location would also require a new interconnection application, which would re-start the CAISO interconnection process and would delay the project for several years.

***Conclusion.** The use of alternative BLM-administered land was eliminated from consideration because it does not meet Project objectives, the purpose and need for the Project, or is otherwise not a reasonable alternative (as described above). Therefore, it is not analyzed in further detail.*

2.6.4 Alternate Non-Renewable Power Generating Technologies

Nonrenewable generation technologies that require use of natural gas, coal, or nuclear energy *were considered as potential alternatives to the proposed Project. BLM typically does not analyze an alternative for a different technology when a ROW application is submitted for a specific technology because such an application does not respond to the BLM's purpose and need to consider an application for the authorized use of public lands for a specific renewable energy technology. In addition, these projects* would not achieve *a* key objective: to construct and operate *a* generation facility that would contribute approximately 1,000,000 megawatt hours (MWh) of clean, renewable solar energy per year to the State of California's renewable energy goals.

***Conclusion.** Alternative methods of generating or conserving electricity are eliminated from detailed discussion because they would be too great a departure from the application to be considered a modification of the Applicant's proposal, and so are ineffective under NEPA. These alternative methods would not respond to the BLM's purpose and need for the Proposed Action, which is to respond to Sunlight's application for a ROW grant to construct, operate, and decommission a solar photovoltaic facility on public lands in compliance with FLPMA, BLM ROW regulations, and other federal applicable laws. Additionally, none of these alternative methods of generating electricity is within the Applicant's area of expertise; therefore, it would not likely be technically or economically feasible for the*

Applicant to implement them. Moreover, the permitting of new nuclear facilities in California is currently illegal, so this technology also is eliminated as infeasible.

2.6.5 Concentrating Solar Power Technologies

The use of alternative concentrating solar generation technologies was evaluated as potential alternatives to the proposed Project. Although the alternative solar generation technologies would achieve most of the project objectives, each would have different environmental or feasibility concerns. In particular, these technologies would require similar amounts of land as the Project, resulting in similar impacts on biological and cultural resources, and land use, and potentially greater impacts on water use and visual impacts because of towers or other structural features that would be much more visible than those for a PV project.

Conclusion. *Alternative renewable technologies, including concentrating solar power technologies, were eliminated from detailed discussion because they are ineffective. In other words, they would not respond to the BLM's purpose and need for the Proposed Action, which is to respond to Sunlight's application for a ROW grant to construct, operate, and decommission a solar photovoltaic facility on public lands in compliance with FLPMA, BLM ROW regulations, and other federal applicable laws. In addition, this technology is not within the Applicant's area of expertise, and so may not be technically or economically feasible for them to implement.*

2.6.6 Wind Energy

Wind carries kinetic energy that can be utilized to spin the blades of a wind turbine rotor and an electrical generator, which then feed alternating current (AC) into the utility grid. Most state-of-the-art wind turbines operating today convert 35 to 40% of the wind's kinetic energy into electricity. A single 1.5-MW turbine operating at a 40% capacity factor generates 2,100 MWh annually. Wind turbines currently being manufactured have power ratings ranging from 250 watts to 5 MW, and units larger than 7 MW in capacity are now under development (AWEA 2008). The average capacity of wind turbines installed in the United States in 2007 was 1.65 MW (EERE 2008). The technology is well developed and can be used to generate significant amounts of power. There are now approximately 2,490 MW of wind being generated in California (AWEA 2008).

The use of wind energy at the Project locations may be feasible at the scale of the proposed Project but it would not eliminate significant impacts caused by the Project; specifically, there would still be impacts on biological and cultural resources, and visual effects would be greater than with the proposed Project.

Conclusion. *Alternative renewable technologies, including wind energy, were eliminated from detailed discussion because they are ineffective. In other words, they would not respond to the BLM's purpose and need for the Proposed Action, which is to respond to Sunlight's application for a ROW grant to construct, operate, and decommission a solar photovoltaic facility on public lands in compliance with FLPMA, BLM ROW regulations, and other federal applicable laws. In addition, this technology is not within the Applicant's area of expertise, and so may not be technically or economically feasible for them to implement.*

2.6.7 Alternative Transmission and Interconnection Locations

An additional Gen-Tie Line, GT-B-1, was considered for the proposed Project. GT-B-1 exits the southwest corner of the Solar Farm site across Kaiser Road, then turns west and southwest until it intersects with Eagle Mountain Road, then runs south along the east side of Eagle Mountain Road across I-10 to the western location considered for the Red Bluff Substation (Red Bluff Substation B). The transmission corridor encompasses approximately 177 acres. The total length of GT-B-1 is approximately 9.3 miles within a 160-foot-wide corridor. The elevation of GT-B varies from approximately 690 to 1,185 feet above mean sea level. With the exception of one MWD parcel, the entire length of GT-B-1 is within the Chuckwalla DWMA (7.7 miles), and 6.1 miles of it is within Desert Tortoise Critical Habitat (versus 3.5 miles in the DWMA and 3.8 miles in Critical Habitat for GT-B-2). It would also require removal of approximately 1,475 foxtail cactus (versus 575 for GT-B-2, 1 for GT-A-1, and none for GT-A-2), and could disturb more potentially significant cultural resource sites than the other Gen-Tie Lines. Since this layout did not provide any advantage over the other Gen-Tie Line that would provide a connection to Red Bluff Substation B and would result in greater impacts to the DWMA, Desert Tortoise Critical Habitat, foxtail cactus, and cultural resources, it was eliminated from consideration.

The Applicant also considered alternative locations where the Project would interconnect with the regional grid. Sunlight considered the possibility of interconnecting with the existing MWD 230-kV line at the MWD Eagle Mountain Substation that is near the Project Study Area and then interconnecting with the SCE system farther west (for example, at the Julian Hinds Substation). However, investigation revealed limited capacity at this location that rendered this alternative infeasible. Instead, SCE indicated a plan to develop a substation in the general area of Desert Center (the Red Bluff Substation). This approach, and then identifying potential transmission corridors from the Solar Farm Study Area to interconnect with the SCE system at the Red Bluff Substation with the fewest possible impacts, became the approach that the Applicant has pursued.

Conclusion. *Since the alternative transmission line (GT-B-1) did not provide any technological advantage over GT-B-2 and would result in greater impacts to the DWMA, Desert Tortoise Critical Habitat, foxtail cactus, and cultural resources, it was eliminated from consideration.*

The alternative interconnection with the regional grid was eliminated because it is technologically and economically infeasible.

2.6.8 Distributed and Rooftop Photovoltaics

A distributed solar alternative would consist of PV panels that would absorb solar radiation and convert it directly to electricity *(similar to First Solar's technology and all PV technologies)*. The PV panels could be installed on private or publicly owned residential, commercial, or industrial building rooftops or in other disturbed areas such as parking lots or disturbed areas adjacent to existing structures such as substations. To be a viable alternative to the proposed Desert Sunlight Solar Farm, there would have needed to be sufficient newly installed panels to generate 550 MW of capacity.

California currently has over 500 MW of distributed PV systems which cover over 40 million square feet (CPUC 2009). During 2008, 158 MW of distributed PV was installed in California, doubling the amount installed in 2007 (78 MW), and with 78 MW installed through May 2009, installation data suggests that at least the same amount of MW could be installed in 2009 as in 2008 (CPUC 2009).

Yet at this rate of installation, achievement of the California Renewables Portfolio Standard would be delayed well beyond the 2010 and 2020 deadlines. Even if distributed installation of 550 MW per year could be achieved, adding over 1 TWh of electricity generation capacity per year (equivalent to the size of the proposed Project), it would take over 50 years to obtain the level of electricity generation from renewable sources that will be required to meet California's 33 percent RPS deadline in 2020. *There would have to be a significant acceleration of installation of both distributed and nondistributed generation to meet the goals defined in California's RPS. Large-scale projects play an important role in meeting these goals.*

Conclusion. *A distributed solar alternative was eliminated from detailed discussion because it does not respond to the BLM's purpose and need for the Proposed Action, which is to respond to Sunlight's application for a ROW grant to construct, operate, and decommission a solar photovoltaic facility on public lands in compliance with FLPMA, BLM ROW regulations, and other federal applicable laws. Additionally, the Energy Policy Act of 2005 established a goal for the Secretary of the Interior to approve 10,000 MW of non-hydropower renewable energy projects located on public lands. The Act reflects Congress's conclusion that installation of renewable energy technologies on public lands capable of producing at least 10,000 MW is appropriate. Given the current state of the technology, only utility-scale renewable energy generation projects are reasonable alternatives to achieve this level of renewable energy generation on public lands. Furthermore, the BLM has no authority or influence over the installation of distributed generation systems, other than on its own lands.*

2.6.9 Underground Installation of Gen-Tie Lines

Commenters on the Draft EIS suggested that an alternative be considered in which the Gen-Tie Lines are installed underground rather than overhead. This was suggested because the overhead lines would be highly visible and would be installed in areas that currently do not have high-voltage transmission lines. This section considers the environmental effects and the feasibility concerns relating to an underground line.

Underground transmission lines at 230 kV have been installed or are planned to be installed in California by Pacific Gas & Electric Company (its Northeast San Jose, Tri-Valley, and Jefferson-Martin Projects) and by San Diego Gas & Electric Company (its approved Otay Mesa and Sunrise Powerlink Projects). These lines, or portions of them, have been installed underground either due to congested urban areas where there is inadequate space for overhead high voltage lines, or (in the case of Tri-Valley and Jefferson-Martin) to reduce visual impacts in scenic areas.

Environmental Impacts. *While underground lines would reduce the visual effects of the transmission lines, they have several disadvantages with respect to their environmental impacts. The impacts are driven mostly by construction disturbance. The construction of underground transmission lines requires substantial ground disturbance to install the trench and cables. Of the approximately 30 miles of Gen-Tie Line Alternatives illustrated in Figure 2-1, about 6 miles would parallel a paved roadway (Kaiser Road). This 6-mile segment could likely be installed within the paved portion of this road so would require minimal disturbance of desert habitat, but the remainder of the route would be installed in dirt roads or in undisturbed desert.*

The trench for a 230-kV line could vary from about 3 feet to 6 feet wide depending on the configuration of the cables within the trench. A construction work area from 25 to 50 feet wide is required parallel to the trench for construction equipment, resulting in temporary disturbance to habitat. In unpaved areas, the area above the trench (generally a 20 or 25-foot-wide road) would have to remain clear and accessible for the life of the project, a permanent loss of habitat.

The environmental impacts of installing underground transmission lines have been defined in detail in several completed CPUC EIRs including the following, all of which included underground segments that have been constructed:

- *PG&E Jefferson-Martin 230 kV Transmission Project (Application No. A.02-09-043, approved in CPUC Decision D.04-08-046);*

- *PG&E Tri-Valley Capacity Increase Project (Application No. A.99-11-025, approved in CPUC Decision D.01-10-029); and*
- *SDG&E Otay Mesa Power Purchase Agreement Transmission Project (Application No. A.04-03-008, approved in CPUC Decision D.05.06.061).*

Other CPUC EIRs have evaluated underground transmission line segment alternatives and rejected them for a variety of reasons, including their potential for environmental impacts (e.g., Miguel-Mission 230 kV #2 Project, A.02-07-022, Final EIR, June 2004). As defined in those documents, the impacts resulting from construction or operation of underground transmission lines include the following:

- *Biological resources would be affected by loss of habitat due to construction required outside of paved roadways. The loss of desert tortoise habitat, and habitat for other species, would be substantially greater than that lost for overhead transmission line construction.*
- *There would be a substantially greater likelihood of encountering subsurface cultural resources.*
- *Air emissions would be greater due to the construction equipment required to construct a continuous trench, the dust from trenching and more trucks driving on unpaved roads, and increased truck trips to haul trench spoils and import thermal back-fill.*
- *Construction noise would be increased, both in time and severity.*
- *Traffic impacts would be greater because additional vehicles would be required to haul trench spoils and import back-fill. Construction in Kaiser Road would require closure of at least one lane.*

Concerns about Cost, Expansion, and Maintenance. *First Solar provided a report entitled "Gen-Tie Undergrounding Report; Desert Sunlight Solar Farm Project" (First Solar, 2011), which summarized underground installations in the U.S. and presented potential design for the underground gen-tie. The report also listed additional concerns, including the potential for third-party construction damage to the buried facilities, concerns about additional time required to repair the line in the event of an outage, and limitations on expansion for future additional lines. Cost is also a major concern to the developer, since construction of underground transmission lines costs up to 8.5 times more than overhead lines. These increased costs negatively affect the Project's financial viability, especially when coupled with the considerable technical and environmental risks involved with underground transmission line design.*

The First Solar report presents a concern about underground lines: that expansion of the capacity of a transmission line, or addition of future circuits, would be more difficult. The report also explains that the addition of future circuits could be accommodated by increasing cable spacing or constructing a larger duct bank (leaving empty spaces for future cables), or by construction of a parallel duct bank separated by an adequate distance to allow heat dissipation. These approaches would also increase construction cost.

Underground transmission lines are less accessible than overhead lines, so line maintenance is more challenging. It is more difficult to know where an outage has occurred, so outages of an underground line can be more time-consuming both to find the problem and to repair it.

Conclusion*. BLM and the CPUC have evaluated the information included in First Solar's report and have determined that, based on the Agencies' own experience, expertise and research, undergrounding Desert Sunlight's Gen-Tie Lines would be infeasible. Although the technology for underground transmission lines is available and has been used to reduce visual impacts and to avoid overhead construction through congested areas by major utilities in California, the increased environmental impacts that would result in other resource areas does not justify the use of* *undergrounding in this case. Specifically, the lack of adequate paved roadways for installation of the Gen-Tie Lines serving the Desert Sunlight Project would result in substantially greater impacts in biological resources, cultural resources, air quality, and noise than for the overhead gen-ties. The additional costs and technical risks associated with undergrounding also make it undesirable under these conditions. As a result, the underground gen-tie alternative has been eliminated from detailed consideration.*

CHAPTER 3 – AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the affected environment (environmental setting) of the Project Study Area. It provides information on the physical, biological, cultural, socioeconomic, and other resources that have the potential to affect or be affected by activities related to implementing the Proposed Action or alternatives that are discussed in detail in Chapter 2. These resources include those that occur within the proposed Project area, or adjacent to or otherwise associated with the area. More detailed information for some resources (noise, air quality, biological resources, hydrology, geology, traffic, and hazardous waste) is provided in the technical reports or supporting information provided as technical appendices to this EIS. For the purpose of this document, the environmental setting, or "baseline," used for the impact analysis reflects conditions at the time of issuance of the Notice of Intent (NOI) in January 2010.

The following resources are evaluated in this EIS:

- Air resources;
- Vegetation;
- Wildlife;
- Climate change;
- Cultural resources;
- Paleontological resources;
- Geology and soil resources;
- Lands and realty;
- Noise;
- Public health and safety/hazardous materials (includes wildland fire);
- Recreation;
- Socioeconomics and environmental justice (includes public services);
- Special designations;
- Transportation and public access;
- Visual resources; and
- Water resources.

The following resources would not be affected by the Proposed Action or alternatives and are not further evaluated in this EIS:

- Livestock grazing—There is no known livestock grazing within or adjacent to the Project Study Area;

- Wild horse and burros—There are no known wild horse or burro populations within or surrounding the Project Study Area; and
- Mineral resources—There are no known locatable, leasable, or salable mineral resource deposits or mineral resource rights within or adjacent to the Project Study Area.

For each resource, a discussion of applicable plans, policies, and regulations is provided. All applicable federal, state, and local laws, regulations, and policies are summarized and their applicability to the Project explained. It is assumed in the analysis that the Applicant (in this case, Sunlight) and Southern California Edison (SCE) will fully comply with all regulations applicable to their respective Project components, will prepare any required plans, and will obtain any necessary permits or waivers. For the Red Bluff Substation, in accordance with California Public Utilities Commission (CPUC) General Order 131D, public utility providers such as SCE are not subject to local jurisdiction. CPUC General Order 131D specifically requires public utility providers to consult with local agencies on land use issues, but ultimately the CPUC has the authority to permit public utility projects *on private lands*.

The environmental setting (existing conditions) of the Project area is described using information from literature reviews, fieldwork, and input from appropriate federal, state, and local agencies. Where appropriate, the resource sections in this chapter define and describe a resource-specific region of influence (ROI), which serves as the baseline for the environmental impact analysis. Defining these conditions (such as existing air quality, biological and cultural resources, water resources, and recreational opportunities) allows for characterization and anticipation of the proposed Project's impacts and forms the basis for the environmental analysis. Sources for the literature reviews included published technical reports, internet resources, data from government sources, aerial photographs, and information provided by the Applicant. Where existing information regarding the Project area was insufficient or outdated, or where surveys or studies were specifically required by jurisdictional agencies, surveys and studies were conducted to determine the existing environmental conditions. This work included gathering information for biological and cultural resources, air quality, geotechnical, visual resources, and jurisdictional delineation surveys.

As discussed in Chapter 1, the Project is subject to environmental review under the National Environmental Policy Act (NEPA). In addition, since the CPUC has permitting authority over the Red Bluff Substation, CPUC may use this EIS for its environmental review under the California Environmental Quality Act (CEQA). As a result, this EIS was written to comply with NEPA and to satisfy CEQA requirements for those project components that require entitlements from state and local agencies, in accordance with CEQA Guidelines Section 15221. Due to the similarity in information requirements for both NEPA and CEQA, the existing conditions setting described in this chapter serves both purposes.

3.2 AIR RESOURCES

The term “pollutant emissions” refers to the amount (usually stated as a weight) of one or more specific compounds introduced into the atmosphere by a source or group of sources. In practice, most pollutant emissions data are presented as “emission rates”: the quantity of pollutants emitted during a specified increment of time or during a specified increment of emission source activity. Typical measurement units for emission rates on a time basis include pounds per hour, pounds per day, or tons per year. Typical measurement units for emission rates on a source activity basis include pounds per thousand gallons of fuel burned, pounds per ton of material processed, and grams per vehicle mile of travel.

The term “ambient air quality” refers to the atmospheric concentration of a specific compound (quantity of pollutants in a specified volume of air) actually experienced at a particular geographic location that may be some distance from the source of the relevant pollutant emissions. The ambient air quality levels actually measured at a particular location are determined by the interactions among three groups of factors:

- Emissions: the types, amounts, and locations of pollutants emitted into the atmosphere;
- Meteorology: the physical processes affecting the distribution, dilution, and removal of these pollutants; and
- Chemistry: any chemical reactions that transform pollutant emissions into other chemical substances.

In a regulatory context, “ambient air” refers to outdoor locations to which the general public has access. Ambient air quality data are generally reported as a mass per unit volume (e.g., micrograms per cubic meter of air) or as a volume fraction (e.g., parts per million by volume).

Air pollutants are often characterized as being “primary” or “secondary” pollutants. Primary pollutants are those emitted directly into the atmosphere (such as carbon monoxide, sulfur dioxide, lead particulates, and hydrogen sulfide). Secondary pollutants are those (such as ozone, nitrogen dioxide, and sulfate particles) formed through chemical reactions in the atmosphere; these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere, and other secondary pollutants. Those compounds which react to form secondary pollutants are referred to as reactive pollutants, pollutant precursors, or precursor emission products. Some air pollutants (such as many organic gases and suspended particulate matter) are a combination of primary and secondary pollutants.

3.2.1 Applicable Plans, Policies, and Regulations

Air Quality Standards

Federal and state air quality management programs have evolved using two distinct management approaches:

- The State Implementation Plan (SIP) process of setting ambient air quality standards for acceptable exposure to air pollutants, conducting monitoring programs to identify locations experiencing air quality problems, and then developing programs and regulations designed to reduce or eliminate those problems; and

- The Hazardous Air Pollutant (HAP) regulatory process identifying specific chemical substances that are potentially hazardous to human health, and then setting emission standards to regulate the amount of those substances that can be released by individual commercial or industrial facilities or by specific types of equipment.

Criteria Air Pollutants

Air quality programs based on ambient air quality standards typically address air pollutants that are produced in large quantities by widespread types of emission sources and which are of public health concern because of their toxic properties. The U.S. Environmental Protection Agency (EPA) has established ambient air quality standards for several different pollutants, which often are referred to as criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, suspended particulate matter, and lead). Standards for suspended particulate matter have been set for two size fractions: inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$). Federal ambient air quality standards are based primarily on evidence of acute and chronic health effects. Federal ambient air quality standards apply to outdoor locations to which the general public has access.

Some states have adopted ambient air quality standards that are more stringent than the comparable federal standards or to address pollutants that are not covered by federal ambient air quality standards. Most state ambient air quality standards are based primarily on health effects data, but can reflect other considerations such as protection of crops, protection of materials, or avoidance of nuisance conditions (such as objectionable odors). Table 3.2-1 summarizes ambient air quality standards adopted by EPA and the California Air Resources Board (CARB).

Table 3.2-1
State and National Ambient Air Quality Standards Applicable In California

Pollutant	Averaging Time	Standards in Parts Per Million by Volume (ppm) California	Standards in Parts Per Million by Volume (ppm) National	Standards in Micrograms Per Cubic Meter ($\mu g/m^3$) California	Standards in Micrograms Per Cubic Meter ($\mu g/m^3$) National	Violation Criteria California	Violation Criteria National
Ozone	1 Hour	0.09	Standard rescinded	180	Standard rescinded	If exceeded	Not applicable
Ozone	8 Hours	0.070	0.075	137	147	If exceeded	If exceeded by the mean of annual 4th highest daily values for a 3-year period
Carbon Monoxide	1 Hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
Carbon Monoxide	8 Hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year

Table 3.2-1 (continued)
State and National Ambient Air Quality Standards Applicable In California

Pollutant	Averaging Time	Standards in Parts Per Million by Volume (ppm) California	Standards in Parts Per Million by Volume (ppm) National	Standards in Micrograms Per Cubic Meter (µg/m³) California	Standards in Micrograms Per Cubic Meter (µg/m³) National	Violation Criteria California	Violation Criteria National
Carbon Monoxide	8 Hours (Lake Tahoe Basin only)	6.0	9	7,000	10,000	If equaled or exceeded	If exceeded on more than 1 day per year
Nitrogen Dioxide	Annual Average	0.030	0.053	_57_	100	If exceeded	If exceeded
Nitrogen Dioxide	1 Hour	0.18	0.100	_339_	188	If exceeded	If exceeded by the mean of annual 98th percentile values over 3 years
Sulfur Dioxide	Annual Average	No standard	0.03_0_	No standard	80	Not applicable	If exceeded
Sulfur Dioxide	24 Hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
Sulfur Dioxide	3 Hours	No standard	0.5	No standard	1,300	Not applicable	If exceeded on more than 1 day per year
Sulfur Dioxide	1 Hour	0.25	No standard	655	Not applicable	If exceeded	Not applicable
Inhalable Particulate Matter (PM_{10})	Annual Arithmetic Mean	Not applicable	Not applicable	20	Standard rescinded	If exceeded	Not applicable
Inhalable Particulate Matter (PM_{10})	24 Hours	Not applicable	Not applicable	50	150	If exceeded	For 1997 non-attainment areas, if exceeded on more than 1 day per year. For other areas, if exceeded by the mean of annual 99th percentile values over 3 years

Table 3.2-1 (continued)
State and National Ambient Air Quality Standards Applicable In California

Pollutant	Averaging Time	Standards in Parts Per Million by Volume (ppm) California	Standards in Parts Per Million by Volume (ppm) National	Standards in Micrograms Per Cubic Meter ($\mu g/m^3$) California	Standards in Micrograms Per Cubic Meter ($\mu g/m^3$) National	Violation Criteria California	Violation Criteria National
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	Not applicable	Not applicable	12	15.0	If exceeded	If exceeded as a 3-year spatial average of data from designated stations
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	Not applicable	Not applicable	No standard	35	Not applicable	If exceeded by the mean of annual 98th percentile values over 3 years
Lead Particles (TSP sampler)	Calendar Quarter	Not applicable	Not applicable	No standard	1.5	Not applicable	If exceeded
Lead Particles (TSP sampler)	Rolling 3-Month Average	Not applicable	Not applicable	No standard	0.15	Not applicable	If exceeded during a 3-year period
Lead Particles (TSP sampler)	30 Days	Not applicable	Not applicable	1.5	No standard	If exceeded	Not applicable
Sulfate Particles (TSP sampler)	24 Hours	Not applicable	Not applicable	25	No standard	If equaled or exceeded	Not applicable
Hydrogen Sulfide	1 Hour	0.03	No standard	42	No standard	If exceeded	Not applicable
Vinyl Chloride	24 Hours	0.01	No standard	26	No standard	If equaled or exceeded	Not applicable

Notes:

All standards except the national PM_{10} and $PM_{2.5}$ standards are based on measurements corrected to 25 degrees C and 1 atmosphere pressure.

The national PM_{10} and $PM_{2.5}$ standards are based on direct flow volume data without correction to standard temperature and pressure.

Decimal places shown for standard reflect the rounding or truncating conventions used for evaluating compliance.

The “10” in PM_{10} and the “2.5” in $PM_{2.5}$ are not particle size limits; these numbers identify the particle size class (aerodynamic diameter in microns) collected with 50% mass efficiency by certified sampling equipment. The maximum particle size collected by PM_{10} samplers is about 50 microns. The maximum particle size collected by $PM_{2.5}$ samplers is about 6 microns.

Data Sources:

40 CFR Parts 50, 53, and 58; CARB (2010a); EPA (2010b).

Hazardous Air Pollutants

Air quality programs based on regulation of other hazardous substances typically address chemicals used or produced by limited categories of industrial facilities. Programs regulating hazardous air pollutants focus on: substances that alter or damage the genes and chromosomes in cells (mutagens); substances that affect cells in ways that can lead to uncontrolled cancerous cell growth (carcinogens); substances that can cause birth defects or other developmental abnormalities (teratogens); substances with serious acute toxicity effects; and substances that undergo radioactive decay processes, resulting in the release of ionizing radiation. Federal air quality management programs for hazardous air pollutants focus on setting emission limits for particular industrial processes rather than setting ambient exposure standards. Some states have established ambient exposure guidelines for various hazardous air pollutants, and use those guidelines to as part of the permit review process for industrial emission sources.

Air Quality Planning Programs

Since 1970, the federal Clean Air Act (CAA) has required each state to identify areas that have ambient air quality in violation of federal standards. States are required to develop, adopt, and implement a SIP to achieve, maintain, and enforce federal ambient air quality standards in these nonattainment areas. The SIP process includes specific deadlines for achieving the federal ambient air quality standard once a nonattainment designation has been made. Deadlines for achieving the federal air quality standards vary according to air pollutant and the severity of existing air quality problems. The SIP must be submitted to and approved by EPA. SIP elements are developed on a pollutant-by-pollutant basis whenever one or more air quality standards are being violated. Development of SIP documents is formally the responsibility of the relevant state air quality management agency. In many states, local/regional air quality management agencies and local/regional transportation planning agencies assume the primary responsibility for SIP document preparation, with state air quality management agency oversight and approval.

The status of areas with respect to each federal ambient air quality standard is typically categorized as nonattainment (in violation of a national standard), attainment (in compliance with a national standard), unclassifiable, or attainment/unclassified. For most air pollutants, initial federal status designations are made using only two categories: nonattainment or unclassifiable/attainment. The unclassified designation includes attainment areas that comply with federal standards as well as areas for which monitoring data are lacking. Unclassified areas are treated as attainment areas for most regulatory purposes.

Simple attainment designations generally are used only for areas that transition from a nonattainment status to an attainment status. Areas that have been reclassified from nonattainment to attainment of federal air quality standards are automatically considered “maintenance areas”, although this designation is not always noted in status listings.

The California Clean Air Act of 1988 created a state air quality planning program similar to the federal SIP process for areas that violate state ambient air quality standards. CARB designates areas as attainment, nonattainment, or unclassified with respect to each of the state ambient air quality standards. Local air quality management agencies, in consultation with the relevant council of governments, are responsible for preparing and updating state air quality management plans for pollutants other than suspended particulate matter. CARB is responsible for air quality planning efforts addressing the state ambient air quality standards for suspended particulate matter (PM_{10} and $PM_{2.5}$). The state air quality planning process differs from the federal SIP process in one respect: while there are requirements to show on-going improvement in air quality, there are no specific deadlines for achieving state air quality standards.

The geographic basis for attainment status designations varies from state to state, and often varies according to the pollutant being considered. The geographic area used for designations can be based on city or county boundaries; metropolitan statistical area boundaries; areas defined by township and range; areas defined by highways or topographic features; or areas defined by a combination of these types of boundaries. The largest geographic units used for attainment status designations are called air quality control regions (EPA terminology) or air basins (CARB terminology). Air quality control regions and air basins are typically defined by a combination of political boundaries (often county boundaries) and topographic features that influence meteorological conditions and pollutant transport.

Riverside County has adopted an air quality element in the county general plan. The air quality element includes policies supporting regional cooperation with other jurisdictions to improve air quality; requiring compliance with federal, sate, and regional air quality regulations; encouraging programs to reduce vehicle travel; encouraging energy conservation in urban land uses; and encouraging development patterns that improve the county's jobs/housing balance.

Visibility

The federal CAA requires a planning program with the goal that all areas of the country achieve the federal ambient air quality standards within various specified time frames. For attainment areas that already meet the federal ambient air quality standards, the federal Prevention of Significant Deterioration (PSD) permit program established a three-tier classification defining the extent to which baseline air quality conditions can be degraded. Class I areas have the smallest allowable air quality deterioration limits. Class II areas allow greater deterioration of air quality but must maintain air quality conditions better than the federal air quality standards. Class III areas allow deterioration of air quality to the level of the federal ambient air quality standards. There are currently 163 Class I areas designated in the United States, with 29 Class I areas in California. Two of the 163 Class I areas are exempt from visibility impairment analyses under the PSD program because visibility is not considered an important air quality value in those areas. All areas outside Class I areas are currently designated as Class II areas. No Class III areas have been designated. The Class I area closest to the Project vicinity is the Joshua Tree Wilderness Area within Joshua Tree National Park. Visibility is considered an important air quality value to be protected within Joshua Tree National Park. There are no other Class I areas within 62 miles (100 kilometers) of the solar farm site. The San Jacinto Wilderness west of Palm Springs is about 69 (111 kilometers) miles from the solar farm site, and the San Gorgonio Wilderness in San Bernardino County is about 77 (124 kilometers) miles northwest of the solar farm site.

The federal CAA requires EPA to protect visibility conditions within the Class I areas that have been established under the PSD program. The CAA also requires development of programs to remedy existing visibility impairment in Class I areas if that visibility impairment results from man-made air pollution. EPA has identified two general types of visibility impairment at Class I areas:

- Impairment due to smoke, dust, colored gases, or layered haze attributable to a single stationary emission source or a small group of emission sources; and
- Impairment due to widespread, regionally homogeneous haze resulting from the cumulative emissions of varied emission sources in a region.

The PSD permit program addresses visibility impairment from nearby stationary emission sources. Regional haze impacts resulting from cumulative emissions in a region are being addressed through new SIP planning requirements. Visibility impairment, whether from stationary sources or from other sources, must be addressed under the regional haze program.

Various federal and state agencies operate the Inter-agency Monitoring of Protected Environments (IMPROVE) program to monitor visibility conditions and particulate matter concentrations in or near Class I areas across the country. There are 18 active IMPROVE monitoring sites in California, including one in Joshua Tree National Park. In addition to the visibility monitoring sites in the IMPROVE network, there are three National Atmospheric Deposition Monitoring Program (NADP) networks with stations in California. The National Trends Network (NTN) monitors wet deposition. There are 12 active NTN sites in California, including one in Joshua Tree National Park. The Clean Air Status and Trends Network (CASTNET) monitors dry deposition. There are six active CASTNET sites in California, including one in Joshua Tree National Park. There are three active mercury deposition network (MDN) monitoring sites in California. The MDN site closest to the Desert Center area is at Converse Flats south of Big Bear Lake in San Bernardino County.

Regulatory Considerations

In general, states have assumed primary responsibility for enforcing most federal industrial source emission standards and industrial source review requirements, with EPA exercising formal review and oversight responsibilities. Many states have independent air quality permit programs that extend to emission sources not covered by federal requirements. State air quality permit requirements generally are integrated with federal requirements, resulting in a consolidated permit program. Under most consolidated permit programs, basic state permit requirements apply to all sources that are not specifically exempted. Additional requirements (including EPA review of the permit) become applicable if sources exceed various size or emission thresholds.

In California, air quality regulation is a joint responsibility between CARB and local air quality management agencies. Local agencies are either a single county or a multi-county agency, typically called an Air Pollution Control District (APCD) or an Air Quality Management District (AQMD). APCDs and AQMDs have primary responsibility for most air quality regulatory programs, with CARB retaining oversight responsibilities. CARB directly implements statewide regulatory programs for motor vehicles, portable equipment, and hazardous air pollutants. Two different AQMDs have jurisdiction over portions of Riverside County. The South Coast Air Quality Management District (SCAQMD) has jurisdiction over most of Riverside County. The far eastern portion of Riverside County, however, is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). *Figure* 3.2-1 shows the jurisdictional boundaries of the SCAQMD and MDAQMD in Riverside County. Areas near Desert Center are under the jurisdiction of the SCAQMD.

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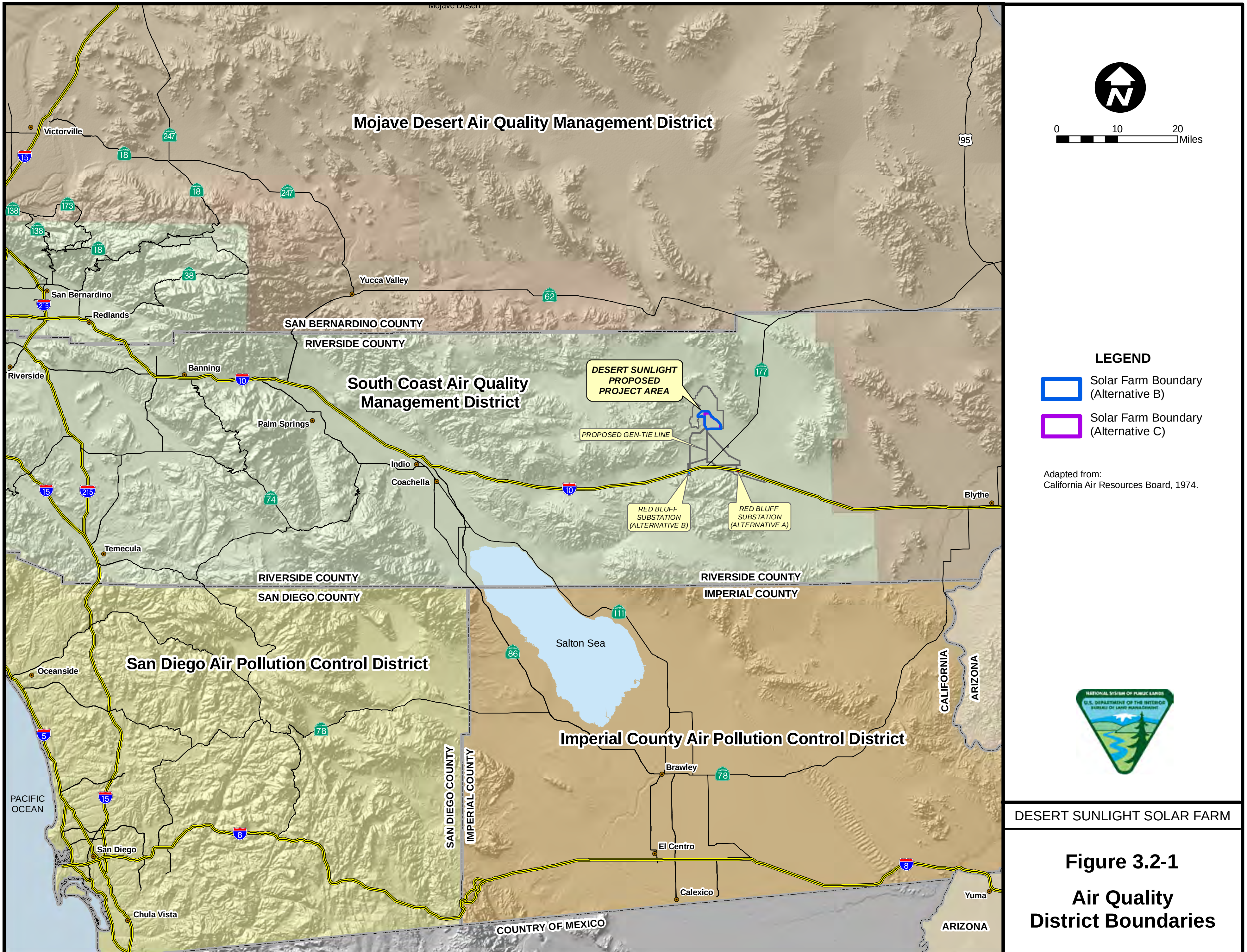

DESERT SUNLIGHT SOLAR FARM

Figure 3.2-1

Air Quality District Boundaries

The SCAQMD is the primary air quality regulatory agency for the Project vicinity. Most construction equipment items are classified as mobile sources, and thus are exempt from stationary source permit requirements. But other portable and stationary equipment such as generators, compressors, pumps, welders, diesel pile driving hammers, concrete batch plants, sand and gravel screening equipment, rock crushers, wood chippers, and tub grinders are potentially subject to SCAQMD permit requirements. SCAQMD Rule 219 list equipment types that are typically exempt from permit requirements. Equipment normally exempt from stationary source permit requirements includes:

- Equipment using a piston type internal combustion engine (typically using diesel, gasoline, or compressed gas fuels) that has a manufacturer rating of 50 horsepower or less;
- Equipment using a gas turbine engine that has a maximum heat input rate of 2,975,000 British thermal units (BTU) or less;
- Concrete mixers with a working capacity of one cubic yard or less;
- Portable equipment registered under the CARB statewide portable engine registration that remains at one fixed location for no more than 12 months; and
- Rental equipment located at one facility for no more than 12 months when the equipment owner has a valid AQMD permit or has registered the equipment under the statewide portable engine registration program.

The CARB statewide portable engine registration program is a voluntary program that establishes uniform emission limits and other requirements for eligible equipment. CARB-registered portable equipment items are exempt from local air district regulations and permit requirements as long as the equipment does not remain at a single fixed location (other than an equipment storage area) for more than 12 months (CARB 2009b). Portable equipment that is not registered under the statewide program or that remains at a single fixed location for 12 consecutive months or more is subject to local air district regulations and permit requirements unless it qualifies for exemption under other provisions of local air district rules and regulations. CARB-registered portable equipment remains exempt from air district permit requirements if it is relocated periodically within a project site for legitimate operational purposes, and is not at any single fixed location for 12 consecutive months.

In addition to possible permit requirements for some equipment used during project construction, the SCAQMD has adopted other regulations that affect facility construction and operation. Construction activities would be subject to fugitive dust control requirements (Rule 403). Rule 403 prohibits creation of dust plumes that are visible beyond the property line of the emission source, and requires all “active operations” (construction/demolition activities, earthmoving activities, heavy or light duty vehicle movements, or creation of disturbed surface areas) to implement applicable best available control measures as defined in the Rule. Best available dust control measures outlined in SCAQMD Rule 403 are summarized in Table 3.2-2 as general dust control measures. Enhanced dust control requirements apply if the project is considered a large operation. A large operation under Rule 403 is any active operations on property which contains 50 or more acres of disturbed surface area, or any earthmoving operation with a daily throughput volume of 5,000 cubic yards or more three or more times during the most recent 365-day period.

Table 3.2-2
General Dust Control Measures Required by SCAQMD Rule 403

Dust Source	Required Control Measures	Guidance
Mechanical or manual demolition	Stabilize wind-erodible surfaces to reduce dust. Stabilize surface soil where support equipment and vehicles will operate. Stabilize loose soil and demolition debris. Comply with AQMD Rule 1403 (asbestos from demolition and renovation).	Apply water in sufficient quantities to prevent visible dust plumes.
Clearing and grubbing	Water site before clearing and grubbing. Stabilize soil during clearing and grubbing. Stabilize soil at completion of clearing and grubbing.	Maintain live perennial vegetation where possible. Apply sufficient water to prevent generation of dust.
Cut and fill	Water soils before cutting and filling. Stabilize soils during and after cutting and filling.	For large sites, water with sprinklers or water trucks and allow time for water to penetrate. Water soils to depth of cut before subsequent cuts.
Earthmoving	Water to depth of proposed cuts. Reapply water as necessary to maintain dampness in soils and to ensure that visible dust does not extend more than 100 feet in any direction. Stabilize soils once earthmoving is complete.	Grade each project phase separately, timed to coincide with construction phase. Install upwind fencing to reduce material movement on-site. Apply water or a stabilizing agent in sufficient quantity to prevent the generation of dust.
Importing/exporting bulk materials	Stabilize material while loading to reduce dust emissions. Maintain at least six inches of freeboard on haul vehicles. Stabilize material while transporting to reduce dust emissions. Stabilize material while unloading to reduce dust emissions. Comply with Vehicle Code Section 23114.	Use tarps or other suitable enclosures on haul trucks. Check belly-dump truck seal regularly and remove any trapped rocks to prevent spillage. Comply with track-out prevention and mitigation requirements. Apply water while loading and unloading to reduce dust.
Stockpiles and bulk material handling	Stabilize stockpiled material. Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet high, or must have a road bladed to the top to allow water truck access, or must have an operational water irrigation system capable of completely covering the stockpile.	Add and remove material from the downwind portion of the stockpile. Maintain storage piles to avoid steep sides or faces.
Truck loading	Water material before loading. Ensure that freeboard exceeds six inches (California Vehicle Code Section 23114).	Ensure that the loader bucket is close to the truck to minimize drop height while loading. Empty loader bucket so that no dust is generated.

Table 3.2-2 (continued)
General Dust Control Measures Required by SCAQMD Rule 403

Dust Source	Required Control Measures	Guidance
Staging areas	Stabilize staging areas during use. Stabilize staging area soils at project completion.	Limit the size of staging areas. Limit vehicle speeds to 15 miles per hour. Limit the size and number of staging area entrances and exits.
Traffic areas for construction activity	Stabilize all off-road traffic, parking areas, and haul routes. Direct construction traffic over established haul routes.	Apply gravel or paving as soon as possible to haul routes that will become future roadways. Construct barriers to restrict vehicles to established haul routes and parking areas.
Road shoulder maintenance	Apply water to unpaved road shoulders prior to clearing. Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	Installation of curbing and/or paving or road shoulders can reduce recurring maintenance costs. Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs.
Disturbed soil	Stabilize disturbed soil throughout the construction site and between structures.	Limit vehicle traffic and disturbances on soils where possible. If interior block walls are planned, install them as soon as possible. Apply water or stabilizing agents in sufficient quantity to prevent the generation of dust.
Trenching	Stabilize surface soils where trenchers, excavators, or support equipment will operate. Stabilize soils at completion of trenching.	Water soils before trenching. For deep trenching, first trench to 18 inches and soak deeper soils before continuing to trench to final depth. Wash mud and soil from trenching equipment at the conclusion of trenching.
Backfilling	Stabilize backfill material when not handling. Stabilize backfill material during handling. Stabilize soil at completion of activity.	Mix backfill material with water before moving. Dedicate a water truck or high capacity hose to backfilling equipment. Empty loader buckets slowly to avoid generating dust. Minimize drop height from loader bucket.
Crushing	Stabilize surface soil before operating support equipment. Stabilize material after crushing.	Follow permit conditions for crushing equipment. Water material before loading it into crusher. Monitor crusher emissions opacity. Apply water to crushed material to prevent dust.

Table 3.2-2 (continued)
General Dust Control Measures Required by SCAQMD Rule 403

Dust Source	Required Control Measures	Guidance
Screening	Water material before screening. Limit fugitive emissions to comply with opacity and plume length standards. Stabilize material immediately after screening.	Dedicate a water truck or high capacity hose to screening operations. Drop material through screen slowly and minimize drop height. Install a wind barrier with a porosity of no more than 50 percent and a height equal to the drop height on the upwind side of screening equipment.
Clearing Forms	Use water sprays, water sprays plus sweepers, or vacuum systems to clear forms.	Do not use high pressure air to clear forms because it may violate rule requirements.
Unpaved roads and parking lots	Stabilize soils to meet applicable performance standards. Limit vehicle travel to established haul roads and parking lots.	Restrict vehicle movements to established haul roads and parking lots to reduce the area requiring stabilization.
Landscaping	Stabilize soils, materials, and slopes.	Apply water to stabilize materials. Maintain materials in a crusted condition. Maintain effective cover over materials. Stabilize sloping surfaces with soil binders until vegetation or ground cover can stabilize the slopes. Hydroseed before the rainy season.
Turf overseeding	Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards. Cover haul vehicles prior to exiting the site.	Haul waste material immediately off-site.
Vacant land	In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking, and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees, or other effective control measures.	

Source: SCAQMD 2005, Rule 403

Table 3.2-3 identifies enhanced dust control requirements applicable to large operations.

In addition to SCAQMD regulations, state regulations (California Code of Regulations, Title 13, Section 2449) would also affect construction activity. State regulations limit the unnecessary idling of off-highway vehicle and equipment engines (CARB 2008a, 2008d). Except when necessary for normal equipment operations, vehicle queuing, engine testing and maintenance, or for operator comfort and safety, vehicle idling for more than five minutes is prohibited.

Table 3.2-3
Enhanced Dust Control Measures Required for Large Operations by SCAQMD Rule 403

Dust Source	Required Control Measures
Earthmoving: Construction cut areas and mining	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Earthmoving: Construction fill areas	Maintain soil moisture content at a minimum of 12 percent, as determined by the American Society for Testing and Materials (ASTM) Method D-2216 or other equivalent method approved by the Executive Officer, the CARB, and the EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method D-1557 or other equivalent method approved by the Executive Officer, the CARB, and the EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.
Earthmoving except for mining operations or construction cut and fill areas	Either: Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM Method D-2216 or other equivalent method approved by the Executive Officer, the CARB, and the EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations. Or: For any earthmoving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Disturbed surface areas: Completed grading areas	Either: Apply soil stabilizers within five working days of grading completion. Or: Apply water to at least 80 percent of all inactive disturbed surface areas (excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions) on a daily basis when there is evidence of wind-driven fugitive dust. Or: Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter.
Disturbed surface areas except for completed grading areas	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind-driven fugitive dust, must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Inactive disturbed surface areas	Either: Apply water to at least 80 percent of all inactive disturbed surface areas (excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions) on a daily basis when there is evidence of wind-driven fugitive dust. Or: Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface. Or: Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter. Or: Use any combination of the above control actions such that, in total, these actions apply to all inactive disturbed surface areas.

Table 3.2-3 (continued)
Enhanced Dust Control Measures Required for Large Operations by SCAQMD Rule 403

Dust Source	Required Control Measures
Open storage piles	Either: Apply chemical stabilizers. Or: Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind-driven fugitive dust. Or: Install temporary coverings. Or: Install a three-sided enclosure with walls having no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
Unpaved roads	Either: Water all roads used for any vehicular traffic at least once every 2 hours during active operations (3 times per normal 8-hour work day). Or: Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour. Or: Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
All sources	Any other control measures approved by the Executive Officer and the EPA as equivalent to the measures specified in this table may also be used.

Source: SCAQMD 2005, Rule 403

As currently proposed, solar farm facilities would not require any stationary emission sources (such as backup generators) for facility operations. Power from existing local distribution lines would provide backup power to key facilities during Project operations. A backup generator may be required for the Red Bluff Substation, but any such generator is expected to be within the size range that is exempt from SCAQMD permit requirements. Although no SCAQMD air permits would be required for Project operations, various SCAQMD regulations could still apply to the Project. Paints or other architectural coatings used at facility buildings or on facility equipment would be subject to the volatile organic compound limits of SCAQMD Rule 1113. Cleaning solvents used for facility maintenance operations also may be subject to various requirements outlined in SCAQMD Rule 442 (Usage of Solvents) and SCAQMD Rule 1171 (Solvent Cleaning Operations).

Clean Air Act Conformity

Section 176(c) of the CAA requires federal agencies to ensure that actions undertaken in nonattainment or maintenance areas are consistent with the CAA and with federally enforceable air quality management plans. EPA has promulgated separate rules that establish conformity analysis procedures for highway/mass-transit projects (40 CFR Part 93, Subpart A) and for other (general) federal agency actions (40 CFR Part 93, Subpart B). General conformity requirements are potentially applicable to many federal agency actions, but apply only to those aspects of an action that involve on-going federal agency responsibility and control over direct or indirect sources of air pollutant emissions.

The EPA conformity rule establishes a process that is intended to demonstrate that the proposed federal action:

- Would not cause or contribute to new violations of federal air quality standards;
- Would not increase the frequency or severity of existing violations of federal air quality standards; and

- Would not delay the timely attainment of federal air quality standards.

The EPA general conformity rule applies to federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emission thresholds that trigger requirements of the conformity rule are called de minimis levels. Emissions associated with stationary sources that are subject to permit programs incorporated into the SIP are not counted against the de minimis threshold.

Compliance with the conformity rule can be demonstrated in several ways. Compliance is presumed if the net increase in direct and indirect emissions from a federal action would be less than the relevant de minimis level. If net emissions increases exceed the relevant de minimis value, a formal conformity determination process must be followed. Federal agency actions subject to the general conformity rule cannot proceed until there is a demonstration of consistency with the SIP,

3.2.2 Existing Conditions

Air Quality

The air pollutants of greatest concern in Riverside County are ozone and suspended particulate matter (PM_{10} and $PM_{2.5}$). The seriousness of air pollution problems is greatest in the western portion of Riverside County and least in the eastern portion of Riverside County. Portions of Riverside County fall into three separate air basins:

- The South Coast Air Basin in western Riverside County (west of San Gorgonio Pass and the San Jacinto Mountains),
- The Salton Sea Air Basin in the Coachella Valley portion of Riverside County (between the San Jacinto Mountains and the Little San Bernardino Mountains), and
- The Mojave Desert Air Basin in eastern Riverside County (east of the Little San Bernardino Mountains, north of the Cottonwood Mountains, and east of the Orocopia Mountains).

Figure 3.2-2 shows the three air basins that include portions of Riverside County.

As can be seen by comparing *Figure* 3.2-2 with *Figure* 3.2-1, the Mojave Desert Air Basin portion of Riverside County is subdivided into a western portion under the jurisdiction of the SCAQMD and an eastern portion under the jurisdiction of the MDAQMD.

The Project area is located in the SCAQMD-jurisdiction portion of the Mojave Desert Air Basin. Most air quality monitoring stations in Riverside County are in the South Coast Air Basin and Salton Sea Air Basin portions of the County. There are no air quality monitoring stations near the proposed solar farm area. An air quality monitoring station in Blythe (48.5 miles east-southeast of the proposed solar farm site) measures ozone levels, but not other air pollutants. The National Park Service operates *three* air quality monitoring stations in Joshua Tree National Park. The Joshua Tree National Park *operates an air station (Pinto Wells) within five miles to the west of the proposed solar farm that measures for ozone, sulfur dioxide, and PM. A* station south of the Cottonwood Visitor Center is 24.5 miles west-southwest of the solar farm site, and measures ozone*, sulfur dioxide, and PM* levels. This monitoring station is at the northern edge of the Salton Sea Air Basin, and is more heavily influenced by pollutant transport from the South Coast Air Basin than are locations near Desert

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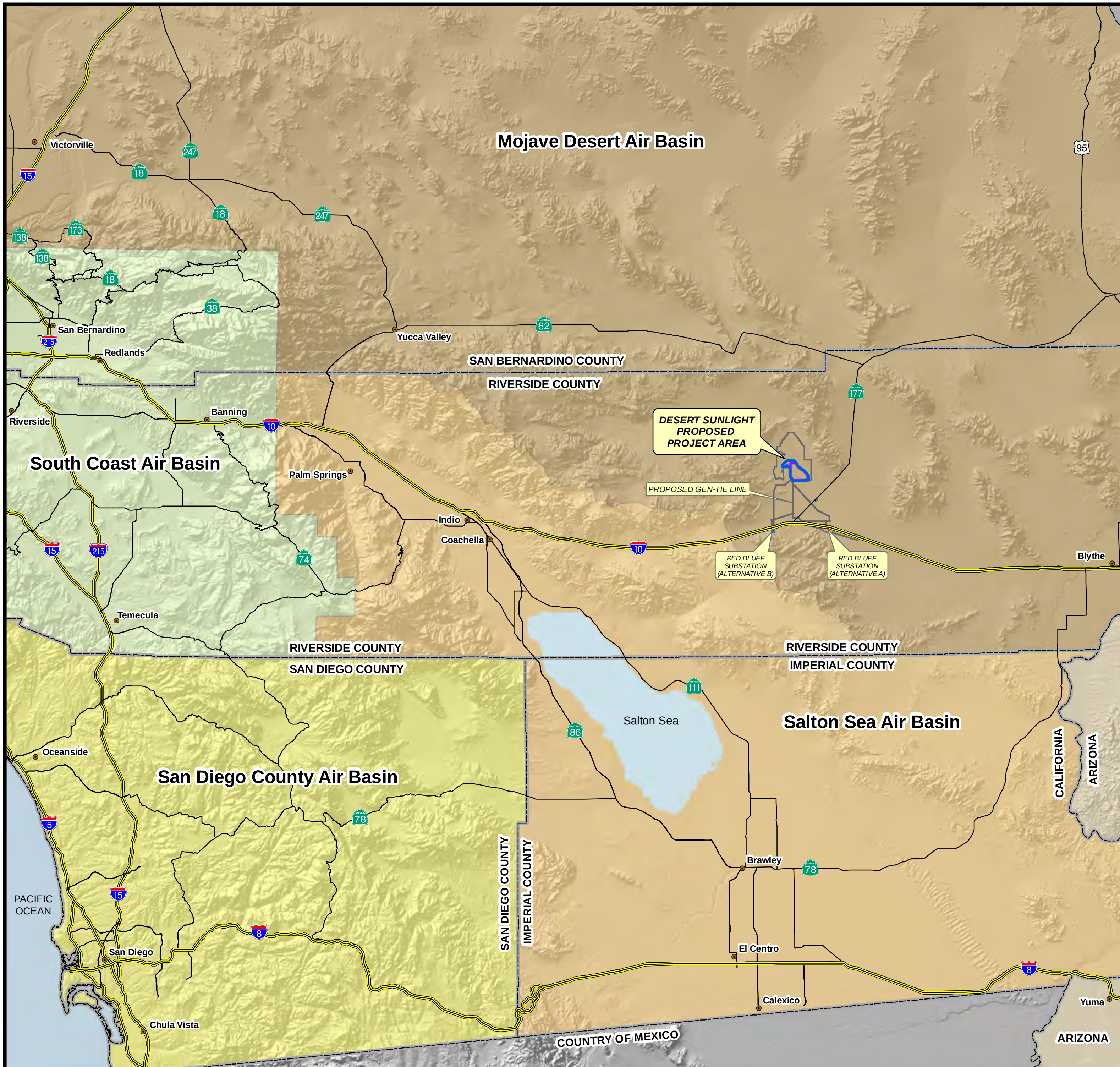

LEGEND

Solar Farm Boundary (Alternative B)

Solar Farm Boundary (Alternative C)

Adapted from:
California Air Resources Board, 1974.

DESERT SUNLIGHT SOLAR FARM

Figure 3.2-2

Air Basin Boundaries

Center. The Joshua Tree National Monument station is 59 miles northwest of the solar farm site near the Black Rock Campground in the northwest corner of the Park. This monitoring station is in San Bernardino County in the southwestern corner of the Mojave Desert Air Basin, and is more heavily influenced by pollutant transport from the South Coast Air Basin than are locations near Desert Center. The National Park Service also operates NTN wet deposition, Clean Air Status and Trends Network (CASTNet) dry deposition, and IMPROVE visibility monitoring stations in this same area. The Joshua Tree National Monument monitoring station measures ozone, sulfur dioxide, and PM_{10} concentrations, but only the ozone data are available in CARB data summaries.

There are several monitoring stations in the Riverside County and Imperial County portions of the Salton Sea Air Basin, but all of those monitoring stations are influenced by pollutant transport from the South Coast Air Basin. In addition, some of the Imperial County monitoring stations are influenced by pollutant transport from Mexico. Because the monitoring stations in Joshua Tree National Park and those in the Salton Sea Air Basin are more strongly influenced by pollutant transport from the South Coast Air Basin than in the Project area, data from those monitoring stations are not considered representative of air quality conditions in the Project area.

All federal ambient air quality standards are currently being met in the Mojave Desert Air Basin portion of Riverside County, but state standards for ozone and PM10 are occasionally exceeded.

Table 3.2-4 lists the federal and state attainment status designations applicable to the Mojave Desert portion of Riverside County.

Table 3.2-4
Federal and State Attainment Status Designations
in the Mojave Desert Air Basin Portion of Riverside County

Pollutant	Federal Designation	State Designation
Ozone	Unclassified/Attainment	Nonattainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Carbon Monoxide	Unclassified/Attainment	Unclassified
Sulfur Dioxide	Unclassified	Attainment
PM_{10} (Inhalable Particulate Matter)	Unclassified	Nonattainment
$PM_{2.5}$ (Fine Particulate Matter	Unclassified/Attainment	Unclassified
Lead	No Federal Designation	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified

Sources: US EPA (2010a); CARB (2010b)

Areas with unclassified or unclassified/attainment designations are treated as attainment areas. Because there are no federal nonattainment or maintenance designations in the Mojave Desert portion of Riverside County, federal agency actions in the Mojave Desert Air Basin portion of Riverside County are not subject to CAA conformity review requirements.

Visibility

The National Park Service has been monitoring visibility conditions in Joshua Tree National Park since 2001. Visibility can be impaired by haze caused by fine particles in the air, including dust. However, visibility monitoring data at Joshua Tree National Park suggest that the worst visibility days at Joshua Tree National Park are caused by increased ammonium nitrate emission levels.

Emission Sources

The most important emission sources in the project area are traffic on I-10, Highway 177, and other area roadways, agricultural operations on private lands, recreational vehicle use on public and private lands, fuel combustion associated with residential, commercial, and light industrial land uses, and wind erosion from lands with sparse vegetation.

Ground Conditions Affecting Wind Erosion

Wind can move soil particles by three general processes: surface creep (rolling along the ground surface), saltation (a bouncing movement along the ground surface caused by particle collisions that help force a particle into the air for a brief time before it falls back to the ground), and suspension transport (particles lofted into the air and remaining suspended for more than a minute). Surface creep and saltation typically account for most soil mass movement associated with wind erosion, and normally involve larger sand-size soil particles. Suspension transport normally involves smaller silt and clay size soil particles. From an air pollution standpoint, suspension transport of soil particles is the wind erosion process that generates fugitive dust.

The extent of fugitive dust generated by wind erosion is affected by numerous factors, including:

- Soil texture (the mix of clay, silt, and sand sized particles in a soil);
- Particle aggregation (mostly due to clay content);
- Organic matter content of soils;
- Non-erodible surface features (gravel, rocks, boulders, rock outcrops, etc.);
- Extent and density of vegetation cover;
- Surface crusting – mineral or biological crusts – especially between vegetation stems;
- Soil moisture conditions;
- Wind speed;
- Vertical air turbulence;
- Sedimentation of erodible material from upslope water erosion or from flood deposits; and
- Active disturbance of surface soils.

Soil moisture conditions and surface conditions are important factors determining the vulnerability of an area to wind erosion. In desert areas, soil moisture levels are high only during and after rainfall or flash flood events. Consequently, soil moisture levels in desert areas are high enough to influence wind erosion processes for only brief intermittent periods.

The surface features of greatest importance are non-erodible surface material, vegetation cover, mineralized soil crusts, and biological soil crusts. The most common types of non-erodible surface materials in deserts include scattered rocks and boulders, rock formation outcrops, and desert pavement. Desert pavements are areas with rock fragments of pebble to cobble size that cover an underlying layer of sand, silt, or clay. Desert pavement areas typically have little or no vegetation cover. The extent to which desert pavement reduces wind erosion and resulting fugitive dust depends on the density of the rock fragments covering the underlying soil.

Desert pavements seem to form from two different processes (McAuliffe 2000). On rocky alluvial fans, fine dust settling out of the air accumulates between and below the surface layer of rocks, eventually forming a relatively thin silt and clay layer that separates the surface rocks from the main part of the alluvial fan. Desert pavement also can form on sandy soils that contain significant amounts of gravel and rock fragments. In such situations, wind and water erosion can remove most of the sand and fine sediments from the surface, leaving the remaining rock fragments as the predominant surface layer.

Surveys of the proposed solar farm site indicate that there are areas of desert pavement in both the northwest and southwest portions of the site. An estimated 20 to 30 percent of the overall site has moderate to strong desert pavement, with an additional 5 to 15 percent of the overall site having weakly developed desert pavement (Earth Systems Southwest 2010a). The remainder of the solar farm site is typical Mojave Desert vegetation on a sandy soil. Vegetation coverage, mineral soil crusts, and biological soil crusts all help reduce fugitive dust from wind erosion from such areas. Existing vegetation at the solar farm site provides an estimated 15 percent canopy coverage, with little or no stable biological or mineral crusts in the open areas between desert shrubs (Hughes 2010).

Geotechnical studies conducted at the solar farm site indicate sandy soils throughout the site, with a typical silt plus clay content of 5 to 13 percent (Eberhart/United Consultants 2007; Earth Systems Southwest 2010b). The Natural Resources Conservation Service (NRCS) has conducted limited soil surveys on some private agricultural lands near Desert Center. Agricultural development of desert soils typically results in an increase in organic matter content, resulting in a more loamy texture to the soils than would occur without agricultural development. Agricultural lands near the solar farm site were generally characterized as gravelly loamy, coarse sand, or loamy sand with a high potential for wind erosion (Houdeshell 2010).

3.3 VEGETATION

3.3.1 Applicable Plans, Policies, and Regulations

Federal Regulations

Endangered Species Act of 1973

The Endangered Species Act (ESA) (16 USC 1531 et seq.) and subsequent amendments establish legal requirements for the conservation of endangered and threatened species and the ecosystems upon which they depend.

Section 7

Section 7 of the ESA requires federal agencies, in consultation with, and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service share responsibilities for administering the Act. All listed plant species fall under the jurisdiction of the USFWS. Regulations governing interagency cooperation under Section 7 are found at 50 CFR Part 402. The biological opinion (BO) issued at the conclusion of a formal Section 7 consultation may include a statement authorizing a take that may occur incidental to an otherwise legal activity.

Clean Water Act

The Clean Water Act (33 USC 1251 et seq.) establishes legal requirements for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

Section 401

Section 401 requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the United States must obtain a State certification that the discharge complies with other provisions of the Clean Water Act. The Regional Water Quality Control Boards administer the certification program in California.

Section 404

Section 404 establishes a permit program administered by the US Army Corps of Engineers (USACE) regulating the discharge of dredged or fill material into waters of the United States, including wetlands. Implementing regulations by the USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the EPA in conjunction with the USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

California Desert Protection Act of 1994

This act established Death Valley and Joshua Tree National Parks, the Mojave National Preserve, and the Granite Mountains National Reserve. It also declared certain lands in the California desert as wilderness, and included other natural resource designations and provisions.

Noxious Weed Act of 1974

This act provides for the control and management of nonindigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. Under this act, the Secretary of Agriculture was given the authority to designate plants as noxious weeds, and inspect, seize and destroy products, and to quarantine areas, if necessary to prevent the spread of such weeds.

Executive Order 11988 Floodplain Management

This order directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Executive Order 11990 Protection of Wetlands

This order directs all federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Executive Order 13112 Invasive Species

This order directs federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. To do this, the order established the National Invasive Species Council; currently there are 13 Departments and Agencies on the Council.

Compliance with Floodplain and Wetland Environmental Review Requirements

Established under 10 CFR Part 1022, this regulation establishes policy and procedures relating to the Department of Energy's (DOE) responsibilities under EO 11988 and 11990, including:

- DOE policy regarding the consideration of floodplain and wetland factors in DOE planning and decision making; and
- DOE procedures for identifying proposed actions located in a floodplain or wetland, providing opportunity for early public review of such proposed actions, preparing floodplain or wetland assessments, and issuing statements of findings for actions in a floodplain.

To the extent possible, DOE shall accommodate the requirements of EO 11988 and EO 11990 through applicable DOE NEPA procedures or, when appropriate, the environmental review process under the Comprehensive Environmental Response, Compensation, and Liability Act (42 USC. 9601 et seq.).

State Laws and Regulations

California Environmental Quality Act

The California Environmental Quality Act (CEQA) (PRC. 21000 *et seq*.) was enacted in 1970 to provide for full disclosure of environmental impacts on the public before state and local public agencies issue a permit. With regard to biological resources, CEQA gives consideration to "sensitive" (or "special status") plants, in addition to federal or state listed species. Sensitive species include plants on the California Native Plant Society's (CNPS)[1] List 1A (presumed extinct), List 1B (rare, threatened, or endangered in California and elsewhere; eligible for state listing), or List 2 (rare, threatened, or endangered in California but more common elsewhere; eligible for state listing). To be conservative, CNPS List 3 (plants for which more information is needed) and List 4 (plants of limited distribution), are also considered sensitive.

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code 2050 *et seq.*) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under CESA. For projects that affect a species listed under both CESA and the federal ESA, compliance with the federal ESA will satisfy CESA if the California Department of Fish and Game (CDFG) determines that the federal incidental take authorization is consistent with CESA under Fish and Game Code Section 2080.1. For projects that will result in a take of a state-only listed species, the applicant must apply for a take permit under Section 2081(b).

Native Plant Protection Act

California's Native Plant Protection Act (Fish and Game Code 1900-1913) requires all State agencies to utilize their authority to carry out programs to conserve endangered and rare native plants. Provisions of the Native Plant Protection Act prohibit the taking of listed plants from the wild and require notification of the CDFG at least 10 days in advance of any change in land use. This allows CDFG to salvage listed plant species that would otherwise be destroyed. The applicant is required to conduct botanical inventories and consult with CDFG during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

Streambed Alteration Agreements, California Fish and Game Code, Sections 1600 – 1616

Under these sections of the Fish and Game Code, CDFG jurisdiction is determined to occur within the water body of any natural river, stream or lake. The term "stream", which includes creeks and rivers, is defined in Title 14, CCR, Section 1.72. The applicant is required to notify CDFG prior to constructing any project that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

[1] *CDFG has changed references to CNPS Lists to California Rare Plant Rank (CRPR) to clarify that CDFG plays an active and authoritative role in the ranking process. See September 2010 CNDDB newsletter: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDB_News_Sep_2010.pdf. The change does not affect the list numbering system or conservation status of any plant species.*

Bureau of Land Management Plans and Guidelines

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) is a 25-million acre expanse of land in southern California designated by Congress in 1976 through the Federal Land Policy and Management Act (FLPMA). BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, proximity to the population centers of southern California, and the need for a comprehensive plan for managing the area. Congress stated that the CDCA Plan must be based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The proposed Project falls within the CDCA.

The Vegetation Element of the CDCA Plan contains the following goals: to conserve federally- and State-listed rare, threatened, or endangered plants and to further the purposes of the ESA and similar State laws; to treat unusual plant assemblages that rate as highly sensitive and very sensitive in a manner that will preserve their habitat and ensure their continued existence; to manage wetland and riparian areas in the desert; to sustainably maintain the continued existence and biological viability of the vegetation resource in the CDCA while providing for the consumptive needs of wildlife, livestock, wild horses and burros, and public uses; to provide guidance for the manipulation of plant habitats or vegetation; and to encourage the use of private desert lands for commercial production of valuable desert plants. The plan identifies the need for monitoring efforts and directing these efforts to those areas with the greatest management need.

Northern and Eastern Colorado Desert Coordinated Management Plan/EIS

The Northern and Eastern Colorado Desert Coordinated Management Plan/EIS (NECO Plan/EIS) is a landscape-scale, multi-agency planning effort that seeks to protect and conserve natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The NECO planning area, which is located in the southeastern CDCA, encompasses over 5 million acres and hosts 60 sensitive plant and animal species. The NECO Plan/EIS amends BLM's CDCA Plan. This multiple use planning effort also takes into account other uses of the desert, such as hiking, hunting, rock hounding, off-highway recreation, commercial mining, livestock grazing, and utility transmission. The NECO Plan/EIS provides integrated ecosystem management for special status species and natural communities for all federal lands, and regional standards for public land health for BLM lands.

Cacti and Yucca Removal Guidelines

The BLM normally requires transplanting or salvage of certain native plant species that would be lost to development on lands under its jurisdiction. Species that typically require salvage regardless of their height in this region include yuccas (*Yucca* spp.), ocotillo (*Fouquieria splendens*), and cacti. For chollas (*Cylindropuntia* spp.), the plant must be less than three feet in height to require salvaging, as all plants greater than three feet in height will not be salvaged but left on-site to be destroyed by clearing activities.

Regional and Local Regulations

County of Riverside General Plan

The open space policy relevant to vegetation is defined in the Desert Center Area Plan (DCAP) within the Riverside County General Plan as follows:

DCAP 10.1 Encourage clustering of development for the preservation of contiguous open space.

3.3.2 Methodology

The Project Study Area encompasses approximately 19,516 acres originally considered for siting of the project components. Initial surveys for biological resources were conducted within this larger Project Study Area. The Project Study Area and locations of each alternative are shown in Figures 3.3-1 through 3.3-3. Additional acreage was added to the Project Study Area to accommodate changes to the footprint of various project components, including the eastern substation (Red Bluff Substation A) and associated Gen-Tie Lines (GT-A-1 and GT-A-2). *Thus, appropriate biological resource surveys included all Project areas currently under consideration. In addition to biological resource surveys all sites with active or partially stabilized sand dunes were also covered by an aeolian geomorphology evaluation (Solar Farm site layouts B and C).*

Prior to conducting any biological surveys, a biological resources literature search was performed. This included researching information from regional documents such as the NECO Plan/EIS (BLM and CDFG 2002), and the Biological Opinion (BO) for the NECO Plan/EIS (USFWS 2005). Searches of the CDFG's California Natural Diversity Database and the CNPS Electronic Inventory were conducted to determine the sensitive species that have been documented in the proposed project vicinity. These searches included a radius of five miles surrounding the Project Study Area.

In addition, surveyors reviewed environmental documents for nearby proposed renewable energy projects that included extensive biological surveys, including the Palen Solar Power Project (BLM 2010a) and the Genesis Solar Energy Project (Genesis Solar 2009), which are approximately 10 miles (Palen) and 17 miles (Genesis) southeast of the Project Study Area, respectively. These reports were reviewed to determine whether any sensitive species found during surveys of those project sites might be relevant to this proposed project. Literature reviews were augmented by the professional judgment of qualified biologists before surveys were conducted.

Using this information and observations in the field, a list was generated of special status plant species that have the potential to occur within the Project Study Area. For assessment purposes, special status species were defined as plants that:

- Have been designated as either rare, threatened, or endangered by CDFG or the USFWS, and are protected under either the ESA or CESA;
- Are proposed species for listing under those same acts;
- Are included in the CNPS Inventory of Rare and Endangered Plants (Lists 1 through 4);
- Meet the definition of endangered, rare, or threatened under CEQA Guidelines, Section 15380; or
- Are considered special status species in local or regional plans, policies, or regulations, such as the NECO Plan/EIS.

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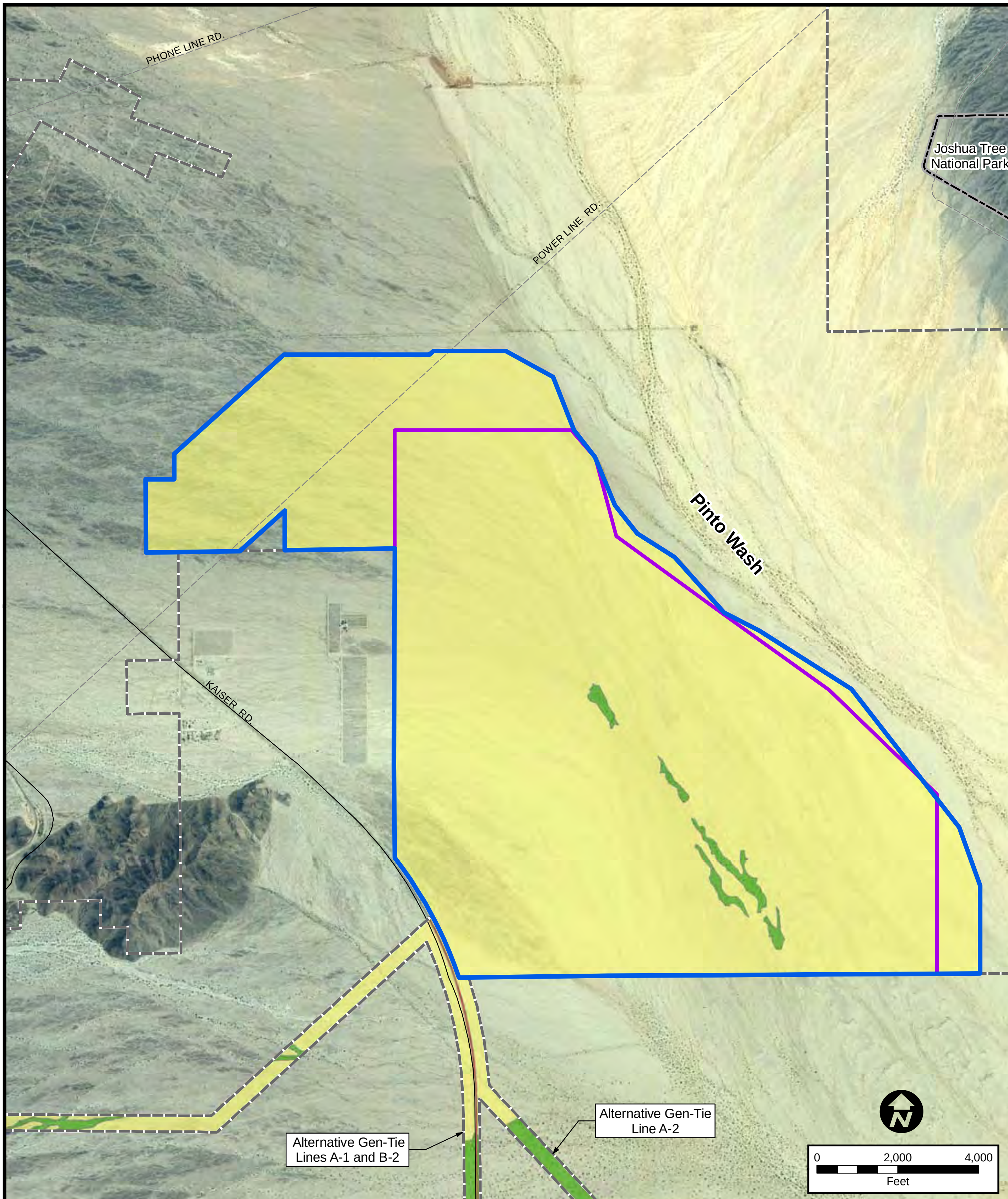

Source: Ironwood Consulting, Inc. 2010

LEGEND

Vegetation Communities

- Desert Dry Wash Woodland
- Sonoran Creosote Bush Scrub
- Developed/Agriculture

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)

DESERT SUNLIGHT SOLAR FARM

Figure 3.3-1

Vegetation Communities (Solar Farm Site)

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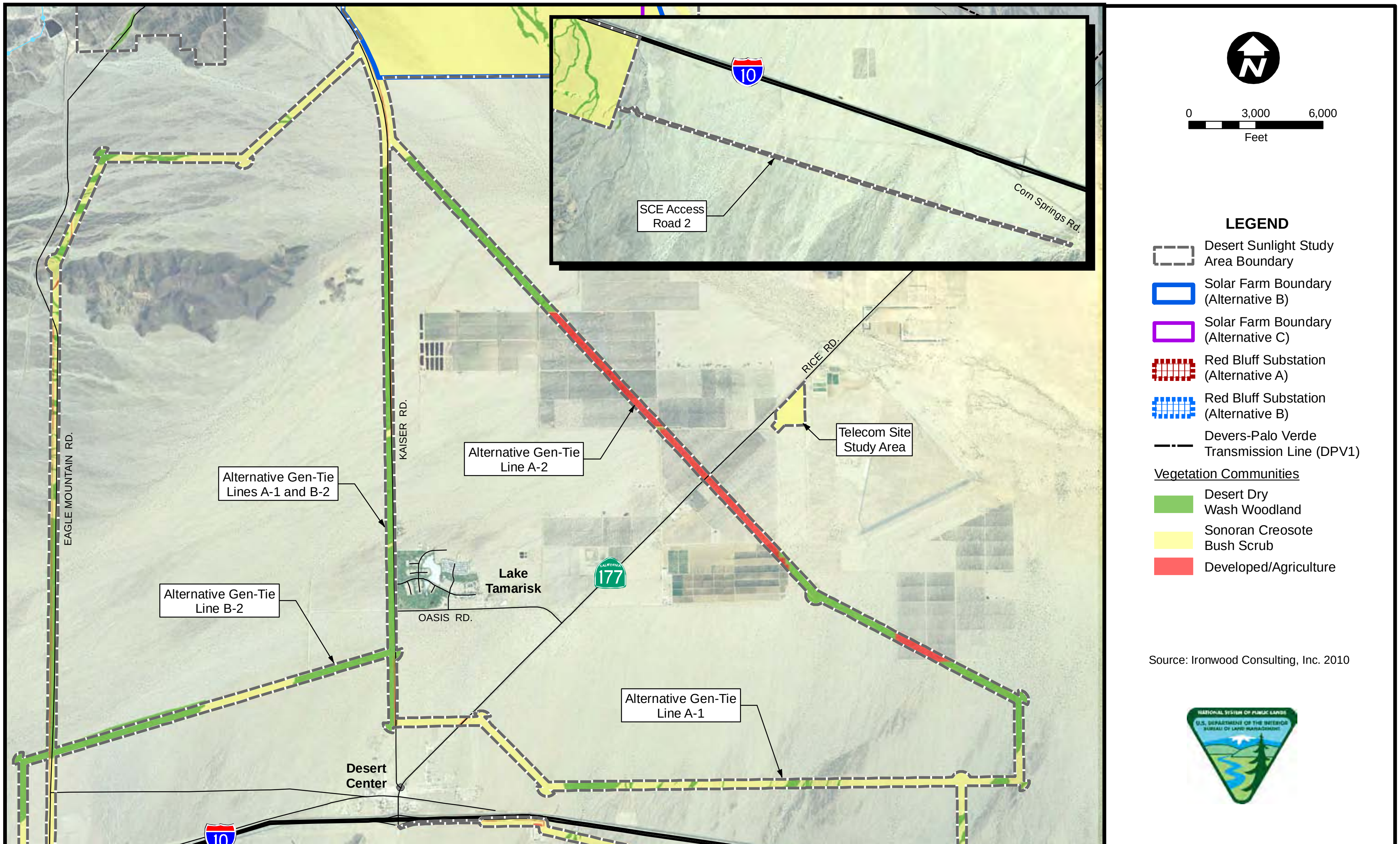

DESERT SUNLIGHT SOLAR FARM

Figure 3.3-2

Vegetation Communities (Gen-Tie Lines and Substations)

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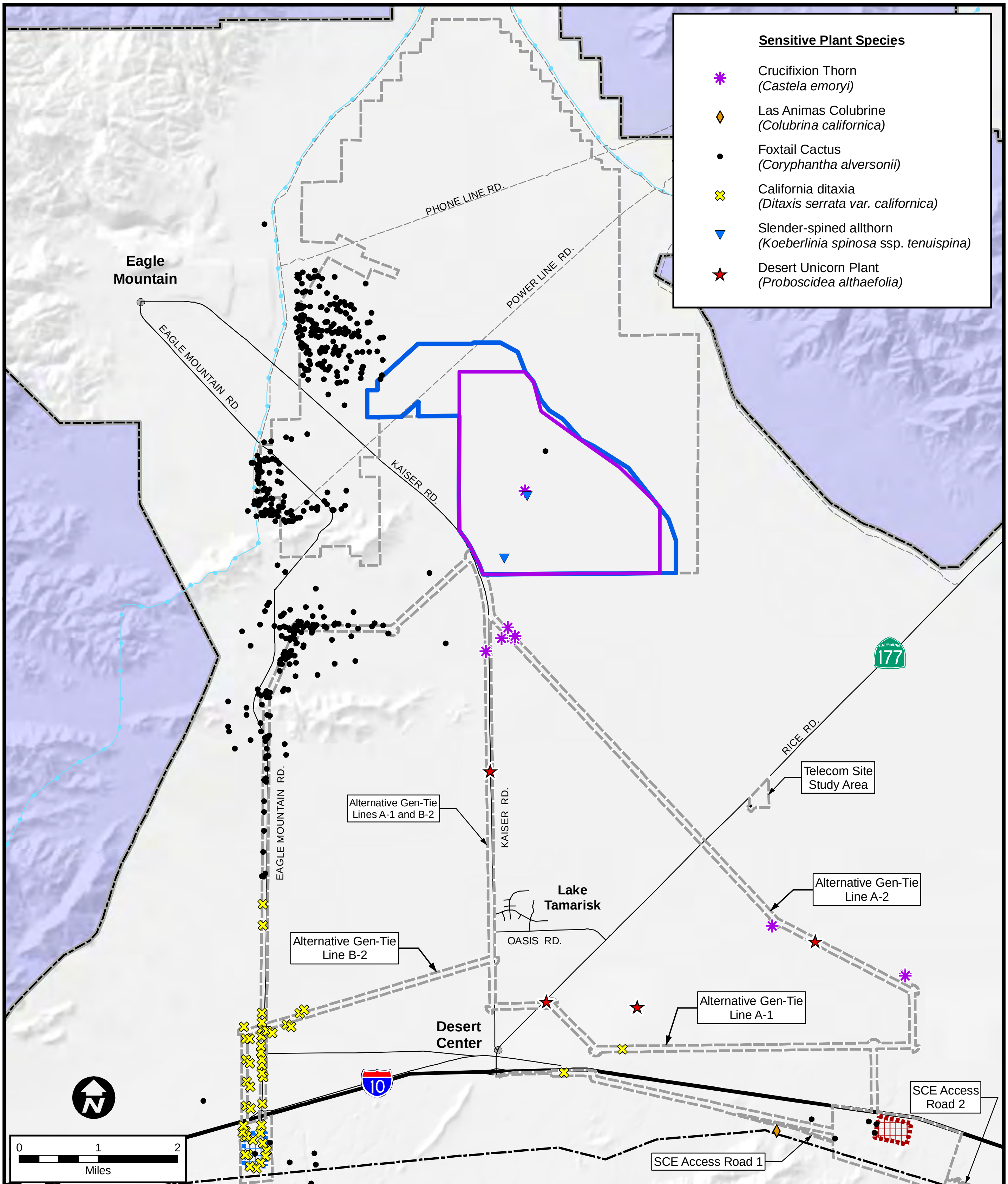


LEGEND

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Devers-Palo Verde Transmission Line (DPV1)
- Red Bluff Substation (Alternative A)
- *Red Bluff Substation (Alternative B)*
- Joshua Tree National Park Boundary
- Aqueduct

Source: Ironwood Consulting, Inc. 2010

DESERT SUNLIGHT SOLAR FARM

Figure 3.3-3

Sensitive Plant Species

A description of each of these types of special status species is presented in Table 3.3-1.

Table 3.3-1
Definitions of Special Status Species Under Consideration in this EIS

Species Designation	Agency	Definition
Endangered	USFWS	A species that is in danger of extinction throughout all or a significant portion of its range.
Threatened	USFWS	Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Proposed	USFWS	A species for which the USFWS has sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA.
Covered under the NECO Plan/EIS	BLM	Special status species that were addressed in the NECO Plan/EIS due to management concerns within the NECO Planning Area.
Endangered	CDFG	A native species or subspecies that is in serious danger of becoming extinct throughout all or a significant portion of its range due to one or more causes, including loss or change in habitat, overexploitation, predation, competition, or disease.
Threatened	CDFG	A native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.
Rare	CDFG	A species that, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its present environment worsens.
Candidate	CDFG	A native species that has been officially noticed by the California Fish and Game Commission as being under review by the CDFG for addition to the threatened or endangered species lists. CDFG candidate species are given no extra legal protection under state laws.
List 1A	CNPS	Plants presumed to be extinct in California.
List 1B	CNPS	Plants rare, threatened, or endangered in California and elsewhere.
List 2	CNPS	Plants rare, threatened, or endangered in California but more common elsewhere.
List 3	CNPS	Plants about which more information is needed—a review list.
List 4	CNPS	Plants of limited distribution—a watch list.

CNPS-listed species also have “threat ranks” as an extension to the list number, which designates the level of endangerment by a 0.1 to 0.3 ranking, with 0.1 being the most endangered and 0.3 being the least endangered. A threat rank is *assigned* for all List 1B, List 2 and most of List 3 and List 4 species. A threat rank of 0.1 indicates that a plant is seriously endangered in California (high degree/immediacy of threat), 0.2 indicates that a plant is fairly endangered in California (moderate degree/immediacy of threat), and 0.3 indicates that a plant is not very endangered in California (low degree/immediacy of threats or no current threats known). No List 1A plants and only some List 3 and List 4 plants have a threat rank extension.

Preliminary biological resources surveys were conducted within the Project Study Area in 2007. The purpose of the surveys was to provide preliminary habitat descriptions within the Project Study Area, describe the need for focused surveys for special status species, and summarize potential biological constraints for the proposed Project. The size of the Project Study Area and the description of the proposed solar facility have changed since the 2007 surveys. The current Project locations and Project Study Area are shown in Figures 3.3-1through 3.3-3. A subsequent Biological Resources Technical Report (BRTR) (Appendix H) incorporates the results of the 2007 surveys, as well as all subsequent surveys, into the characterization of the biological resources of the current Project locations. The discussion of the existing biological setting is based upon information in the BRTR (Ironwood Consulting 2010a).

Floristic surveys were conducted between March 15 and April 9, 2010 <u>*and November 8th through November 12, 2010, within the Project Study Area and thus all of the Project areas currently under consideration have been fully surveyed.*</u> These surveys conformed to the following protocols, as described in more detail in the BRTR contained in Appendix H:

- *Protocols for Surveying and Evaluating Impacts on Special Status Native Plant Populations and Natural Communities* (CDFG 2009);
- *Survey Protocols Required for NEPA/ESA Compliance for BLM Special Status Plant Species* (BLM 2009a); and
- *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 1996).

These surveys included identifying every plant observed within the survey area to the level necessary (species or subspecies/variety) to determine its special status, if any.

A jurisdictional waters delineation was conducted in spring of 2010 and updated in the summer of 2010 within the Project locations to map any wetlands, desert dry washes, and desert dry wash woodlands (Ironwood Consulting and Huffman-Broadway Group 2010). The delineation determined both USACE and CDFG jurisdictions. The study was conducted in accordance with the Code of Federal Regulations definitions of jurisdictional waters, the *Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008*), <u>and supporting guidance documents, such as the current guidance from EPA and USACE (2008) regarding CWA jurisdiction after the U.S. Supreme Court's decision in Rapanos v. Unites States regarding isolated, non-navigable, intrastate waters</u>* <u>(USACE 2008b).</u>

In summary, Project facility and associated Project components for the proposed and alternative Project features were surveyed for biological resources. <u>*In addition to biological resource surveys,*</u> the aeolian geomorphology evaluation covered Solar Farm site <u>*layouts B and C; these were the only sites with potential to affect active or partially stabilized dune habitat*</u>. Data collected during surveys documents the baseline conditions for biological resources.

3.3.3 Soils and Topography

<u>*Although soils associated with the Project Study Area have not been surveyed by the Natural Resource Conservation Service (NRCS), the geotechnical survey of the site and field observations made by Ironwood Consultants found that soils on the Project Study Area were essentially uniform in nature and primarily sandy in texture. Soils primarily consist of undifferentiated younger alluvium, younger alluvium with interspersed areas of weak desert pavement, and*</u>

older alluvium with moderate to strong desert pavement (Earth Systems Southwest 2010). Older alluvial fan deposits supported uplands with desert pavement (manganese and iron oxidized coatings on cobbles and sand) covering older alluvial fan material. Drainages occurring within the older alluvial fans have active younger sediments consisting of fine to coarse sand, interbedded with clay, silt and gravel with no evidence of desert pavement.

Multiple alluvial fans flow into Big Wash (located south of the Solar Farm site layouts B and C and crosses the Gen-Tie Line alternatives) and Pinto Wash (located immediately east of the Solar Farm site layouts B and C). Aeolian sand deposits are located within the Project Study Area but outside of all project component Study Areas. Stabilized sand sheets and pockets of sand dune deposits are located east of the Solar Farm site (layouts B and C) and both solar farm layout sites lack aeolian (wind-blown) sand formations. The western extent of the Chuckwalla Valley is defined by a broad alluvial system that flows east through the Project Study Area. It is fed by numerous alluvial fans and crosses the Gen-Tie Line alternative alignments before it joins with the lower reaches of Big Wash.

The Red Bluff Substation A and related component areas are located at the base of a bajada of the Chuckwalla Mountains. Broad, active alluvial fans dominated by larger rock and gravelly soils are juxtaposed with upland mounds with well-developed desert pavement. Several incised washes occur in this region. Red Bluff Substation B Study Area consists of two distinct soil conditions: sandy soils emanating from an active alluvial fan in the southern half and a caliche outcrop in the southern half. Channels of the alluvial fan develop into narrow washes and flow into control dykes built for flood protection.

3.3.4 Vegetation Communities

Creosote Bush-White Bursage Series (Sawyer and Keeler-Wolf 1995; analogous to Holland's Mojavean and Sonoran desert scrubs, 1986) and Blue Palo Verde-Ironwood-Smoke Tree Series (ibid., analogous to Holland's and NECO's desert dry wash woodland, 1986) are the two vegetation communities found within the Project locations (Figures 3.3-1 and 3.3-2). In addition, disturbed areas are also found within the Project locations, as described in more detail below.

Creosote Bush – White Bursage Series (Creosote Desert Scrub)

The majority of the Project Study Area supports a creosote desert scrub community, *which is a type of desert scrub habitat. Desert scrub habitat is well developed on valley floors and lower bajadas. Soils are well drained and coarse, and salt content in the soil ranges from low to high concentrations of calcium carbonate and other salts. These high concentrations of salts form a hardpan as a subsurface (Mayer, et al 1988).*

Dominant plant species associated with this community include creosote bush (*Larrea tridentata*), burro bush (*Ambrosia dumosa*), boxthorn (*Lycium* sp.), brittlebush (*Encelia farinosa*), indigo bush (*Psorothamnus* spp.), and cheesebush (*Hymenoclea salsola*). Local diversity of creosote scrub varied throughout the Project Study Area. This community was relatively more structurally diverse within the stable, older alluvial fan systems located in the northwestern and southwestern portions of the Solar Farm alternatives than in active alluvial fan systems located in the middle and southern extent of the Solar Farm alternatives.

Blue Palo Verde-Ironwood-Smoke Tree Series (Desert Dry Wash Woodland)

Within the Project Study Area, Blue Palo Verde-Ironwood-Smoke Tree series (desert dry wash woodland) community occurs in the areas designated as desert dry wash woodland (Figure 3.3-2). *Soils of desert wash habitats tend to be sandy to gravelly; some wash plants may be found on a variety of soils. This habitat is often found in association with canyons, arroyos, washes, and other features that contain water for at least* *part of the year, which is essential for habitat to persist. Desert washes are restricted to areas of greater water availability (Mayer, et al 1988).*

Plant species typical of this community found on the site include blue palo verde (*Cercidium floridum*), ironwood (*Olneya tesota*), smoke tree (*Psorothamnus spinosa*), and desert willow (*Chilopsis linearis*). Desert dry wash woodland does not have standing *or running surface* water during most of the year, except after storms. However, *the dominant and characteristic species in* this habitat*, once they mature, are deep-rooted trees (phreatophytes; Rundel and Gibson 1996; Schoenherr and Burk 2007.) By contrast, most desert plants are dependent upon percolating seasonal surface water; their root systems do not reach deeper groundwater sources. In desert washes, the characteristic woodland species persist on surface water sources until they eventually develop deeper root systems. Due to seasonal runoff and infrequent storm flows, the wash habitats provide greater and more frequent soil moisture than surrounding bajadas, enabling young phreatophytes to become established and eventually develop their deep root systems. When they mature, these trees become at least partly dependent upon groundwater. Depth to permanent groundwater in desert washes is essentially the same as the surrounding landscape.*

Disturbed Areas

Disturbed, ruderal, and non-vegetated areas are found in association with roads within the Project locations and previously developed areas around wells and associated features such as drainage basins. Disturbed areas are found on 2 acres of GT-A-1, 20 acres of GT-A-2, 2 acres of GT-B-2, and 1 acre of Red Bluff Substation A (Access Road 1).

Invasive Plant Species

Invasive plants are introduced species that can thrive in areas beyond their natural range of dispersal. These plants are characteristically adaptable, aggressive, and have a high reproductive capacity. Their vigor combined with a lack of natural enemies often leads to outbreak populations (USDA 2010). Invasive plant species have degraded most natural communities in the southwestern U.S. They often displace and outcompete native species, and have the potential to alter fire and hydrologic regimes.

Within the Project Study Area, the prevalence of invasive species is low, but is higher in disturbed areas. Invasive plant species that can be found in the Project Study Area include Mediterranean splitgrass (*Schismus barbatus*), red brome (*Bromus madritensis* ssp. *rubens*), crane's bill (*Erodium cicutarium*), and Tournefort's mustard (*Brassica tournefortii*).

3.3.5 Special Status Plant Species

After review of plant occurrence records, a list was developed of 14 special status plant species that are present in the area and that might occur within the Project Study Area. Table 3.3-2 lists each of these species and whether its presence was confirmed and as illustrated in Figure 3.3-3. They include: *Coryptantha alversonii* (foxtail cactus), Emory's crucifixion thorn (*Castela emoryi*), Las Animas colubrina (*Colubrina californica*), California ditaxis (*Ditaxis serrata* var. *californica*), desert unicorn plant (*Proboscidea althaeifolia*), and slender-spined allthorn (*Koeberlinia spinosa* ssp. *tenuispina*), and are discussed in more detail in the BRTR. All of these plant species are on the CNPS list, but none of them are federally or state listed or proposed for listing.

Table 3.3-2
Special Status Plant Species with the Potential to Occur in the Project Study Area

Scientific Name **Common Name**	**Status**	**Potential for Occurrence Alternative 1/ Alternative 2/ Alternative 3**[1]
Coachella Valley milk-vetch *Astragalus lentiginosus* var. *coachellae*	Federal: Endangered State: None CNPS[2]: 1B.2 BLM: Covered under the NECO[3] Plan	U/U/U
Foxtail cactus *Coryptantha alversonii*	Federal: None State: None CNPS: 4.3 BLM: Covered under the NECO Plan	C/C/C
Harwood's milk-vetch *Astragalus insularis* var. *harwoodii*	Federal: None State: None CNPS: 2.2 BLM: Covered under the NECO Plan	U/U/U
Ayenia *Ayenia compacta*	Federal: None State: None CNPS: 2.3 BLM: Not covered under the NECO Plan	U/U/U
Emory's crucifixion thorn *Castela emoryi*	Federal: None State: None CNPS: 2.3 BLM: Covered under the NECO Plan	C/C/C
Las Animas colubrina *Colubrina californica*	Federal: None State: None CNPS: 2.3 BLM: Covered under the NECO Plan	C/P/P
Glandular ditaxis *Ditaxis claryana*	Federal: None State: None CNPS: 2.2 BLM: Covered under the NECO Plan	U/U/U
California ditaxis *Ditaxis serrata* var. *californica*	Federal: None State: None CNPS: 3.2 BLM: Covered under the NECO Plan	C/C/P
Spearleaf *Matelea parvifolia*	Federal: None State: None CNPS: 2.3 BLM: Covered under the NECO Plan	U/U/U
Desert unicorn plant *Proboscidea althaeifolia*	Federal: None State: None CNPS: 4.3 BLM: Covered under the NECO Plan	C/C/C
Orocopia sage *Salvia greatae*	Federal: None State: None CNPS: 1B.3 BLM: Covered under the NECO Plan	U/U/U

Table 3.3-2 (continued)
Special Status Plant Species with the Potential to Occur in the Project Study Area

Scientific Name **Common Name**	**Status**	**Potential for Occurrence Alternative 1/ Alternative 2/ Alternative 3[1]**
Desert spike-moss *Selaginella eremophila*	Federal: None State: None CNPS: 2.2 BLM: Covered under the NECO Plan	U/U/U
Cove's senna *Senna covesii*	Federal: None State: None CNPS: 2.2 BLM: Covered under the NECO Plan	U/U/U
Slender-spined allthorn (Crown-of-thorns) *Koeberlinia spinosa* ssp. *tenuispina*	Federal: None State: None CNPS: 2.2 BLM: Covered under the NECO Plan	C/C/C

[1]Potential for occurrence:
U: Unlikely
P: Potential
C: Confirmed
[2] CNPS Status:
1B.3= rare, threatened, or endangered in CA, however, there is a low degree or immediacy of threats.
2.2= fairly threatened in CA, more common elsewhere.
2.3 = not very threatened in CA, more common elsewhere.
3.2 = fairly threatened in CA, need more information on this species.
4.3 = not very [3]threatened in CA, plants of limited distribution (watch list).
[3] Northern and Eastern Colorado Desert Coordinated Management Plan (NEC0)

A brief description of each special status plant species is provided below.

The Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*), a federal listed endangered plant species, has been recorded near the Project Study Area. During surveys, a number of individuals were observed that were similar to Coachella Valley milk-vetch. Discussions with a Joshua Tree National Park botanist and the Herbarium at Rancho Santa Ana Botanic Garden led to the conclusion that the individuals that were observed were actually the freckled milk-vetch (*Astragalus lentiginosus* var. *variabilis*), which is not a special status species. As such, the Coachella Valley milk-vetch was not observed during surveys. Further, the previously recorded observation near the Project Study Area was also a misidentification of the species. Suitable habitat for this species, sandy Sonoran desert scrub and windblown sand dunes, *occurs within the larger Project Study Area but* does not occur within any of the Project *component* locations *(Solar Farm, substation, or gen-tie line alternatives)*. Thus, *Coachella Valley milk-vetch* is considered unlikely to occur in the Project locations.

Foxtail cactus (*Coryptantha alversonii*) is a CNPS List 4.3 species belonging to the cactus family (Cactaceae). This low-lying cactus is typically found in rocky soils on hills, mountains, margins of washes, and bajadas dominated by Sonoran desert scrub. During surveys, *five* and *two* individuals were observed within the footprints of Alternatives 1 and 2, respectively, and *five* individuals were observed within Alternative 3.

Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*) is a CNPS List 2.2 annual herb belonging to the pea family (Fabaceae). It is historically known to occur in *creosote bush scrub communities of the Sonoran Desert on desert dunes in sandy or gravelly areas at elevations ranging from 0 to 990 feet (0 to 300 meters). Although sand dunes do not occur within the Project Study Area sites, habitat in the form of sandy and gravelly areas within creosote bush scrub habitat is found in the project footprint; however, this species was not found during surveys for the Project and the nearest recorded occurrence of Harwood's milk-vetch is approximately eight miles south of the Project Study Area. Therefore, this species is unlikely to occur within the Project locations.*

Ayenia (*Ayenia compacta*) is a CNPS List 2.3 perennial herb belonging to the cacao family (Stericuliaceae). It is historically known to occur in Mojavean desert scrub and rocky Sonoran desert scrub at elevations ranging from 500 to 3,600 feet (150 to 1,095 meters). Both of these vegetation communities occur within the Project Study Area, however, the nearest recorded occurrence of ayenia is approximately 12 miles south of the Project Study Area and this species was not found during surveys for the Project. Therefore, this species is unlikely to occur within the Project locations.

Emory's crucifixion thorn (*Castela emoryi*) is a CNPS List 2.3 perennial deciduous shrub belonging to the quassia family (Simaroubaceae). It is historically known to occur in Mojavean desert scrub, playas, and gravelly Sonoran desert scrubs at elevations ranging from 300 to 2,200 feet (90 to 670 meters). All of these environmental conditions occur within the Project Study Area and there is a record of Emory's crucifixion thorn approximately 2.5 miles south of the layouts of SF-A, SF-B, and SF-C, near GT-A-1. During surveys, *one* individual was observed within the footprints of Alternatives 1 and 2, respectively, and *three* individuals were observed within Alternative 3.

Las Animas colubrina (*Colubrina californica*) is a CNPS List 2.3 perennial deciduous shrub belonging to the buckthorn family (Rhamnaceae). It is historically known to occur in both Mojavean and Sonoran desert scrub at elevations ranging from 0 to 3,200 feet (0 to 1,000 meters). This species typically occurs in dry canyons with sandy, gravelly soils (BLM 2002). These vegetation communities occur within the Project Study Area, and there is a recorded occurrence of Las Animas colubrina approximately four miles southwest of the Project Study Area. *No individuals were found within the proposed project's disturbance footprint, but two individuals were observed within the Study Area footprints of Alternatives 1 and 3.*

Glandular ditaxis (*Ditaxis claryana*) is a CNPS List 2.2 perennial herb belonging to the spurge family (Euphorbiaceae). It is historically know to occur in Mojavean desert scrub and sandy Sonoran desert scrub at elevations ranging from 0 to 1,500 feet (0 to 465 meters). These vegetation communities and elevations occur within the Project Study Area, however, the nearest recorded occurrence of glandular ditaxis is approximately 12 miles south of the Project Study Area and this species was not found during surveys for the Project. Therefore, this species is unlikely to occur within the Project locations.

California ditaxis (*Ditaxis serrata* var. *californica*) is a CNPS List 3.2 perennial herb belonging to the spurge family (Euphorbiaceae). It is historically known to occur in Sonoran desert scrub at elevations ranging from 100 to 3,300 feet (30 to 1,000 meters). This species' distribution is not well understood and most records within the NECO plan area are within, and immediately south of, Joshua Tree National Park (BLM 2002). Sonoran desert scrub occurs within the Project Study Area and there is a record of this species approximately three miles southwest of the Project Study Area.

During surveys, *two* individuals were found within the footprints of Alternative 1 and Alternative 3, respectively, and *604* individuals were found within the footprint of Alternative 2.

Spearleaf (*Matelea parvifolia*) is a CNPS List 2.3 perennial herb belonging to the milkweed family (Asclepidaceae). It is historically known to occur in Mojavean and Sonoran desert scrub at elevations ranging from 1,400 to 3,600 feet (440 to 1,095 meters). Although both Mojavean and Sonoran desert scrub occur within the Project Study Area, the highest elevation of the site is more than 500 feet below the lowest recorded elevation for spearleaf. Additionally, the nearest recorded occurrence is approximately 13 miles south of the Project Study Area. This species was also not found during surveys, and for these reasons this species is considered to be unlikely to occur within the Project locations.

Desert unicorn plant (*Proboscidea althaeifolia*) is a CNPS List 4.3 perennial herb belonging to the Unicorn-plant family (Martyniaceae). It is historically known to occur in sandy Sonoran desert scrub at elevations ranging from 500 to 3,300 feet (150 to 1,000 meters). This vegetation community occurs within the Project Study Area, and the species was observed during surveys. *One* individual *was* observed in the footprints of Alternative 1 and 3, and *none* were observed in the footprint of Alternatives 2.

Orocopia sage (*Salvia greatae*) is a CNPS List 1B.3 perennial evergreen shrub belonging to the mint family (Lamiaceae). It is historically known to occur in Mojavean and Sonoran desert scrub at elevations ranging from -130 to 2,700 feet (-40 to 825 meters). Both Mojavean and Sonoran desert scrubs occur within the Project Study Area, however, the nearest recorded occurrence of Orocopia sage is approximately nine miles south of the Project Study Area and this species was not found during surveys for the Project. Therefore, this species is considered to be unlikely to occur within the Project locations.

Desert spike-moss (*Selaginella eremophila*) is a CNPS List 2.2 perennial rhizomatous herb belonging to the Spike-moss family (Sellaginellaceae). It is historically known to occur in gravelly or rocky Sonoran desert scrub at elevations ranging from 650 to 3,000 feet (200 to 900 meters). The environmental conditions associated with occurrence of this species also are present within the Project Study Area; however, the nearest recorded occurrence of this species is approximately 13 miles south of the Project Study Area and this species was not found during surveys for the Project. Therefore, this species is considered to be unlikely to occur within the Project locations.

Cove's senna (*Senna covesii*) is a CNPS List 2.2 perennial herb belonging to the *pea* family. It is historically known to occur in sandy Sonoran desert scrub at elevations ranging from 1,000 to 3,500 feet (305 to 1,070 meters). There is a recorded occurrence of Cove's senna approximately five miles northwest of the Project Study Area. However, this species was not found during surveys, and suitable habitat and elevations are not present within the Project Study Area. For these reasons, this species is considered to be unlikely to occur within the Project locations.

Slender-spined allthorn (*Koeberlinia spinosa* ssp. *tenuispina*), also known as crown-of-thorns, is a CNPS List 2.2 deciduous shrub belonging to the althorn family (Koeberliniaceae). This species typically blooms from May to July. It is historically known to occur in rocky or gravelly soils in washes and ravines in desert dry wash woodlands and Sonoran desert scrub, at elevations ranging from 500 to 1,700 feet (150 to 510 meters). Slender-spined allthorn may form small colonies by root-sprouting.

Five individuals were found within SF-B and SF-C and, therefore, occur in the footprints of Alternatives 1, 2, and 3.

A number of species of cacti were found within the Project Study Area during floristic surveys and are listed in Table 3.3-3. Those species shown in bold are also considered special status plant species**.** Other non-special status cacti species were treated as special-status species for the purposes of this analysis due to BLM's salvage an*d* translocation guidelines for cacti and yucca.

Table 3.3-3
Cacti Recorded Within the Project Study Area

Scientific Name	Common Name
Cactaceae	Cactus family
Coryphantha vivipara	Foxtail cactus
Echinocactus polycephalus	Cottontop
E. engelmannii	Hedgehog cactus
Ferocactus cylandraceus	Barrel cactus
Mammalaria tetrancistra	Fishhook cactus
Opuntia basilaris basilaris	Beavertail cactus
Opuntia echinocarpa	Golden cholla
Opuntia ramosissima	Pencil cholla
Simaroubaceae	Quassia or Simarouba family
Castela emoryi	Crucifixion thorn

Source: Ironwood 2010

3.3.6 Sensitive Natural Communities

Desert Dry Wash Woodland

The NECO Plan/EIS designates desert dry wash woodland habitats as a sensitive habitat subject to 3:1 mitigation for any disturbance within that habitat. Desert dry wash woodland (equivalent to Blue Palo Verde-Ironwood-Smoke Tree series vegetation in the more recent Sawyer-Keeler Wolf designations) is present within Alternatives 1, 2, and 3, as shown in (Figures 3.3-1 and 3.3-2). *In addition, desert dry wash woodland is present off-site, along episodic stream channels both upstream and downstream from project area boundaries, and in Pinto Wash, east of the Solar Farm layout alternatives.*

Active Desert Dunes

Active desert dunes are considered sensitive by the CNDDB and the BLM (within the NECO Plan/EIS) *and are the primary habitat type for certain special status plant and animal species. This community is characterized by mostly unvegetated drifted sand dunes and sand fields of five feet or less in height. Environmental changes that stabilize sand, affect sand sources, or block sand movement corridors also affect active dunes; as such, Sunlight commissioned an aeolian (wind driven) geomorphology study to determine whether the Solar Farm was within a sand transport corridor and to assess any potential impacts from aeolian sand migration within the proposed footprint of the solar farm facility (Kenney 2010).* Results of the aeolian geomorphology evaluation conducted for the proposed Project showed that there is no evidence of aeolian sand migration (no active dune fields) within the Solar Farm area (Kenney 2010); *thus, the Project would not have any significant effect on aeolian sand migration. Additionally, no active dune fields were identified within the Project locations during surveys. Within the Project Study Area, aeolian sand deposits are limited to the eastern portion of the Project Study Area located approximately one mile east of the Solar Farm alternatives. Because other portions of the*

Project locations (substations and gen-tie lines) are not located adjacent to active dunes, they are not expected to affect sand transport to active dunes and were not included in this study.

Fine Sand Habitats

According to the aeolian geomorphology study (Kenney 2010), relict aeolian deposits exist within the Solar Farm site (layouts B and C). These deposits, which by definition are no longer receiving active sand transport, consist of sand sheets and small coppice dunes (i.e., mounds at the base of plants). The sand sheets are stabilized with vegetation and often exhibit a wind abrasion lag on the surface composed of very coarse sand and small gravel. The relict coppice dunes (mounds at the base of plants) were observed to be strongly degraded via bioturbation and other processes. These types of dune deposits are known for zones characterized by relatively minor aeolian sand migrating fluxes and likely were deposited in the mid to late Holocene (past 5,000 years).

Relict sand deposits in coppice dunes and sand sheets, both overlying bajada surfaces, are generally only a few centimeters thick, overlying hardened alluvial surfaces. The sand surfaces are also hardened and thus no longer accessible to aeolian transport. These relict sands are not suitable habitat for special status plant species restricted to dunes or other aeolian habitats.

The only aeolian deposits identified within the Solar Farm alternatives that receive active sand transport consist of moderately active coppice dunes within some of the active alluvial washes. These deposits are likely associated with minor aeolian sand fluxes derived from the local washes within a few months after they flow. Sand deposits within the washes are thin (only a few centimeters deep), overlying more coarsely armored rock and gravel channel bottoms. Most sand within the washes is coarser than aeolian dune sand. These washes and the small patches of adjacent coppice dune habitat are poorly to marginally suitable habitat for special status plant species restricted to dunes or other aeolian habitats.

Based on the evidence evaluated during this study, aeolian sand transport across the site is very low to low. Winds appear to be sufficiently strong across the site to entrain and transport sand; however, there is a paucity of sand source(s) to support more than low to very low sand transport; most of the potentially available sand is from the local active washes and this sand quickly deposits within local coppice dunes within or in the proximity of the washes from which the sand derived.

According to the Biological Resources Technical Report (Ironwood, 2010), sand dunes within the Project Study Area are limited to an area located one mile east of the Sunlight and SCE components (including Solar Farm layouts B and C, gen-tie lines, and substation alternatives).

3.3.7 Jurisdictional Resources

The Project Study Area is not within a floodplain, as defined by the Federal Emergency Management Agency (FEMA). Nevertheless, several ephemeral washes are present that may fall under the jurisdiction of various agencies, such as the USACE, CDFG, and RWQCB and *could* thus be described as jurisdictional waters *if certain regulatory criteria are met*. During project surveys, no areas were found that met the USACE technical criteria for classification as wetlands. However, a number of areas did meet the USACE technical criteria for other waters of the U.S. due to the presence of an ordinary high water mark. These areas are locally known as desert dry washes. While these areas meet the criteria for other waters of the U.S., they are not subject to USACE jurisdiction under the Clean Water Act. This is based on guidance provided by the EPA and USACE and is due to their lack of a surface water connection to the following: a traditional navigable waterway, an intrastate commerce connection with the ephemeral surface water flows, and ponding that infrequently occurs in localized areas within the desert dry washes within the proposed Solar Farm site (Ironwood 2010).

The Applicant has requested *and received an official USACE determination that there are no waters of the United States within the Project area.* However, ephemeral desert washes within the Project *area* do fall under the jurisdiction of the CDFG's Streambed Alteration Agreement Program.

3.4 WILDLIFE

3.4.1 Applicable Plans, Policies, and Regulations

Federal Regulations

Endangered Species Act of 1973

The ESA (16 U S C *§§ 1531-1544*) and subsequent amendments establish legal requirements for the conservation of endangered and threatened species and the ecosystems upon which they depend.

Section 7

Section 7 of the ESA requires federal agencies, in consultation with, and with the assistance of the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. The USFWS and National Marine Fisheries Service share responsibilities for administering the Act. All federal threatened and endangered species considered in this EIS are under the jurisdiction of the USFWS. Regulations governing interagency cooperation under Section 7 are found at 50 CFR, Part 402. The BO issued at the conclusion of formal Section 7 consultation may include a statement authorizing a take that may occur incidental to an otherwise legal activity.

Critical Habitat

Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. Designation of an area as critical habitat provides a means by which the habitat of an endangered or threatened species can be protected from adverse changes or destruction resulting from federal activities or projects. A critical habitat designation does not set up a preserve or refuge and usually applies only when federal funding, permits, or projects are involved, though it may be protected under CEQA. Critical habitat requirements do not apply to citizens engaged in activities on private land that do not involve a federal agency.

Section 9

Section 9 of the ESA lists those actions that are prohibited under the ESA, including take (i.e., to harass, harm, pursue, hunt, wound, or kill) of listed species of fish and wildlife without special exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or shelter. "Harass" is further defined as actions that create the likelihood of injury to listed species to an extent as *to* significantly disrupt normal behavior patterns which include breeding, feeding, and shelter.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703-711) is a treaty signed by the United States, Canada, Mexico, and Japan that makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill migratory birds. The law applies to the removal of nests (such as swallow nests on bridges) occupied by migratory birds during the breeding season. The MBTA states that it is unlawful to take these species, their nests, their eggs, or their young anywhere in the United States.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (16 USC, 668, enacted by 54 Stat. 250) protects bald and golden eagles by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this act. Under the Bald and Golden Eagle Protection Act, take includes "disturb," which means "to agitate or bother a bald eagle or a golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (16 USC, 661-666) applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or otherwise modified. Project proponents are required to consult with the USFWS and the appropriate state wildlife agency. These agencies prepare reports and recommendations that document project effects on wildlife and identify measures that may be adopted to prevent loss or damage to wildlife resources. The term "wildlife" includes both animals and plants. Provisions of the act are implemented through the NEPA process and the Section 404 permit process.

Desert Tortoise Recovery Plan and Critical Habitat Designation of 1994

The Desert Tortoise Recovery Plan established a strategy for the recovery and eventual delisting of the Mojave population of desert tortoise. Six recovery units within 14 Desert Wildlife Management Areas (DWMAs) were originally proposed in Arizona, California, Nevada, and Utah. Based on information in the Recovery Plan, 12 Critical Habitat Units (CHUs) were established for the Mojave population of desert tortoise by the USFWS on February 8, 1994.

A draft revised recovery plan was prepared in 2008 (USFWS 2008), which re-delineated the recovery units and reduced them from six units to five units, based on recent genetic research. The recovery units cover the entire range of the Mojave population (all tortoises north and west of the Colorado River) of desert tortoise.

California Desert Protection Act of 1994

This act established the Death Valley and Joshua Tree National Parks, the Mojave National Preserve, and the Granite Mountains National Reserve. It also declared certain lands in the California desert as wilderness, and included other natural resource designations and provisions.

Executive Order 13112 Invasive Species

This order directs federal agencies to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause. To do this, the order established the National Invasive Species Council; currently there are 13 Departments and Agencies on the Council.

State Laws and Regulations

California Environmental Quality Act

The California Environmental Quality Act (CEQA) (PRC. 21000 et seq.) was enacted in 1970 to provide for full disclosure of environmental impacts to the public before issuance of a permit by state and local public agencies. With regard to biological resources, CEQA gives consideration to "sensitive" plants and animals, in addition to federal or state listed species. Sensitive species include wildlife Species of Special Concern listed by the CDFG and BLM sensitive species*, and species which meet the CEQA definition of endangered, rare or threatened. (CEQA Guidelines §15380.)*

California Endangered Species Act

The CESA (Fish and Game Code 2050 et seq.) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under CESA. For projects that affect a species listed under both CESA and the federal ESA, compliance with the federal ESA will satisfy CESA if the CDFG determines that the federal incidental take authorization is consistent with CESA under Fish and Game Code Section 2080.1. For projects that will result in a take of a state-only listed species, the applicant must apply for a take permit under Section 2081(b).

California Fish and Game Code, Sections 3511, 4700, 5515, and 5050

The classification of fully protected species was the state's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state or federal endangered species acts, or both, although there are several exceptions, including the golden eagle.

The Fish and Game Code sections dealing with fully protected species state that these species "...may not be taken or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected" species, although take may be authorized for necessary scientific research. This language arguably makes the "fully protected" designation the strongest and most restrictive regarding the "take" of these species. In 2003, the code sections dealing with fully protected species were amended to allow the CDFG to authorize take resulting from recovery activities for state-listed species.

California Fish and Game Code, Sections 3503 and 3513

Section 3503 prohibits the taking and possession of any bird egg or nest, except as otherwise provided by this code or subsequent regulations. Further, Section 3513 provides for the adoption of the MBTA's provisions. As with the MBTA, this state code offers no statutory or regulatory mechanism for obtaining an incidental take permit for the loss of non-game migratory birds. The administering agency for these sections is the CDFG.

Bureau of Land Management Plans and Guidelines

California Desert Conservation Area Plan

The CDCA is a 25-million acre expanse of land in southern California designated by Congress in 1976 through the FLPMA. BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, proximity to the population centers of southern California, and the need for a comprehensive plan for managing the area. Congress stated that the CDCA Plan must be based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The proposed Project falls within the CDCA.

The Wildlife Element of the CDCA Plan contains objectives and goals designed to: manage federally and State listed species and their habitats; comply with existing legislation and BLM policies; provide certain species designated as sensitive by the BLM special consideration and attention in the planning process; consider the habitat of all fish and wildlife in implementing the CDCA Plan; manage representative habitats using a holistic approach; give habitats unique to the CDCA special management consideration and manage them so as to maintain their unique biological characteristics; and manage sensitive habitat using a holistic, systems-type approach. Some examples of sensitive habitats include: riparian areas, wetlands, sand dunes, relict and island habitats, washes, and important ecological zones between different major ecosystems and deserts.

The primary active wildlife management tools used in the CDCA Plan are Areas of Critical Environmental Concern (ACECs) and Habitat Management Plans (HMPs). The CDCA Plan also affords protection to fish and wildlife resources through the designation of Multiple-Use Class L, which limits the number and location of routes that are approved. In addition, the plan includes a designation of Special Areas that highlights habitats and species that should receive special consideration in the environmental assessment process for all project types. Two additional designations in the Wildlife Element are Research Natural Area and Sikes Act Agreement. Research Natural Areas have been proposed in a few locations where research and education would be the primary uses. Sikes Act Agreements are cooperative agreements between the BLM and the CDFG for joint development and implementation of an HMP. The plan identified 89 special fish and wildlife areas that would receive active habitat management and/or special attention in the environmental assessment process. Twenty-eight areas were identified as ACECs solely or partially to protect fish and wildlife resources.

Northern and Eastern Colorado Desert Coordinated Management Plan/EIS

The NECO Plan/EIS is a landscape-scale, multi-agency planning effort that seeks to protect and conserve natural resources while simultaneously balancing human uses of the California portion of the Sonoran Desert ecosystem. The NECO planning area, which is located in the southeastern CDCA, encompasses over 5 million acres and hosts 60 sensitive plant and animal species. The NECO Plan/EIS amends BLM's CDCA Plan. This multiple use planning effort also takes into account other uses of the desert, such as hiking, hunting, rock hounding, off-highway recreation, commercial mining, livestock grazing, and utility transmission.

The NECO Plan/EIS provides reserve management for the desert tortoise, integrated ecosystem management for special status species and natural communities for all federal lands, and regional standards for public land health for BLM lands. The NECO Plan focuses on the conservation of species and habitats through the use of a system of large *Desert Wildlife Management Areas (*DWMAs*)* for the desert tortoise and wildlife habitat management areas (WHMAs) for other special status species and natural communities. DWMAs and WHMAs would replace all current special designations for species and habitats. DWMAs generally coincide with current tortoise critical habitat areas, are ACECs, and feature a one percent surface disturbance limit. The focus of WHMAs is on mitigation, habitat improvements, and federal ownership. The NECO Plan/EIS also addresses designation of routes of travel, land ownership pattern, access to resources for economic/social needs, bighorn sheep management, and burro and wild horse management.

Regional and Local Regulations

County of Riverside General Plan

The following open space policies relevant to wildlife are defined in the Desert Center Area Plan (DCAP) within the Riverside County General Plan as follows:

DCAP 10.1 Encourage clustering of development for the preservation of contiguous open space.

DCAP 10.2 Work to limit off-road vehicle use within the Desert Center Area Plan.

DCAP 10.3 Require new development to conform with Desert Tortoise Critical Habitat designation requirements.

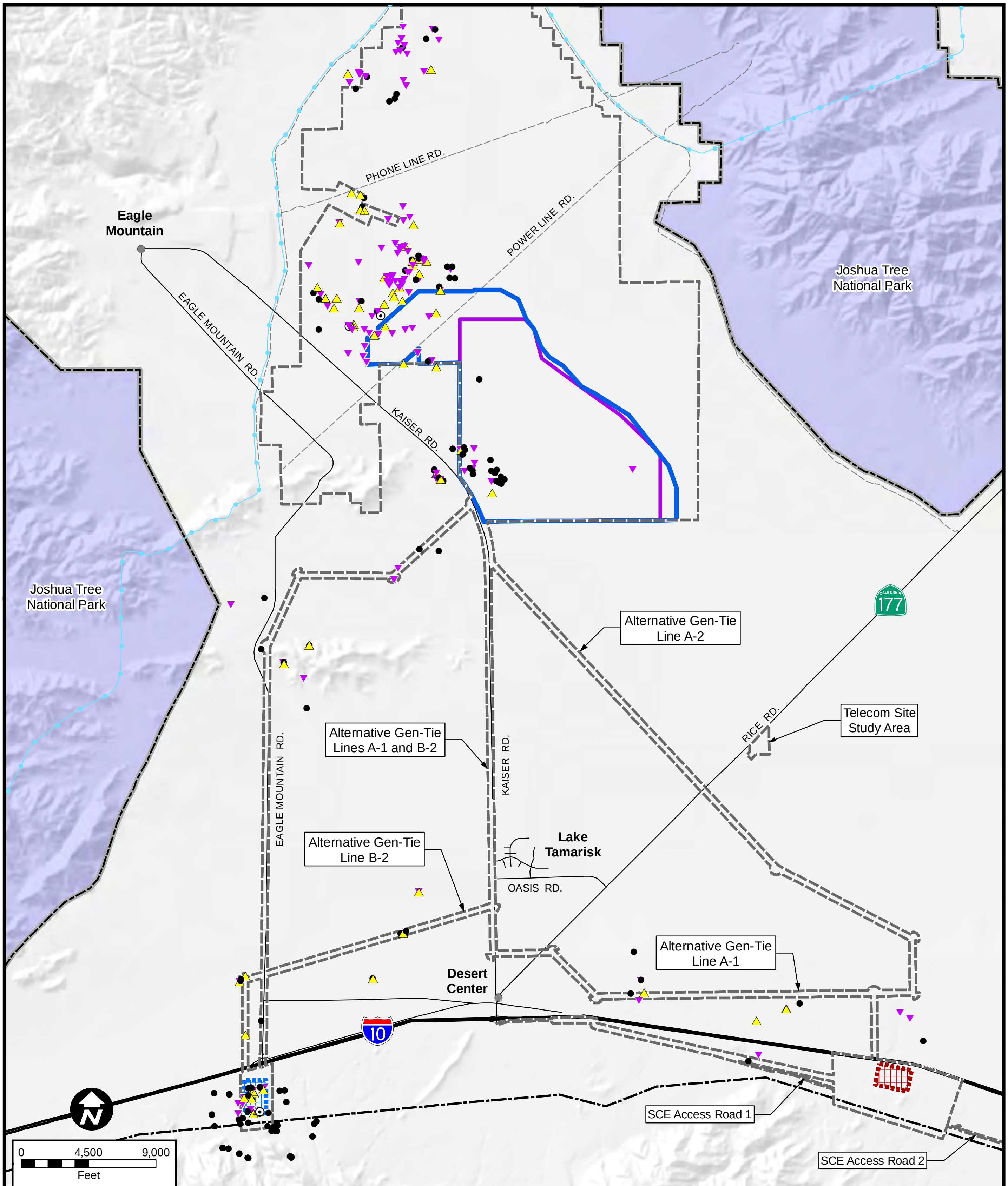
3.4.2 Methodology

The Project Study Area encompasses approximately 19,516 acres that were originally considered for siting of the Project components. Initial surveys for biological resources were conducted within this larger Project Study Area, which, along with locations of each alternative, are shown in Figures 3.4-1 through 3.4-5. Additional acreage was added to the Project Study Area to accommodate changes to the footprint of various project components, including the eastern substation (Red Bluff Substation A) and associated Gen-Tie Lines (GT-A-1 and GT-A-2). *Thus, appropriate biological resource surveys included all sites for the proposed Project facilities and associated Project components for the proposed Project and each alternative. In addition to biological resource surveys all sites with potential for active or partially stabilized sand dunes were also covered by an aeolian geomorphology evaluation. (Solar Farm site layouts B and C). Field surveys covering all project component sites provide the appropriate biological data to support the analysis and conclusions presented here.*

Prior to conducting any biological surveys, a biological resources literature search was performed. This included researching information from regional documents such as the NECO Plan/EIS (BLM and CDFG 2002), the Biological Opinion (BO) for the NECO Plan/EIS (USFWS 2005), and line distance sampling data for desert tortoise collected between 2001 and 2009 in the region. Searches of the CDFG's California Natural Diversity Database were conducted to determine the sensitive species that have been documented in the proposed project vicinity. These searches included a radius of five miles surrounding the Project Study Area.

In addition, surveyors reviewed environmental documents for nearby proposed renewable energy projects that included extensive biological surveys, including the Palen Solar Power Project (BLM and CEC 2010) and the Genesis Solar Energy Project (Genesis Solar 2009), whose sites are approximately 10 miles (Palen) and 17 miles (Genesis) southeast of the Project Study Area. These

X:\GIS\Desert_SunlightMXD_Files\Tortoise_Prj.mxd



LEGEND

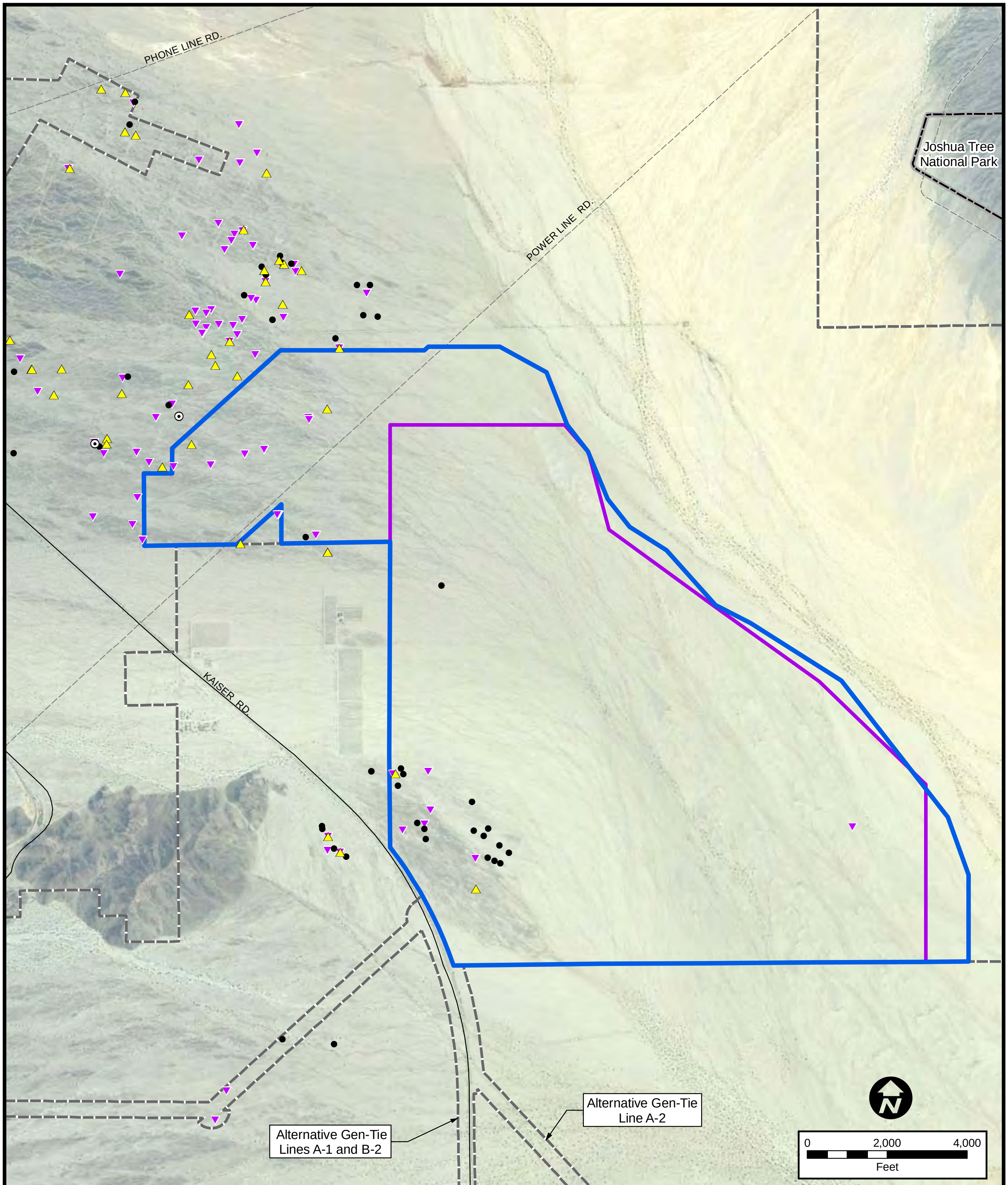
Source: Ironwood Consulting, Inc. 2010

Tortoise Sign
- Tortoise
- Burrow/Pallet
- Mating Ring
- Scat
- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- Joshua Tree National Park Boundary
- Aqueduct
- Devers-Palo Verde Transmission Line (DPV1)

DESERT SUNLIGHT SOLAR FARM

Figure 3.4-1

Active Desert Tortoise Sign for Proposed Project and Alternatives



LEGEND

Tortoise Sign
- Tortoise
- Burrow/Pallet
- Mating Ring
- Scat

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Aqueduct

Source: Ironwood Consulting, Inc. 2010

DESERT SUNLIGHT SOLAR FARM

Figure 3.4-2

Active Desert Tortoise Sign (Solar Farm Site)

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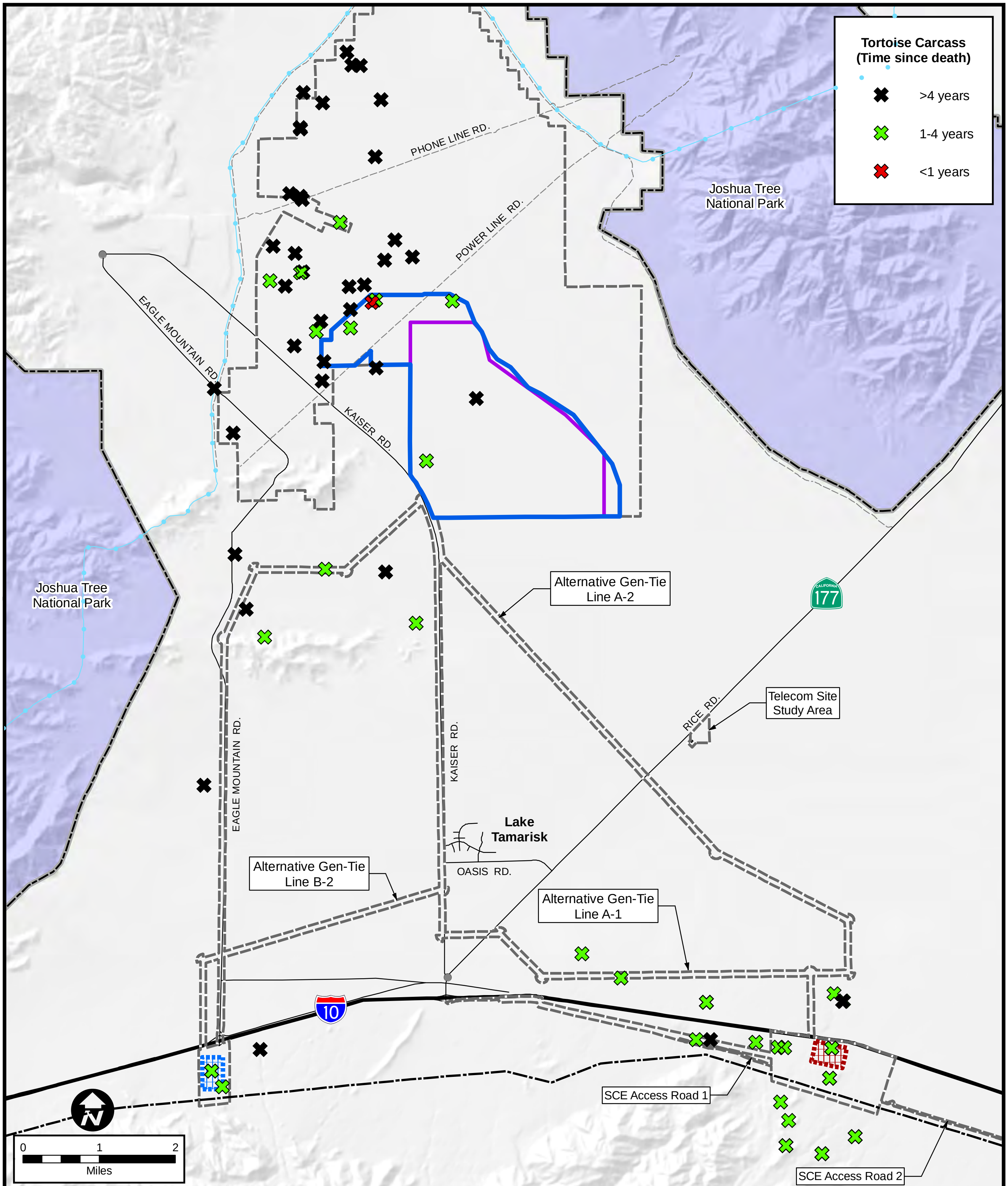

LEGEND

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- Devers-Palo Verde Transmission Line (DPV1)
- Aqueduct

Source: Ironwood Consulting, Inc. 2010

DESERT SUNLIGHT SOLAR FARM

Figure 3.4-3

Desert Tortoise Carcass

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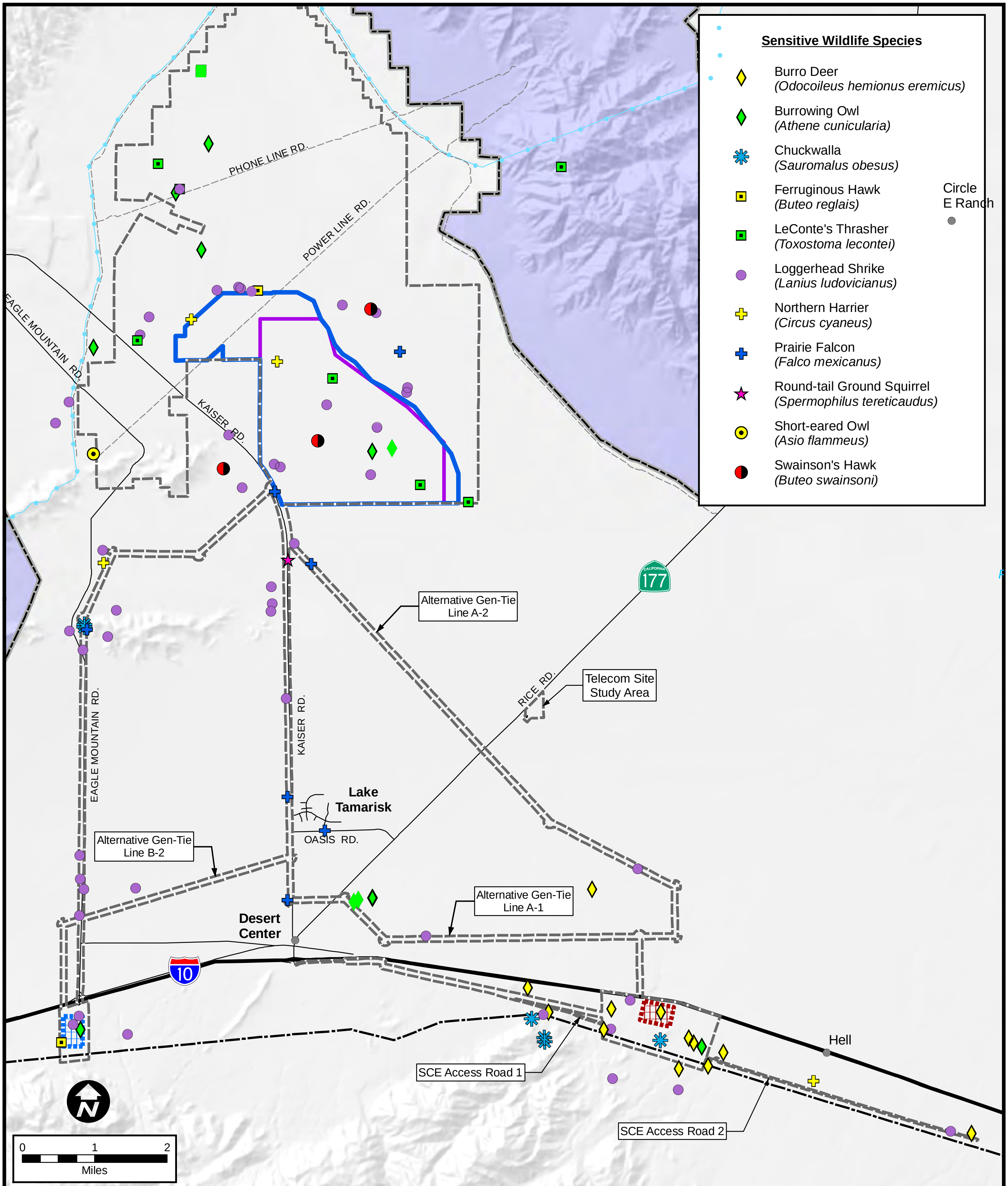

LEGEND

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Devers-Palo Verde Transmission Line (DPV1)
- Red Bluff Substation (Alternative B)
- Red Bluff Substation (Alternative A)
- Joshua Tree National Park Boundary
- Aqueduct

Source: Ironwood Consulting, Inc. 2010

DESERT SUNLIGHT SOLAR FARM

Figure 3.4-4

Sensitive Wildlife Species

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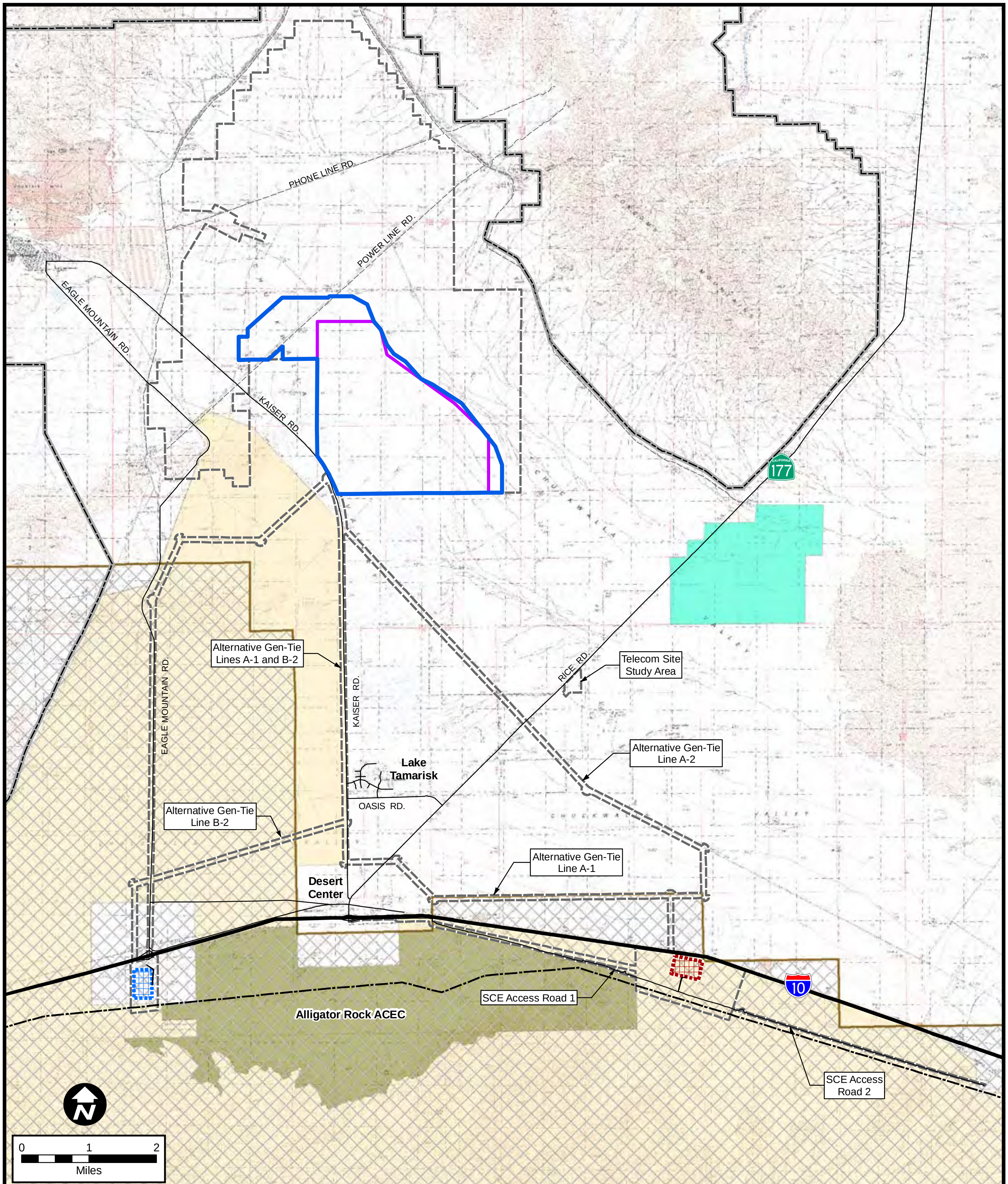

LEGEND

- Alligator Rock ACEC
- Chuckwalla DWMA
- Desert Lily Preserve ACEC
- Desert Tortoise Critical Habitat
- Joshua Tree National Park Boundary
- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Alternative C
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- Devers-Palo Verde Transmission Line (DPV1)

Sources: BLM, 2010.
USFWS Critical Habitat Portal.

DESERT SUNLIGHT SOLAR FARM

Figure 3.4-5

Federal Land Designation

reports were reviewed to determine whether any sensitive species found during surveys of those project sites might be relevant to this proposed Project. Literature reviews were augmented by the professional judgment of qualified biologists before surveys were made.

Using this information and observations in the field, a list was generated of special status wildlife species that have the potential to occur within the Project Study Area. For assessment purposes, special status species were defined as wildlife that:

- Have been designated as either rare, threatened, or endangered by CDFG or the USFWS, and are protected under either the ESA or CESA;
- Are proposed or candidate species for listing under those same acts;
- Meet the definition of endangered, rare, or threatened under CEQA Guidelines Section 15380; or
- Are considered special status species in local or regional plans, policies, or regulations, such as the NECO Plan/EIS.

A description of each of these types of special status wildlife species is presented in Table 3.4-1.

Table 3.4-1
Definitions of Special Status Wildlife Species Under Consideration in This EIS

Species Designation	Agency	Definition
Endangered	USFWS	A species that is in danger of extinction throughout all or a significant portion of its range.
Threatened	USFWS	Any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Proposed	USFWS	A species for which the USFWS has sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA.
Candidate	USFWS	A species for which the USFWS has sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. USFWS candidate species are given no extra legal protection under federal laws.
Protected under the federal Migratory Bird Treaty Act (MBTA)	USFWS	All native bird species in the US.
Covered under the NECO Plan/EIS	BLM	Special status species that were addressed in the NECO Plan/EIS, due to management concerns within the NECO planning area.
Sensitive	BLM	Those species (1) that are under status review by the US Fish and Wildlife Service or National Marine Fisheries Service, (2) whose numbers are declining so rapidly that federal listing may become necessary, (3) those with typically small and widely dispersed populations, or (4) those inhabiting ecological refugia or other specialized or unique habitats.
Endangered	CDFG	A native species or subspecies that is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease.

Table 3.4-1 (continued)
Definitions of Special Status Wildlife Species Under Consideration in This EIS

Species Designation	Agency	Definition
Threatened	CDFG	A native species or subspecies that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.
Candidate	CDFG	A native species that has been officially noticed by the California Fish and Game Commission as being under CDFG review for addition to the threatened or endangered species lists. CDFG candidate species are given no extra legal protection under state laws.
Fully Protected (FP)	CDFG	Species that are a result of California's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or that faced possible extinction. Most fully protected species have also been listed as threatened or endangered under the more recent endangered species laws and regulations.
Species of Special Concern (SSC)	CDFG	A species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria: • Is extirpated from the state or, in the case of birds, in its primary seasonal or breeding role; • Is listed as federally but not state threatened or endangered; • Meets the state definition of threatened or endangered but has not formally been listed; • Is experiencing or formerly experienced serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status; or • Has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status. SSC is an administrative designation and carries no formal legal status. This designation is intended to focus attention on animals at conservation risk, to stimulate research on poorly known species, and to achieve conservation and recovery before these species meet the CESA criteria for listing. California SSC are considered under CEQA and require a discussion of impacts and appropriate mitigation to reduce impacts.
California Fish and Game Code 3503 and 3513	CDFG	All US native bird species that occur in California.

Preliminary biological resources surveys were conducted within the Project Study Area in 2007. The purpose of the surveys was to provide preliminary habitat descriptions within the Project Study Area, describe the need for focused surveys for special status species, and summarize potential biological constraints for the proposed project. The size of the Project Study Area and the description of the proposed solar facility have changed since the 2007 surveys. The current Project locations and Project Study Area are shown in Figures 3.4-1 through 3.4-5. A subsequent BRTR

(Appendix H) incorporates the results of the 2007 surveys, as well as all subsequent surveys, into the characterization of the biological resources of the current Project locations. The discussion of the existing biological setting is based upon information in the Biological Resources Technical Report (Ironwood Consulting 2010a). Focused desert tortoise surveys were conducted in 2008 and 2009 to determine the presence or absence of desert tortoise and other special status species within the Project Study Area and in the immediately surrounding areas, and to estimate the number of individuals of each species that could be present within the Project locations during construction. *One portion of the Red Bluff Substation A location was originally surveyed outside the USFWS recommended survey period (Appendix H) but that area was resurveyed in October 2010 within the recommended period (Biological Assessment Fig. 9).* In addition to recording desert tortoise information, surveyors recorded all wildlife species, including special status *species, which* were encountered during the survey. In addition, in 2009, surveys were conducted to determine the locations of desert dry wash woodland within the Project Study Area. Additional surveys for desert tortoise and special status wildlife were conducted in 2010 to encompass new project alternative areas.

Golden eagle surveys were conducted by Wildlife Research Institute, Inc. (WRI) for four proposed energy development projects. The study area was 1,600 square miles in the Big Maria, Chuckwalla, Coxcomb, Eagle, Hodges, Little Chuckwalla, Little Maria, McCoy, Orocopia and Palen mountain ranges, as well as the Chuckwalla Valley. Phase 1 and Phase 2 surveys for golden eagles were conducted within 10 miles of project boundaries in order to comply with the USFWS *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance* (Pagel et al. 2010). Surveys were conducted by helicopter to confirm golden eagle activity, occupancy, breeding status of the pairs, and fledging success. Additionally, barn owl, bighorn sheep, common raven, Cooper's hawk, great horned owl, long-eared owl, prairie falcon, red-tailed hawk, Swainson's hawk, and turkey vulture were recorded with GPS locations. The results of the surveys relevant to the proposed Project are summarized in the BRTR contained in Appendix H.

Phase 1 and 2 burrowing owl surveys were conducted following the California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines* (California Burrowing Owl Consortium 1993).

Bird counts were also conducted between April 7 and 17, 2010. Birds were sampled using the point count method described in *Monitoring Bird Populations by Point Counts* (Ralph et al. 1995).

A small mammal trapping survey was completed and a bat assessment was conducted in February 2010 to assess potential habitat for special status bat species within the Project locations.

Certain special status wildlife species are restricted to active dunes. As described in Section 3.3, Vegetation, the Applicant conducted an aeolian geomorphology evaluation to assess the potential impacts, if any, on aeolian (wind driven) sand migration within the proposed footprint of the Solar Farm.

In summary, at a minimum, all but one Project facility and associated Project components for the proposed and alternative Project features were surveyed for biological resources. The exception was the aeolian geomorphology evaluation, which covered only the Solar Farm site. Data collected during surveys adequately documents the baseline conditions for biological resources.

3.4.3 General Wildlife

Below is a description of the common (non-special status) wildlife species that either have been observed or are expected to occur in the vegetation communities found within the Project locations and are described in Section 3.3.3.

Creosote Bush – White Bursage Series

Desert reptile species observed within the creosote bush-white bursage community during surveys include desert horned lizard (*Phrynosoma platyrhinos*), long-nosed leopard lizard (*Gambelia wislizenii*), zebra-tailed lizard (*Callisaurus draconoides*), side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), coachwhip (*Masticophis flagellum*), sidewinder (*Crotalus cerastes*), speckled rattlesnake (*C. mitchelli*), and western whiptail (*Cnemidophorus tigris*).

Bird species observed in this habitat type during surveys include turkey vulture (*Cathartes aura*), horned lark (*Eremophila alpestris*), black-throated sparrow (*Amphispiza bilineata*), Gambel's quail (*Callipepla gambelii*), California quail (*C. californica*), and common raven (*Corvus corax*).

Mammal species observed in desert scrub habitat during surveys include coyote (*Canis latrans*), bobcat (*Lynx rufus*), black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope ground squirrel (*Ammospermophilus leucurus*), and desert cottontail (*Sylvilagus audubonii*). Small mammals detected during small mammal trapping were the long-tailed pocket mouse (*Chaetodipus formosus*), Merriam's kangaroo rat (*Dipodomys merriami*), spiny pocket mouse (*Perognathus spinatus*), little pocket mouse (*P. longimembris*), and desert woodrat (*Neotoma lepida*).

Blue Palo Verde – Ironwood – Smoke Tree Series (Desert Dry Wash Woodland)

The desert dry wash woodland would be expected to support common bird species characteristic of the surrounding desert habitats as well as birds that prefer woodlands. Representative species include blue-gray gnatcatcher (*Polioptila caerulea*), mourning dove (*Zenaida macroura*), and white-crowned sparrow (*Zonotrichia leucophrys*). Desert dry wash woodlands are particularly important as stopover feeding habitat for many migratory bird species, due to the very high insect productivity in these habitats.

Reptiles expected in this community include western whiptail. Amphibians that are typically associated with desert wash areas include western spadefoot toad (*Spea hammondii*) and Couch's spadefoot toad (*Scaphiopus couchi*).

Desert dry wash woodland attracts foraging bats, such as pallid bats (*Antrozous pallidus*) and California myotis (*Myotis californicus*), due to increased insect concentration. Hoary bats (*Lasiurus cinereus*) will roost in palo verde and ironwood trees. Large mammal species can use desert dry washes and include special status species such as bighorn sheep (*Ovis canadensis*) and burro deer (*Odocoileus hemionus eremicus*). While sign for burro deer was observed during surveys, bighorn sheep, including tracks and scat, were not observed. Small mammals detected during small mammal trapping were long-tailed pocket mouse (*Chaetodipus formosus*), Merriam's kangaroo rat (*Dipodomys merriami*), spiny pocket mouse (*Perognathus spinatus*), little pocket mouse (*P. longimembris*), and desert woodrat (*Neotoma lepida*).

Disturbed Areas

Disturbed, ruderal, and non-vegetated areas are found in association with roads within the Project locations and previously developed areas around wells and associated features such as drainage basins. Disturbed areas are found on 2 acres of GT-A-1, 20 acres of GT-A-2, 2 acres of GT-B-2, and 1 acre of Red Bluff Substation A (Access Road 1).

Developed and disturbed areas provide habitat for opportunistic wildlife species. House sparrows (*Passer domesticus*) often nest on artificial structures. Red-tailed hawks (*Buteo jamaicensis*) and common ravens frequently nest on the steel lattice towers of transmission lines. Coyotes may also be present.

3.4.4 Special Status Wildlife Species

Special status wildlife species that could occur within the Project Study Area are shown in Table 3.4-2. As described in more detail below, these wildlife vary in their probability of occurrence within the Project Study Area.

Table 3.4-2
Special Status Wildlife Species with the Potential to Occur in the Project Study Area

Scientific Name **Common Name**	**Status**	**Potential for Occurrence Alternative 1/ Alternative 2/ Alternative 3[1]**
Amphibians		
Scaphiopus couchi Couch's spadefoot	Federal: None State: SSC BLM: Covered under NECO Plan, Sensitive	U/U/U
Reptiles		
Gopherus agassizii Desert tortoise	Federal: Threatened State: Threatened BLM: Covered under the NECO Plan	C/C/C
Uma scoparia Mojave fringe-toed lizard	Federal: None State: SSC BLM: Covered under the NECO Plan, Sensitive	U/U/U
Lichanura trivirgata Rosy boa	Federal: None State: None BLM: Covered under the NECO Plan, Sensitive	P/U/P
Sauromalus obesus Chuckwalla	Federal: None State: None BLM: Covered under the NECO Plan	C/U/P
Birds		
Aquila chrysaetos Golden eagle	Federal: None, MBTA State: Fully Protected, SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan, Sensitive	P/P/P (potential to forage only)
Asio flammeus Short-eared owl	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan	P/P/P (potential to forage only)

Table 3.4-2 (continued)
Special Status Wildlife Species with the Potential to Occur in the Project Study Area

Scientific Name Common Name	Status	Potential for Occurrence Alternative 1/ Alternative 2/ Alternative 3[1]
Asio otus Long-eared owl (nesting)	Federal: None, MBTA State: SSC, F& G Code 3503/3513 BLM: Covered under the NECO Plan	P/P/P (potential to breed and forage)
Athene cunicularia Burrowing owl (burrow sites and some wintering sites)	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan, Sensitive	C/C/C
Buteo regalis Ferruginous hawk (*wintering*)	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan, Sensitive	C/C/P (potential to forage only)
Falco mexicanus Prairie falcon (wintering)	Federal: None, MBTA State: WL, F&G Code 3503/3513 BLM: Covered under the NECO Plan	C/C/C (potential to forage only)
Buteo swainsonii Swainson's hawk (nesting)	Federal: None, MBTA State: Threatened, F&G Code 3503/3513 BLM: Covered under the NECO Plan	C/C/C (potential to forage only)
Chaetura vauxi Vaux's swift (breeding)	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan	U/U/U
Progne subis Purple martin (nesting)	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan	U/U/U
Circus cyaneus Northern harrier	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan	C/C/C (potential to forage only)
Lanius ludovicianus Loggerhead shrike	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan	C/C/C
Toxostoma bendirei Bendire's thrasher	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan, Sensitive	U/U/U
Toxostoma lecontei LeConte's thrasher	Federal: None, MBTA State: SSC, F&G Code 3503/3513 BLM: Covered under the NECO Plan, Sensitive	C/C/C
Mammals		
Spermophilus teriticaudus chlorus Palm Springs round-tailed ground squirrel	Federal: None *(former candidate for listing)* State: SSC BLM: Covered under the NECO Plan	C/C/P
Antrozous pallidus Pallid bat	Federal: None State: SSC BLM: Covered under the NECO Plan, Sensitive	P/P/P

Table 3.4-2 (continued)
Special Status Wildlife Species with the Potential to Occur in the Project Study Area

Scientific Name **Common Name**	**Status**	**Potential for Occurrence Alternative 1/ Alternative 2/ Alternative 3**[1]
Corynorhinus townsendii Townsend's big-eared bat	Federal: None State: SSC BLM: Covered under the NECO Plan, Sensitive	U/U/U
Eumops perotis californicus Western mastiff bat	Federal: None State: SSC BLM: Covered under the NECO Plan. Sensitive	P/P/P
Macrotus californicus California leaf-nosed bat	Federal: None State: SSC BLM: Covered under the NECO Plan, Sensitive	P/P/P
Nyctinomops femorosaccus Pocketed free-tailed bat	Federal: None State: SSC BLM: Covered under the NECO Plan	P/P/P
Vulpes macrotis arsipus *Desert kit fox*	*Federal: None* *State: CCR Title 14, § 460* *BLM: None*	*P/P/P*
Puma concolor browni Mountain lion (Yuma puma)	Federal: None State: None BLM: Covered under the NECO Plan	P/P/P
Neotoma albigula venusta Colorado Valley woodrat	Federal: None State: None BLM: Covered under the NECO Plan	P/P/P
Ovis canadensis nelsoni Nelson's bighorn sheep	Federal: None State: None BLM: Covered under the NECO Plan, Sensitive	P/P/P
Odocoileus hemionus eremicus Burro deer	Federal: None State: None BLM: Covered under the NECO Plan	C/P/C
Taxidea taxus American badger	Federal: None State: SSC BLM: Covered under the NECO Plan	P/P/P

[1]Potential for occurrence:
U: Unlikely
P: Potential
C: Confirmed

F&G Code 3503/3513 – California Fish and Game Code Sections 3503 and 3513 protecting migratory birds.

Amphibians

Couch's spadefoot toad (*Scaphiopus couchi*) is a BLM sensitive species, NECO Plan/EIS species, and California SSC. It occurs in a variety of vegetation types, including desert dry wash woodland and creosote bush scrub. It is well adapted to extremely dry conditions and spends most of its life in subterranean burrows, emerging for short periods only during spring and summer rains. It is typically associated with ephemeral ponds/puddles that persist for a minimum of seven days and contain water temperatures greater than 15 degrees Celsius. It breeds explosively during scarce rainfall from May through September. Most breeding occurs during the first night after puddles form. Eggs typically hatch in less than one day and tadpoles transform in about one week. Couch's spadefoot toad's diet consists of invertebrates, specifically termites that also emerge during rains. This species is known to occur in the southeast region of California along the Colorado River western plains (CDFG 2010; BLM and CDFG 2002). The known western range boundary is greater than five miles from the Project Study Area: approximately eight miles from the eastern extent of the Access Road 2 (for Red Bluff Substation A) and eighteen miles from the Solar Farm sites. Based on the distance between the Project locations and the range limits, this species is not expected to occur in the Project locations.

Reptiles

The desert tortoise (Gopherus agassizii) is listed as threatened under the California ESA and the Mojave population is listed as threatened under the federal ESA. The federally-listed Mojave population includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwestern Utah, and in the Sonoran (Colorado) Desert in California. Outside the listed Mojave population, the desert tortoise's range extends into Arizona and northwestern mainland Mexico. There are two recognized populations; these populations are isolated from one another by the Colorado River. All desert tortoises in California are part of the Mojave population.

Desert tortoises spend much of their lives in burrows, even during their seasons of activity between March and May. In late winter or early spring, they emerge from over-wintering burrows and typically remain active through fall. During their active periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (Luckenbach 1982; Esque 1994).

Activity decreases in summer, but tortoises often emerge after summer rain storms to drink (Henen et al. 1998). During the summer activity period, tortoises retreat to burrows, shaded "palettes," or other shaded sites beneath shrubs or rocks during the most intense heat, and at night. They may aestivate (summer dormancy) in burrows during extended periods of heat and dryness. A single tortoise may have a dozen or more burrows within its home range, and different tortoises may use these burrows at different times. During periods of inactivity, their metabolism and water loss are reduced. Tortoises enter brumation (the reptilian equivalent of hibernation) during autumn (September to November, depending on conditions).

Desert tortoise habitats include desert alluvial fans, washes, canyon bottoms, rocky hillsides, and other steep terrain. Tortoises are most common in desert scrub, desert wash, and Joshua tree habitats, but occur in almost every desert habitat except on the most precipitous slopes. Friable soils, such as sand and fine gravel, are an important habitat component, particularly for burrow excavation and nesting. The presence of soil suitable for burrowing is a limiting factor to desert tortoise distribution (USFWS 1994a). Vegetation cover of typical desert tortoise habitat is dominated by creosote bush, burrobush (Ambrosia dumosa), Mojave yucca (Yucca schidigera), or blackbush (Coleogyne ramosissima). At higher elevations, Joshua trees and galleta grass are common plant indicators (USFWS 1994a).

The size of desert tortoise home ranges varies with respect to location and year (Berry 1986) and also serves as an indicator of resource availability and opportunity for reproduction and social interactions (O'Connor et al. 1994). Female tortoises have long-term home ranges that may be less than half that of the average male's home range, which can range to up to 200 acres (Burge 1977; Berry 1986; Duda et al. 1999; Harless et al. 2009). Over its lifetime, each desert tortoise may use more than 1.5 square miles of habitat and may make periodic forays of more than 7 miles at a time (Berry 1986).

Desert tortoises are long-lived and grow slowly. They require 13 to 20 years to reach sexual maturity. As adults, their reproductive rates are low, though their reproductive lifespan is long. The number of clutches (set of eggs laid at a single time) and number of eggs that a female desert tortoise produces in a season is dependent on conditions including habitat quality, availability of forage and drinking water, and the animal's physiological condition (Turner et al. 1987; Henen 1997; McLuckie and Fridell 2002). Egg-laying occurs primarily between April and July (Rostal et al. 1994; USFWS 1994b); the female typically lays 2 to 14 eggs (average 5 to 6) in an excavation near the mouth of a burrow or beneath a shrub (Woodbury and Hardy 1948; USFWS 1994b). The eggs typically hatch 90 to 120 days later, between August and October. The success rate of clutches has proven difficult to measure, but predation, while highly variable (Bjurlin and Bissonette 2004), appears to play an important role in clutch failure (Germano 1994).

Desert tortoise populations have declined for several reasons, each of which tends to be exacerbated by the others and most of which are associated with human land uses and other human activities. Most threats identified in the 1980s as the bases for state and federal listing continue to affect tortoise populations today (USFWS 2008). Habitat degradation and loss due to land use conversion, grazing, mining, energy development, and highway construction and expansion have all contributed to declining numbers and fragmentation of desert tortoise populations. Off-road vehicle use causes direct mortality from vehicle collision or crushed burrows and destruction of habitat. Desert tortoises are also vulnerable to vehicle collisions on roads and highways. Drought, habitat degradation, and associated weed invasion decrease nutrients available to desert tortoises in their food; this makes them susceptible to upper respiratory tract disease, and possibly other diseases, which can be fatal and is transmittable among populations (Jacobson 1992). Tortoises also are vulnerable to predation by ravens, coyotes, and domestic and feral dogs. Infrastructure development and urbanization creates perch sites and food and water sources for ravens, and increases numbers of dogs, all of which elevate predation pressure on juvenile tortoises. Other threats include illegal collecting, vandalism, livestock grazing, feral burros, non-native plants, changes to natural fire regimes, and environmental contaminants (USFWS 1994). Habitat fragmentation and development can isolate tortoise populations, further increasing risk of disease and reducing genetic diversity. This range of threats can kill or indirectly affect desert tortoises and their habitat, but little is known about the relative contribution each threat makes to tortoise demography (Boarman 2002, USFWS 2008a). Current recovery planning focuses on expanding the knowledge of individual threats and places emphasis on understanding their multiple and combined effects on tortoise populations.

The USFWS published the Desert Tortoise (Mojave Population) Recovery Plan in 1994 and published a Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise in 2008. Since 1994, research indicates generally continuous variation in genetic structure and ecological biomes across the Mojave population's range. On the basis of this new information, the draft revised recovery plan redefines the recovery units to balance regional distinctiveness and variability within the population. If adopted, the draft revised recovery plan will reduce the number of recovery units from six to five, to reflect new analyses and ensure that local adaptations and genetic diversity are maintained.

The Project site is located within the Eastern Colorado Recovery Unit (USFWS 1994), which would be merged with the adjacent Northern Colorado Recovery Unit upon finalization of the draft revised recovery plan. The new recovery unit will be referred to as the Colorado Desert Recovery Unit (USFWS 2008). Within this recovery unit desert tortoises are found primarily in "well-developed washes, desert pavements, piedmonts, and rocky slopes characterized by relatively species-rich succulent scrub, creosote bush scrub, and blue palo verde-ironwood-smoke tree communities" (USFWS 1994). Habitat within this recovery unit was described as being in excellent condition despite declines in tortoise densities over the past several decades; disturbance was estimated at less than 1.3 percent throughout (USFWS 2005).

Critical Habitat: The proposed Solar Farm (layouts B and C) is not within designated desert tortoise critical habitat, but Red Bluff Substation alternative locations A and B, SCE access roads 1 and 2, and portions Alternative gen-tie Line B-2 would be within designated critical habitat (Figure 3.4-5) (USFWS 1994a). These portions of the project area are also within the Chuckwalla Desert Wildlife Management Area (DWMA), discussed further in Section 3.4.6, Wildlife Management Areas.

Before the biological surveys were done, desert tortoises had been found immediately northeast and approximately six miles southwest of the Project Study Area. During surveys conducted for the proposed Project, scat, burrows, and live tortoises were observed within the footprint of Alternatives 1, 2, and 3 (Figures 3.4-1 and 3.4-2). Alternatives 1 and 3 contain less active desert tortoise signs than Alternative 2; Alternative 3 contains the least number of active desert tortoise signs. *The majority of the desert tortoises and sign observed during the field surveys were located within the Project Study Area (as described in Appendix H) but outside the proposed project areas as described in Alternatives 1 through 3. Four desert tortoises were recorded within the boundaries of Solar Farm Layout B, and several others were just outside the northwestern boundary of Layout B. Two desert tortoises were recorded within Solar Farm Layout C. One desert tortoise was found along gen-tie alternative alignment A-1; none along alignment A-2, and four were along alignment B-2. No desert tortoises were found at Substation alternative site A, and five were found at Substation alternative site B. Note that the Biological Resources Technical Report (Appendix H) reports six tortoises within the Solar Farm B configuration; the difference is due to reduced size of the Solar Farm B layout as analyzed in this EIS.* Desert tortoise carcasses recorded during surveys are presented in Figure 3.4-3. The carcass data match well with the current desert tortoise use of the area presented in Figures 3.4-1 and 3.4-2. Approximately the same number of desert tortoise carcasses were found within the Alternatives 1 and 2 configurations, with fewer found in the Alternative 3 configuration.

The actual number of desert tortoises on the project site cannot be determined from field survey data alone, due to the possibility that some tortoises may have been overlooked during surveys (e.g., they may have been in deep burrows where they could not be seen); and some may have been double-counted if they moved from one survey transect line to another during the field work. Further, the number of tortoises found on the site during field surveys may not reflect the actual number of tortoises that use the site or may need to be removed prior to construction, because tortoises may move onto or off of the project site prior to initiation of project construction.

Concurrent with and separate from this EIS, a formal Biological Assessment (BA) is being prepared, in accordance with Section 7(b) of the ESA of 1973, 16 USC §§ 1531 et seq., and the regulations contained in 50 CFR § 402.12, following formal Section 7 consultation procedures with the USFWS. The BA is addressing potential adverse effects of the Project on the desert tortoise and its designated critical habitat. At the conclusion of the formal Section 7 consultation process, a BO will be issued by the USFWS for the proposed Project.

Mojave fringe-toed lizard (*Uma scoparia*) is a BLM sensitive species, NECO Plan/EIS species, and California SSC restricted to dune*s or habitats providing scattered patches of fine windblown sand, stabilized sand flats, or (less commonly) sandy washes,* in the California and Arizona deserts. *Suitable sand systems occur in isolated locations across its geographic range. This fragmented pattern leaves the species vulnerable to local extirpations from habitat loss, local fragmentation, or stochastic events. Murphy et al. (2006) identified two maternal lineages; the northern lineage is associated with the Amargosa River drainage system, and the southern with the Mojave River drainage system, Bristol Trough, Clark's Pass (including Palen Lake and Pinto Wash), and the Colorado River sand transport systems. The northern lineage is under review for listing under the federal Endangered Species Act, but the southern lineage is not under review for listing (USFWS 2008).*

The Mojave fringe-toed lizard is found in arid, sandy, sparsely vegetated habitats, within the broader matrix of creosote bush scrub, throughout much of its range (Norris 1958). The most important factor in its habitat is the presence of fine sands, but it also uses surrounding desert habitat. It is restricted to habitats where fine, loose, aeolian (windblown) sand, typically with grain size no coarser than 0.375 mm in diameter and at least a few inches deep, is available (Stebbins 1944; Turner et al. 1984, CDFG 2010). It burrows in the sand to avoid predators and to thermoregulate (Stebbins 1944), though it will also seek shelter in rodent burrows. Sand dunes provide its primary habitat, although it can also be found in the margins of dry lakebeds, washes, and isolated sand habitat, such as scattered hummocks or wind-deposited "sand ramps" against hillsides (BLM et al. 2005).

The Mojave fringe-toed lizard occurs on unvegetated dunes, and also where vegetation is present, including creosote bush scrub (Murphy et al. 2006). A study by Cablk and Heaton (2002) at Marine Corps Air Ground Combat Center at Twentynine Palms documented Mojave fringe-toed lizard populations in a broader area than expected and concluded that more habitat than just aeolian sands must be identified for management. The same authors described occupied habitat near Lead Mountain as "medium-pack sand," further indicating that suitable habitat may exist as a matrix of sand hummocks or patches interspersed with hard packed surfaces. Aeolian sand originates from hydrological processes (i.e., fluvial transport and sorting from desert mountains onto valley floors) (Lancaster and Tchakerian 2003). Thus, desert washes where fine sand is available may also serve as Mojave fringe-toed lizard habitat.

Aeolian sand habitat is vulnerable to both direct and indirect disturbances (Weaver 1981; Beatley 1994; Barrows 1996). Environmental changes that stabilize sand, affect upwind sand sources, or block sand movement corridors will also affect Mojave fringe-toed lizards and other species requiring this specialized habitat (Turner et al. 1984; Jennings and Hayes 1994). Threats to Mojave fringe-toed lizard and its habitat include land use conversion, off-highway vehicles and other direct and indirect impacts of regional development. Aside from the direct loss of land, development can also affect Mojave fringe-toed lizards by blocking upwind sand transport or by increasing access by predators, such as the common raven and small raptors. For example, predation by kestrels or loggerhead shrikes may increase due to availability of new perch sites (e.g., fence posts, sign posts, structures) which allow them to hunt for lizards in areas where no perches were previously available. Indirect habitat degradation results from the disruption of the dune ecosystem source sand, wind transport, and sand transport corridors. Thus, Mojave fringe-toed lizard conservation requires the conservation of blowsand ecosystems processes, including the sand source, fluvial sand transport areas, aeolian sand transport areas, wind corridors, and the occupied habitat (Bureau of Land Management 2005).

To evaluate potential for direct or indirect impacts to Mojave fringe-toed lizard habitat, a windblown geomorphology study[1] was undertaken, as discussed in Section 3.3, Vegetation, to assess any potential impacts from windblown sand within the proposed *and alternative* footprints of the Solar Farm *and to determine specifically whether any of the Solar Farm sites are within a sand transport corridor* (Kenney 2010). *The aeolian geomorphology evaluation covered the Solar Farm alternative sites (layouts B and C); these are the only project component sites with potential to affect active or partially stabilized dune habitat.* According to this study, a portion of the Project Study Area, east of Pinto Wash (which is east of the Solar Farm), supports dunes that intergrade with stabilized and partially stabilized desert dunes and sand fields; however, no active dune fields were identified within the Project locations. The study also determined that the Solar Farm was not within a sand transport corridor and that the Project would not have any effects on aeolian sand migration.

[1] *The terms "windblown geomorphology study" and "aeolian geomorphology evaluation" refer to the same study.*

The Solar Farm site is primarily characterized by coarse-textured alluvial fans characterized by unsorted rocky and gravelly alluvial deposits and, in some areas, desert pavement. Relict windblown sand deposits, coppice dunes, and sandy washes are described in Section 3.3, Vegetation*. These small, isolated patches of sand are generally too shallow, hardened on their surfaces, unsuitable for burrowing or egg laying by Mojave fringe-toed lizard, and well-separated from suitable habitat to the east. Based on poorly suitable habitat conditions and distance from known suitable habitat, presence of the Mojave fringe-toed lizard on the Solar Farm site is unlikely.*

Mojave fringe-toed lizard occurs near Bristol Dry Lake, Cadiz Dry Lake, Dale Dry Lake, Rice Valley, Pinto Basin, Palen Dry Lake, and Ford Dry Lake. It has also been observed approximately five miles east of the Project, at the Palen and Genesis solar project sites located southeast of the Solar Farm site area, and suitable habitat is located one mile east of the Solar Farm Alternative sites, at the toe slopes of the Coxcomb Mountains. However, the Project site would not serve as a movement corridor for MFTL connecting the aforementioned areas because it provides no aeolian or alluvial sand habitat linkage between them.

Rosy boa (*Lichanura trivirgata*) is a BLM sensitive species and NECO Plan/EIS species and has no other special status. *The rosy boa is widely but sparsely distributed in desert and chaparral habitats throughout southern California (CDFG 2010). In the desert, it is typically found in areas with moderate to dense vegetation and rock cover (CDFG 2010). Suitable habitat for this species occurs in the rocky washes (e.g., Big Wash) east of the Solar Farm alternatives and in the rocky foothills of the surrounding mountains. Rosy boas were not observed during the surveys conducted by Ironwood; however, this species may occur along GT-B-1 within Big Wash, near Victory Pass, and within the rock outcroppings within the Red Bluff Substation A Study Area. Habitat throughout the Solar Farm alternative layouts is also marginally suitable. Therefore, this species has the potential to occur in the footprints of Alternatives 1 and 3.*

Chuckwalla (*Sauromalus obesus*), a large lizard, is a NECO Plan/EIS species. Habitat for this species includes areas that have large rocks and boulders*, and bedrock outcrops. Chuckwallas occur throughout the Mojave and Sonoran Deserts in California, Nevada, Utah, Arizona, and Mexico. They are found in appropriate habitat throughout the NECO planning area (BLM 2002). Within the Project Study Area, observations of this species* are limited to a small area within the Red Bluff Substation A *site*. This species was observed during surveys within Red Bluff Substation A, including immediately south of Access Road 1 (Figure 3.4-4).

Birds

Golden eagle (*Aquila chrysaetos*) is a state fully protected raptor, a California SSC, is protected under the Bald and Golden Eagle Protection Act, is a BLM sensitive species, and is covered under the NECO Plan/EIS. *Threats include nesting habitat and foraging habitat loss or damage due to land use changes and increased development on open lands, illegal shooting and nest disturbance, pesticides, and power line electrocution.* Golden eagles and their primary prey species, jackrabbits, have declined in the California desert regions due to prolonged drought conditions that have persisted since 1998 (WRI 2010). *Golden eagles generally nest in rugged, open habitats with canyons and escarpments, with overhanging ledges, cliffs or large trees as cover. Nesting golden eagles may be susceptible to disturbance from noise and other human activities, and may abandon nests if disturbed.* Breeding in southern California starts in January, nest building and egg laying *occurs from* February to March, and hatching and raising the young eagles from April through June. Once the young eagles are flying on their own, the adults will continue to feed them and teach them to hunt until late November. Golden eagles have nesting territories, most of which have up to six nests (Pagel et al. 2010). A nesting territory is defined as an area that contains, or historically contained, one or more nests within the home range of a mated pair; it is a confined locality where nests are found, usually in successive years, and where no more than one pair is known to have bred at one time (Pagel et al. 2010). Golden eagles require large areas for foraging and an abundance of prey. It is estimated that golden eagles within the Mojave Desert have home ranges from 100 to 120 square miles (260 to 311 square kilometers) that they use for foraging (Fesnock 2010); assuming a circular territory, this equates to a 6.2–mile (10-kilimeter) radius around the nests of a territory. *The USFWS recommends that inventories for golden eagles should be conducted if suitable nesting, roosting, and foraging habitat are present on a proposed project site or within a 10-mile radius of the site (Pagel et al. 2010). The Project site provides suitable golden eagle foraging habitat but no suitable nesting habitat.*

During golden eagle surveys performed for the proposed Project, no golden eagle nests were found on or next to the Project locations. According to the BLM's golden eagle database and the golden eagle surveys performed for the proposed Project, there are or were eight *golden eagle* territories, within a 10-mile (16-kilometer) radius of the proposed Project *including alternative solar field layouts and other components* (*WRI* 2010). Of the eight territories, six are considered active *or potentially active*, and two are historic. *Within the six active or potentially active territories, two active nesting sites and four potentially active nesting sites were identified within a 10-mile (16 kilometer) radius of the proposed Project.* The closest active *nesting site* is in the southwest portion of the Coxcomb Mountains within the Joshua Tree National Park (referred to as the Coxcomb Mountain Southwest Territory), approximately *four* miles (*2.5* kilometers) from the proposed Solar Farm *layouts B or C* site boundaries. While there is no suitable nesting habitat for the golden eagle within the Project locations, the species may forage there during nesting, wintering, or migration. Given the proximity of the Coxcomb Mountains Southwest Territory, it is highly likely that the Project site overlaps the territorial foraging area of this pair of eagles. One observation of a golden eagle flyover of the Chuckwalla Valley was also recorded during surveys conducted for the proposed Project (WRI 2010).

Golden eagle territories may be inactive in some years, but they may be used later by the same or different individuals as the habitat and prey species cycle through to more productive years. Therefore, unoccupied territories are considered potentially active in future years. Other active or inactive nest sites are reported about ten miles northwest of the Solar Farm layouts (B or C), about four miles north of Red Bluff Substation alternative site B, and about two to three miles south of proposed SCE access road 1. As described above for the Coxcomb Mountains Southwest Territory, golden eagles occupying any of these local territories would be likely to forage over the Project site. In addition, golden eagles (and other raptors) forage more widely outside of the nesting season, since they have no need to return daily to eggs or young at their nests. Golden eagles could forage over the Project area at any time of year. Foraging birds could include mated pairs using the surrounding nesting territories; or, if the territories are inactive, unmated golden eagles or adult birds whose nests may have failed, could forage over the site during breeding season. Foraging would be somewhat more common during winter and migration seasons due to larger numbers of golden eagles in the region and their larger winter foraging ranges. Nesting individuals of the short-eared owl (*Asio flammeus*) and long-eared owl (*A. otus*) are NECO Plan/EIS species and California SSC that inhabit open areas and nest on the ground or in low trees or shrubs. Nine individuals of either the short-eared owl or long-eared owl were observed during surveys west of the locations of SF-B and SF-C (Figure 3.4-4), but not within the Project component locations. Because it is difficult to distinguish between the two species in the field, either species could have been observed during surveys. The Project Study Area is outside of the breeding range of the short-eared owl but within the breeding range of the long-eared owl, so either species could occur in the Project locations. However, only the long-eared owl is expected to nest in the area.

Burrowing owl (*Athene cunicularia*) is a BLM sensitive species, NECO Plan/EIS species, and California SSC that inhabits open dry grasslands and desert scrub and nests underground typically in mammal burrows, although they may use man-made structures including culverts and debris piles. They exhibit strong nest site fidelity. Burrowing owls eat insects, small mammals and reptiles. Burrowing owls can be found from California to Texas and into Mexico. In some case, owls migrate into southern deserts during the winter. Three individuals of this species and nine records of sign for this species were observed within the Project Study Area during surveys (Figure 3.4-4). Individual owls were observed throughout different times of the year during surveys within the Project Study Area, with no pairs or young observed. Four records of sign and one individual were found within the Alternative 1 area, two records of sign were recorded in Alternative 2, and three records of sign were recorded in Alternative 3.

Nesting individuals of the ferruginous hawk (*Buteo regalis*) and prairie falcon (*Falco mexicanus*) are BLM sensitive species, NECO Plan/EIS species, and California SSC. Their nests are generally found on cliffs, in high rocky areas, or in tall trees. Migrant ferruginous hawks are regular but uncommon during spring and fall in the California southern desert region. Ferruginous hawks may forage within the Project Study Area during wintering or migration season, while prairie falcons may forage over the site year-round.

Prairie falcons are found in areas of the dry interior where cliffs provide secure nesting sites. In the desert they are found in all vegetation types, although sparse vegetation provides the best foraging habitat. Although these species were observed in flight over the Project Study Area during surveys, no nesting habitat for them was found there. Therefore, the potential for these species to nest within the Project locations is low.

Swainson’s hawk (*Buteo swainsonii*) nesting sites are listed as threatened under the CESA and are generally found on cliffs, in high rocky areas, or in tall trees. Although this species is likely to forage within the Project Study Area during wintering or migration season and was observed in flight over the Project Study Area during surveys, no nesting habitat for them was found within the Project Study Area. Therefore, the potential for this species to nest within the Project locations is low.

Nesting sites of Vaux’s swift (*Chaetura vauxi*) and purple martin (*Progne subis*) are NECO Plan/EIS species and California SSC. Both of these species are unlikely to nest within the Project Study Area but may be found as occasional migratory season visitors in the area. Neither species was observed during field surveys. These species have a low potential to occur within the Project locations.

Northern harrier (*Circus cyaneus*) is a NECO Plan/EIS species and California SSC that has been observed in the region of the Project Study Area (Solar Millennium 2009; Genesis Solar 2009), and flying over the locations of Alternatives 1, 2, and 3 (Figure 3.4-4). This species nests on the ground in marshes, meadows, grasslands, and cultivated fields. As such, it is unlikely to nest within the Project locations but may forage in this area during winter or migratory seasons.

Loggerhead shrike (*Lanius ludovicianus*), Bendire’s thrasher (*Toxostoma bendirei*) and LeConte’s thrasher (*T. lecontei*) are NECO Plan/EIS species and California SSC; Bendire’s thrasher and LeConte’s thrasher are also BLM sensitive species. These species inhabit various desert scrub and wash habitats. Shrikes typically build nests one to three meters above the ground depending on the height of the vegetation. The Project Study Area is out of the Bendire’s thrasher’s known geographical range, making this species unlikely to occur. During surveys, loggerhead shrike and LeConte’s thrasher were both observed in the Project Study Area within and near the Project component locations (Figure 3.4-4); 29 loggerhead shrikes were observed within the footprint of Alternative 1, 31 were observed within Alternative 2, and 25 were observed in Alternative 3. Two LeConte's thrashers each were observed within Alternatives 1, 2, and 3.

Mammals

Palm Springs round-tailed ground squirrel (*Spermophilus tereticaudus chlorus*) _is a California SSC and_ is covered under the NECO Plan/EIS. _*It was formerly a candidate for listing under the federal ESA, but is no longer a candidate due to habitat conservation efforts in the Coachella Valley and new information indicating that its geographic range is much larger than previously understood (USFWS 2010).*_

*The Palm Springs round-tailed squirrel is typically associated with partially stabilized dunes supporting hummocks of mesquite (Prosopis glandulosa), but may also be found in dunes or partially stabilized aeolian sands supporting creosote bush scrub or other vegetation (USFWS 2010). This small ground squirrel seems to prefer areas where hummocks of sand accumulate at the base of large shrubs that provide burrow sites and adequate cover. They may also be found in areas where sandy substrates (those appropriate for burrow construction) occur in desert saltbush or desert sink scrub that supports herbaceous growth. In addition to wind blown sand habitats, the squirrel may occur in areas of coarser sands associated with desert dry washes. Their home ranges vary throughout a season and depend on the availability of food and water. When food and water are scarce, squirrels can move 200 to 400 meters per day. In years when food and water are more plentiful the size of their home range shrinks between their burrows and foraging areas. They are active for six months (February-July) and inactive for six months (August-January).*

*Threats to the Palm Springs ground squirrel include loss of habitat, including mesquite hummocks; their persistence is threatened by its relatively small range. As ground dwelling small mammals, they are susceptible to impacts from surface disturbances that could crush their burrows. As they seem to prefer open areas with adequate visibility, invasive exotic plants may reduce habitat suitability. Development of roads creates barriers to movement, kills individuals and results in the permanent loss of habitat. Loss of habitat can degrade the functional value of the habitat by degrading or destroying intervening habitat as well as prevent recolonization of temporarily unoccupied habitats. Fragmented habitats result in severed gene flow between populations and an overall reduction in the resiliency of the population or species as a whole.*

Habitat loss is the primary risk for the decline of this squirrel, which has been observed within the north end of the GT-A-1 and GT-B-2 corridors within Alternatives 1 and 2 (Figure 3.4-4). It was not found in or near any of the other Project locations, _*and*_ habitat appears to be _*poorly suitable*_ throughout most of the Project Study Area.

Five bat species, pallid bat (*Antrozous pallidus*), western mastiff bat (*Eumops perotis californicus*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and California leaf-nosed bat (*Macrotus californicus*) are NECO Plan species and California SSC that inhabit desert scrub and woodland habitats with rocky areas, caves and mines, and tall trees and buildings for roosting. All of these species are also BLM sensitive species, with the exception of the pocketed free-tailed bat.

Townsend's big-eared bat forages relatively close to its mine and cave roosts, although no mines or caves are close to any of the Project component locations (Brown 2010). As a result, this species is unlikely to occur within the Project locations.

Pallid bat and California leaf-nosed bat forage within desert washes. Pallid bats roost in *crevices in boulder outcroppings*, while California leaf-nosed bats have been known to roost in ironwood trees in the warmer months. Pocketed free-tailed bats occur in creosote bush habitats. Western mastiff bat occurs in the area and forages high off the ground (Brown 2010). Pallid bat roosting habitat occurs throughout the Project Study Area. Marginal roosting and foraging habitat for the other species is found within the layouts of SF-B and SF-C in the sparse dry wash woodland area in the southernmost part of the Solar Farm layouts (Figure 3.3-1), and roosting habitat is found in the dry desert wash woodland within each of the Gen-Tie Line and Red Bluff Substation locations (Figure 3.3-2). The nearest records of these species are all approximately five miles from the Project Study Area, and no observations of bats were made during surveys. The potential for these species to inhabit the Project locations is low, except in areas of denser dry wash woodland where the potential is high. In addition, all three of these species may forage within the Project locations.

Mountain lion (a.k.a., Yuma puma [*Puma concolor browni*]) is a NECO Plan/EIS species that is known to inhabit the low mountains and to use the desert dry wash woodlands following the trails of burro deer in areas next to the Project Study Area (Pinto Wash next to the Solar Farm site; Figure 3.3-1). No records of this species are found in the Project Study Area, and the species is most likely to use Pinto Wash next to the Project location. However, potential foraging habitat exists for the species in the Project location.

Colorado Valley woodrat (*Neotoma albigula venusta*) is a NECO Plan/EIS species that inhabits low-lying desert areas and is closely associated with beavertail cactus (*Opuntia* sp.) and mesquite (*Prosopis* sp.). A different species of woodrat, desert woodrat (*Neotoma lepida*) was incidentally detected during baseline small mammal trapping surveys within the Solar Farm Study Area, suggesting that the Colorado Valley woodrat is not present within this area. Nevertheless, because the Project locations support appropriate habitat for this species, and records of the species are found approximately ten miles from the Solar Farm site, this species is considered to have a moderate potential to occur within the Project locations, although it was not observed during biological surveys.

Nelson's bighorn sheep (*Ovis canadensis nelsoni*) is a BLM sensitive species and a NECO Plan/EIS species that inhabits open rocky steep areas with available water sources. *The bighorn sheep in local mountain ranges are* not the Peninsular bighorn sheep *"distinct population segment"* that is *state and* federally listed and state fully protected. *Nelson's bighorn sheep in local mountain ranges prefer open areas of low-growing vegetation for feeding, with proximity to steep, rugged terrain for escape, lambing, and bedding, an adequate source of water, and travel routes that link these areas. They graze and browse on a wide variety of plant species with green, succulent grasses and forbs preferred. They usually feed in open habitats, such as rocky barrens, meadows, and low, sparse brushlands. They generally remain near rugged terrain while they feed but use open habitat for escape and bedding. Water is critical to their survival. In the California desert, bighorn sheep must remain within daily access of drinking water during summer. In less arid regions, and during mild seasons, they can go for longer periods of time without water. Water sources they commonly use include springs, water in depressions, and human-made sources.*

Bighorn sheep movement can be categorized into two general types, daily movements and seasonal movements. Daily movement includes movement between watering areas, foraging areas, and resting areas, which normally do not exceed more than a few miles in a day. Seasonal movements include movement to other parts of a range or to other mountain ranges in response to changes in vegetation quality, water availability or weather which can include several thousand feet *in elevation and a 20- or 30-mile movement to another range. Impeding either of these movement patterns can be devastating to a bighorn sheep population.*

Radio telemetry studies of bighorn sheep in various southwestern deserts, including the Mojave Desert of California, have found considerable movement of these sheep between mountain ranges (Bleich et al. 1990b). Intermountain movements provide a genetic connection with a larger metapopulation and are the source of colonization of vacant habitat. Intermountain areas of the desert floor that bighorn traverse between mountain ranges are as important to the long-term viability of populations as are the mountain ranges themselves (Schwartz et al. 1986; Bleich et al. 1990b, 1996). Actions that impair the ability of bighorn sheep to move between mountain ranges include fencing along highways or other boundaries, canals, and high densities of human habitation. These barriers will limit the potential for natural colonization and gene exchange, both of which are key to metapopulation viability.

This species is known to live in the mountainous rocky areas of Joshua Tree National Park west and northwest of the Solar Farm alternatives, and in the Chuckwalla Mountains south of I-10. The bighorn sheep population in the Chuckwalla area is estimated at between 25 and 50 individuals (Epps et. al 2004) and the population in Joshua Tree National Park is estimated at 200 individuals throughout the park (NPS 2010). *This population is known to cross the northern extreme of the Chuckwalla Valley between Joshua Tree National Park and the Coxcomb Mountains.*

Although it is likely that this species would use the edges of the valley floor that are close to mountainous terrain, they could also use open areas of the valley floor serving as a linkage between neighboring mountainous regions and allowing gene flow to occur between subpopulations (USFWS 2000). This species migrates between winter and summer ranges, moving down slope into canyons in winter. Although there have not been any sightings or observed tracks of this species over several years of pedestrian surveys conducted in the Project Study Area, potential exists for them to occur in the Project Study Area.

Burro deer (*Odocoileus hemionus eremicus*) is a NECO Plan/EIS species that is known to occur in desert dry wash woodlands in the vicinity of the Project Study Area. Three individuals and numerous tracks were observed in Red Bluff Substation A, with individuals also observed along Access Roads 1 and 2.

American badger (*Taxidea taxus*) is a NECO Plan/EIS species and California SSC that inhabits open shrub areas of the desert that support good soils for burrowing *in areas with sparse overstory cover. This species is uncommon but found throughout most of the state and is most abundant in drier open stages of most shrub forest, and herbaceous habitats, with friable soils.* This species was not observed during biological surveys but has a high potential to occur within the Project component locations. This is because badgers have been observed during recent surveys of the Palen Solar Power Project site about 10 miles southeast of the Solar Farm sites (Solar Millennium 2009), and good habitat for this species is found throughout the Project Study Area.

Desert Kit Fox (Vulpes macrotis arsipus) is not listed as a special-status species by the State of California, BLM, or the USFWS, but it is protected under Title 14, California Code of Regulations (Title 14, Section 460) from trapping and hunting. These activities are not proposed under any of the Project alternatives. It can be found in much of the same habitats as the badger. Kit foxes are primarily nocturnal, and inhabit open level areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and rearing pups. Desert kit fox is present within the Project Study Area (Appendix H) and it may occur anywhere throughout the Project site. Estimates of kit fox home range size vary widely, and population densities fluctuate drastically depending on the prey availability, predation pressures, and other factors; and many kit fox home ranges overlap considerably. Therefore, it is difficult to estimate the actual number of desert kit foxes that may occupy the Project site.

3.4.5 Wildlife Corridors

The extent, distribution, and accessibility of suitable habitat affect the long-term viability of regional wildlife populations. Fragmentation and isolation of natural habitat ultimately results in the loss of native species within those areas (Soulé et al. 1988). Wildlife movement among habitat areas is important to long-term genetic variation and demography. In the short term, it may also be important to individual animals' ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations are especially important for rare, threatened, or endangered species such as the desert tortoise, and wide-ranging species which exist in low population densities such as large mammals. Therefore, this discussion of wildlife movement focuses on conditions relevant to desert tortoise and Nelson's bighorn sheep movement. However, these conditions are also relevant for other species, including corridor "passage" and corridor "dweller" species (Beier and Loe 1992). Corridor passage species would traverse connectivity areas during ordinary diurnal or seasonal movement patterns, whereas corridor dweller species must persist as viable populations over multiple generations within a connectivity area in order to eventually migrate from one habitat block to another.

In landscapes where native habitats exist as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on "wildlife corridors" to provide animals with access routes among habitat patches. In largely undeveloped areas, including the Chuckwalla Valley, wildlife habitat is available in extensive open space areas throughout the region, but specific linear barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on sites where animals can cross linear barriers, but generally does not emphasize linear corridors among habitat areas.

A recent state-wide evaluation of habitat connectivity (Spencer et al. 2010) includes the upper Chuckwalla Valley, including the Project Area, among areas identified as "Essential Connectivity Areas." The report describes these as follows: "Essential Connectivity Areas are placeholder polygons that can inform land-planning efforts, but that should eventually be replaced by more detailed Linkage Designs, developed at finer resolution based on the needs of particular species and ecological processes" (p. xiii). Spencer et al. (2010) recommend siting renewable energy projects in the Sonoran Desert region where they will not block potential wildlife movement corridors, and make several other recommendations related to roadway crossings and fencing (p. 69). In Chapters 4 and 5, Spencer et al. (2010) provide "frameworks" for regional and local scale connectivity analysis. The BLM is currently evaluating more localized connectivity priorities in the region. Preliminary results of that analysis, which is based on modeled connectivity requirements for desert tortoise, Nelson's bighorn sheep, American badger, and desert kit fox, do not indicate that the Solar Farm layouts analyzed here are within a priority linkage area (A. Fesnock, pers. comm).

In Chuckwalla Valley, the biologically important functions of biological connectivity are the long-term demographic and genetic effects of occasional animal movement among mountain ranges and other large habitat areas. Desert tortoises and other less-mobile animals may live out their entire lives within a "corridor" area between larger habitat blocks; for these species, movement among mountain ranges may take place over the course of several generations (Beier and Loe 1992). However, larger and more mobile animals such as Nelson's bighorn sheep may travel across the valley infrequently, as a part of dispersal among partially isolated subpopulations. It is unlikely that any individual animal would need to move across the valley to access different parts of its regular home range.

The proposed Project lies within the Chuckwalla Valley. The proposed Project is bordered on the south by the Chuckwalla Mountains, south of the I-10. Opportunity for north to south wildlife movement between Joshua Tree National Park and the Chuckwalla Mountains is significantly impeded by the I-10 Freeway. A few other existing *linear features (unpaved transmission line and pipeline access roads) are parallel to the freeway but have only minimal effects on wildlife movement. Some species, such as coyote, may learn to cross the freeway safely. But for most terrestrial species the freeway presents an impassable or high risk barrier to north-south movement. There are potential wildlife crossings beneath the freeway at scattered wash crossings and at the underpasses at Desert Center Road and Eagle Mountain Road. Wildlife use of these washes and undercrossings may be limited by the sizes of the wash structures and traffic at the undercrossings. But wildlife access to them is only minimally impeded by scattered unpaved roads to the north and south.*

The Solar Field alternative layouts are *about three miles east of* the Eagle Mountains and Joshua Tree National Park, and *about two miles west of* the Coxcomb Mountains, *also in* Joshua Tree National Park (Figures 3.4-1 through 3.4-5 and Figure 7 in the BRTR contained in Appendix H). *Extensive protected open space within Joshua Tree National Park, north of the Project site, links the Eagle Mountains and Coxcomb Mountains, providing biological connectivity. In addition, BLM-managed public lands within the Project Study Area but north of the solar field alternative layouts addressed in this analysis, provide further biological connectivity between the two mountain ranges. Pinto Wash lies between the eastern project boundary and the Coxcomb Mountains.* Areas that correspond with Joshua Tree National Park are also within the occupied range of a Big Horn Sheep WHMA. *The primary existing linear impediments to east-west wildlife movement between the Eagle Mountains and Coxcomb Mountains are Kaiser Road and Eagle Mountain Road. Any terrestrial wildlife species could cross the roads. Wary or fast-moving animals such as medium- to large-sized mammals would probably cross safely in most crossing attempts, but some road mortality would also be expected. Slower-moving animals, particularly desert tortoise, would be at high risk of mortality during any road-crossing attempt. Other minor anthropogenic impediments to east-west wildlife movement include scattered unpaved roads, the Eagle Mountain quarry and surrounding structures and features (including railroad tracks), and some scattered agricultural lands. None of these land uses presents a significant barrier to east-west wildlife movement in the vicinity of the Solar Farm site. The aqueduct presents a more difficult barrier but wildlife is able to cross where drainages are directed under it.*

The two alternative substation sites and the SCE access routes are between the I-10 Freeway and steep bajada and toeslopes of the Chuckwalla Mountains. Gen-Tie lines linking the solar farm and substation sites would have minimal impact on terrestrial wildlife movement due to the relatively small footprints and wide spacing between tower structures. For some species, likely including desert tortoise, movement east and west along the base of the Chuckwalla Mountains is largely constrained by the Freeway on one side and steep topography on the other as well as numerous existing transmission lines, underground lines, roads, and associated structures. This leaves a relatively narrow corridor for east to west movement south of the Freeway. Both substation alternatives are located within this corridor.

3.4.6 Wildlife Management Areas

Chuckwalla Desert Wildlife Management Areas

Desert Wildlife Management Areas (DWMAs) were established in the NECO Plan and address the recovery of the desert tortoise. They are intended to be areas where viable desert tortoise populations can be maintained. These are stand-alone areas that cover much of the designated critical habitat for the desert tortoise. As such they may and do overlap with some existing protected areas, such as critical habitat. On BLM lands, DWMAs are also designated as ACECs. The BLM has developed a set of specific DWMA management prescriptions, outlined in the NECO plan; in general, emphasis is placed on minimizing disturbance and maximizing mitigation, compensation, and restoration from authorized allowable uses. Within these areas, the land is given a Multiple-Use Class L (Limited Use) designation.

The Chuckwalla DWMA was designated to protect desert tortoise as well as significant natural resources, including special status plant and animal species and natural communities. It encompasses 818,685 acres, 465,287 acres of which (57 percent) are on BLM land. *Conservative estimates based on the USGS habitat model indicate that approximately 70 percent of the Chuckwalla DWMA is suitable desert tortoise habitat with the remaining 30 percent unsuitable.* As defined in the NECO Plan, examples of management actions to protect resources within the Chuckwalla DWMA include designating lands as *Multiple Use Class (*MUC*)* L (Limited Use), limiting cumulative new surface disturbance on lands administered by the BLM within any DWMA to 1 percent of the BLM-administered portion of the DWMA, and implementing grazing, recreation, and travel restrictions.

This vast area contains a variety of desert habitats that are still relatively undisturbed in most places. The dominant plant community in the area is creosote bush scrub, with creosote bush, burro weed, ocotillo, and brittle bush as the most conspicuous species. In the alluvial washes, the typical wash woodland includes mesquite, desert ironwood, smoke tree, palo verde, and desert willow (*Chilopsis linearis*). There are stands of the California fan palm (*Washingtonia filifera*) in several of the oases. At least two rare plants, a cactus, *Escobaria vivipara* var. *alversonii* and *Ditaxis californica*, occur in the Chuckwalla DWMA. Within the area, there is a wide variety of lower Sonoran animal life, and over 20 species of reptiles likely occur in the area. The desert bighorn sheep (*Ovis canadensis*) is found in the mountains.

Figure 3.4-5 shows where the Chuckwalla DWMA intersects with the Project location, and Figure 3.9-2 shows the Multiple Use Classes within the Project component location. According to Appendix A of the NECO Plan/EIS, the proposed Solar Farm site, portions of the Gen-Tie lines north of I-10, and the proposed Telecommunications Site are outside of the DWMA. These areas are listed as Category III habitat for desert tortoise and as a BLM moderate use class. Category III habitat is defined as areas that are not essential to maintenance of viable populations, that contain low to medium densities, and that are not contiguous with medium- or high-density areas and in which the population is stable or decreasing (BLM 1992). Red Bluff Substation A and portions of the Gen-Tie Lines south of I-10 are within the DWMA and Category I habitat for desert tortoise and are given a Limited Use designation. Category I habitat is defined as areas that are essential to maintenance of large viable populations, that contain medium to high densities or are contiguous with medium- to high-density areas, and in which the population is increasing, is stable, or is decreasing (BLM 1992).

Chuckwalla Critical Habitat Unit

Figure 3.4-5 also shows where the Chuckwalla *Critical Habitat Unit* (CHU) intersects with the Project locations and where the Chuckwalla CHU overlaps with the Chuckwalla DWMA. CHUs are specific legally defined areas that are essential for the conservation of the desert tortoise that support physical and biological features essential for desert tortoise survival, and that require special management considerations or protection. Critical habitat for the desert tortoise was designated by the USFWS in 1994, largely based on the proposed DWMAs in the draft Recovery Plan (USFWS 2008).

The Chuckwalla CHU is located generally south of I-10 and west of Kaiser Road (but not adjacent to it). Portions of all three Gen-Tie Lines intersect the CHU. The Red Bluff Substation B is not within the Chuckwalla CHU as it is located on private land.

3.5 CLIMATE CHANGE

Climate represents a statistical description of weather patterns averaged over periods ranging from several months (for seasonal descriptions) to several decades (for long-term climate patterns). Climate descriptions typically emphasize average, maximum, and minimum conditions for temperature and precipitation patterns, but also include wind, cloud cover, humidity, and sunlight intensity patterns.

Changes in climate conditions occur over a wide range of time scales. Climate change over time scales of tens of thousands to hundreds of thousands of years or longer are produced by natural factors such as:

- Continental drift and associated changes in ocean circulation patterns, with resulting changes to atmospheric circulation patterns and weather conditions;
- Continental uplift and tectonic activity forming mountain ranges and plateaus that alter atmospheric circulation patterns and weather conditions over land areas; and
- Variations in the shape of Earth's orbit around the sun and variations in the tilt of the Earth's axis, affecting the intensity of sunlight received at different locations.

Climate change over shorter time scales are produced by natural factors such as:

- Variations in the sun's output of solar radiation;
- Volcanic eruptions releasing large quantities of carbon dioxide (CO_2), sulfur compounds, and aerosols;
- Periodic changes in ocean circulation patterns and sea surface temperatures, which influence global weather patterns;
- Changes in the extent of snow and ice cover; and
- Other changes in land surface properties affecting the absorption and reflection of solar radiation.

Over the last few centuries, human activity has become a factor producing climate change through activities such as:

- Activities that generate CO_2, methane (CH_4), nitrous oxide (N_2O), and other greenhouse gas (GHG) emissions;
- Activities generating photochemical air pollutants, resulting in increases in ozone levels in the lower atmosphere;
- Activities that release chlorofluorcarbon compounds that result in depletion of stratospheric ozone;
- Activities generating solid and liquid aerosol air pollutants; and
- Changes in land surface properties affecting the absorption and reflection of solar radiation.

Greenhouse Gases

Greenhouse gases are compounds in the atmosphere that absorb infrared radiation and re-radiate a portion of that back toward the earth's surface, thus trapping heat and warming the earth's atmosphere. The most important naturally occurring GHG compounds are CO_2, CH_4, N_2O, ozone (O_3), and water vapor. CO_2, CH_4, and N_2O are produced naturally by respiration and other physiological processes of plants, animals, and microorganisms; by decomposition of organic matter; by volcanic and geothermal activity; by naturally occurring wildfires; and by natural chemical reactions in soil and water. Some O_3 is formed naturally from chemical reactions that occur when lightning ionizes oxygen and other atmospheric gases, but most O_3 forms during complex chemical reactions in the atmosphere among organic compounds and nitrogen oxides in the presence of ultraviolet radiation. O_3 is a strong GHG, but is also chemically very reactive. Consequently, high O_3 concentrations do not persist for long periods of time in the lower atmosphere. The short atmospheric residence time reduces the overall climate effects of O_3 in the lower atmosphere. While water vapor is a strong GHG, its concentration in the atmosphere is primarily a result of, not a cause of, changes in surface and lower atmospheric temperature conditions.

Although naturally present in the atmosphere, concentrations of CO_2, CH_4, and N_2O also are affected by emissions from industrial processes, transportation technology, urban development, agricultural practices, and other human activity. The Intergovernmental Panel on Climate Change (IPCC) and the National Oceanic and Atmospheric Administration (NOAA) estimate the following changes in global atmospheric concentrations of the most important GHGs (IPCC 2001, 2007; NOAA 2010):

- Atmospheric concentrations of CO_2 have risen from a pre-industrial background of 280 parts per million by volume (ppm) to 379 ppm in 2005 and to 386 ppm in 2009;
- Atmospheric concentrations of CH_4 have risen from a pre-industrial background of about 0.70 ppm to 1.774 ppm in 2005 and to 1.79 ppm in 2009; and
- Atmospheric concentrations of N_2O have risen from a pre-industrial background of 0.270 ppm to 0.319 ppm in 2005 and to 0.322 ppm in 2009.

The IPCC has concluded that these changes in atmospheric composition are almost entirely the result of human activity, not the result of changes in natural processes that produce or remove these gases (IPCC 2007).

CO_2, CH_4, and N_2O have atmospheric residence times ranging from about a decade to more than a century. Several other important GHG compounds with long atmospheric residence times are produced almost entirely by various industrial processes; these include sulfur hexafluoride (SF_6) and a wide range of fluorinated hydrocarbons. These fluorinated compounds typically have atmospheric residence times ranging from a few decades to thousands of years.

The overall global warming potential of GHG emissions is typically presented in terms of carbon dioxide equivalents (CO_2e), using equivalency factors developed by the IPCC. The IPCC has published sets of CO_2e factors as part of its periodic climate change assessment reports issued in 1995, 2001, and 2007. The latest IPCC data assign global warming potential multipliers of 1 to CO_2, 25 to CH_4, and 298 to N_2O (IPCC 2007). The global warming potential multiplier for sulfur hexafluoride is 22,800; global warming potential multipliers for fluorinated hydrocarbons vary widely according to the specific compound.

CARB (2007a) has estimated that the 1990 level of GHG emissions in California was 470.7 million tons CO_2e. The estimated 2006 level of GHG emissions in California was 533.4 million tons CO_2e (CARB 2009a), a 13.3 percent increase over 1990 levels. As a comparison, EPA estimates that national GHG emissions in 2006 were 7.882 billion tons CO_2e (EPA 2009a). California thus accounted for 6.8 percent of overall US GHG emissions in 2006. National GHG emissions in 2006 represented a 17.2 percent increase from estimated 1990 national GHG emissions (6.723 billion tons CO_2e). CARB estimates that without implementation of programs to reduce GHG emissions, statewide GHG emissions in 2020 would be about 657 million tons CO_2e, a 39.6 percent increase from 1990 levels (CARB 2008).

Based on the GHG inventory for 2006 (CARB 2009a), the major sources of GHG emissions in California are:

- Fuel combustion for motor vehicle, aircraft, rail, and commercial vessel transportation (38.4%);
- Industrial facility operations and fuel use (22.8%);
- Fuel combustion for electricity generation, both in-state and imported (22.1%);
- Fuel use in residential buildings (6.4%);
- Agricultural and forestry operations (6.3%);
- Fuel use in commercial buildings (2.7%); and
- Recycling and waste management (1.3%).

3.5.1 Regulatory Framework

State and Federal Climate Change Programs

The US Department of the Interior (DOI) has established general policies related to renewable energy development and climate change. In 2001, Secretary Order 3226 established a requirement that each bureau or office within the DOI should consider and analyze potential climate change impacts when undertaking long-range planning, developing multiyear management plans, making major decisions on using resources under the DOI’s purview, or setting priorities for scientific research and investigation. In March 2009, Secretary Order 3285 set a policy that encouraging the production, development, and delivery of renewable energy would be one of the DOI’s highest priorities. In September 2009, Secretary Order 3289 reaffirmed the provisions of Secretary Order 3226 and established a DOI Carbon Storage Project to develop methods for geological and biological carbon storage. In February 2010, Secretary Order 3289 was replaced with Secretary Order 3289, Amendment 1, which made minor editorial changes to the original order.

The EPA adopted a federal GHG mandatory reporting program in October 2009. The federal GHG mandatory reporting threshold is 27,558 tons (25,000 metric tons) per year CO_2e for 31 categories of stationary emission sources (EPA 2009b). GHG reporting for additional categories of stationary sources may be addressed by future regulations. Electrical power transmission and distribution systems is one of the source categories that remains under review for future federal GHG reporting requirements. Electrical transformers, switchgear, circuit breakers, gas-insulated substations, and gas-insulated transmission lines are a source of sulfur hexafluoride and fluorinated hydrocarbon emissions (mostly from equipment and storage container leaks or from spills and leaks during recharging of insulating gases).

California began efforts to address GHG issues at a state level in 1988 when the California Energy Commission (CEC) was directed to develop a statewide inventory of GHG emission sources. The California Climate Action Registry was established in 2000 to allow companies and government agencies to voluntarily record their GHG emissions in a database, in anticipation of possible future regulations that might allow credit for early GHG emission reductions. In 2002, Assembly Bill (AB) 1493 directed CARB to develop regulations to reduce GHG emissions from vehicles sold in California. In 2005, Governor Schwarzenegger issued Executive Order S-3-05, which sets the following target dates for reducing statewide GHG emissions:

- Reduce GHG emissions to 2000 levels by 2010;
- Reduce GHG emissions to 1990 levels by 2020; and
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

In 2006, Senate Bill (SB) 1368 created GHG performance standards for new long-term financial investments in base-load electricity generation facilities serving California customers. Also in 2006, California passed AB 32 (the California Global Warming Solutions Act of 2006; California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires CARB to design and implement regulations, emission limits, and other measures to reduce statewide GHG emissions to 1990 levels by 2020.

The California Global Warming Solutions Act of 2006 (AB 32) established the following timetable for specific CARB actions:

- Publish a list of discrete early action GHG emission reduction measures by June 30, 2007.
- Establish a statewide GHG emissions cap for 2020 (equivalent to the 1990 emissions level) by January 1, 2008.
- Adopt mandatory reporting rules for significant sources of GHGs by January 1, 2008.
- Adopt a scoping plan by January 1, 2009, indicating how GHG emission reductions will be achieved from significant GHG sources via regulations, market-based compliance mechanisms and other actions, including identification of a de minimis threshold for GHG emissions, below which emission reduction requirements would not apply.
- Adopt regulations by January 1, 2011 to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market-based and alternative compliance mechanisms.
- Establish January 1, 2012 as the date by which all regulations adopted prior to January 1, 2010 are to become operative (enforceable).
- The goals of the California Global Warming Solutions Act of 2006 are to halt the growth in annual GHG emissions and to reduce GHG emissions to the 1990 level by 2020. Achieving

the 2020 goal would represent a 12 percent reduction in statewide GHG emissions from 2006 levels and a 28 percent reduction from projected 2020 “business as usual” emission levels.

In 2007, CARB adopted regulations requiring mandatory annual reporting of GHG emissions from the following categories of industrial emission sources:

- Cement manufacturing plants;
- Electric generating plants, retail providers, and power marketers;
- Cogeneration facilities;
- Petroleum refineries, hydrogen plants, and combustion from oil and gas production; and
- General stationary source fuel combustion.

The GHG reporting requirements (CARB 2008c) establish a reporting threshold of 27,558 tons (25,000 metric tons) per year of CO_2 emissions for industrial facilities other than power generation and cogeneration facilities. The emission reporting threshold for power generation and cogeneration facilities is 2,756 tons (2,500 metric tons) per year of CO_2. Power generation and cogeneration facilities with a capacity of less than 1 megawatt, backup and emergency generators, portable equipment, primary and secondary schools, and most hospitals are exempt from the reporting requirements. While the CARB mandatory GHG reporting regulation requires the reporting of all major GHG emissions, the thresholds for requiring the reports are based on CO_2 emissions only, not total CO_2e from all GHG emissions. GHG emissions from vehicle fleets also are excluded from the mandatory reporting requirements, but the regulation provides for voluntary reporting of those emissions. Non-exempt facilities with annual CO_2 emissions below the relevant de minimis thresholds are not required to report their annual GHG emissions. All facilities subject to the regulation must submit annual GHG emission reports. In addition, depending on type and size of facility, independent verification of annual GHG emission reports must be submitted either annually or every third year.

CARB adopted the climate change scoping plan mandated by AB 32 in December 2008 (CARB 2008b). Key elements of the plan include:

- Expanding and strengthening energy efficiency programs, building energy efficiency standards, and appliance energy efficiency standards;
- Achieving a renewables energy mix of 33 percent for statewide electrical power generation;
- Developing a California cap-and-trade program coordinated with other western states to limit industrial GHG emissions;
- Establishing targets for transportation-related GHG emissions by region throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures such as California’s clean car standards, the low carbon fuel standards, and goods movement measures; and
- Creating targeted fees such as a public goods charge on water use, fees on the use of high global warming potential gases, and a fee to fund the administrative costs of implementing AB32 programs.

In 2008, SB 375 was adopted to provide a process for regional and local planning efforts to achieve GHG emission reductions through land use and transportation planning programs. SB375 requires coordination between the regional transportation planning process and the regional housing needs assessment process. SB375 also modifies the regional housing needs assessment process timelines to be consistent with timelines for regional transportation planning. Under SB375, CARB will establish transportation-related regional GHG emission reduction targets to be considered in regional transportation planning programs. The regional GHG emission reduction targets are planning goals, not mandatory requirements. Regional planning organizations will be responsible for working with local governments to identify a "sustainable communities strategy" that is based on current planning assumptions, is consistent with federal Clean Air Act requirements, and will help achieve regional GHG emission reduction targets.

Greenhouse Gas Reduction Strategies

Combustion of fossil fuels accounts for most GHG emissions, both in California and nationally. Additional GHG emissions are produced directly by industrial, agricultural, and waste management activities. The importance of fossil fuel combustion as a source of GHG emissions means that energy conservation and fuel economy measures have a major role in reducing GHG emissions. Most potential GHG reduction measures can be grouped into the following general categories:

- GHG emission standards for mobile sources;
- Improved fuel economy for mobile sources;
- Increased use of non-combustion sources for electrical power generation;
- Reduced electrical use in residential, commercial, and industrial buildings;
- Reduced fossil fuel use in residential, commercial, and industrial buildings;
- Land use and transportation programs to reduce vehicle trips and vehicle miles traveled (VMT);
- GHG emission reductions from stationary fuel combustion sources;
- GHG emission reductions from non-combustion sources in industrial operations;
- Development of substitutes for industrial uses of sulfur hexafluoride and fluorinated hydrocarbons;
- Reduced use of nitrogen fertilizers in agriculture and landscape maintenance;
- Improved CH_4 recovery at landfills and wastewater treatment plants; and
- CH_4 recovery at feedlots, dairies, and other livestock operations.

As noted previously, electrical power generation represents an important industrial source of GHG emissions (22 percent of California's GHG emissions). The CEC and the CPUC have implemented two programs focused specifically on generators and retailers of electrical power.

In 2002, SB 1078 established targets for renewable energy use by public and investor-owned utilities in California. The following types of power sources qualify as renewable energy sources under the Renewables Portfolio Standards (RPS) Program:

- Geothermal;
- Wind;
- Solar thermal;
- Photovoltaic solar;
- Small hydroelectric (under 30 megawatts);
- Efficiency improvements for large hydroelectric;
- Conduit hydroelectric;
- Ocean wave;
- Tidal currents;
- Ocean thermal;
- Biomass;
- Digester gas;
- Landfill gas;
- Municipal solid waste; and
- Biodiesel.

The California RPS Program sets fixed performance standards for investor-owned utilities in California and allows publicly owned utilities to set their own standards and target deadlines. The initial RPS target for investor-owned utilities was 20 percent renewable power generation by 2017. In 2006, SB 107 revised the target date for the 20 percent standard to 2010. As noted previously, the CARB climate change scoping plan adopted in 2008 calls for a statewide renewable energy mix of 33 percent by 2020.

In 2006, SB 1368 established an additional program to limit utility industry investments in power generation sources that have high emissions of GHGs. The SB 1368 program establishes emission performance standards (EPS) for utility investments in baseload power generation facilities. The current EPS is 1,100 pounds of CO_2 per megawatt-hour of energy generation. Utility investments subject to the EPS limitation include:

- Construction or purchase of new power plants designed and intended for baseload power generation;
- Purchase of existing power plants that are designed and intended for baseload power generation (combined-cycle natural gas power plants that were in operation or permitted before June 30, 2007, are exempt from this requirement);
- Ownership of shares in existing power plants that are designed and intended for baseload power generation (combined-cycle natural gas power plants that were in operation or permitted before June 30, 2007, are exempt from this requirement);
- Capital investment in existing utility-owned power plants that are designed and intended for baseload power generation if that investment would:

- Increase generation capacity by 50 megawatts or more at a combined-cycle natural gas power plant that was permitted before June 30, 2007;
- Extend the life of one or more units at other power plants by five years or more;
- Increase the rated capacity of other power plants; or
- Convert a non-baseload power plant into a baseload power plant.

Table 3.5-1 summarizes the current power generation mixes for SCE and PG&E.

Table 3.5-1
2009 Power Generation Mix for Southern California Edison and Pacific Gas and Electric

Type of Power Plant	Percent of SCE Power Generation Mix	Percent of PG&E Power Generation Mix
Coal	10.0%	2.0%
Large Hydroelectric	5.0%	15.8%
Natural Gas	50.7%	46.3%
Nuclear	17.9%	19.7%
Biomass/Waste	2.0%	3.9%
Geothermal	9.0%	3.9%
Small Hydroelectric	1.0%	3.9%
Solar	1.0%	0.5%
Wind	3.0%	3.0%
Other	0.5%	1.0%
Percent Renewable Power	**16.4%**	**16.3%**

Sources: SEC 2009; PG&E 2009

As of 2009, neither SCE nor PG&E had met the 2010 RPS target of 20 percent.

3.5.2 Existing Conditions

Climate

Climate conditions in the Desert Center area are characterized by moderate winter temperatures, hot summer temperatures, and low rainfall totals. Rainfall events are infrequent, averaging about 20 days with measurable precipitation each year. While rainfall events occur more often in winter than in other seasons, summer thunderstorms can produce the most significant rainfall events. April, May, and June are the months with the lowest average rainfall, and August is the month with the highest average rainfall. The Eagle Mountain weather station (located 2.75 miles west of the solar farm site near the Metropolitan Water District Eagle Mountain pump station) records temperature and precipitation data. Blythe Airport (42 miles east-southeast of the solar farm site) appears to be the next closest location with representative weather data. In addition to temperature and precipitation data, Blythe Airport provides limited wind data.

Table 3.5-2 summarizes monthly average temperature and precipitation data from the Eagle Mountain weather station. Table 3.5-3 summarizes monthly average temperature, precipitation, and wind speed data from Blythe Airport.

Table 3.5-2
Monthly Average Weather Conditions (1971-2000) for Eagle Mountain Weather Station

Month	Maximum Temp, degrees F	Minimum Temp, degrees F	Average Precipitation, inches	Days with Precipitation Equal to or Exceeding	
				0.01 Inches	0.10 Inches
January	64.8	45.4	0.58	3.2	1.4
February	69.4	49.1	0.53	2.7	1.4
March	74.9	53.5	0.50	2.6	1.4
April	82.4	60.1	0.08	1.0	0.2
May	90.3	68.0	0.08	0.7	0.2
June	100.2	77.1	0.06	0.3	0.1
July	104.1	82.6	0.44	1.1	0.5
August	102.8	81,1	0.82	2.5	1.4
September	97.2	75.2	0.47	1.5	0.8
October	86.1	64.2	0.24	1.3	0.6
November	73.3	52.6	0.18	0.9	0.6
December	65.1	45.5	0.43	1.8	1.1
Annual Average or Total	**84.2**	**62.9**	**4.41**	**19.6**	**9.7**

Source: National Climatic Data Center 2004b

Table 3.5-3
Monthly Average Weather Conditions (1971-2000) for Blythe Airport

Month	Maximum Temp, degrees F	Minimum Temp, degrees F	Average Precipitation, inches	Days with Measurable Precipitation	Average Wind Speed, mph
January	66.6	41.7	0.46	3/0	6.6
February	72.0	45.7	0.55	2.8	7.2
March	77.6	50.2	0.45	2.7	7.8
April	85.7	56.2	0.14	1.1	9.3
May	93.9	63.9	0.03	0.5	8.9
June	104.1	72.6	0.01	0.2	9.4
July	107.2	80.2	0.32	1.6	9.6
August	105.4	79.5	0.66	2.0	8.7
September	99.6	72.4	0.50	1.5	7.5
October	88.0	60.0	0.23	1.3	6.8
November	74.7	47.4	0.19	1.2	6.1
December	66.0	40.9	0.48	2.2	6.7
Annual Average or Total	**86.7**	**59.2**	**4.02**	**20.1**	**7.9**

Wind speed data are for 1996-2006.
Sources: National Climatic Data Center 2004a; Western Regional Climate Center 2007

Detailed wind direction data from Blythe Airport are not readily available, but seasonal time-of-day wind roses for Blythe Airport are available (Stewart 1999). Despite differences in the height and orientation of nearby topographic features, the wind rose data for Blythe Airport provide a reasonable indication of dominant wind directions for the proposed Project area. Overall, the predominant wind directions are from the north, south, and southwest. Northerly winds are more common in the fall and winter, and southerly winds are more common in the spring and summer. Table 3.5-4 summarizes seasonal wind direction data from Blythe Airport.

Table 3.5-4
Seasonal Wind Directions at Blythe Airport, 1997-2001

Season	Period of Day	Dominant Wind Directions	Directions for Winds 17 mph or Stronger
Winter	Morning	N, W, S	N, SW
	Afternoon	N, S	N, SW, S
	Evening	N, S, SW	N, W, SW
	Overnight	N, W	N, NW, SW
Spring	Morning	S, N	N, SW, S
	Afternoon	S	SW, N, S
	Evening	S, SW	SW, N, S
	Overnight	S, N	N, W, SW
Summer	Morning	S, N	S, N
	Afternoon	S	S, SW, SE
	Evening	S, SW	SE, SW, NW
	Overnight	S, SW	SE, S, N
Fall	Morning	N, SW, W	N, S, SW,
	Afternoon	N, S, SE,	SW, N, E, S
	Evening	S, SE, N	W, N, SW
	Overnight	N, W, SW	N, NW, S

Source: Stewart 1999

Existing Greenhouse Gas Emissions

Statewide emissions of GHG from relevant source categories in 1990 and later years are summarized in Table 3.5-5. Specific contributions from air basins such as MDAB are not currently specified as part of the state inventory. Emissions of CO_2 occur largely from combustion of fossil fuels. The major categories of fossil fuel combustion CO_2 sources can be broken into sectors for residential, commercial, industrial, transportation, and electricity generation. Other GHG emissions, such as CH_4 and N_2O, are also tracked by state inventories but occur in much smaller quantities.

Table 3.5-5
California Greenhouse Gas Emissions (MMTCO2e)

Emission Inventory Category	***1990***	***2000***	***2001***	***2002***	***2003***	***2004***	**2005**
Residential Fuel Combustion (CO_2)	*29.7*	*30.25*	*27.21*	*27.32*	*26.40*	*27.86*	--
Commercial Fuel Combustion (CO_2)	*14.4*	*15.63*	*12.04*	*17.84*	*15.06*	*12.1*	--
Industrial Fuel Combustion (CO_2)	*103.0*	*76.17*	*80.48*	*71.53*	*65.47*	*67.2*	--
Transportation Fuel Combustion (CO_2)	*150.7*	*181.68*	*182.49*	*190.19*	*180.64*	*187.95*	--
Electricity Generation, in-State (CO_2)	*49.0*	*55.87*	*61.35*	*47.78*	*45.92*	*55.10*	*49.0*
Methane (all CH_4 shown as CO_2e)	*--*	*26.32*	*26.62*	*27.07*	*27.49*	*27.80*	--
Nitrous Oxide (all N_2O shown as CO_2e)	*--*	*31.43*	*30.76*	*34.48*	*33.85*	*33.34*	--
Electricity Transmission and Distribution (SF_6 shown as CO_2e)	*2.6*	*1.14*	*1.10*	*1.04*	*1.01*	*1.02*	--
Total California GHG Emissions without Electricity Imports	***371.1***	***440.47***	***446.35***	***444.86***	***423.20***	***439.19***	**--**
Electricity Imports (CO_2e)	*61.6*	*40.48*	*47.37*	*51.73*	*56.44*	*60.81*	--
Total California GHG Emissions with Electricity Imports	***433.29***	***480.94***	***493.72***	***496.59***	***479.64***	***500.00***	**--**

Source: CPUC 2008

Potential Effects of Climate Change

In November 2004, the California Climate Action Team (CAT) was formed to assist CARB with the Climate Change Scoping Plan. The CAT consisted of 14 agencies and 11 subgroups According to the 2006 California CAT Report, the following climate change effects, based on the IPCC trends, can be expected in California over the next century:

1. *A diminishing Sierra snowpack, declining by 70 to 90 percent, threatening the State's water supply;*
2. *Increasing temperatures from 0.5 °F to 5.8 °F under the higher emission scenarios, leading to a 25 percent to 35 percent increase in the number of days ozone pollution levels are exceeded in most urban areas;*
3. *Increased vulnerability of forests as a result of pest infestation and increased temperatures; and*
4. *Increased electricity demand, particularly in the hot summer months.*

Ecosystem Carbon Storage

Several comments received during the scoping process for this EIS requested that the EIS address the impact of the Solar Farm on carbon storage in desert soils. The following discussion provides a background for such analyses.

Most of the carbon found in organic matter is ultimately derived from CO_2 removed from the atmosphere by growing plants. Thus living organisms and organic matter in the soil represent a GHG (CO_2) that has been temporarily removed from the atmosphere. In addition to carbon stored in organic matter, atmospheric CO_2 can be stored in soils as carbonate minerals formed by chemical or biochemical reactions between CO_2 and calcium or magnesium oxide. The carbon stored in organic matter can be released back into the atmosphere by combustion (wildfires or use of organic matter as fuel); decay of organic matter; and respiration by plants, animals, and microorganism. Carbon stored in carbonate minerals can also be released back into the atmosphere by various chemical reactions.

Long term storage of carbon in terrestrial ecosystems occurs through one of three mechanisms:

- Long term, ongoing increases in biomass (primarily in vegetation biomass);
- Long term, ongoing increases in soil organic matter content; or
- Long-term, ongoing increases in mineralized carbon compounds, primarily as carbonate minerals in the soil.

Desert areas have low vegetation and animal biomass (combined aboveground and below ground), limited quantities of organic litter on the soil surface, and low soil organic matter contents (Oak Ridge National Laboratory 1998a, 1998b; University of Edinburgh, no date). Consequently, desert ecosystems have a low capacity for organic matter carbon storage that could buffer climate change effects due to increasing GHG concentrations.

Some older literature references state that desert soils have an organic carbon storage level comparable to temperate forest soils, but such statements are clearly incorrect. These faulty evaluations of desert soil carbon storage are usually based on two soil carbon databases from the mid-1980s that incorrectly assigned non-desert soil samples to desert vegetation communities or that selectively sampled only atypical areas where soils had high moisture levels and potential for agricultural development (Adams et. al., 1998). More recent evaluations of terrestrial carbon sinks recognize the low organic carbon storage potential of desert soils (Hurtt et. al., 2002). The US Climate Change Science Program (2007) identifies the major carbon sinks in North America as net forest growth, net accumulation of wood products, encroachment of trees and woody vegetation into grasslands, net changes in cropland management to increase soil organic matter, net accumulation of organic matter in wetlands, organic sediment accumulation in rivers and reservoirs, net international exports of wood and agricultural products, and river transport of organic sediments to the oceans. Desert ecosystems are not mentioned in this report on carbon sources and sinks in the US, Canada, and Mexico.

A few recent studies (such as Wohlfahrt, et. al., 2008) claim that desert ecosystems may rival temperate forests or grasslands as a potential source of carbon storage. These studies, however, have not made any direct measurements of net increases in carbon storage in desert ecosystems. Instead, they have used complex indirect calculation procedures to estimate time histories of CO_2 uptake and release derived from instrumented tower measurements of atmospheric CO_2 concentrations and meteorological data using procedures called eddy covariance techniques. These procedures are widely recognized as being technically difficult and subject to considerable uncertainty.

The Wohlfahrt, et al. (2008) study was conducted over a 2-year period (2005 and 2006) at a site north of Las Vegas, Nevada. The study area was dominated by creosote bush, burro bush, boxthorn, and perennial grasses, with a canopy coverage of about 18 percent. Based on that description, the vegetation at the Nevada study site appears to be generally similar to that found at the proposed Desert Sunlight Solar Farm site. The study estimated net annual uptake rates of 910 pounds of carbon per acre per year in 2005 and 981 pounds of carbon per acre per year in 2006. The study authors estimated the uncertainty of their measurements as plus or minus about 65 percent of the mean annual carbon uptake values. The carbon content of vegetation is typically 45 percent to 50 percent of dry biomass weight. Desert and semi-desert shrub ecosystems typically have an above ground plant biomass equivalent to about 2,944 pounds of carbon per acre (Oak Ridge National Laboratory 1998b). No measurements of above ground or below-ground biomass were undertaken during the Wohlfahrt et al. (2008) study. The study authors did not note any significant change in vegetation cover during the two-year study, and thus concluded that net increases in vegetation could account for no more than a small part of the estimated ecosystem carbon uptake. The study authors instead suggested that net increases in soil biological crust biomass was the likely source of the estimated annual net carbon uptake. The annual carbon uptake rates estimated by Wohlfahrt, et al. (2008) are equivalent to about 1,900 pounds per acre dry weight of biomass in 2005 and 2,050 pounds per acre dry weight of biomass in 2006. The implied biomass increases over the two years of the study would be about two-thirds of the baseline standing biomass of shrub vegetation at the site. *However, a reasonably plausible process in which net annual carbon uptake is incorporated into biological soil crusts was not included in the study.*

A news review (Stone 2008) noted suggestions from a similar study in China that the estimated carbon storage was occurring as mineralized carbon in the soil rather than as biomass increases. Other researchers interviewed for the news review were dubious about the results reported in both the China study and in Wohlfahrt, et al. (2008).

The recognized mechanisms for carbonate mineral accumulation in soils include chemical formation through the weathering of silicate and oxide minerals, wet deposition of calcium carbonate dissolved in precipitation, and dry deposition of atmospheric dust particles rich in calcium carbonate (McAuliffe 2000). Non-biological mechanisms for CO_2 transport from the atmosphere to soils are dominated by formation of carbonic acid as CO_2 dissolves in water. Precipitation amounts in desert ecosystems are far too low to provide an important mechanism for CO_2 removal from the atmosphere. While carbonic acid in precipitation plays a role in the chemical reactions that occur during weathering of silicate and oxide minerals in rocks, the process is extremely slow. In addition, carbonic acid dissolves calcium carbonate, leaching it to deeper layers in the soil or into groundwater systems. This process keeps calcium carbonate from accumulating in upper soil layers in regions that receive abundant precipitation. Relatively high levels of calcium carbonate are common in desert soils because there is insufficient precipitation to dissolve and leach carbonate minerals from surface soils.

If the carbon uptake estimates made by Wohlfahrt, et al. (2008) occurred as mineralization of atmospheric CO_2 to calcium carbonate, the estimated carbon uptake rates would have added 7,583 pounds of calcium carbonate per acre during 2005 and 8,178 pounds of calcium carbonate per acre during 2006. Such rapid accumulations of calcium carbonate in soils would quickly cement the soils and make them unsuitable for the growth of many, if not most, desert plant species.

Without corroboration from direct measurements of increased carbon storage in vegetation or soils, carbon flux estimates such as those reported by Wohlfahrt et al. (2008) are not considered reliable enough to use as the basis for identifying desert soils (including soils in the Project area) as a source for carbon storage. This issue is not discussed further.

3.6 CULTURAL RESOURCES

Cultural resources are locations of human activity, occupation, or use. They include expressions of human culture and history in the physical environment, such as archaeological sites, buildings, structures, objects, districts, or other places. Cultural resources also include places that are considered to be of traditional cultural or religious importance to social or cultural groups.

Prehistoric resources are recognized as those attributed to Native American groups who occupied the region before contact with Europeans; historic resources are those associated primarily with Europeans and Americans but also include resources of Native Americans following contact. These resources are more than 50 years old but date to after the time of contact between Native Americans and Europeans. Although a few explorers traversed the region earlier, in California the time of contact between Native Americans and Europeans is generally identified as the 1770s.

Ethnographic resources are those sites that were in use at the time of Spanish exploration and later settlement of the area, while ethnohistoric resources are those areas used by Native Americans following exploration and settlement by non-Native Americans. Sites or artifacts of particular significance to modern Native Americans are often kept secret by those groups to protect the sites from disturbance, looting, overuse, or other damage. Ceremonial sites or objects, burials and associated funerary objects, or places referred to in traditional oral histories are often considered sacred to these groups.

Sacred sites and other places of traditional cultural importance, sometimes called traditional cultural properties (TCPs), are associated with the cultural practices or beliefs of a living community. *Traditional cultural properties* are rooted in the community's history and are important in maintaining cultural identity. Such places may be eligible for the National Register of Historic Places (NRHP). Examples of TCPs for Native American communities include natural landscape features, trail systems, places used for ceremonies and worship, places where plants are gathered that are used in traditional medicines and ceremonies, places where artisan materials are found, and places and features of traditional subsistence systems, such as hunting areas.

Several cultural resource studies have been completed in support of this EIS. These include a Class I cultural resources inventory (ECORP 2009a), a cultural resource survey and monitoring effort associated with geotechnical testing (ECORP 2009b); a geoarchaeological survey of the preferred Solar Farm area (ECORP 2010a); and a Class III field survey of all Project components and alternative areas (ECORP 2010b). In addition, the BLM has initiated consultation with Indian tribes to identify traditional resources that may otherwise be left unidentified by these studies. These documents and consultation letters are included in Appendix K.

Based on the above studies and efforts, *a Region of Influence* (ROI) for this cultural resources analysis has been defined. *The ROI is equivalent to the Area of Potential Effects (APE) as defined in Title 36 CFR Part 800.16(d), the regulations implementing the National Historic Preservation Act of 1966.* The ROI includes the areas described in the categories below (ECORP 2010b). Specific cultural resources listed here are described in the Identified Cultural Resources subsection of Section 3.6.2.

1. All areas where physical Project activities would occur, including the full extent of all Project components and alternatives. These include:

   a. Solar Farm Sites B and C;
   b. Gen-Tie Lines GT-A-1, GT-A-2, and GT-B-2;
   c. Red Bluff Substations A and B (including drainage features);
   d. SCE Red Bluff Distribution Line (associated with Substation A);
   e. Access Road 1 (via Kaiser Road and Aztec Road) and Access Road 2 (via Chuckwalla Valley Road and Corn Springs Road) alternatives (including drainage features) for Substation A;
   f. Access Road for Substation B (via Eagle Mountain Road and including drainage features); and
   g. Telecommunications Site and Associated Distribution Line.
2. The full boundary, in depth and horizontal extent, of any cultural resources identified within or partially within any of the areas described above under Part 1.
3. Individual cultural resources not within the areas described above under Part 1 that could sustain direct or indirect nonphysical effects, including visual, auditory, and atmospheric effects, as a result of the Project. These include:
   a. Cultural resources identified through the Class I inventory. Specific cultural resources that were identified are:
      i. The NRHP-listed North Chuckwalla Mountains Quarry Archaeological District (CA-RIV-1814),
      ii. The NRHP-eligible prehistoric site CA-RIV-330, and
      iii. The NRHP-listed North Chuckwalla Mountains Petroglyph District (CA-RIV-1383).
   b. Elements of the Built Environment whose viewsheds encompass the study area. Specific resources identified are:
      i. Colorado River Aqueduct,
      ii. Eagle Mountain Pumping Station, and
      iii. Eagle Mountain Mine.
4. Any cultural resource or location that has been included in the Native American Heritage Commission Sacred Lands Files or that may be identified by an Indian tribe, tribal organization, or individual through consultation as having religious or cultural significance. No specific resources or areas of concern have been identified to date.
5. Any cultural resource or location that may be identified by a consulting party, organization, governmental entity, or individual through consultation or the public commenting processes as having significance or being a resource of concern. No specific resources or areas of concern have been identified to date.
6. Historic Districts and Landscapes that include all or portions of any of the Project components listed under Part 1. These are:

a. The Desert Training Center California-Arizona Maneuver Area (DTC/C-AMA), which encompasses the entire Project Study Area,

b. The Colorado River Aqueduct,

c. The NRHP-listed North Chuckwalla Mountains Petroglyph District (CA-RIV-1383),

d. The NRHP-listed North Chuckwalla Mountains Quarry Archaeological District (CA-RIV-1814), and

e. The NRHP-eligible prehistoric site CA-RIV-330.

3.6.1 Applicable Plans, Policies, and Regulations

Federal

There are numerous federal regulations, executive orders, and policies that direct management of cultural resources on federal lands and by federal agencies. These include the National Historic Preservation Act (NHPA), the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act *(AIRFA), Executive Order 13007*, and the Antiquities Act. The following is a discussion of the most pertinent laws affecting the proposed Project and the impact analysis included in the EIS.

The material expressions of past human activities and the types of areas used by people vary across the region, where cultural resources are managed in accordance with laws, regulations, and guidelines. The principal federal law addressing cultural resources is the NHPA of 1966, as amended (16 United States Code [USC], Section 470), and its implementing regulations (36 Code of Federal Regulations [CFR], Part 800), that primarily address compliance with Section 106 of the act. The regulations describe the process for identifying and evaluating historic properties, for assessing the effects of federal actions on historic properties, and for consulting with interested parties, including the State Historic Preservation Office (SHPO) and Indian tribes, to develop measures that would avoid, reduce, or minimize adverse effects. The term “historic properties” refers to cultural resources that *are listed on, or meet specific criteria of eligibility for listing on, the NRHP*.

In order to be eligible for the NRHP, cultural resources must be at least 50 years old (generally), have integrity, and meet at least one of the four criteria listed below. Integrity is the property’s ability to convey its demonstrated historical significance through location, design, setting, materials, workmanship, feeling, and association. There are also considerations for resources that may have achieved national significance but are fewer than 50 years old. Criteria for listing on the NRHP (36 CFR, 60.4) are as follows:

A. Association with events that have made a significant contribution to the broad patterns of our history;

B. Association with the lives of persons significant to our past;

C. Resources that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Resources that have yielded or may be likely to yield information important in prehistory or history.

Section 106 of the NHPA describes the procedures for identifying and evaluating eligible properties, for assessing the effects of federal actions on eligible properties, and for consulting to avoid, reduce, or minimize adverse effects. Eligible properties need not be formally listed on the NRHP. As part of the Section 106 process, agencies are required to consult with the SHPO. Section 106 does not require the preservation of historic properties, but it ensures that the decisions of federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The proposed action is an undertaking, as defined by 36 CFR 800.3, and is subject to Section 106 and consideration under other federal requirements.

Directives for land use planning in the BLM Land Use Planning Manual H-1601-1 and BLM Manual Sections 8110.4 and 8130 require categorizing known and suspected cultural resources according to their nature and relative preservation value. Resource types are allocated to appropriate use categories that include scientific use, conservation for future use, traditional use, public use, and experimental use or those resources discharged from management. These directives also require identifying priority geographic areas for new field inventory or protective measures. These decisions would be based on a probability for unrecorded significant resources, imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses.

The BLM also complies with the NHPA through a National Programmatic Agreement (NPA) and, in California, a 2007 State Protocol Agreement. The protocol supplements the NPA with unique requirements for managing cultural resources on public lands in California and is used as the primary management guidance by BLM offices in the state for complying with the NHPA. This protocol allows BLM's cultural resource staff to act on the SHPO's behalf under limited circumstances. The BLM may define APEs and the required level of inventory efforts and may determine NRHP eligibility and the effects of undertakings without consulting with the SHPO. However, when undertakings are found to affect historic properties under Section 106 of the NHPA, consultation with SHPO under 36 CFR 800, and the BLM Manual 8100 series is required.

A Memorandum of Agreement is being developed for this Project for the purpose of NHPA compliance. The Memorandum of Agreement would be among the BLM, SHPO, CPUC, SCE, Desert Sunlight Holdings, LLC, and interested Indian tribes the BLM is consulting. The Advisory Council on Historic Preservation would be invited to participate in the Memorandum of Agreement. (A draft of the Memorandum of Agreement is included in Appendix K.) The Memorandum of Agreement will include a list of historic properties located within the APE, require that a Historic Property Treatment Plan be developed and implemented prior to the issuance of a Notice to Proceed, provide for review by interested parties of draft documents resulting from implementation of the Historic Property Treatment Plan, provide for the management of unanticipated discoveries of cultural resources, address treatment of Native American human remains, and include reporting requirements. NRHP eligibility evaluations and treatment of historic properties would be carried out before Project construction. Once the *Memorandum of Agreement* is signed, which will be before the Record of Decision (ROD) for this EIS is signed, compliance with Section 106 of the NHPA will be considered complete.

AIRFA establishes a policy of federal protection for traditional American Indian religious freedoms. It seeks to correct federal policies and practices that could (a) deny access to sacred sites required in traditional religions, (b) prohibit use *and possession of sacred objects necessary for religious ceremonies, and (c) intrude upon or interfere with religious ceremonies. The BLM complies with AIRFA by obtaining and considering the views of traditional religious practitioners as part of the NEPA compliance process.*

Executive Order 13007 directs federal agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners. It requires federal agencies to avoid adversely affecting the physical integrity of sacred sites to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions. EO 13007 reinforces the purposes expressed in AIRFA. The BLM complies with EO 13007 by consulting with tribal governments and Indian religious practitioners as part of the NEPA compliance process.

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the NAGPRA (Public Law 101-601) and its implementing regulations found at Title 43 CFR Part 10. On public lands within the Project area, the BLM will comply with the law and regulations by determining lineal descendants and culturally affiliated Indian tribes and by carrying out appropriate treatment and disposition of the discovered remains, including transfer of custody.

The BLM is also required to consider impacts on Indian trust assets, which are lands, natural resources, money, or other assets held by the federal government in trust or that are restricted against alienation for Indian tribes and individual Indians. Trust responsibilities for the BLM are found in Department of the Interior Secretarial Order No. 3215 (Principles for the Discharge of the Secretary’s Trust Responsibility), Departmental Manual Part 512, Chapter 2 (Departmental Responsibilities for Indian Trust Resources), and BLM Manual H-8120-1. However, because no Indian trust assets are within or near the Project area, this resource is not analyzed here.

State

There are numerous state regulations and policies that direct management of cultural resources on state lands and by state agencies. The following is a discussion of the most pertinent laws affecting the proposed Project and impact analysis from a state perspective.

Under CEQA, cultural resources listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) or a local register meet the CEQA definition of “historical resources” and must be given consideration in the CEQA process. For this EIS, effects on historical resources may be considered impacts of the Project. Under CCR, Title 14, Chapter 11.5, properties listed on or formally determined to be eligible for listing in the NRHP are automatically eligible for listing in the CRHR. A resource is generally considered to be historically significant under CEQA if it meets the criteria for listing in the CRHR.

A resource is considered eligible for inclusion in the CRHR, and therefore a historical resource under CEQA, if it is at least 50 years old and meets at least one of the CRHR eligibility criteria, or it can be demonstrated that sufficient time has passed to understand its historical importance. Similar to the NRHP, the criteria for CRHR eligibility are as follows:

1. An association with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. An association with the lives of persons important to local, California, or national history.

3. An embodiment of the distinctive characteristics of a type, period, region, or method of construction, or a representation of the work of a master, or possesses high artistic values.
4. A resource that has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Impacts on Native American burials on non-federal land are considered under CCR, Title 14, Chapter 3, Section 15064.5(d)(1), Public Resource Code Section 5097.98, and Health and Safety Code Section 7050.5. When an agency identifies the existence of, or the probable likelihood of, Native American human remains on non-federal land within a project, the lead agency is required to work with the appropriate descendants, as identified by the Native American Heritage Commission. In the event of an accidental discovery, the procedures outlined in CCR, Title 14, Chapter 3, Section 15064.5(e) will be followed.

3.6.2 Existing Conditions

Cultural Context

Understanding the historic and environmental context in which cultural resources exist is imperative to evaluating impacts of projects on those resources. *The earliest explorations of the Mojave and Colorado Deserts took place in the 1930s and 1940s (Campbell 1931, 1936; Campbell and Campbell 1935; Campbell et al. 1937; Rogers 1939, 1945). During this time a basic cultural-historical outline was established, which has formed the foundation for subsequent efforts (Arnold et al. 2002; Love and Dahdul 2002; Schaefer 1994; Warren 1984).*

Numerous cultural resource management projects have increased our understanding of the prehistory of the region. Two of the most notable synthetic works include the BLM's large-scale cultural resources inventory of the Central Mojave and Colorado Desert Regions (Gallegos et al. 1980) and Crabtree's (1980) overview. Jones and Klar's (2007) recent review of California archaeology builds on the efforts of these earlier authors, including the results of recent data recovery projects (Schaefer and Laylander 2007; Sutton et al. 2007). The following discussions of cultural contexts for the Project are taken directly from ECORP (2009b), which documents cultural resource survey and monitoring efforts associated with geotechnical studies completed for the proposed Project.

Prehistoric Context

It is generally believed that human occupation of southern California began at least 13,000 years before present (BP). The archaeological record indicates that between approximately 13,000 and 6,000 years BP, a predominantly hunting economy existed, characterized by archaeological sites containing numerous projectile points and butchered large animal bones. Animals that were hunted probably consisted mostly of large species still alive today. Bones of extinct species have been found, but cannot definitely be associated with human artifacts. Although small animal bones and plant grinding tools are rarely found within archaeological sites of this period, small game and plant foods were probably exploited on a limited basis. A lack of deep cultural deposits from this period suggests that groups included only small numbers of individuals who did not often stay in one place for extended periods (Wallace 1978).

Around 6,000 years BP, there was a shift in focus from hunting toward a greater reliance on floral resources. Archaeological evidence of this trend consists of a much greater number of milling tools (e.g., metates and manos) for processing seeds and other vegetable matter. This period, which lasted until around 3,000 years BP, is sometimes referred to as the "Millingstone Horizon" (Wallace 1978).

Projectile points are found in archaeological sites from this period, but they are far fewer in number than from sites dating to before 6,000 years BP. An increase in the size of groups and the stability of settlements is indicated by deep, extensive middens at some sites from this period (Wallace 1978).

In sites dating to after about 3,000 years BP, archaeological evidence indicates that reliance on both plant gathering and hunting continued as in the previous period, with more specialized adaptation to particular environments. Mortars and pestles were added to metates and manos for grinding seeds and other vegetable material. Chipped-stone tools became more refined and specialized, and bone tools were more common. During this period, new peoples from the Great Basin began entering southern California. These immigrants, who spoke a language of the Uto-Aztecan linguistic stock, seem to have displaced or absorbed the earlier population of Hokan-speaking peoples. The exact time of their entry into the region is not known; however, they were present in southern California during the final phase of prehistory. During this period, known as the "Late Horizon," population densities were higher than before and settlement became concentrated in villages and communities along the coast and interior valleys (Erlandson 1994; McCawley 1996). Regional subcultures also started to develop, each with its own geographical territory and language or dialect (Kroeber 1925, McCawley 1996; Moratto 1984). These were most likely the basis for the groups encountered by the first Europeans during the eighteenth century (Wallace 1978). Despite the regional differences, many material culture traits were shared among groups, indicating a great deal of interaction (Erlandson 1994). The presence of small projectile points indicates the introduction of the bow and arrow into the region sometime around 1,500 to 1,000 years BP (Moratto 1984).

Regional Prehistory

The prehistory of the Chuckwalla Valley region is associated with the wider geographic context of Arizona, California and Baja California. *This environmental zone is transitional between the Colorado Desert to the south and west, the Mojave Desert to the north, and the Sonoran Desert to the east.* The prehistory of this region can be divided into three broad cultural periods: the San Dieguito Complex, Desert Archaic Period, and the Patayan (or Yuman) Period. The San Dieguito Complex (a group of artifacts and subsistence remains that are characteristic of a specific period of time and geographic area) was originally thought to represent Early Holocene (12,000 to 8,000 BP) big game hunters who lived around the pluvial lakes in the Great Basin and Colorado Desert (Warren 1967). More recent research indicates these people were likely highly mobile hunter-gatherers who exploited a wider range of animal and plant foods. The San Dieguito Complex is represented in the archaeological record entirely by lithic technology (stone tools), which consists of well-made projectile points, bifacial blades and knives, scrapers, scraper planes, and choppers. San Dieguito sites consist of lithic scatters, rock features, cleared circles, and trails and are usually found on terraces overlooking drainages and along the shorelines of the former pluvial lakes such as Lake Cahuilla and Palen Lake (CE Obsidian Energy 2002).

Only a small amount of archaeological material is known from the Chuckwalla Valley region for the long period of time known as the Desert Archaic or Pinto-Amargosa period between about 8,000 BP and about 1,500 BP (IID 2002). Large bifacial dart points continue in use, but there is also an increasing variety of expedient and formed flaked lithic tools. Milling equipment, indicating use of plant seed resources, also appears during this period. Some food storage is indicated by the presence of stone-lined cache pits at Indian Hill Rockshelter and Tahquitz Canyon. The sparse occupation during the middle Holocene may be related to extremely arid climatic conditions and fluctuations in the level of Lake Cahuilla (IID 2002), an ancient lake that formed whenever the Colorado River would drain into the Salton Basin. The freshwaters of Lake Cahuilla would eventually evaporate.

The Late Prehistoric Period in the Colorado Desert has been termed the Yuman period and is now more often referred to as the Patayan Pattern (IID 2002). The Patayan Pattern first developed on the Colorado River around AD (Anno Domini) 500 and is defined by mobile groups living in dispersed seasonal settlements. Rocklined jacal structures (thatched-roof huts), semi-subterranean earth houses, simple ramadas, and rock lined brush huts were constructed depending on the season and function of the settlement (Schaefer 1994). Patayan I dates from AD 500 to AD 1050 and is marked by the introduction of the bow and arrow, indicated archaeologically by the presence of small arrow points. Ceramics appear during the end of Patayan I and are the indicator for Patayan II (AD 1050 to AD 1500). Bands of people used a series of temporary camps in a seasonal round as they moved between the valleys of the Peninsular Ranges to the west and the shores of Lake Cahuilla. Fish and migratory waterfowl were important lake resources. Desert resources included mesquite and saltbush (IID 2002). Patayan III after AD 1500 is associated with the recession of Lake Cahuilla. Fish was an important resource, as indicated by large amounts of fish bone found in sites along the receding shorelines of Lake Cahuilla. Stone fish traps were used on the west side of Lake Cahuilla during both Patayan II and Patayan III (IID 2002). Early theories argued that the inhabitants around Lake Cahuilla underwent a mass migration from the area after the final recession of the lake. However, more recent studies, including several investigations of the large settlements at San Sebastian established on the dry bed of Lake Cahuilla, suggest that a period of readjustment occurred in the region instead of a mass exodus (Schaefer 1994).

Local Prehistory

The known archaeology of the Chuckwalla Valley vicinity has revealed the presence of widely separated oases sites which all contain similar cultural features. Trail segments preserved in the desert pavements radiate out in several directions from these sites and once linked them together. Washes and drifting sands have disconnected most of these trails leaving only these segments. These sites also typically feature cleared circles and/or rock rings, and numerous petroglyphs. One of these sites, the North Chuckwalla Mountains Petroglyph District, CA-RIV-1383, is located near proposed Substation A. Other such sites are located at Corn Springs, McCoy Springs, Hayfield Dry Lake, and Mule Tank.

Ethnohistoric Context

Ethnographic accounts of Native Americans indicate that the Project Study Area lies near a territorial junction of *six* groups of Native Americans: the Quechan, *Halchidhoma, Serrano,* Chemehuevi, Cahuilla, and Mojave.

Quechan

The Quechan territory was centered between the confluence of the Gila and Colorado Rivers near Yuma, Arizona, and ranged northward to the vicinity of Blythe, California. The Quechan are popularly referred to as Yuma (Stewart 1983a). The language of the Quechan is, together with the Mohave and Maricopa, from the River-Yuman branch of the Hokan language family. The linguistic territory included southeastern California and southwestern Arizona (Bean 1978). Although the settlements and rancherias were scattered along the rivers, the people considered themselves one tribal group. Forbes estimates the Quechan population at 4,000 at the time of European contact. Several hundred people would live in each Rancheria, with approximately 800 reported in 1774 by the Spanish at Xucsil (Bee 1983, Forde 1931). European disease and warfare reduced the total population to nearly 2,800 in 1852, and 834 in 1910 (Forbes 1965).

In the early 1800s the Quechan were closely allied with the Mojave, while both groups were hostile toward their Cocopa neighbors to the south (Stewart 1983a). The Quechan practiced horticulture in the rich silts deposited by the winter and spring flood periods of the rivers. Plant gathering in addition to cultivated plants provided a balance to the Quechan diet. Planted fields produced maize, teparies, melons, watermelons, black-eyed beans, pumpkins, and muskmelons. Winter wheat was harvested before the spring floods. *Agriculture was supplemented with hunting of game* (Bee 1983).

The Quechan tradition tells of a southward migration by their ancestors from the sacred mountain, Avikwame (Newberry Mountain, near Needles, California) by way of the river. They had been created there, along with the Mohave, eastern Tipai, Maricopa and Cocopa, by Kukumat, the creator. A mourning ceremony was performed in the memory of a family member or an important tribal leader. This ceremony was also a reenactment of the original mourning ceremony upon the death of Kukumat. A microcosm of the Quechan way of life was represented during this ceremony *(Bee 1983)*.

The Spanish, Mexicans, and Anglos found the confluence of the Colorado and Gila Rivers of great importance for early migration. The two rivers accommodated vast migrations of soldiers and settlers to California and to the south and east before 1776. Salvador Palma, a Quechan leader, and three other tribesmen accompanied de Anza on his return to Mexico City. Shortly after 1776, the Spanish established two major settlements near the rivers. A period of unrest followed as the settlers turned to the Quechan fields for food and Spanish authority persisted over the native people. In 1781, the Quechan destroyed the two settlements, killing several dozen of the Spanish and ending Spanish regional authority. Resistance continued until the United States Army built a small garrison in 1852 that protected against Native American attacks on Anglos traversing the region. The growth of an Anglo town just south of the fort, and increased rail and steamship industry created employment for the Quechan as laborers or domestic help.

In 1884, a reservation was established for the Quechan on the west side of the Colorado River north of Yuma (Bee 1983). *In 1959, the Indian Claims Commission affirmed the Quechan Tribe's title to certain lands it claimed in California, title to which was extinguished by the United States in 1853. In compensation for the taking of that land outside their reservation, the Quechan Tribe was awarded a settlement which the Tribe approved in 1965.* In 1978, 25,000 acres of the original reservation *that had been appropriated* were returned to the tribe, the conclusion of a dispute over the legality of the signing away of tribal lands in 1893. A dam built upstream from the reservation by 1912 changed the flooding and siltation patterns. Many Quechan migrated from the outlying areas to the reservation by this time.

Halchidhoma

The Halchidhoma are a Yuman-speaking group of the Western Hokan language stock. Traditionally the Halchidhoma occupied territory south of the confluence of the Gila and Colorado Rivers and south of the Quechan. Population densities prior to tribal conflicts and Spanish contact are uncertain but may have been high. In 1605, Spanish explorer Don Juan de Onate encountered an estimated 2,000 people living in the northernmost of the Halchidoma's eight camps (Kroeber 1925). The Halchidhoma and the Yumas were rivals, and the Halchidhoma sustained severe population losses from warfare with the Yumas. Francisco Garcés, who encountered the Halchidhoma *in 1776, estimated approximately 2,500 people in the entire group. By the eighteenth century, they had moved north to occupy an area along the Colorado River between present day Parker and Blythe/Ehrenberg.*

The Halchidhoma were horticulturalists who supplemented their diet with hunting and gathering. Seasonal settlement patterns reflect a changing floodplain environment and consisted of camps located on the river terraces during the winter and spring, and dispersed extended family camps located on the river floodplain near their horticultural plots during the summer and fall (Cleland and Apple 2003). Planted crops included maize, squash, and beans. Wild plants such as Mesquite pods and Screwbean pods remained an important staple.

By the mid-nineteenth century, the Halchidhoma were driven from their territory in the Parker-Blythe area by the Quechan-Mojave alliance. They took refuge with the Maricopa, with whom they had developed close relations (Kroeber 1925; Cleland and Apple 2003). Due to the merging and assimilation into Maricopa culture, detailed ethnographic studies of the Halchidhoma in their native territory along the Colorado River are scarce (Cleland and Apple 2003; Schaefer 2003).

Serrano

Territory traditionally claimed by the Serrano included the San Bernardino Mountains east of Cajon Pass, lands at the base and north of the San Bernardinos in the desert near Victorville, and territory extending east in the desert to Twentynine Palms and south to, and including, the Yucaipa Valley. The Serrano spoke a language belonging to the Serean Group of the Takic subfamily of the Uto-Aztecan family (Golla 2007; Moratto 1984; Shipley 1978).

The Serrano occupied small village-hamlets located mainly in the foothills near water sources. Others were at higher elevations in coniferous forest, or in the desert. The availability of water was a critical determinant of the nature, duration, and distribution of Serrano settlements.

Women gathered, and men hunted and occasionally fished. Topography, elevations, and biota present within the Serrano territory varied greatly. Primary plant foods varied with locality. In the foothills, they included acorns and pinyon nuts. In the desert, honey mesquite, pinyon, yucca roots, and cactus fruits were staples. In both areas they were supplemented by a variety of roots, bulbs, shoots, and seeds, especially chia. Among primary game animals were deer, mountain sheep, pronghorn, rabbits, rodents, and quail. Large game was hunted with bows and arrows. Small game was taken with throwing sticks, traps, snares, and deadfalls. Meat was cooked in earth ovens. Meat and plant foods were parched or boiled in baskets. Plant foods were ground, pounded, or pulverized in mortars and pestles or with manos and metates. Processed meat and plant foods were dried and stored. Occasional communal deer and rabbit hunts were held. Communal acorn, pine nut, and mesquite gathering expeditions took place. These communal activities involved several lineages under a lineage leader's authority.

Serrano houses were circular, domed, individual family dwellings, with willow frames and tule thatching. They were occupied by a husband and wife along with their children, and often other kin. Houses were mainly used for sleeping and storage. Most daily activities occurred outside, often in the shade of a ramada (a flat-roofed, open-sided shade structure) or other sun cover.

Settlements usually had a large ceremonial house where the lineage leader and his family lived. It was the social and religious center for each lineage/lineage set. The latter was two or more lineages linked by marriage, economic reciprocity, and ritual participation. Other structures included semi-subterranean, earth-covered sweathouses located near water, and granaries.

Serrano material culture was very similar to that of the Cahuilla. Stone, wood, bone, plant fibers, and shell were used to make a variety of artifacts. These included highly decorated baskets, pottery, rabbit skin blankets, bone awls, bows *and arrows, arrow straighteners, fire drills, stone pipes, musical instruments, feathered costumes, mats, bags, storage pouches, cordage, and nets.*

The clan was the largest autonomous landholding and political unit. No pan-tribal union between clans existed. Clans were aligned through economic, marital, and ceremonial reciprocity. Serrano clans often were allied with Cahuilla clans and Chemehuevi groups. The core of a clan was the linage. A lineage included all men recognizing descent from a common ancestor, their wives, and their descendants. Serrano lineages were autonomous and localized, each occupying and using defined, favored territories. A lineage rarely claimed territory at a distance from its home base.

The head of a clan was a ceremonial and religious leader. He also determined where and when people could hunt and gather. Clan leadership was passed down from father to son. The clan leader was assisted by a hereditary ceremonial official, from a different clan. This official held ceremonial paraphernalia (the sacred bundle), notified people about ceremonies, and handled ceremonial logistics.

Sources for the Serrano include Bean and Smith (1978), Benedict (1924,1929), Drucker (1937), Gifford (1918), Johnson (1965), Kroeber (1925), and Strong (1929). The Serrano shared many traits and artifacts with the Cahuilla, discussed below.

Chemehuevi

The Chemehuevi are one of 16 identified Southern Paiute *ethnolinguistic* groups, and likely originated from the Great Basin. The main territory occupied by the Southern Paiute-Chemehuevi group was west of the Colorado River, extending approximately from present-day Blythe to just north of Needles and into California halfway to Twenty-Nine Palms (Kelly and Fowler 1986; Earle 1997). The name Chemehuevi is a Mohave word describing them. They call themselves Nuwuwu, or “the people” (Elzinga 2007). The Chemehuevi language is a nearly extinct dialect of the Ute language of the Numic branch of the Uto-Aztecan stock that extends from the Great Basin of North America through Mexico (Bean 1978). Although large game was hunted, small game was the chief source of protein. Plant foods included pinyon nuts, roots, agave, seeds, and berries. Some horticulture was practiced at the time of Spanish contact in the 1770s (Earle 1997). Settlement was mobile and scattered, with recurrent residence in specific locations. Structures varied according to the season. During the winter, the Chemehuevi lived in earth-covered dwellings or caves (Kelly and Fowler 1986).

Some Southern Paiute-Chemehuevi raided travelers along the Old Spanish trail from the 1850s to the early 1870s. During that time, efforts were made to settle the Chemehuevi on the Colorado River Reservation, but many did not agree to move there until the twentieth century. In 1980, there were approximately 124 Southern Paiute-Chemehuevi (Kelly and Fowler 1986).

Cahuilla

The Takic language of the Cahuilla is a family of the Uto-Aztecan stock, which extends from the Great Basin of North America through Mexico (Bean 1978). The Cahuilla ancestors probably originated in the Great Basin. The Cahuilla occupied a territory ranging from the San Bernardino Mountains in the north to the Chocolate Mountains and Borrego Springs in the south, and from the Colorado Desert in the east to Palomar Mountain in the west.

The Cahuilla were organized into more than a dozen political groups or clans. Each clan was an independent, politically autonomous land-holding unit. The territories ranged from the desert or valley floor to mountain areas encompassing several biotic zones. Clans included several lineages, each of which owned an independent community area within the larger clan area (Schaefer 2001).

In addition to residence areas of each lineage, and locations within a clan territory owned in common with other clan members, each lineage had ownership rights to various food collecting, hunting, and other areas. Individuals also owned specific areas or resources such as plant foods, hunting areas, fishing areas, mineral collecting places, and sacred spots used only by shamans, healers, and ritual practitioners (Schaefer 2001).

These clans' population was up to several thousand people. They were arranged so that each lineage or community was placed in an area near significant water and food resources, most commonly in canyons or near drainages on alluvial fans. Within each community, generally several miles from each other, houses and structures were spaced at some distance from each other. Often a community would spread over a mile or two with each nuclear and extended family having houses and associated structures for storage of food, and shaded work places for tool manufacture and food processing. Each community contained a house of the lineage or clan leader (Schaefer 2001).

The Cahuilla are known to have engaged in trade, marriage, shared rituals, and war with other groups of Native Americans whose territories they overlapped—primarily the Serrano to the north and the Gabrielino/Tongva to the northeast (Kroeber 1925; Bean 1972, 1978).

Cahuilla subsistence consisted of hunting, gathering, and fishing. Major villages were fully occupied during the winter, but during other seasons task groups made periodic forays to collect various plant foods, with larger groupings from several villages organizing for the annual acorn harvest (Bean and Saubel 1972). Bean and Saubel (1972) recorded the use of several hundred species of plants used for food, building/artifact materials, and medicines. The major plant foods included acorns, pinyon nuts, and various seed-producing legumes. These were complemented by agave, wild fruits and berries, tubers, cactus bulbs, roots and greens, and seeds. European explorers and settlers (including Captain Don Jose Romero in 1823) reported the Cahuilla as agriculturally active, growing pumpkin, melon, watermelon, barley and wheat at the village of Toro near Thermal (Bean and Saubel 1972; Schaefer and Laylander 2007).

Hunting focused on small- to medium-sized mammals, such as rodents and rabbits, and large mammals, such as pronghorn, mountain sheep, and mule deer. Hunting was done using the throwing stick or the bow and arrow, though nets and traps were also used for small animals (Bean 1972).

Cahuilla buildings consisted of dome-shaped or rectangular houses, constructed of poles covered with brush, and above-ground granaries (Strong 1929; Bean 1978). Wells of various types, including walk-in wells and hand-dug wells, were also constructed using mesquite wood shovels and baskets to remove earth (Heizer and Whipple 1971; Schaefer 2001). Other material culture included pottery; grinding implements; stone tools, arrow shaft straighteners and bows; clothing (loincloths, blankets, rope, sandals, skirts, and diapers); and various ceremonial objects made from mineral, plant, and animal substances (Bean 1972).

While most daily secular and religious activities took place within the community, there were places at some distance from the community where people stayed for extended periods of time (e.g. acorn or pinyon groves). Throughout the area there were sacred places used primarily for rituals, intergroup or inter-clan meetings, caches for sacred materials, and locations for use by shamans. Generally hilly, rocky areas, cave sites, or walled cave sites were used for temporary camping, food storage, fasting by shamans, and as hunting blinds (Schaefer 2001).

There may have been as many as 6,000 to 10,000 Cahuilla at the first European contact in 1797. During the first encounters, Spanish explorers passing through the desert valley found that the Cahuilla and the neighboring Quechan to the east were hostile. Because of this, and the difficulty with traversing the harsh desert environment, Europeans mostly used sea routes during the early settlement of California. Starting in the 1770s, western relatives of the Torres Martinez often were baptized at the missions in San Gabriel, San Luis Rey, and San Diego and worked among the Spanish. In 1816 to 1819, several asistencias were established near Cahuilla territory in Redlands, Santa Ysabel, and Pala. Through these asistencias, Cahuilla had greater interaction with Spaniards and adopted some forms of Spanish lifestyles and culture including agriculture, cattle and horse raising, clothing, language, and religion (Bean 1972, 1978).

At least ten Cahuilla villages were recorded in the southwest end of Coachella Valley in the 1850s (Wilke et al. 1975) according to US government survey maps and other data from that time. These villages include Cabazones, Martinez, Toro, La Mesa, and Agua Dulce. At least 10 walk-in and hand-dug wells were also noted (Schaefer 2001). The arrival of Americans, after about 1850, brought competition for land, and the Cahuilla started to lose some of their land to American cattle grazing interests. In 1851, the Toro leader, Chungil, joined other Cahuilla and Luiseño leaders in signing a treaty with the United States Government, which Congress never ratified (Schaefer 2001). A smallpox epidemic in 1863 had the largest post-contact impact on the Cahuilla, killing hundreds. The surviving Cahuilla continued a fairly independent lifestyle, occupying their own land and combining traditional subsistence practices with wage labor. This soon changed with the federal government establishing reservation lands and forcing tribal groups to reside within those boundaries. The federal government began to closely supervise the native population. Government schools were opened to train young Cahuilla in menial tasks. Traditional cultural practices were strongly discouraged and government officials controlled political organization. Organized protests over the next several decades eventually led to greater political autonomy after World War II, but also led to decreased government services and funding for health, education, welfare, and economic development programs. In the 1960s, however, greater federal funding became available for these types of programs, improving conditions for the Cahuilla. In 1974 there were about 900 people claiming to be Cahuilla (Bean 1978). Census data from the year 2000 indicates over 1,500 people of Cahuilla descent resided on eight separate reservations in southern California (US Census Bureau 2008).

Mohave

The Mohave comprised the northernmost and largest of the Yuman-speaking tribes along the lower Colorado River in prehistoric times. Their territory was approximately 150 miles long and on both sides of the Colorado River, on what are now the California, Nevada, and Arizona state borders. The Mohave lived in sprawling settlements in rural neighborhoods that were scattered throughout the valleys. Extended families formed settlements that might stretch for one to two miles, with four to five miles between settlements. Most of the year, open-sided shades (armadas) provided shelter, while more substantial sand-covered houses were used in the winter.

The Mohave primarily depended on floodplain farming in the lowlands along the river for subsistence, supplementing their diet with fishing and gathering wild plants. The principal crop was maize. Several varieties of beans, pumpkins, and melons were also grown. In times of drought, the Mohave relied more heavily on hunting, fishing, and gathering. Wild seeds, cactus fruits, and mesquite were commonly collected. Deer and rabbit were occasionally hunted. Despite division into local groups, the Mohave considered themselves one nation with a well-defined territory, enabling them to present a united front in warfare against all enemies. The Mohave had a system of patrilineal clans with names of totemic origin. Clans played no part in religious or secular life. However, the Mohave did have a war chief that would lead others into battle. At death, the body was cremated with personal possessions (Stewart 1983b).

The first Spaniard to reach the Mohave Valley, Father Francisco Garces in 1776, estimated the Mohave population at 3,000. No missions or Spanish settlements were established in Mohave territory and few changes occurred to the Mohave way of life until Anglo-American trappers began to travel through the region in the 1820s. Apprehensive of the increasing numbers of Whites entering their territory, the Mohave attacked a wagon train in 1858. As a result, the Americans established Fort Mohave and soon the Mohave were defeated by the US Army. Disease and poverty followed the Mohave's defeat. These conditions did not change until around the turn of the century. *By the mid- to late-1900s*, many of the Mohave people lived on the Colorado River Reservation, with income from irrigated farms and leases of reservation land to non-Indians (Stewart 1983b).

Historic Context

The history of the Chuckwalla Valley/Desert Center region since the time of European contact (1774) is characterized by several themes, including exploration, transportation, creation of the Colorado River Aqueduct, mining, and military training. Each of these contributed to the growth and development of the region.

Exploration

In 1774 and 1776, two different Spanish expeditions, led by Juan Bautista de Anza, crossed Yuman territory in search of a travel route across the desert; and recorded some of the flora and fauna that they found. On de Anza's return to Mexico City from his second expedition, Chief Palma and three companions accompanied him to petition for the establishment of a mission.

During this period, several asistencias associated with the Spanish missions were established in Redlands, Santa Ysabel, and Pala. Given the distance from Desert Center, they had little impact on the settlement of the Project area but did have an impact on the lives of the native inhabitants of the region.

By the Mexican Period (beginning in 1821), Maricopa Indian messengers carried mail between Sonora and the California coast, through the northern Colorado Desert and the San Gorgonio Pass. About the same time, from 1815 to the 1830s, Indians from San Gabriel Mission made annual trips into the Salton Sink to collect salt (Hoyt 1948; Fitch 1961; Johnston 1977; Pourade 1971; Bannon 1974; Nordland 1977).

In 1825, Captain Jose Maria Romero led a small party from the Los Angeles area through the San Gorgonio Pass and across the Coachella Valley east to Blythe in search of a transportation route from the Los Angeles and San Diego area to Arizona. Once reaching the Colorado River, they turned south toward Yuma. After the journey, a southern route that ran directly from Yuma to San Diego through the present-day site of Brawley, was deemed preferable to the San Gorgonio-Blythe route, and the "Southern Route" became the official road from Sonora to Alta California (Hoyt 1948; Johnston 1977; Nordland 1977; Pourade 1971). Ranchos, predominant in other portions of California, were not established in the Coachella Valley during this period.

Transportation

During the gold rush of the late 1840s and early 1850s, thousands of prospectors and other immigrants came to California by the Southern Route. Semi-weekly stage service by the Butterfield Overland Mail Company, crossing Imperial Valley from Yuma to San Diego and Los Angeles, was begun along this route in 1858 (Dowd 1960; Fitch 1961).

In 1862, gold was discovered near Blythe, creating the need for a direct route eastward from California to Arizona. In response to this need, William D. Bradshaw used existing roads to travel from Los Angeles to Dos Palmas Oasis near the current northeastern shore of the Salton Sea. From there, Bradshaw's party crossed the Orocopia and Chuckwalla Mountains, five miles south of Desert Center, and followed ancient Indian trails east using a map drawn for them by Cabazon, a Cahuilla chief, reaching the Colorado River just northeast of Blythe (Johnson 1977; Ross 1992).

The Bradshaw trail was the main means of communication between southern California and the eastern part of the United States until the 1877 completion of the Southern Pacific Railroad from Los Angeles to Santa Fe, New Mexico through Indio and Dos Palmas. By the 1880s, however, passenger coaches were discontinued in favor of the railroad, and express and mail contracts were subsequently primarily carried by mule trains and freight wagons. The Bradshaw trail was used as a freight route until the twentieth century, and even accommodated automobile travel until the highway that eventually became Interstate 10 was built, farther to the north, in the early part of the twentieth century (Johnston 1977; Ross 1992).

Automobiles began replacing buckboards (four-wheeled wagons drawn by a horses or mules) about 1910. Because of bad roads, the high-centered Model-T became the vehicle of choice. At that time, no maps, road signs, or service stations existed. Venturesome motorists in Southern California, faced with these circumstances, banded together in 1900 to form a touring club and began publishing a monthly magazine with tips on travel and directions to popular destinations (Von Till Warren 1980). As desert driving could be perilous, motorists began advocating for better information and road assistance. In 1917, the U.S. Geological Survey erected signs directing travelers to water at 167 localities in California's desert (Thompson 1921). The California Department of Engineering, after paving its first auto road in 1912, began issuing maps in 1918 (Von Till Warren 1980).

In 1915, the Chuckwalla Valley Road was essentially 90 miles of blow sand and cross washes with a couple of ruts. It was not until 1936 that U.S. Highway 60/70 between Indio and Blythe was paved (Norris and Carrico 1978). In 1968, this highway became Interstate 10 (I-10), a major transportation corridor through the Chuckwalla Valley today, connecting Los Angeles and Phoenix. Most other roads in the area remained unpaved.

Creation of the Colorado River Aqueduct and Mining Operations

In 1931, in an effort to bring much needed water to the area's booming population, 13 Southern California cities joined together to form the Metropolitan Water District of Southern California (Metropolitan). Metropolitan's primary mission was to supply its member cities with water for domestic and industrial uses (Hinds 1936). To accomplish this mission, the Metropolitan's first priority was to construct the Colorado River Aqueduct. Construction of the aqueduct began in March 1933 and the initial phase was completed, more than eight years later, in June 1941 (Gruen 1998). When finished, the Colorado River Aqueduct was one of the longest water conveyance facilities in the world: a 242-mile-long aqueduct over mountains and desert that included power lines, tunnels, siphons, covered conduits, open canals, dams, reservoirs, and five pumping plants (Gruen 1998). The aqueduct begins at Parker Dam on the Colorado River and ends at Lake Mathews south of the city of Riverside.

The project provided jobs to as many as 10,500 people at certain times during the eight-year construction period, and 35,648 people in all (Gruen 1998). During the 1930s, a period of severe unemployment, it was the largest construction employment project carried out in Southern California. In 1995, the American Society of Civil Engineers named the Colorado River Aqueduct a National Historic Civil Engineering Landmark. Today, it is still the major water supply for urban and suburban Southern California (Gruen 1998).

In the early 1930s, geologists working for Henry Kaiser during aqueduct construction discovered a rich deposit of iron ore at Eagle Mountain, about 13 miles north of Desert Center. One of the world's largest open-pit mines operated there from World War II until it closed in the late 1980s. The mine was instrumental in support of both the aqueduct and the war effort. The communities of Eagle Mountain and Lake Tamarisk were founded to provide housing, along with Desert Center, for workers.

In the mid 1930s, Dr. Sidney Garfield built a four-bed clinic near the construction headquarters for the Colorado River Aqueduct, just southeast of Desert Center. Hearing that Garfield's practice was foundering and that he was ready to leave, Henry J. Kaiser, whose division of The Seven Companies was building the stretch of aqueduct through the Desert Center vicinity, suggested a plan for Kaiser to take five cents per week out of each worker's paycheck to prepay for that worker's future medical treatments, should an injury occur while he was working. If the worker wanted to cover his wife or children, he would pay an additional 5 cents. Garfield stayed and upon completion of the project he joined Kaiser to manage the healthcare for future construction projects. Garfield's operation was the basis of Kaiser Permanente, the largest managed health care system in California today.

Upon the mine's closure in the 1980s, a for-profit prison was built on mining land leased from Kaiser by Utah's Management and Training Corporation. The prison closed at the end of 2003.

General Patton's Desert Training Center

The Colorado and Mojave Deserts became the scene of the US Army's Desert Training Center (DTC) in April 1942, established in preparation for the allied landing in North Africa, under the command of Major General George S. Patton, Jr., who later became an American military legend in World War II. Camp Desert Center, one of the 11 divisional camps, was located in the Chuckwalla Valley east of Eagle Mountain, covering portions of the Project area. The Desert Center Army Airfield, as part of the DTC operations at Camp Desert Center, was created and operational sometime in the winter of 1942–1943 (Bischoff 2000). The DTC transformed 19,000 square miles of the desert into a simulated theater of operations, to teach trainees to live and fight in desert conditions, with a training regimen that stressed realism. After several months, in the summer of 1942, Patton and his newly trained personnel were ordered to depart the DTC for North Africa.

They were replaced by a second group of trainees in August 1942, commanded by Major General Alvan Gillem.

By early 1943, the campaign in North Africa was coming to a close, but the DTC was still considered valuable as a training program, so the concept of the DTC was changed to serve the purpose of large-scale training and maneuvering. This resulted in the expansion of the DTC into Arizona and Nevada, covering 31,500 square miles (Bischoff 2000). Accordingly, the name of the training center was changed to the California-Arizona Maneuver Area (C-AMA) to reflect its expansion in size and purpose. More than a million men participated in the intense training held at the DTC/C-AMA before it was closed in April 1944, after the direction of World War II had shifted to the Allies' favor (Bischoff 2000).

According to Bischoff (2000), little is known about Camp Desert Center, and it is unclear what types of activities occurred there. Use permits obtained from the War Department include land located within Sections 26, 28, 30, 32, and 34, T5S R14E, and Sections 1 to 15, 17, 18, 22, and 30 to 34 T4S R15E. The majority of this land was likely used for maneuvers, but an encampment with temporary housing structures, an evacuation hospital, observer's camp, ordnance camp, and quartermaster truck site were also reported to have been at Camp Desert Center, although their exact location is unknown (Bischoff 2000). Rock-lined, oil-paved, and asphalt roads, walkways, tent areas, rock insignias, and refuse, similar to what is found at the other divisional camps, are reported to be found on the desert landscape east of Eagle Mountain Road and spread across the valley north of the town of Desert Center.

The Desert Center Army Airfield, located approximately one mile east of Route 177 and five miles northeast of Desert Center, contained two 5,000-foot-long paved runways and more than 40 buildings associated with the operational activities. The airstrip remains, but most, if not all, of the original buildings have been dismantled and removed (Bischoff 2000).

Community of Desert Center

Desert Center is an unincorporated town located at the junction of I-10 and SR-177. Current population estimates are unclear, as the 2000 Census does not include Desert Center in its listing (US Census Bureau 2008). Stephen Ragsdale founded the town in 1921 as a rest stop on the new US Route 60 (now I-10). The town has been sparsely populated, remaining a key rest stop on the desert crossing. A number of mobile home parks and agricultural operations, such as jojoba farms planted in the 1980s, add to the current local economy. The community of Lake Tamarisk, created by Kaiser Steel, is two miles north of Desert Center. The former Army Air Field remained as a local, seldom-used airport (Freeman 2006). This airport has been redeveloped as a private racetrack and airstrip.

Geoarchaeological Context and Potential for Subsurface Archaeological Resources

Understanding the geoarchaeological context of the Project area helps in determining the potential for subsurface archaeological deposits for which there may not be any surface indications. ECORP's geoarchaeological study (ECORP 2010) has identified and mapped six primary surface deposit types within the Solar Farm area; no additional Project component areas were examined. The following is based on ECORP (2010).

The surface deposits observed are comprised of alluvial sediments consisting of stream channel, sheet wash, and alluvial fan deposits. Six map units were identified within the Solar Farm area (see Appendix A in ECORP 2010a). Map units Qya, Qaly, Qal, and Qfy all represent younger alluvium that appear to be late Holocene to recent in age. These deposits have the potential to contain or overlie archaeological materials. An intermediate age alluvium represented by map unit Qfm represents early to late Holocene deposits. The Qfm may contain or bury prehistoric cultural materials. Conversely, cultural materials may be limited to the surface of the oldest Qfm landforms. Pre-Holocene age alluvium is also present within the Project area, forming older alluvial fans in the northwestern and southwestern parts of the Solar Farm area. The older alluvial fan deposits (Qfo and Qfvo map units) are believed to be late Pleistocene in age, predating human occupation of the region, and thus archaeological materials should be limited to the surfaces of these landforms.

Young Alluvial Stream Deposits (Qya)

Recent alluvial stream deposits are present along a drainage course in the eastern part of the Solar Farm area. These deposits exhibit recently active depositional features and display no post-depositional weathering or soil formation. Given their geomorphologic setting and characteristics, the Qya deposits appear to be years to several decades in age. The Qya materials are derived from the surrounding previously deposited sediments and thus may have potential for containing cultural materials. Given the surface position of these deposits and their youthful age, Qya deposits may also bury other Holocene (pre-12,000 BP) deposits (i.e. Qal, Qaly, Qal2, Qfy). Stream deposits such as Qya are typically created by high energy events, and the integrity of archaeological materials in such depositional settings is likely low.

Young Alluvial Sheet Wash Deposits (Qaly)

Young alluvial sheet wash deposits cover much of the southeastern portion of the Solar Farm area. These deposits generally exhibit negligible surface weathering (i.e. no desert varnish formation) and thus are inferred to be less than approximately 500 years in age. However, a very weak reddening of the incipient basal varnish on clasts in the southernmost portion of the site suggests they may be slightly older in this area. Based on the surface characteristics, position, and the relationship to the surrounding deposits, the Qaly materials appear to be relatively thin and likely bury other Holocene alluvium. Given the inferred age for these deposits, the Qaly deposits have the potential for containing and/or burying deposits with cultural materials.

Young Alluvial Deposits (Qal)

The central part of the Solar Farm area is covered by younger sandy alluvium. Subsurface test pit profiles indicate very weak soil profile development within the Qal deposits. Comparisons with other regional soils suggest they may be Late Holocene (post-1,000 BP) in age or younger. The Qal alluvium originates from the west and northwest. In the northwestern part of the site in the vicinity of the older and topographically higher alluvial fan surfaces, the Qal deposits form relatively thin channels between and incised into the older alluvial fan surfaces. In the central portion of the site, the Qal deposits are approximately 4 to 8 feet (130 to 225 cm) thick and bury a previously eroded surface of older Pleistocene alluvial deposits (Qfo and/or Qfvo). Small-scale recently active stream channels are present locally within the modern surface of the Qal alluvium and indicate ongoing transport and redistribution of these materials. Based on the inferred age for these deposits, the Qal deposits have the potential for containing and/or burying cultural materials.

Young Alluvial Fan Deposits (Qfy)

Younger (Late Holocene to recent) alluvial fan deposits were observed along the outermost margins of the older and topographically higher alluvial fans in the northwestern and southwestern portions of the solar farm area. Given their mapped distribution, the younger fan deposits most likely rest upon older alluvium and/or the Qal deposits where they emerge from the fan drainages in this area. The Qfy fan surfaces display very weak desert pavement development and little to no varnish formation on clasts. Based on their geologic/geomorphic position and the absence of post depositional weathering, they appear to represent recent deposits that are several decades to several hundred years in age (50 to 500 BP) and thus may contain and/or bury deposits containing cultural materials.

Intermediate Alluvial Fan Deposits (Qfm)

Alluvial fan deposits of intermediate age (Early to Late Holocene) were identified in several locations in the western parts of the Solar Farm area. The geomorphic position and materials forming the Qfm deposits are similar to those of the younger Qfy fan alluvium. However, the Qfm deposits exhibit noticeably stronger desert pavement development on their surfaces with weak to moderate varnish formation. Based on the degree of pavement and varnish development present, these deposits likely date to the Early to Late Holocene (1,000 to ca. 12,000 BP). Some Qfm surfaces may be slightly older. Given the broad age range of these deposits, the Qfm deposits may contain and/or bury prehistoric cultural materials. However, cultural materials may be limited to the surface of the oldest Qfm landforms.

Older Alluvial Fan Deposits (Qfo and Qfvo)

Older alluvial fan deposits are present in the northwestern and southwestern portions of the Solar Farm area. These deposits are different in composition and appearance from the younger fan deposits and alluvium. The Qfo and Qfvo deposits have strong pavement development and varnish formation. In addition to the strong surface weathering characteristics, the older fan alluvium exhibits a very well developed soil profile. Given the geomorphic setting, strong pavement and varnish formation, and the strength of post-depositional soil profile development, these deposits are most likely late Pleistocene in age. Based on comparison to other dated alluvial fan deposits in the region, the Qfo landforms may be 14 to approximately 30 thousand years in age and the Qfvo fans appear to be approximately 40,000-80,000 years in age. The inferred Pleistocene age (pre-12,000 BP) for the Qfo and Qfvo alluvial fan deposits suggests that, if present, cultural materials would be limited to only the surfaces of these landforms.

Identified Cultural Resources

In conjunction with the EIS, Sunlight contracted with ECORP Consulting, Inc., to complete a Class I overview (ECORP 2009a) and a Class III pedestrian survey (ECORP 2010b). The Class I overview is a summary of literature, records, and other documents providing an informed basis for understanding the nature of the cultural resources of the study area. The review covered the Project Study Area plus a one-mile buffer. The Class III survey covered the Project Study Area (see Figure 3.6-1), identifying any cultural resources within those areas.

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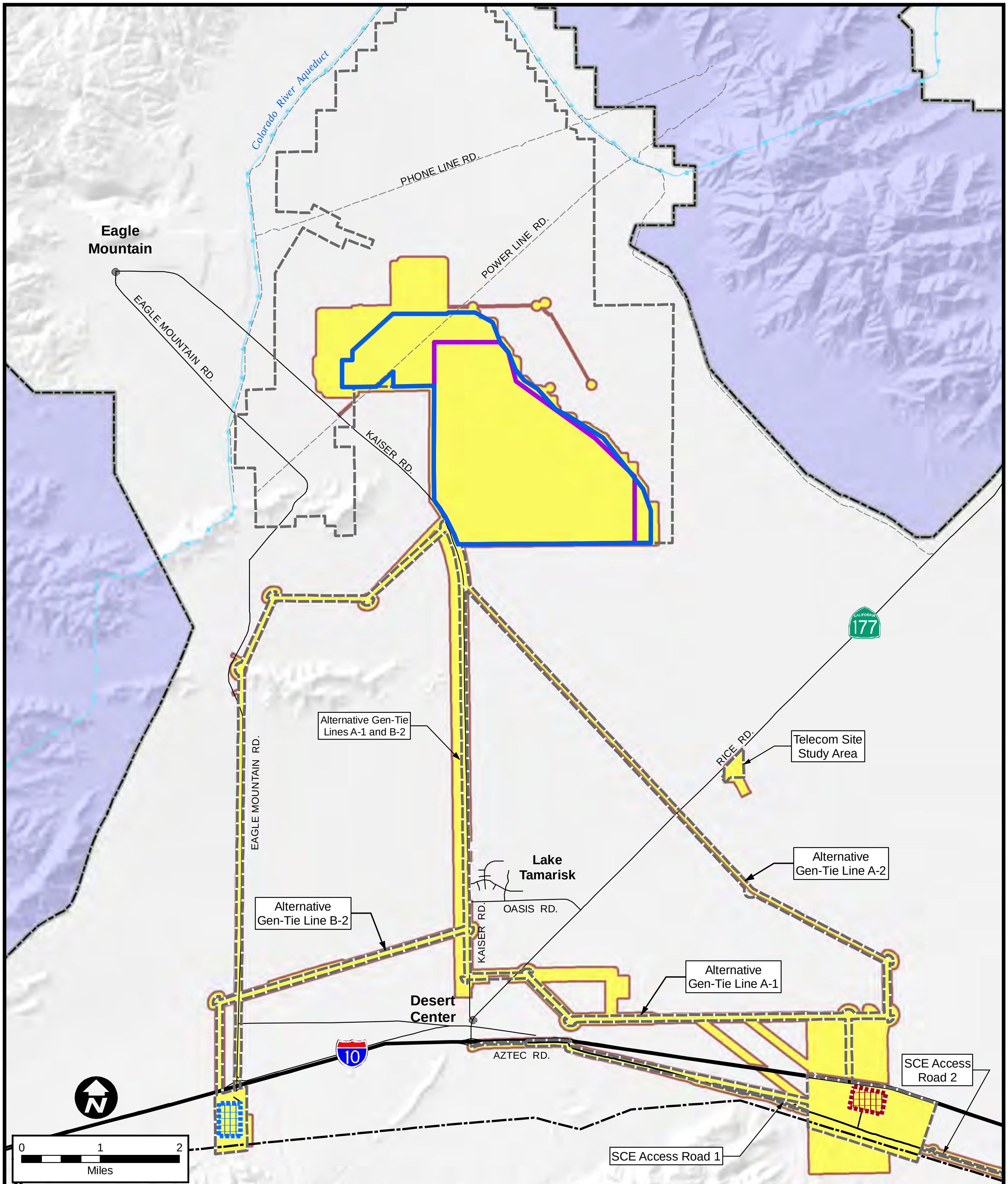

LEGEND

- Class III Survey Area
- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- Joshua Tree National Park Boundary
- Devers-Palo Verde Transmission Line (DPV1)

Source: ECORP (IP).

DESERT SUNLIGHT SOLAR FARM

Figure 3.6-1

Class III Survey Area

Native American Consultations

ECORP contacted the Native American Heritage Commission to request a list of tribal contacts for the Project and to determine whether the Native American Heritage Commission's Sacred Lands File included any cultural resources within or near the Project area. Three separate searches of the Sacred Lands File were conducted: in April 2009, January 2010 and March 2010. These searches revealed no sensitive or sacred Native American resources in the vicinity of the Project areas that could be affected by the proposed Project. In addition to ECORP's work, the BLM Palm Springs-South Coast Field Office initiated consultation with federally recognized Indian tribes associated with the Project area through letters dated April 15, 2010 (Kline 2010). These consultations seek to identify issues of concern for the tribes, as well as sacred sites, traditional use areas, or TCPs that may be affected by the Project. At this time, the BLM has not received replies to consultation requests, and no traditional resources or sacred sites have been identified within or near the Project area. The BLM will continue Indian tribal consultations, the results of which will be incorporated into the *Memorandum of Agreement* for the Project, as discussed above. The fourteen tribes being consulted are Agua Caliente Band of Cahuilla Indians, Augustine Band of Cahuilla Mission Indians, Cabazon Band of Mission Indians, Chemehuevi Indian Tribe, Colorado River Indian Tribes, Cocopah Tribe, Fort Mojave Indian Tribe, Fort Yuma Quechan Indian Tribe, Morongo Band of Mission Indians, Pauma Band of Luiseño Indians, Ramona Band of Mission Indians, San Manuel Band of Mission Indians, Torres-Martinez Desert Cahuilla Indians, and the Twenty-Nine Palms Band of Mission Indians.

Class I Inventory

The Class I inventory included a records search through the Eastern Information Center at the University of California, Riverside, and a review of the BLM's records for the study area. The records search indicated that less than five percent (about 850 acres) of the 19,516-acre Project Study Area had been previously surveyed for cultural resources, and less than one percent (about 120 acres) had been surveyed in the last 10 years. The previous surveys that overlapped the Project Study Area and were less than 10 years old were primarily linear surveys along or parallel to I-10 and only crossed the Gen-Tie Line corridor alternatives. No previous surveys that are less than 10 years old were located within the area considered for the Solar Farm site.

The records search results indicated a variety of cultural resources had been previously recorded within the record search radius. These include prehistoric archaeological sites, prehistoric isolated finds, one prehistoric trail segment, historic archaeological sites, historic road segments, historic rock cairns and rock alignments, a historic highway marker, a historic mine claim marker, a historic water conveyance system, a multi-component archaeological site containing prehistoric and historic-age materials, and a "recent use area" site. The historic-era Eagle Mountain Mine and Townsite, a well-known historical feature of the area that was in operation between the mid-1940s and 1983 by Kaiser Steel, is approximately two miles northwest of the Solar Farm area. Eagle Mountain Railroad, which serviced the mine between 1948 and 1986, crosses the southwest corner of the Solar Farm study area but is not within any of the proposed Project components (ECORP 2010b; USGLO 1954a, 1954b, 1963a, 1963b, 1963c, 1963d, 1963e).

Four historic properties (i.e., resources listed on or eligible for listing on the NRHP) were identified as within one mile of the Project Study Area but not within any of the Project component areas. However, the historic landscapes of these resources do include the Project area, and they are therefore considered part of the ROI/APE. The Colorado River Aqueduct (P33-11265) has been recommended as eligible for listing on the NRHP. Two nearby prehistoric resources are listed on the NRHP: the North Chuckwalla Mountains Petroglyph District and the North Chuckwalla Mountains Quarry Archaeological District. One prehistoric site, a rock art site with a sparse artifact scatter, has also been determined to be eligible for NRHP listing.

The *Class I survey identified 10* previously recorded resources within the boundaries of Project components. These are a prehistoric lithic scatter (P33-15093), a complex prehistoric site that includes petroglyphs, cairns, and lithic scatters (CA-RIV-1383), a historic telegraph*/telephone* line (P33-13987), a historic quartz reduction and refuse site (P33-14201), *a 46-acre historic period dump (P33-15095), a hospital site associated with the DTC (P33-15971), two historic roads (Kaiser Road and Eagle Mountain Road), the Blythe-Eagle Mountain transmission line, and US 60/70 with associated diversion dikes (P33-17766).*

Historic maps of the Project area consulted as part of the records search included the US Army Corps of Engineers (USACE) 15-minute Coxcomb Mountains and Chuckwalla Mountains, California topographic quadrangle maps from 1943 through 1945; US General Land Office (USGLO) plat maps from surveys conducted in 1855, 1856, and 1954 through 1957; and the US Geological Survey (USGS) 15-minute Coxcomb Mountains and Chuckwalla Mountains, California topographic quadrangle maps from 1963. Several historic-era resources identified as within the boundaries of at least one Project component are discussed below.

Brown's Wagon Road

The USGLO plat maps surveyed during the 1850s indicate no man-made features within or near the Solar Farm study area, with one exception. A segment of Brown's Wagon Road is shown crossing from west to east across all of the alternative Gen-Tie Line corridors (USGLO 1907a, 1907b, 1907c, 1907d, 1907e). This roughly east-west road appears on historic maps of the area from 1907 following a route roughly parallel to but about 0.5 mile north of the current I-10, in the area of Eagle Mountain Road. The route may have been used as early as 1825 during the expedition led by Captain Jose Maria Romero from Los Angeles to Arizona. The expedition reportedly traveled northeast between the Orocopia and Chuckwalla Mountains and then turned east. Surveys for potential railroad routes followed a similar path in the 1850s, with a trail established that became known as Frink's Route or Brown's Wagon Road. The Bradshaw Trail, established in 1862 and located approximately five miles to the south, became a more popular route through the area (BLM 2008d; Hoyt 1948; Johnson 1977; Ross 1992). Maps of the region from the early 1950s no longer show the road, and no indication of the road was noted during the Class III survey (ECORP 2010b).

Eagle Mountain Road

The USACE 15-minute Coxcomb Mountains and Chuckwalla Mountains, California topographic quadrangle maps of the early to mid 1940s (US Army Corps of Engineers 1943, 1944, 1945a, 1945b) show Eagle Mountain Road. This paved road first appears on historic maps of the area in 1943 and was most likely constructed at the same time as the Colorado River Aqueduct. It runs generally north from I-10 to the Eagle Mountain Pumping Station and then continues north and follows the Colorado River Aqueduct. GT-B-2 crosses Eagle Mountain Road about 1.1 miles north of I-10 as it heads west from Kaiser Road. It continues west past Eagle Mountain Road for about 0.2 mile, then turns south and runs parallel to Eagle Mountain Road, 0.2 mile away, until it reaches Red Bluff Substation B. The portion of the road that falls within and near the Project components was examined during the Class III survey. It is in good condition with some signs of wear and aging, but no prominent ruts or cracks. Five archaeological sites and seven isolated finds were recorded within 150 feet of the road during the field survey. The sites include *the 36th Evacuation Hospital associated with the DTC (P33-15971), one historic-age road (CA-RIV-9396), one historic-age refuse deposit (P33-18376), and one historic-period telegraph/telephone line (P33-13987). The isolated finds include two prehistoric flakes (P33-18534 and P33-18537), four historic-age cans (P33-18533, P33-18539, P33-18540, and P33-18541), and one historic-age saddle (P33-18542)* (ECORP 2010b).

State Highway 60/70 and Diversion Dikes

State Highway 60/70 (replaced by today's I-10) is shown on the USACE 15-minute Coxcomb Mountains and Chuckwalla Mountains quadrangles as crossing all of the Gen-Tie Line corridor alternatives (US Army Corps of Engineers 1943, 1944, 1945a, 1945b). Mid-twentieth century USGLO plat maps (1954 through 1957) also show State Highway 60/70 (I-10) crossing all of the Gen-Tie Line corridor alternatives, Eagle Mountain Road, and several dirt roads. US Route 60 was established in 1932, from Arizona to Los Angeles, along the route of the former Legislative Route 64, which had been defined as an unimproved road in 1919. In 1936, US Route 70 was designated along the same route as Route 60 from Arizona to Los Angeles. The route was added to the Interstate Highway System in 1947 and designated as Interstate 10 in 1957. In 1964, the old Route 60 and Route 70 numbers were removed, leaving only the designation I-10 (California Highways 2010). The alignment of most of this original route remains relatively unchanged and has merely been redesignated as I-10. However, the physical characteristics of the route have been modified by several repavings and highway widening, so most of the original roadway is no longer extant. However, one segment of Route 60/70 still remains just south of where I-10 and Route 60/70 diverge. From just before Corn Springs Road and continuing eastward, Chuckwalla Valley Road is the remnant of the original Route 60/70 (ECORP 2010b).

Historic maps of the region from 1952 show several diversion dikes constructed along the southern edge of US Route 60/70 east of Desert Center. Many of these original dikes remain, although they have been modified over time. By 1963, this network of dikes had been expanded. These dikes are located south of I-10 and north of the proposed access roads from Corn Springs Road and Highway 177 to Substation A. Where Corn Springs Road meets the proposed access road (Access Road 2), these dikes come within several feet of the proposed access road and continue in this proximity for about one mile to the west. At this point, the dikes turn to the north and remain at least 850 feet from this proposed access road until the road reaches Red Bluff Substation A. Along the proposed access road from Highway 177 to Red Bluff Substation A, one dike crosses the access road at a point about 1.5 miles east of Highway 177. Although more recent dikes also bisect this access road, this is the only one that appears on historic maps and, therefore, is of historic age. Examination of the dikes during the Class III survey revealed that extensive modifications have been made to the system of dikes since what is shown on the 1963 historic map of the area. Numerous small holding ponds and additional dikes have been added, greatly modifying the original feature (ECORP 2010b).

Kaiser Road

On the USGS 15-minute Coxcomb Mountains and Chuckwalla Mountains 1963 topographic maps, paved Kaiser Road has been added, connecting Eagle Mountain with Desert Center, and crossing the southwest corner of the Solar Farm study area (USGS 1963a, 1963b). Kaiser Road was constructed by Kaiser Steel Corporation between 1957 and 1963 to provide access to Eagle Mountain Mine and the town of Eagle Mountain. The paved road heads almost due north from I-10 for about six miles, where it bends gradually to the northwest and leads to Eagle Mountain. Seven Project components lie next to or cross Kaiser Road, including both Solar Farm site alternatives SF-B and -C, and all three of the Gen-Tie Line alternatives (GT-A-1, GT-A-2, and GT-B-2). SF-B and SF-C border Kaiser Road on the northeast side, where the road starts to bend to the northwest. All three of the Gen-Tie Lines cross the road at least once. The portion of the road that falls within and near the Project components was examined during the Class III survey. It is in good condition, with some signs of wear and aging but no prominent ruts or cracks. Six archaeological sites and four isolated finds were recorded within 150 feet of the road during the field survey. The sites include two survey markers *(P33-18240 and CA-RIV-9381), three historic-age refuse deposits (P33-18244, CA-RIV-9382, and P33-18253), and one historic-period mining prospect pit (P33-18246). The isolated finds are P33-18459, P33-18460, P33-18465, and P33-18467*, all of which are historic-age cans (ECORP 2010b).

MWD 230-kV Transmission Line and Power Line

The Metropolitan Water District of Southern California (MWD) Transmission Line and Power Line Road are also noted on maps as crossing the Solar Farm area. This transmission line and its associated dirt road were constructed by MWD in the late 1930s or early 1940s to bring power to the various pumping stations along the Colorado River Aqueduct. The line is constructed of single H-frame steel towers with cross supports. The line bisects the SF-B and SF-C. The portions of the transmission line and road that fall within and near the Project components were examined during the field survey. The line and road both appear to be in good condition. The road has been graded numerous times, as evidenced by the approximately two-foot high berms on either side of the road. One archaeological site *(P33-18333*, a historic-age refuse deposit) and one isolated find (*P33-18588*, a historic-age can) were recorded within 150 feet of the transmission line and road (ECORP 2010b).

Class III Survey

A Class III survey of 10,390.5 acres encompassing the Project components and alternatives was conducted to identify cultural resources that might be directly affected by Project construction, operation and maintenance, and decommissioning. Additional areas were examined within a five-mile buffer around the Project components to identify significant built environment resources that might be indirectly affected by visual or audible Project impacts. The field surveys were conducted in several phases between October 2009 and June 2010. Two small portions of Gen-Tie Line Alternatives A-1 and B-2 could not be surveyed as a result of access issues.

The Class III survey identified 67 previously unrecorded archaeological sites within the various alternative Project components being considered in addition to the 10 previously recorded sites identified in the Class I survey (the Class I and Class III surveys identified numerous additional resources within the larger Project Study Area). In addition to the sites identified, a number of isolated artifacts were found alone and not associated with archaeological sites. Historic-era resources dominate the inventory of archaeological sites while prehistoric-era resources dominate isolates. One multicomponent site (prehistoric and historic-era artifacts are represented) and two sites of indeterminate age were also recorded. Identified resources included prehistoric lithic scatters; rock rings; habitation sites; and isolated artifacts such as flakes, cores, and tools. Identified historic-era resources included refuse deposits; section and survey markers; mining-related sites (such as cairns, claim markers, prospect pits, and camp sites; World War II-era military features associated with the DTC; roads and road alignments; rock or fire rings; and isolated objects such as cans, utensils, bottles, auto parts, appliances and parts, and munitions and casings.

Resources Identified within Project Components

The following discussions and tables indicate sites identified within the various Project component alternatives as well as preliminary CRHR eligibility recommendations based on the Class I inventory and Class III survey results and observations. Several resources are included in multiple Project components due to the overlapping nature of those components. In addition to the resources listed below, the DTC-C-AMA and the less tangible historic landscapes of the surrounding extant resources identified by the Class I inventory extend into each of the Project components discussed below. These landscapes include:

- The Colorado River Aqueduct;
- The NRHP-listed North Chuckwalla Mountains Petroglyph District (CA-RIV-1383);
- The NRHP-listed North Chuckwalla Mountains Quarry Archaeological District (CA-RIV-1814); and
- The NRHP-eligible prehistoric site CA-RIV-330.

CRHR eligibility arguments and justification can be found in ECORP (2010b). The preliminary CRHR eligibility recommendations have not yet been concurred with by CPUC. NRHP eligibility determinations have not yet been made and will be *identified in the Memorandum of Agreement*, which is under development. For this analysis, all identified resources are presumed NRHP eligible unless previously determined or recommended to be ineligible. Although not listed below, all isolates (isolated artifacts in insufficient numbers to be considered an archaeological site) identified during the Class III survey are considered ineligible for both the CRHR and NRHP.

Solar Farm Site

No previously recorded cultural resources were documented within either of the considered Solar Farm site alternatives. However, numerous sites were identified by the Class III survey.

Solar Farm B. SF-B includes *21* sites (*16* historic, 3 prehistoric, 2 unknown-era). The sites are listed in Table 3.6-1.

Table 3.6-1
Cultural Resources Identified within Solar Farm Layout B

Site No.	Prehistoric/ Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
Blythe-Eagle Mountain Transmission Line and Power Line Road	Historic	Transmission line and road	TBD	Potentially eligible
Kaiser Road	Historic	Road	TBD	Potentially eligible
P33-18228	Unknown	Two rock ring features	TBD	Potentially eligible
P33-18229	Unknown	Rock ring feature	TBD	Potentially eligible
P33-18231	Historic	Survey marker with rock cairn	TBD	Likely ineligible
CA-RIV-9373	Prehistoric	Lithic deposit	TBD	Potentially eligible

Table 3.6-1 (continued)
Cultural Resources Identified within Solar Farm Layout B

Site No.	Prehistoric/ Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
CA-RIV-9374	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
CA-RIV-9375	Prehistoric	Lithic deposit	TBD	Potentially eligible
CA-RIV-9376	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
CA-RIV-9377	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
CA-RIV-9378	Prehistoric	Lithic deposit	TBD	Potentially eligible
CA-RIV-9379	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
P33-18239	Historic	Tank tread refuse deposit	TBD	Potentially eligible as contributor to potential DTC historic district
P33-18240	Historic	Road easement marker	TBD	Likely ineligible
CA-RIV-9380	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
P33-18333	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18334	Historic	Berm-lined pit	TBD	Potentially eligible as contributor to potential DTC historic district
P33-18336	Historic	Prospect pit and spoils pile	TBD	Likely ineligible
CA-RIV-9474	Historic	WWII era ammunition deposit	TBD	Potentially eligible as contributor to potential DTC historic district
P33-18339	Historic	Los Angeles Department of Water and Power benchmark	TBD	Likely ineligible
CA-RIV-9475	Historic	Military campsite	TBD	Potentially eligible as contributor to potential DTC historic district

*NRHP *eligibility determinations will be identified in the Memorandum of Agreement*.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Solar Farm C. SF-C includes _15_ sites (_11_ historic, 3 prehistoric, and 1 unknown-era). The sites are listed in Table 3.6-2.

Table 3.6-2
Cultural Resources Identified within Solar Farm Layout C

Site No.	Prehistoric/ Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
Blythe-Eagle Mountain Transmission Line and Power Line Road	Historic	Transmission line and road	TBD	Potentially eligible
Kaiser Road	Historic	Road	TBD	Potentially eligible
_P33-18229_	Unknown	Rock ring feature	TBD	Potentially eligible
_P33-18231_	Historic	Survey marker with rock cairn	TBD	Likely ineligible
CA-RIV-9373	Prehistoric	Lithic deposit	TBD	Potentially eligible
CA-RIV-9374	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
CA-RIV-9375	Prehistoric	Lithic deposit	TBD	Potentially eligible
CA-RIV-9376	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
CA-RIV-9377	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
CA-RIV-9378	Prehistoric	Lithic deposit	TBD	Potentially eligible
CA-RIV-9379	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
_P33-18239_	Historic	Tank tread refuse deposit	TBD	Potentially eligible as contributor to potential DTC historic district
_P33-18240_	Historic	Road easement marker	TBD	Likely ineligible
CA-RIV-9380	Historic	Tank tracks	TBD	Potentially eligible as contributor to potential DTC historic district
_P33-18334_	Historic	Berm-lined pit	TBD	Potentially eligible as contributor to potential DTC historic district

*NRHP _eligibility determinations will be identified in the Memorandum of Agreement_.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Transmission Line Corridors

Gen-Tie Line A-1. The GT-A-1 corridor includes _14_ sites (_12_ historic, 2 prehistoric), four of which were previously recorded. The sites are listed in Table 3.6-3.

Gen-Tie Line A-2. The GTA-2 corridor includes four sites (all historic). The sites are listed in Table 3.6-4.

Gen-Tie Line B-2. The GT-B-2 corridor includes _17_ sites (all historic). The sites are listed in Table 3.6-5.

Table 3.6-3
Cultural Resources Identified within Gen-Tie Line A-1

Site No.	Prehistoric/ Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
Kaiser Road	Historic	Road	TBD	Potentially eligible
P33-15093	Prehistoric	Lithic reduction concentration	TBD	Potentially eligible
P33-15095	Historic	Refuse deposit of cans	TBD	Potentially eligible
P33-17766	*Historic*	*U.S. Routes 60/70 and Associated Diversion Dikes*	*TBD*	*Potentially eligible*
P33-81244	Historic	Refuse deposit of cans	TBD	Likely ineligible
CA-RIV-9382	Historic	Refuse deposit of cans and glass	TBD	Likely ineligible
P33-18246	Historic	Circular excavated area	TBD	Likely ineligible
P33-18253	Historic	46-acre refuse deposit	TBD	*Likely ineligible*
CA-RIV-9390	Historic	Refuse deposit of cans and glass	TBD	Likely ineligible
P33-18271	Historic	Refuse deposit of cans and glass	TBD	*Likely ineligible*
P33-18291	Historic	Refuse deposit of cans	TBD	Likely ineligible
CA-RIV-9407	Prehistoric	Habitation site	TBD	Potentially eligible
P33-18299	Historic	Refuse deposit of cans, glass, ceramics	TBD	Likely ineligible
P33-18405	Historic	Rock cairn	TBD	Likely ineligible

*NRHP *eligibility determinations will be identified in the Memorandum of Agreement.*
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Table 3.6-4
Cultural Resources Identified within Gen-Tie Line A-2[1]

Site No.	Prehistoric/ Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
Kaiser Road	Historic	Road	TBD	Potentially eligible
P33-17766	*Historic*	*U.S. Routes 60/70 and Associated Diversion Dikes*	*TBD*	*Potentially eligible*
P33-18299	Historic	Refuse deposit of cans, glass, ceramics	TBD	Likely ineligible
P33-18392	Historic	Refuse deposit of military artifacts	TBD	Potentially eligible as contributor to potential DTC historic district

[1]Survey crews could not access approximately five miles of this route, but it is likely that additional resources exist within this alternative route.
*NRHP *eligibility determinations will be identified in the Memorandum of Agreement*.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Table 3.6-5
Cultural Resources Identified within Gen-Tie Line Route – Alternative B-2

Site No.	Prehistoric /Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
Kaiser Road	Historic	Road	TBD	Potentially eligible
Eagle Mountain Road	Historic	Road	TBD	Potentially eligible
P33-13987	Historic	Telegraph/telephone line	TBD	Likely ineligible
P33-15971	Historic	36th Evac. Hospital complex	TBD	Potentially eligible as contributor to potential DTC historic district
P33-17766	*Historic*	*U.S. Routes 60/70 and Associated Diversion Dikes*	*TBD*	*Potentially eligible*
P33-18244	Historic	Refuse deposit of cans	TBD	Likely ineligible
CA-RIV-9382	Historic	Refuse deposit of cans and glass	TBD	Likely ineligible
P33-18246	Historic	Circular excavated area	TBD	Likely ineligible
P3318376	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18379	Historic	Refuse deposit of cans and milled lumber	TBD	Likely ineligible
P33-18380	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18381	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18382	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18383	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18384	Historic	Refuse deposit of cans	TBD	Potentially eligible as contributor to potential DTC historic district
P33-18385	Historic	Refuse deposit of cans and glass	TBD	*Likely ineligible*
P33-18386	Historic	Refuse deposit of cans and glass	TBD	Potentially eligible as contributor to potential DTC historic district

*NRHP *eligibility determinations will be identified in the Memorandum of Agreement*.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD=To be determined.

Red Bluff Substation Sites

Red Bluff Substation A. The Red Bluff Substation A area includes *six* sites, all historic-era (Table 3.6-6). These totals include sites that would be affected by drainage features associated with the substation location. This does not include additional Project components associated with the Substation, such as access roads and a distribution line. These are discussed separately below (see Tables 3.6-7, 3.6-8, and 3.6-9). Several additional sites were recorded adjacent to the Substation boundary, and the area to the south is particularly sensitive for cultural resources. The Alligator Rock *Area of Critical Environmental Concern (ACEC),* designated for cultural resource value, does extend into Substation A. The status of the ACEC and impact on it are addressed in Sections 3.14 and 4.14 (Special Designations).

Table 3.6-6
Cultural Resources Identified within Red Bluff Substation A

Site No.	Prehistoric / Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-17766	Historic	U.S. Routes 60/70 and Associated Diversion Dikes	TBD	Potentially eligible
CA-RIV-9414	Historic	Rock ring and rock cairn	TBD	Likely ineligible
CA-RIV-9416	Historic	Two rock cairns	TBD	Likely ineligible
CA-RIV-9418	Historic	Two rock cairns	TBD	Likely ineligible
P33-018394	Historic	Rock cairn and four quartz reduction concentrations	TBD	Likely ineligible
CA-RIV-9486	Historic	Quartz reduction concentrations	TBD	Likely ineligible

*NRHP eligibility determinations will be identified in the Memorandum of Agreement.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined

Table 3.6-7
Cultural Resources Identified within the Transmission Loop-In Line for the Red Bluff Substation A

Site No.	Prehistoric / Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-018394	Historic	Rock cairn and four quartz reduction concentrations	TBD	Likely ineligible
P33-018413	Historic	Quartz reduction concentrations	TBD	Likely ineligible

*NRHP eligibility determinations will be identified in the Memorandum of Agreement.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined

Table 3.6-8
Cultural Resources Identified within Access Road Alternative 1 via Kaiser and Aztec Roads to Red Bluff Substation A

Site No.	Prehistoric / Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-14201	Historic	Quartz reduction concentration and a refuse deposit of glass and cans	TBD	Likely ineligible
P33-17766	Historic	Original US 60/70 alignment and associated dikes	TBD	Potentially eligible
CA-RIV-9478	Historic	Four rock cairns and a refuse deposit of cans and glass	TBD	Likely ineligible
P33-18345	Historic	Six quartz reduction concentrations	TBD	Likely ineligible
P33-18349	Historic	Ten quartz reduction concentrations, two associated reduction pits, and a refuse deposit of cans and glass	TBD	Likely ineligible
P33-18351	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18353	Historic	Four quartz reduction concentrations and a refuse deposit of cans	TBD	Likely ineligible

*NRHP eligibility determinations will be identified in the Memorandum of Agreement.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Table 3.6-9
Cultural Resources Identified within Access Road Alternative 2 via Corn Springs Road and Chuckwalla Valley Road to Red Bluff Substation A

Site No.	Prehistoric / Historic	Site / Isolate	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-17766	Historic	Site	Original US 60/70 alignment and associated dikes	TBD	Potentially eligible

*NRHP eligibility determinations will be identified in the Memorandum of Agreement.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Project components associated with the Red Bluff Substation A are the telecom site, a transmission loop-in line, two access roads, and a distribution line. These were also surveyed during the Class III survey. No resources were identified within the boundaries of the telecom site. Two historic sites were identified within the transmission loop-in line corridor (Table 3.6-7). The western access road corridor, via Kaiser Road and Aztec Road (Access Road Alternative 1), includes seven sites, all historic, including one previously recorded likely NRHP-ineligible site (Table 3.6-8). The access road corridor to the east of the substation via Corn Springs Road and Chuckwalla Valley Road (Access Road Alternative 2) includes one historic site (Table 3.6-9). The corridor for the distribution line includes 20 sites (18 historic, 1 prehistoric, and 1 multicomponent) (Table 3.6-10).

Table 3.6-10
Cultural Resources Identified within Distribution Line for Red Bluff Substation A

Site No.	Prehistoric / Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
CA-RIV-1383 (P33-01383)	Prehistoric	North Chuckwalla Mountains Petroglyph District (thirty-six cultural loci, including petroglyph concentrations, rock rings, cleared circles, trail fragments, flaked stone lithic deposits, bedrock milling features, deposited ceramics, and a rock cairn with an associated wooden cross.)	Listed on NRHP	Listed on CRHR
P33-14201	Historic	Quartz reduction concentration and a refuse deposit of glass and cans	TBD	Likely ineligible
P33-17766	Historic	Original US 60/70 alignment and associated dikes	TBD	Potentially eligible
CA-RIV-9415	Multicomponent	Prehistoric lithic deposit; historic mine shaft, two adits, two prospect pits, and one spoils pile	TBD	Potentially eligible
CA-RIV-9417	Historic	Two prospect pits, one fire hearth, two rock-lined depressions, three cleared areas, and a refuse deposit of cans	TBD	Likely ineligible
CA-RIV-9478	Historic	Four rock cairns and a refuse deposit of cans and glass	TBD	Likely ineligible
P33-18326	Historic	Rock ring	TBD	Likely ineligible
P33-18343	Historic	Four rock cairns and a refuse deposit of cans and glass	TBD	Likely ineligible
P33-18345	Historic	Six quartz reduction concentrations	TBD	Likely ineligible
P33-18349	Historic	Ten quartz reduction concentrations, two associated reduction pits, and a refuse deposit of cans and glass	TBD	Likely ineligible

Table 3.6-10 (continued)
Cultural Resources Identified within Distribution Line for Red Bluff Substation A

Site No.	Prehistoric / Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-18350	Historic	Three quartz reduction concentrations, one extraction pit, and a refuse deposit of cans and glass	TBD	Likely ineligible
P33-18351	Historic	Refuse deposit of cans	TBD	Likely ineligible
P33-18352	Historic	Refuse deposit of cans and glass	TBD	Likely ineligible
P33-18353	Historic	Four quartz reduction concentrations and a refuse deposit of cans	TBD	Likely ineligible
P33-18356	Historic	Refuse deposit of cans and glass	TBD	Likely ineligible
P33-18360	Historic	USGS section marker and wooden post, both surrounded by rock cairns	TBD	Likely ineligible
P33-18394	Historic	Rock cairn and four quartz reduction concentrations	TBD	Likely ineligible
P33-18395	Historic	Rock hearth and a refuse deposit of cans and glass	TBD	Likely ineligible
CA-RIV-9482	Historic	Two quartz reduction concentrations	TBD	Likely ineligible
P33-18398	Historic	Four prospector's collection piles	TBD	Likely ineligible

*NRHP *eligibility determinations will be identified in the Memorandum of Agreement*.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Red Bluff Substation B. The Red Bluff Substation B includes *six* sites (*four* historic and two prehistoric), as shown in Table 3.6-11. No sites were identified immediately next to this substation area. These totals include sites that would be affected by drainage features associated with the substation location. This does not include additional Project components associated with the substation, including one access road alternative and a distribution line. These are discussed separately below (see Tables 3.6-12 and 3.6-13).

Project components associated with the Red Bluff Substation B include one access road and a distribution line. These were also surveyed during the Class III survey. The distribution line and access road include the same two sites, both historic (Tables 3.6-12 and 3.6-13).

Table 3.6-11
Cultural Resources Identified within Red Bluff Substation B

Site No.	Prehistoric / Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-17766	*Historic*	*Original US 60/70 alignment and associated dikes*	*TBD*	*Potentially eligible*
P33-18284	Historic	Rock hearth	TBD	Likely ineligible
CA-RIV-9404	Prehistoric	Lithic deposit	TBD	Potentially eligible
P33-18286	Prehistoric	Lithic deposit	TBD	Potentially eligible
P33-18389	Historic	Five quartz reduction concentrations	TBD	Likely ineligible
P33-18390	Historic	Quartz reduction concentration	TBD	Likely ineligible

*NRHP *eligibility determinations will be identified in the Memorandum of Agreement.*
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Table 3.6-12
Cultural Resources Identified within Distribution Line for Red Bluff Substation B

Site No.	Prehistoric/ Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-13987	Historic	Telegraph/telephone line	TBD	Likely ineligible
P33-17766	*Historic*	*Original US 60/70 alignment and associated dikes*	*TBD*	*Potentially eligible*

*NRHP *eligibility determinations will be identified in the Memorandum of Agreement*.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

Table 3.6-13
Cultural Resources Identified within Access Road via Eagle Mountain Road to Red Bluff Substation B

Site No.	Prehistoric/ Historic	Description	NRHP Eligibility*	CRHR Eligibility Recommendation
P33-13987	Historic	Telegraph/telephone line	TBD	Likely ineligible
P33-17766	*Historic*	*Original US 60/70 alignment and associated dikes*	*TBD*	*Potentially eligible*

*NRHP *eligibility determinations will be identified in the Memorandum of Agreement*.
Source: ECORP (2009) and preliminary data from ECORP (IP)
TBD = To be determined.

3.7 PALEONTOLOGICAL RESOURCES

Paleontological resources constitute a fragile and nonrenewable scientific record of the history of life on earth. The BLM policy is to manage paleontological resources for scientific, educational, and recreational values and to protect these resources from adverse impacts. To accomplish this goal, the BLM ensures that proposed land uses that it initiates or authorizes do not inadvertently damage or destroy important paleontological resources on public lands.

To ensure the protection of paleontological resources, the BLM considers paleontological data as early as possible in the decision-making process for any project. As part of this ongoing consideration, the BLM collates existing information on paleontological resources and uses this information to classify the geologic formations present for their potential to contain vertebrate fossils or invertebrate or plant fossils that are scientifically important.

3.7.1 Applicable Plans, Policies, and Regulations

The major laws protecting paleontological resources on federal lands include the Paleontological Resources Preservation Act (PRPA) which was signed into law as part of the Omnibus Public Lands Management Act (OPLA) of 2009. The PRPA requires the Secretary of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise, and requires the BLM to develop appropriate plans for inventorying, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. Where possible, these plans should emphasize interagency coordination and collaborative efforts with non-federal partners, the scientific community, and the general public.

Other major authorities protecting paleontological resources on federal lands are the Federal Land Policy and Management Act (FLPMA), NEPA, and various sections of BLM's regulations.

While paleontological resources are often discussed in parallel to or linked with historical and cultural resources in planning and environmental impact analyses, the identification and classification of paleontological resources is based on geologic units. On October 15, 2007, the BLM formalized the use of a new classification system for identifying fossil potential on public lands with the release of instruction memorandum IM 2008-009. The Potential Fossil Yield Classification (PFYC) system is based on the potential for the occurrence of significant paleontological resources in a geologic unit, and the associated risk for impacts to the resource based on federal management actions. Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them.

Using the PFYC system, geologic units are classified (Class 1 – Very Low through Class 5 – Very High) based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential. It is used to set management policies and not intended to be applied to specific paleontological localities or small areas within units.

While they are being updated to reflect the requirements of the PRPA and the PFYC system, the BLM Manual 8270 and BLM Handbook H-8270-1 contain the agency's guidance for managing paleontological resources on public land. The manual has more information on the authorities and regulations related to paleontological resources. The handbook gives procedures for permit issuance, requirements for qualified applicants, information on paleontology and planning, and a classification system for potential fossil-bearing geologic formations on public lands.

3.7.2 Existing Conditions

A region of several miles surrounding the proposed Project area was evaluated for the recorded presence of paleontological resources and the potential for the geologic units in the region to contain significant paleontological resources.

A Paleontology Literature and Records Review was conducted by the Division of Geological Sciences at the San Bernardino County Museum (SBCM) on November 1, 2009 (Division of Geological Sciences at the SBCM 2009). The review indicated that no fossils have been recorded within a several-mile radius of the Project Study Area.

Geologic Units

As discussed in Section 3.8, Geology and Soil Resources, the geologic units within the region include dunes sand (Qs), Holocene alluvium (Qal), Quaternary older alluvium (Qoa), Tertiary volcanic rock (Tv), Mezozoic granite rock (gr), and Mezozoic basic intrusive rock (bi). The Tertiary and Mesozoic rock have no potential for paleontological resources (Figure 3.8-1).

Only the Quaternary older alluvium has any potential to yield paleontological resources. Elsewhere in southern inland California, such older Pleistocene sediments have yielded fossil resources. The potential for this unit to contain paleontological resources is dependent on its depositional context and lithology. The Pleistocene alluvium (Quaternary older alluvium) in the Project area is composed of alluvium and fanglomerate with sediments possibly derived from the Brawley Formation or Ocotillo Conglomerate/Palm Springs Formations, which could themselves contain fossils (Division of Geological Sciences at the SBCM 2009).

The Brawley Formation and Ocotillo Conglomerate/Palm Springs Formations themselves do not occur within 10 miles of the proposed Project area. To be present in the region of the project, any fossil resources would have to have been eroded from these formations (i.e., separated from any depositional information and value), transported, and deposited with the sediments of the Quaternary older alluvium. This transport and deposition would result in fragmentation and reduction of any fossil resources of significant scientific value. Therefore, the recent Holocene alluvium (Qs and Qal) and the Pleistocene older alluvium (Qoa) at the surface in the region of the proposed Project have a low potential to contain significant fossil resources (Eberhart/United Consultants 2007). However, if there are any cohesive beds of fine-grained sediments with characteristics of lake or low-energy fluvial deposition lying unexposed beneath the surface, these beds could have a higher potential for paleontological resources.

3.8 GEOLOGY AND SOIL RESOURCES

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed Project or its alternatives with respect to geology and soil resources within the Project Study Area.

3.8.1 Applicable Plans, Policies, and Regulations

Federal

International Building Code

The 2006 International Building Code (IBC) is a model building code developed by the International Code Council (ICC) that sets rules specifying the minimum acceptable level of safety for constructed objects such as buildings in the United States. As a model building code, the IBC has no legal status until it is adopted or adapted by government regulation. California has adopted the IBC. The IBC was developed to consolidate existing building codes into one uniform code that provides minimum standards to ensure the public safety, health and welfare insofar as they are affected by building construction, and to secure safety of life and property from all hazards incident to the occupancy of buildings, structures and premises. With some exceptions, the California Building Code (CBC) discussed below is based on the IBC.

Federal Land Policy and Management Act of 1976 as Amended

The Federal Land Policy and Management Act (FLPMA) establishes policy and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multi-use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources and archaeological values. FLPMA is also charged with the protection of life and safety from natural hazards.

California Desert Conservation Area Plan

The CDCA Plan defines multiple use classes for BLM-managed lands in the CDCA, which includes land encompassing the proposed Project and alternatives. With respect to geological resources, the CDCA Plan aims to maintain the availability of mineral resources on public lands for exploration and development.

State of California

California Building Code

The California Building Code (2007) includes a series of standards that are used in project investigation, design, and construction (including grading and erosion control). The CBC 2007 Edition is based on the 2006 IBC as published by the ICC, with the addition of more extensive structural seismic provisions. Chapter 16 of the CBC contains definitions of seismic sources and the procedure used to calculate seismic forces on structures.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 regulates development and construction of buildings intended for human occupancy to avoid the hazard of surface fault rupture. This act provides mitigation against surface fault rupture of known active faults beneath occupied structures, and requires disclosure of the presence of any seismic faults to potential real estate buyers and a 50-foot setback for new occupied buildings. The Alquist-Priolo Earthquake Fault Zoning Act helps define where fault rupture is most likely to occur. This act groups faults into categories of active, potentially active, and inactive.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 directs the California Geological Survey to delineate seismic hazard zones. The purpose of this act is to reduce the threat to public health and safety, and to minimize the loss of life and property by identifying and mitigating seismic hazards. These seismic hazards include areas that are subject to the effects of strong ground shaking such as liquefaction, landslides, tsunamis and seiches. Cities, counties, and state agencies are directed to use seismic hazard zone maps developed by the California Geological Survey in their land use planning and permitting processes. This act requires that site-specific geotechnical investigations be performed prior to permitting most urban development projects within seismic hazard zones.

California Land Conservation Act of 1965

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, was enacted to preserve California’s prime agricultural lands from urbanization. Since it was enacted, the act has been amended several times to allow its use not only to protect prime agricultural lands.

Riverside County

Riverside County General Plan

The Safety Element of the Riverside County General Plan provides for the mitigation of geologic hazards through a combination of engineering, construction, land use and development standards. The Safety Element addresses the geologic hazards present within the county, including fault rupture, ground shaking, liquefaction, seismically generated subsidence, seiche and dam inundation, landslides/mudslides, non-seismic subsidence, and erosion. Riverside County has prepared graphics that identify geologic hazards, including fault rupture, liquefaction hazards and landslide hazards (Riverside County 2003). Special consideration, including possible engineering/geologic evaluation, is required for developing sites designated on these maps. The Desert Center Area Plan also provides an overview of mitigations for geologic hazards in the Desert Center area.

Riverside County General Plan policies relating to fault rupture, seismicity, and seismic risk are as follows:

- S 2.1 Minimize fault rupture hazards through enforcement of Alquist-Priolo Earthquake Fault Zoning Act provisions and the following policy, among others: Require geologic studies or analyses for critical structures, and lifeline, high occupancy, schools, and high-risk structures within 0.5 miles of all Quaternary to historic faults shown on the Earthquake Fault Studies Zone map.

Riverside County General Plan policies related to liquefaction are as follows:

S 2.2 Require geological and geotechnical investigations in areas with potential for earthquake-induced liquefaction, landsliding or settlement as part of the environmental and development review process, for any structure proposed for human occupancy, and any structure whose damage would cause harm.

S 2.3 Require that a State-licensed professional investigate the potential for liquefaction in areas designated as underlain by “Susceptible Sediments” and “Shallow Groundwater” for all general construction projects.

S 2.7 Require a 100 percent maximum variation of fill depths beneath structures to mitigate the potential of seismically-induced differential settlement.

Riverside County General Plan policies related to ground subsidence are as follows:

S 3.8 Require geotechnical studies within documented subsidence zones as well as zones that may be susceptible to subsidence prior to the issuance of development permits.

S 3.10 Encourage and support efforts for long-term, permanent monitoring of topographic subsidence in all producing groundwater basins, irrespective of past subsidence.

Riverside County General Plan policies related to slope stability are as follows:

S 3.5 During permit review, identify and encourage mitigation of onsite and offsite slope instability, debris flows, and erosion hazards on lots undergoing substantial improvements.

S 3.6 Require grading plans, environmental assessments, engineering and geologic technical reports, irrigation, and landscaping plans, including ecological restoration and revegetation plans, as appropriate, in order to assure the adequate demonstration of a project’s ability to mitigate the potential impacts of slope and erosion hazards and loss of native vegetation.

3.8.2 Existing Conditions

Topography

The Project site is located in a largely undeveloped, vacant, and relatively flat area in the Chuckwalla Valley of the Sonoran Desert in eastern Riverside County. The Desert Center region is surrounded by the Eagle, Coxcomb, and Chuckwalla Mountains. Sand dunes with native desert habitats compose most of the Desert Center planning area (Riverside County General Plan, Desert Center Area Plan 2003). *However, the Project area overlaps only a small portion of the Desert Center planning area, and no sand dunes are located within the Project area.* The Project area is underlain by alluvial sediments. Relict, old, or inactive dune deposits are scattered throughout the Project area (Kenney 2010).

Geology

Regional Geology

The proposed Project lies within the Mojave Desert geomorphic province (Norris and Web 1990), which is located in the westernmost part of the Basin and Range geomorphic province. The Mojave Desert geomorphic province is a broad interior region of isolated mountain ranges separated by expanses of desert plains. It as an interior enclosed drainage, with playas (or dry lake basins) being common. Fault trends largely control Mojave Desert topography. Mountain ranges in the Mojave Desert geomorphic province are composed of complexly faulted and folded basement rocks that range in age from pre-Cambrian (more than 570 million years before present [mybp]) to Mesozoic (66 to 240 mybp). Volcanic and sedimentary rocks deposited in the Cenozoic (less than 66 mybp to present) are common as well. Younger faulting in the eastern half of the Mojave Desert geomorphic province, where the Project is located, is characterized by generally north- to northwest-trending normal faults associated with regional extension in the Basin and Range province.

The Project components lie within the Chuckwalla Valley, which is bounded on the west by the Eagle Mountains, on the east by the Palen Mountains, and to the north by the Coxcomb Mountains. The Chuckwalla Mountains are to the south. The Chuckwalla Valley contains a thick sequence of Quaternary sedimentary deposits including Pleistocene fan deposits, Holocene alluvium, and dune sand. The bordering mountains expose primarily Precambrian metamorphic and Mesozoic granitic rocks. The Blue Cut and Pinto Mountain Fault Zones, north-northwest and approximately 5 and 28 miles, respectively, from the Project area, are the nearest significant faults. The San Andreas Fault is approximately 37 miles southwest of the Project location (Earth Systems Southwest 2010b).

Local Geology

The predominant geologic units in the Project area are Pleistocene older alluvium, Holocene alluvium, and dune deposits. Older alluvium (Qoa), characterized as uplifted Pleistocene fan surfaces with well–developed desert pavement and incised drainage courses, is located primarily in the western portion of the Project (Figure 3.8-1). Holocene alluvium (Qal) is represented by the more recent braided stream channel deposits within the multitude of intermittent drainage channels that occur in the southern portion of the proposed Solar Farm and alternatives. Holocene dune sands (Qs) are located in the east and southeastern portions of the proposed Solar Farm and alternatives.

No active faults are mapped in the current footprint of the proposed and alternative Solar Farm, proposed or alternative Gen-Tie Lines, or proposed or alternative substations (Figure 3.8-1). Three concealed inactive faults, or faults whose position is inferred, are within the Project area (Figure 3.8-1). No active faults are known to exist within the Chuckwalla Valley area (Jennings 1994). The Blue Cut Fault Zone is the closest active fault zone and is approximately 7.2 miles north of the Project. Quaternary older alluvium and Holocene alluvium deposits are within the areas of the proposed transmission corridors (Figure 3.8-1). Both Red Bluff Substation alternatives are within Quaternary older alluvium, with minor amounts of Mesozoic granite rock outcrops (Figure 3.8-1).

Geologic Hazards

Geologic hazards that may affect the region include seismic hazards (ground shaking, surface fault rupture, soil liquefaction, and other secondary earthquake-related hazards), slope instability, ground subsidence, and erosion. Based on the geotechnical study for the Project (see Appendix F), a discussion follows on the specific hazards to the Project locations (Earth Systems Southwest 2010b).

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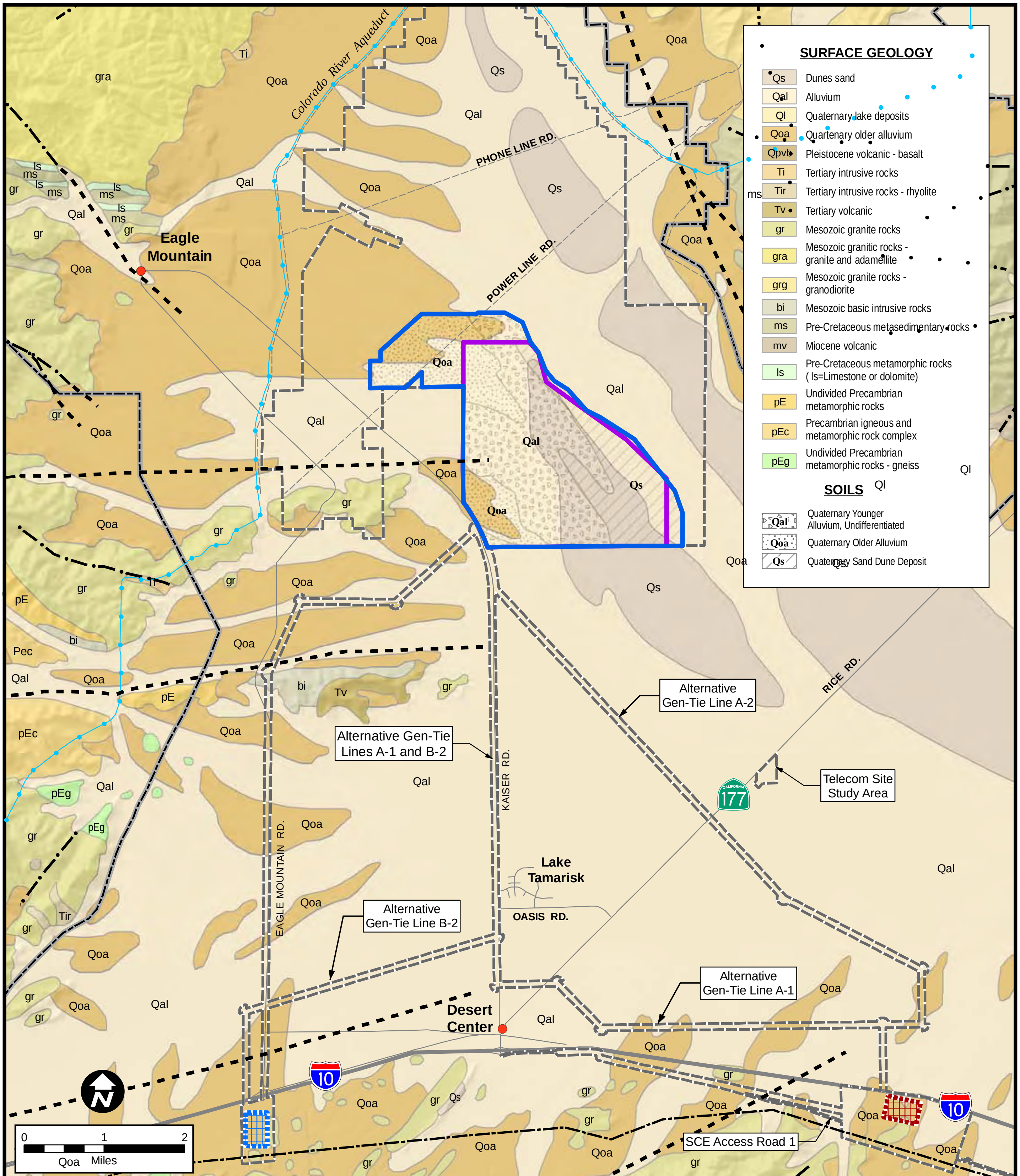

LEGEND

- Fault-Approximate
- Fault-Concealed-Inferred Location
- Devers-Palo Verde Transmission Line (DPV1)
- Desert Sunlight Study Area Boundary
- Joshua Tree National Park Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)

Notes: Adapted from Geologic Map of California, Salton Sea Sheet, 1997

2010 Earth Systems Southwest

DESERT SUNLIGHT SOLAR FARM

Figure 3.8-1

Regional Geology and Soils

Primary Seismic Hazards

Seismic Sources. Several active faults or seismic zones lie within 62 miles (100 kilometers) of the Project Study Area which includes the proposed Solar Farm, Gen-Tie Line, Substation, and their alternatives (Table 3.8-1). The primary seismic hazard to the site is strong ground shaking from earthquakes along the Pinto Mountain Fault north of the Project Study Area, the San Andreas Fault southwest of the Project Study Area, and the multitude of faults within the Eastern California Shear Zone.

Table 3.8-1
Regional Earthquake Faults

Fault Section Name	Distance		Avg. Dip Angle	Avg. Dip Direction	Avg. Rake[1]	Trace Length	Fault Type [2]	Mean Mag [3]	Mean Return Interval	Slip Rate
	(miles)	(km)	(deg.)	(deg.)	(deg.)	(km)			(years)	(mm/yr)
Blue Cut	7.2	11.6	90	177	NA	79	B'	7.1	--	--
Pinto Mtn.	35.9	57.8	90	175	0	74	B	7.2	--	2.5
Brawley, western edge of seismic zone	36.8	59.2	90	250	NA	60	B'	7.0	--	--
San Andreas (Coachella)	36.8	59.2	90	224	180	69	A	7.2	69	20
Brawley, eastern edge of seismic zone	38.0	61.2	90	250	NA	61	B'	7.0	--	--
Pisgah-Bullion Mtn.-Mesquite Lake	40.0	64.4	90	60	180	88	B	7.3	--	0.8
Elmore Ranch	44.2	71.1	90	310	0	29	B	6.6	--	1
San Andreas (San Gorgonio Pass-Garnet Hill)	48.2	77.6	58	20	180	56	A	7.6	219	10
San Andreas (North Branch, Mill Creek)	48.2	77.6	76	204	180	106	A	7.5	110	17
Calico-Hidalgo	48.2	78.2	90	52	180	117	B	7.4	--	1.8
So. Emerson-Copper Mtn.	49.5	79.6	90	51	180	54	B	7.0	--	0.6
Ludlow	49.6	79.8	90	239	NA	70	B'	7.0	--	--
Joshua Tree (Seismicity	51.6	83.1	90	271	NA	17	B'	6.5	--	--
Eureka Peak	54.3	87.3	90	75	180	19	B	6.6	--	0.6
San Jacinto (Clark)	56.5	90.9	90	214	180	47	A	7.6	211	14
Burnt Mtn.	56.8	91.4	67	265	180	21	B	6.7	--	0.6
Superstition Hills	61.6	99.1	90	220	180	36	A	7.4	199	4
Landers	62.4	100.4	90	60	180	95	B	7.4	--	0.6
San Jacinto (Borrego)	62.8	101.0	90	223	180	34	A	7.0	146	4
San Jacinto (Coyote Creek)	63.2	101.8	90	223	180	43	A	7.3	259	4
Imperial	63.5	102.1	82	55	180	46	A	6.8	89	20
Superstition Mountain	65.9	106.1	37	37	37	37	B	7.0	--	0.1
San Jacinto (Superstition Mountain)	66.0	106.3	90	210	180	26	B'	6.6	--	--

Table 3.8-1 (continued)
Regional Earthquake Faults

Fault Section Name	Distance		Avg. Dip Angle	Avg. Dip Direction	Avg. Rake[1]	Trace Length	Fault Type [2]	Mean Mag [3]	Mean Return Interval	Slip Rate
Hector Mine	66.3	106.8	90	246	NA	28	B’	6.7	--	--
Mission Creek	67.7	109.0	65	5	180	31	B’	6.9	--	--
San Jacinto (Anza)	67.9	109.3	90	216	180	46	A	7.6	151	18
Johnson Valley North	68.5	110.3	90	51	180	35	B	6.8	--	0.6
North Frontal (East)	71.8	115.6	41	187	90	27	B	6.9	--	0.5
Earthquake Valley (Southern Extension)	76.2	122.7	90	204	180	9	B’	6.3	--	--
Earthquake Valley	78.4	126.1	90	217	180	20	B	6.7	--	2
San Gorgonio Pass	79.0	127.1	60	11	NA	29	B’	6.9	--	--
Lenwood-Lockhart-Old Woman Springs	79.1	127.2	90	43	180	145	B	7.5	--	0.9
Elsinore (Coyote Mountain)	79.7	128.3	82	35	180	39	A	7.1	322	3
Laguna Salada	81.4	131.0	90	41	180	99	A	6.8	89	3.5
San Andreas (San Bernardino South)	81.4	131.0	90	210	180	43	A	7.6	150	16
Earthquake Valley (North Extension)	81.6	131.3	90	221	180	33	B’	6.9	--	--
Elisnore (Julian)	82.1	132.1	84	36	180	75	A	7.6	725	3
Cerro Prieto	82.7	133.1	90	221	NA	84	B’	7.2	--	--
San Jacinto (San Jacinto Valley, step over)	86.0	138.4	90	224	180	24	A	7.4	199	9
San Jacinto (Anza, step over)	86.8	139.6	90	224	180	25	A	7.6	151	9

[1]Rake: The angle between the horizontal and any linear feature, e.g., an ore shot or lineation, measured in the plane containing the linear feature
[2]Type-A faults have known slip rates and paleo-seismic estimates of recurrence interval. Type-B faults have observed slip rates.
[3]USGS 2008
Source: Working Group on California Earthquake Probabilities, Special Report 203, Appendix A, Earth Systems Southwest 2010b.

Three unnamed faults have been mapped by the California Geologic Survey trending in an east-west direction through the Project area. These faults are shown as buried, are poorly defined, and are not considered active or a significant source of seismic activity (Figure 3.8-1).

Surface Fault Rupture. The Project is not within a currently delineated Alquist-Priolo Earthquake Fault Zone (Hart 1997). Well delineated active fault lines cross through the region, as shown on California Geological Survey maps (Jennings 1994); however, no active faults are mapped in the immediate vicinity of the Project locations. Therefore, active fault rupture is unlikely to occur at the Project site. While fault rupture would most likely occur along previously established fault traces, future fault rupture also could occur at other locations.

Historic Seismicity and Seismic Risk. Approximately 32 earthquakes of magnitude 5.5 or greater have occurred within 70 miles of the Project area since 1800 (Earth Systems Southwest 2010). These include the 1948 Desert Hot Springs earthquake (Magnitude [M] 6.0), the 1949 Pinto Mountains earthquake (M5.0), and the 1992 Joshua Tree earthquake (M6.1) that was an aftershock of the Landers earthquake. All three earthquakes occurred within the San Andreas Fault system, which is closest to the Project Study Area.

While accurate earthquake predictions are not possible, various agencies have conducted statistical risk analyses. In 2008, the California Geological Survey and the US Geological Survey (USGS) completed probabilistic seismic hazard maps. Earth Systems Southwest (2010b) completed an evaluation of the seismic risk at the Project locations. The recent report by the Working Group of California Earthquake Probabilities (2008) estimated a 58 percent conditional probability that an M6.7 or greater earthquake may occur between 2008 and 2038 along the southern segment of the San Andreas Fault. The southern segment of the San Andreas Fault appears to originate near the Salton Sea and bends to the northwest, along the southern base of the San Bernardino Mountains, through the Tejon Pass, and then along the northern base of the San Gabriel Mountains.

The primary seismic risk at the site is a potential earthquake along the San Andreas Fault that is about 37 miles from the site and is considered as fault Type A (Working Group on California Earthquake Probabilities 2008). Geologists at the USGS believe that the San Andreas Fault has characteristic earthquakes that result from rupture of each fault segment. The estimated characteristic earthquake is M7.7 for the southern segment, as detailed earlier for the San Andreas Fault (US Geological Survey 2008). This segment has the longest elapsed time since rupture of any part of the San Andreas Fault. The last rupture occurred about 1680, based on dating by the USGS near Indio (Working Group on California Earthquake Probabilities 2008). This segment has also ruptured on or around 1020, 1300, and 1450, with an average recurrence interval of about 220 years. The San Andreas Fault may rupture in multiple segments, producing a higher magnitude earthquake. Recent paleo-seismic studies suggest that the San Bernardino Mountain Segment to the north and the Coachella Segment, both found within the southern segment of the San Andreas Fault system, may have ruptured together in 1450 and 1690 (Working Group on California Earthquake Probabilities 2008).

Site Acceleration. The potential intensity of ground motion may be estimated by the horizontal peak ground acceleration, measured in “g” forces (g is equivalent to the acceleration due to Earth’s gravity, or 9.81 meters per second squared). Ground motions depend primarily on the earthquake magnitude and distance to the rupture zone. Accelerations also depend on attenuation by rock and soil deposits, direction of rupture, and type of fault. For these reasons, ground motions may vary considerably in the same general area. This variability can be expressed statistically by a standard deviation about a mean relationship. Important factors influencing the structural performance are the duration and frequency of strong ground motion, local subsurface conditions, soil-structure interaction, and structural details. The probabilistic estimates for peak ground acceleration based on a risk of a 10 percent exceedance in 50 years is approximately 0.24 meters per second per second for an earthquake with a recurrence time (equivalent return period) of 476 years (California Geologic Survey 2001, revised 2003).

The probabilistic peak ground acceleration, taken from the seismic hazard maps and data covering the Project area, can be estimated (California Geological Survey 2002, revised 2003). The risk would be a 10 percent exceedance in 50 years, the equivalent return period would be 476 years, and the peak ground acceleration would be approximately 0.24 g, based on Site Class B/C and soil amplification factor of 1.0 for Site Class D (Earth Systems Southwest 2010b).

2007 California Building Code Seismic Coefficients. The CBC seismic design parameters criteria are based on a Design Earthquake that has an earthquake ground motion two-thirds of the lesser of 2 percent probability of occurrence in 50 years or 150 percent of mean deterministic limit. The peak ground acceleration estimate given above is provided for information on the seismic risk inherent in the CBC design.

Seismic Hazard Zones. The site lies in a moderate liquefaction potential zone designated by Riverside County because of high susceptibility sediments (Riverside County 2003). This portion of Riverside County has not been mapped under the California Seismic Hazard Mapping Act (California Public Resources Code 1991). The Project Study Area has a relatively gentle topography and the potential for a large-scale landslide is considered negligible. The occurrence of debris flows and surficial failures within incised drainage channels is considered likely (Earth Systems Southwest 2010b).

Secondary Seismic Hazards. Secondary seismic hazards related to ground shaking generally include soil liquefaction, ground subsidence, slope instability, tsunamis, and seiches.

> *Soil Liquefaction.* Liquefaction is the loss of soil strength from sudden shock (usually earthquake shaking), causing the soil to become a fluid mass. In general, for the effects of liquefaction to be manifested at the surface, groundwater levels must be within 50 feet of the ground surface and the soils within the saturated zone must also be susceptible to liquefaction. The potential for liquefaction to occur in the Project area is considered negligible because the depth of groundwater beneath the site is thought to exceed 50 feet. No free groundwater was encountered in test pits dug to a total depth of 10 feet below ground surface, completed during the geotechnical survey of the proposed Solar Farm and alternatives areas. While the Project lies in a zone designated by Riverside County for sediments susceptible to liquefaction (Riverside County 2003), undocumented depths to groundwater resulted in the assumed moderate liquefaction potential. Water level data from a well located approximately two miles southwest of the Solar Farm area suggest static water levels in excess of 100 feet, with historic shallow water levels greater than 60 feet (Earth Systems Southwest 2010b).

> *Ground Subsidence.* The site is within a Riverside County-designated “susceptible” subsidence zone (Riverside County 2003). Dry sands tend to settle and compact when subjected to strong earthquake shaking. The amount of subsidence is dependent on relative density of the soil, ground motion, and earthquake duration. Uncompacted fill areas of the site may be susceptible to seismically induced settlement.

> *Slope Instability.* The site has relatively gentle topography, such that the potential for large-scale landslides is considered negligible. The occurrence of local surficial failures and debris flows within and along incised drainage channels is considered likely.

> *Tsunamis and Seiches.* The site is far inland, and there are no water storage reservoirs on or near the site, so the hazards from tsunamis and seiches are considered negligible.

<u>*Other Geologic Hazards*</u>

Water Erosion

The site is relatively flat and undisturbed, with sparse native desert vegetation. Drainage paths within the Project area are poorly defined to nonexistent, with drainage by sheet flow in a northwest-to-southwest direction (Earth Systems Southwest 2010b). There are no perennial streams within the Project area. Three ephemeral washes are within the study area but outside the proposed Solar Farm area. Pinto Wash, Big Wash, and Eagle Creek are ephemeral streams originating north and west of the Project Study Area (Figure 3.17-3). The Project locations are in an area where sheet flooding and erosion could occur, with localized flooding within the defined drainage channels during seasonal precipitation and flash flood events. Appropriate Project design, construction, and maintenance would minimize flooding potential.

Wind Erosion

An analysis of aeolian (or wind-driven) sand migration for the Chuckwalla Valley includes the proposed Project area (Kenney 2010). Only very minor active aeolian sand deposits exist within the site. These are associated with mobilized sand from the local washes in the Project Study Area but outside the Project area. They are not associated with the regional aeolian sand corridor of the Clarks Pass system, which extends from Dale Dry Lake to just east of Ford Dry Lake, 20 miles northwest of the Project Study Area (Kenney 2010).

As stated earlier, relict, old, or inactive dune deposits are scattered throughout the Project. Due to the paucity of sand sources, the potential is low for aeolian or wind-driven sand erosion in the Project Study Area and the areas of the proposed Project and alternatives (Kenney 2010).

Soil Resources

Soils associated with the proposed Solar Farm area were surveyed on December 10, 2009, as part of the geotechnical survey (Earth Systems Southwest 2010b). The soil units encountered during the geotechnical survey consist of sand dune deposit, younger alluvium, and older alluvium. The older alluvium was slightly moist, likely due to winter rain infiltration and in a medium dense to dense condition, while the sand dune deposits were generally soft and dry. Soils south of the Project area were surveyed by the Natural Resources Conservation Service (1993). The survey area was associated with agricultural lands found next to Rice Road, within the GT-A-2 corridor and approximately four miles south of the Solar Farm area. The draft survey results classified those soils as gravelly loamy coarse sands (Carsitas series) and loamy sands (Rositas series). A typical description for both the Carsitas and Rositas soils series provided by the NRCS indicates that these soils do not have a topsoil horizon (Natural Resources Conservation Service 1993). Soils are described as having C horizons from 0 to 60 inches below grade, indicating that soil-forming activity in these soils is primarily absent. The water erosion hazard for soils classified as Carsitas series has been determined to be slight, and the windblown erosion hazard for those soils is considered to be severe. The water erosion hazard for soils classified as Rositas soil series has also been determined to be slight, and the windblown erosion hazard is considered to be severe (Natural Resources Conservation Service 1993).

While no prime farmland soils were identified in the survey conducted by the NRCS, Riverside County has identified soils in one component of the Project, GT-A-2, where it crosses Rice Road, as

Williamson Act Non-Prime Agricultural Land (California Department of Conservation, Division of Land Resources Protection 2007). These are lands that are enrolled in a California Land Conservation Act contract and do not meet the criteria as Prime Agricultural Land. Non-Prime Farmland is defined as open space land of statewide significance under the California Open Space Subvention Act. Most non-prime lands are in agricultural uses, such as grazing or non-irrigated crops. Non-prime lands may also include other open space uses that are compatible with agriculture and consistent with local general plans (California Department of Conservation, Division of Land Resources Protection 2007). Although soils associated with the Project have not been surveyed by the NRCS, the geotechnical survey of the site suggests that the soils found on the Project area were essentially uniform in nature and primarily sandy in texture, similar to the soils found in the agriculture lands adjacent to Rice Road.

Geotechnical testing of soils collected during field investigation in December 2009 exhibited a range of low to very severe resistivity, resulting in a potential for electrochemical corrosion for metal in contact with soil, and requiring corrosion protection or sacrificial thickness for any underground utilities. Site soils were classified as having a very low expansion potential (Earth Systems Southwest 2010b).

Desert pavement is covered with closely packed, interlocking angular or rounded rock fragments of pebble and cobble size. The rock fragments are covered with a dark varnish typically due to manganese oxides. Several theories have been proposed for their formation. The more common theory is that they are formed by the gradual removal of the sand, dust, and other fine-grained material by the wind and intermittent rain, leaving only the larger fragments behind. However, this does not continue indefinitely because, once the pavement has been formed, it can act as a barrier to further erosion (Wood et al. 2002). Approximately 20 percent of the Solar Farm area has been determined to have various stages of desert pavement (weak, moderate, and strong) (Earth Systems Southwest 2010a).

Soils and sediments are composed of minerals and organic materials in various ratios, derived from ambient conditions of the location within the landscape, vegetation type, rainfall, and the geologic materials that the soils were derived from. The mineral portion of a soil consists of a ratio of sand, silt, and clay identified as soil texture. Soils contain naturally occurring background levels of metals derived from the factors influencing soil formation. Table 3.8-2 presents concentration ranges and mean values of inorganics in selected surface soils of the United States. Most of the contribution is due to natural and regional/global sources originating from human activity (Breckenridge and Crockett 1995). The soil types presented are general but cover many of the major categories found in the United States, including desert soils.

Table 3.8-2
Concentrations of Inorganics in Surface Soils of the United States in Parts per Million

	Elements											
	Arsenic		Barium		Cobalt		Chromium		Copper		Mercury	
Soil Type	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean
Desert soils	1.2-18.1	6.4	300-2,000	835	3-20	10.0	10-200	60	5-100	24	0.02-0.32	0.06 (1)
Sandy soils and lithosols[2] on sandstones	<0.1-30.0	5.1	20-1,500	400	0.4-20	3.5	3-200	40	1-70	14	<0.01-0.54	0.08
Loamy soils	0.4-31.0	7.3	70-1,000	555	3-30	7.5	10-100	55	3-70	25	0.01-0.60	0.07
Loess and soils on silt deposits	1.9-16.0	6.6	200-1,500	675	3-30	11.0	10-100	55	7-100	25	0.02-0.38	0.08
Clay and clay loamy soils	1.7-27.0	7.7	150-2,500	535	3-30	8.0	20-100	55	7-70	29	0.01-0.09	0.13
Alluvial soils	2.1-22.0	8.2	200-1,500	660	3-20	9.0	15-100	55	5-50	27	0.02-0.15	0.05
Soils over granites and gneisses	0.7-15.0	3.6	300-1,500	785	3-15	6.0	10-100	45	7-70	24	0.01-0.14	0.06
Soils over volcanic rocks	2.1-11.0	5.9	500-1,500	770	5-50	17.0	20-700	85	10-150	41	0.01-0.18	0.05
Soils over limestones and calcareous rocks	1.5-21.0	7.8	150-1,500	520	3-20	9.5	5-150	50	7-70	21	0.01-0.50	0.08
Soils on glacial till and drift	2.1-12.0	6.7	300-1,500	765	5-15	7.5	30-150	80	15-50	21 (1)	0.02-0.36	0.07
Silty prairie soils	2.0-12.0	5.6	200-1,500	765	3-15	7.5	20-100	50	10-50	20 (1)	0.02-0.06	0.04 (1)

Table 3.8-2 (continued)
Concentrations of Inorganics in Surface Soils of the United States in Parts per Million

	Elements											
	Manganese		Nickel		Lead		Selenium		Strontium		Zinc	
Soil Type	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Range	Mean
Desert soils	150-1,000	360	7-150	22.0	10-70	23	<0.1-1.1	0.5	70-2,000	490	25-150	52.5
Sandy soils and lithosols on sandstones	7-2,000	345	<5-70	13.0	<10-70	17	0.005-3.5	0.5[1]	5-1,000	125	<5-164	40.0
Loamy soils	50-1,000	480	5-200	22.0	<10-50	20	0.02-1.2	0.33[1]	10-500	175	20-118	55.0
Loess and soils on silt deposits	50-1,500	525	5-30	17.0	10-30	19	0.02-0.7	0.26[1]	20-1,000	305	20-109	58.5
Clay and clay loamy soils	50-2,000	580	5-50	20.5	10-70	22	<0.1-1.9	0.5	15-300	120	20-220	67.0
Alluvial soils	150-1,500	405	7-50	19.0	10-30	18	<0.1-2.0	0.5	50-700	295	20-108	58.5
Soils over granites and gneisses	150-1,000	540	<5-50	18.5	10-50	21	<0.1-1.2	0.4	50-1,000	420	30-125	73.5
Soils over volcanic rocks	300-3,000	840	7-150	30.0	10-70	20	0.1-0.5	0.2	50-1,000	445	30-116	78.5
Soils over limestones and calcareous rocks	70-2,000	470	<5-70	18.0	10-50	22	0.1-1.4	0.19[1]	15-1,000	195	10-106	50.0
Soils on glacial till and drift	200-700	475	10-30	18.0	10-30	17[1]	0.2-0.8	0.4	100-300	190	47-131	64.0[1]
Silty prairie soils	150-1,000	360	7-150	22.0	10-70	23	<0.1-1.1	0.5	70-2,000	490	25-150	52.5

Parts per million= Milligrams per kilogram. Sample results were calculated on a dry weight basis.
[1]Result for the whole soil profile sampled.
[2]Lithosols are soils with no zones that consist of unweathered or partially weathered rock fragments and are usually associated with steep slopes and bedrock outcrops.
Source: Kabata-Pendias and Pendias 1984

3.9 LANDS AND REALTY

3.9.1 Applicable Plans, Policies, and Regulations

This section discusses the applicable regulations, plans, and policies that govern land use within the Project Study Area and the surrounding area.

California Desert Conservation Area Plan and Northern and Eastern Colorado Desert Coordinated Management Plan

The principal land use plans affecting the Project are the BLM's CDCA Plan of 1980, as amended, and the NECO Plan, a 2002 amendment to the CDCA. The CDCA and NECO Plans are described in Section 1.3 of Chapter 1.

Riverside County Integrated Plan and Desert Center Area Plan

The principal land use plan affecting private land within the Project is the Riverside County General Plan (General Plan), which articulates the vision and planning principles for development in Riverside County. The Desert Center Area Plan (DCAP) is part of the General Plan and provides a more focused development plan for the Desert Center area, which includes the Project area. In addition, the General Plan defines development policies for the Desert Center Policy Area, which is generally between Desert Center and Lake Tamarisk.

Current Riverside County plans, policies, and regulations do not take into account the County's significant solar resource. However, the County recognizes that its current General Plan does not address siting utility-scale solar facilities and that policy conflicts may exist. The County plans to address siting of solar plants and will clarify these issues in a General Plan update and in future County Code revisions (CEC and BLM 2010).

3.9.2 Existing Conditions

The affected environment for land use consists of the existing and reasonably foreseeable land uses in the Project area. Land use can be assessed by analyzing current land activities, land ownership, zoning (where applicable), and land use designations in adopted land use plans and policies. An assessment of land use must also consider legal guarantees or limitations on land use, such as those provided by easements, deeds, ROW, claims, leases, licenses, and permits. BLM-administered lands are not zoned, but they may be encumbered by easements, ROWs, mining claims, and permits.

General Characteristics of Land in the Project Area

The Project area is largely a vacant, undeveloped, and relatively flat open space area located in the Chuckwalla Valley of the Sonoran Desert in eastern Riverside County. Development in the surrounding area includes the rural community of Desert Center, California; Lake Tamarisk Desert Resort; and the Eagle Mountain Mine. Joshua Tree National Park, which is managed by the National Park Service and is largely designated as wilderness, surrounds the majority of the Project to the west, north, and east. The general characteristics of the Project area are described in Chapter 1.

Land Ownership/Management

Figure 3.9-1 depicts the current land ownership in the Project area, as reported by the BLM (BLM 2009). Most of the Project would be on land that is under the jurisdiction of the BLM. Small

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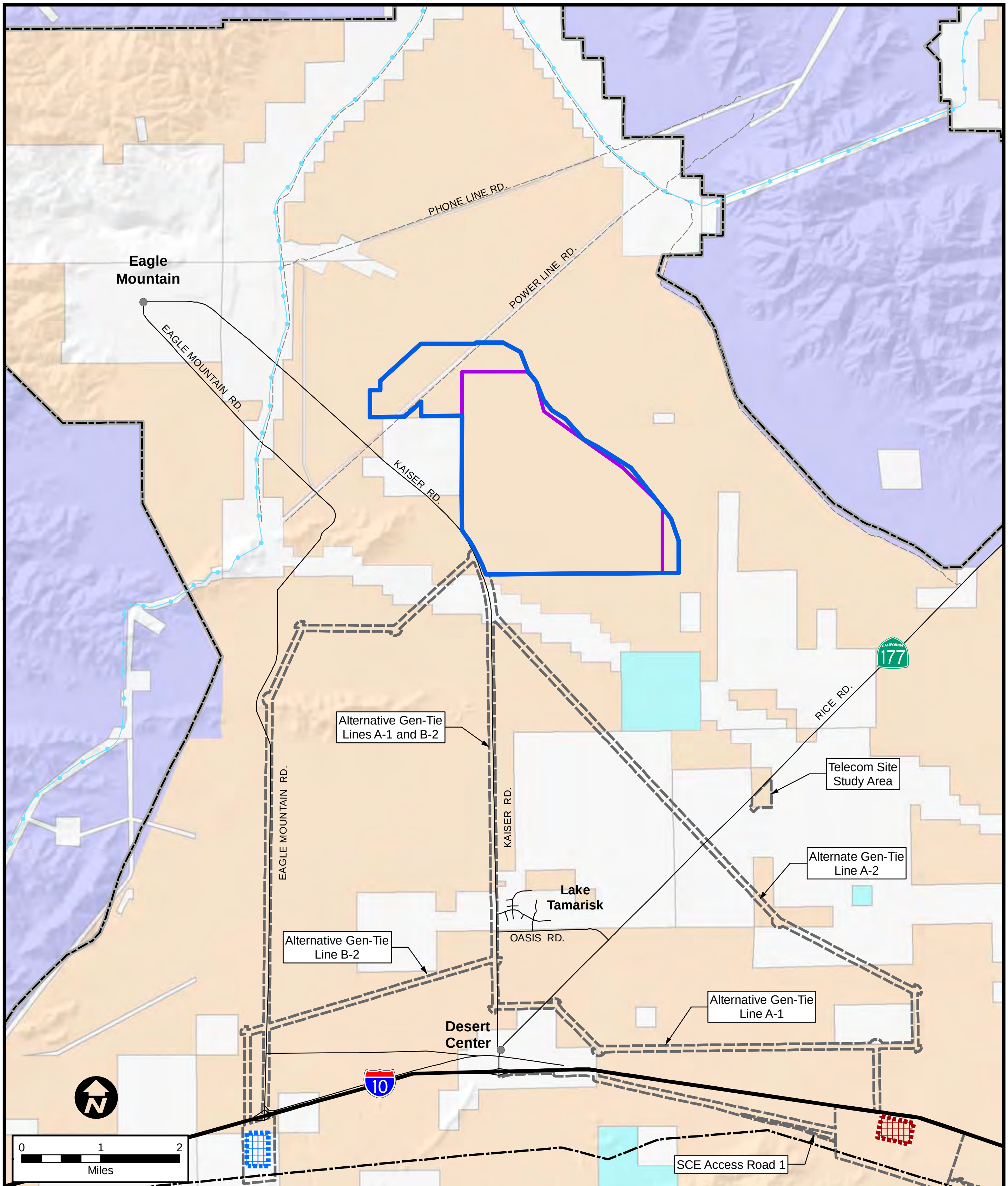

LEGEND

Land Ownership / Management

- Bureau of Land Management
- National Park Service
- State
- Private
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- Aqueduct
- Devers-Palo Verde Transmission Line (DPV1)

Source: BLM, May 2009.

DESERT SUNLIGHT SOLAR FARM

Figure 3.9-1

Land Ownership/ Management

portions of the Project would overlap private land (Table 3.9-1). Where the Project would be located on BLM-administered land, BLM land use designations established in the CDCA and NECO Plans would apply. Where the Project would be located on private land, the Riverside County General Plan designations and zoning would apply *as those portions of the Project are not under the jurisdiction of the CPUC*.

Portions of GT-A-1, GT-A-2, and GT-B-2 would traverse private land. All three Gen-Tie Line alternatives would cross one parcel owned by the Metropolitan Water District of Southern California (MWD). GT-A-1 and GT-B-2 would also cross one parcel of private land near Lake Tamarisk. GT-A-2 would cross 5.1 miles of private land. Red Bluff Substation B would be entirely on private land. Red Bluff Substation A and the Solar Farm alternatives would be entirely on BLM-administered land, as would the telecom site associated with the Red Bluff Substation. Table 3.9-1 provides information about private land ownership in the Project area.

Table 3.9-1
Land Ownership in the Project Area

Project Component	Private Land Crossed	Assessor Parcel Numbers
SF-B	None	Not applicable
SF- C	None	Not applicable
GT-A-1	0.6 mile	807171005, 808161001
GT-A-2	5.1 miles	807172029, 811270001, 811142005, 811141011, 811260013, 811170013, 811170018, 811170017, 811170016, 808250015, 808250016, 808250005, 808240010, 808240008, 808240007, 811170019, 808250014, 808250003, 808240011, 808240012, 808250004
GT-B-2	0.6 mile	808161001
Red Bluff Substation A, including access roads and distribution line	None	Not applicable
Red Bluff Substation B	100 percent	80813006
Telecom Site (associated with Red Bluff Substation)	None	Not applicable

Source: First Solar 2009, 2010

BLM Land Use Designations

The BLM's CDCA establishes four multiple use classes, multiple use class guidelines, and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. Figure 3.9-2 depicts the multiple use classes assigned to BLM-administered land in the Project area, as designated in the NECO Plan. The multiple use classes are defined as follows:

- Class C (Controlled Use)—About 2.1 million acres designated Class C are managed to be preserved in a natural state; access generally is limited to nonmotorized and nonmechanized means, such as by foot or on horseback.
- Class L (Limited Use)—About 5.9 million acres designated Class L are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower intensity, carefully controlled, multiple uses that do not significantly diminish resource values.

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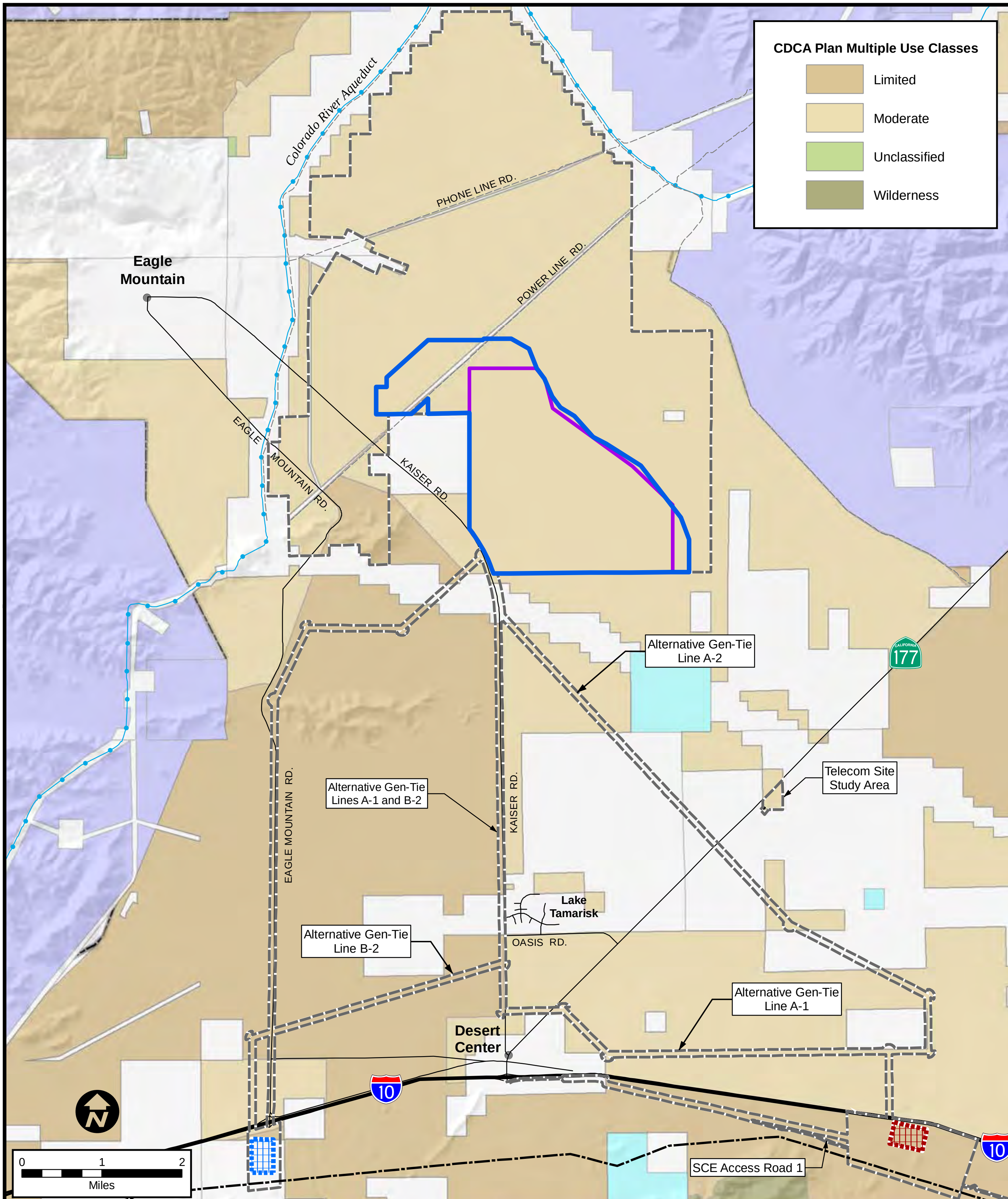

LEGEND

Desert Sunlight Study Area Boundary

Solar Farm Boundary (Alternative B)

Solar Farm Boundary (Alternative C)

Devers-Palo Verde Transmission Line (DPV1)

Red Bluff Substation (Alternative B)

Red Bluff Substation (Alternative A)

National Park Service

State

Private/Unclassified

Source: BLM, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 3.9-2

BLM Multiple Use Classes

- Class M (Moderate Use)—About 3.3 million acres designated Class M are managed in a controlled balance between higher intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and the development of new utility facilities are allowed.
- Class I (Intensive Use)—About 500,000 acres are Class I, managed for concentrated use to meet human needs. Reasonable protection is provided for sensitive natural values. Impacts are mitigated and impacted areas are rehabilitated, when possible.

Both Solar Farm alternatives, most of GT-A-1 and GT-A-2, and portions of GT-B-2 would be located on land designated BLM Multiple Use Class M (Moderate Use). Most of GT-B-2 and Red Bluff Substation A would be on land designated BLM Multiple Use Class L (Limited Use).

Riverside County General Plan Land Use Designations

Where the Project would be located on private land, the Riverside County General Plan land use designations would apply. Figure 3.9-3 depicts the land use designations on private land in the Project area as reported in the General Plan (Riverside County 2003). In addition, all of the private land that the proposed Project would overlap is subject to Riverside County ordinances, the *Desert Center Area Plan (*DCAP*)*, and the Desert Center Policy Area (where said land is within the policy area).

A 0.6-mile section of GT-A-1 and GT-B-2, 5.1 miles of GT-A-2, and the entire Red Bluff Substation B would be on private land designated as “Open Space-Rural (OS-RUR).” According to the General Plan:

> The Open Space-Rural land use designation is applied to remote, privately owned open space areas with limited access and a lack of public services. Single-family residential uses are permitted at a density of one dwelling unit per 20 acres. The extraction of mineral resources subject to an approved surface mining permit may be permissible, provided that the proposed project can be undertaken in a manner that is consistent with maintenance of scenic resources and views from residential neighborhoods and major roadways and that the project does not detract from efforts to protect endangered species (Riverside County 2003).

Relevant land use policies of the General Plan for Open Space-Rural (OS-RUR) are as follows:

LU 20.1 Require that structures be designed to maintain the environmental character in which they are located.

LU 20.2 Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.

LU 20.3 Require that adequate and available circulation facilities, water resources, sewer facilities, and/or septic capacity exist to meet the demands of the proposed land use.

LU 20.4 Ensure that development does not adversely impact the open space and rural character of the surrounding area.

LU 20.6 Provide programs and incentives that allow Open Space-Rural areas to maintain and enhance their existing and desired character (Riverside County 2003).

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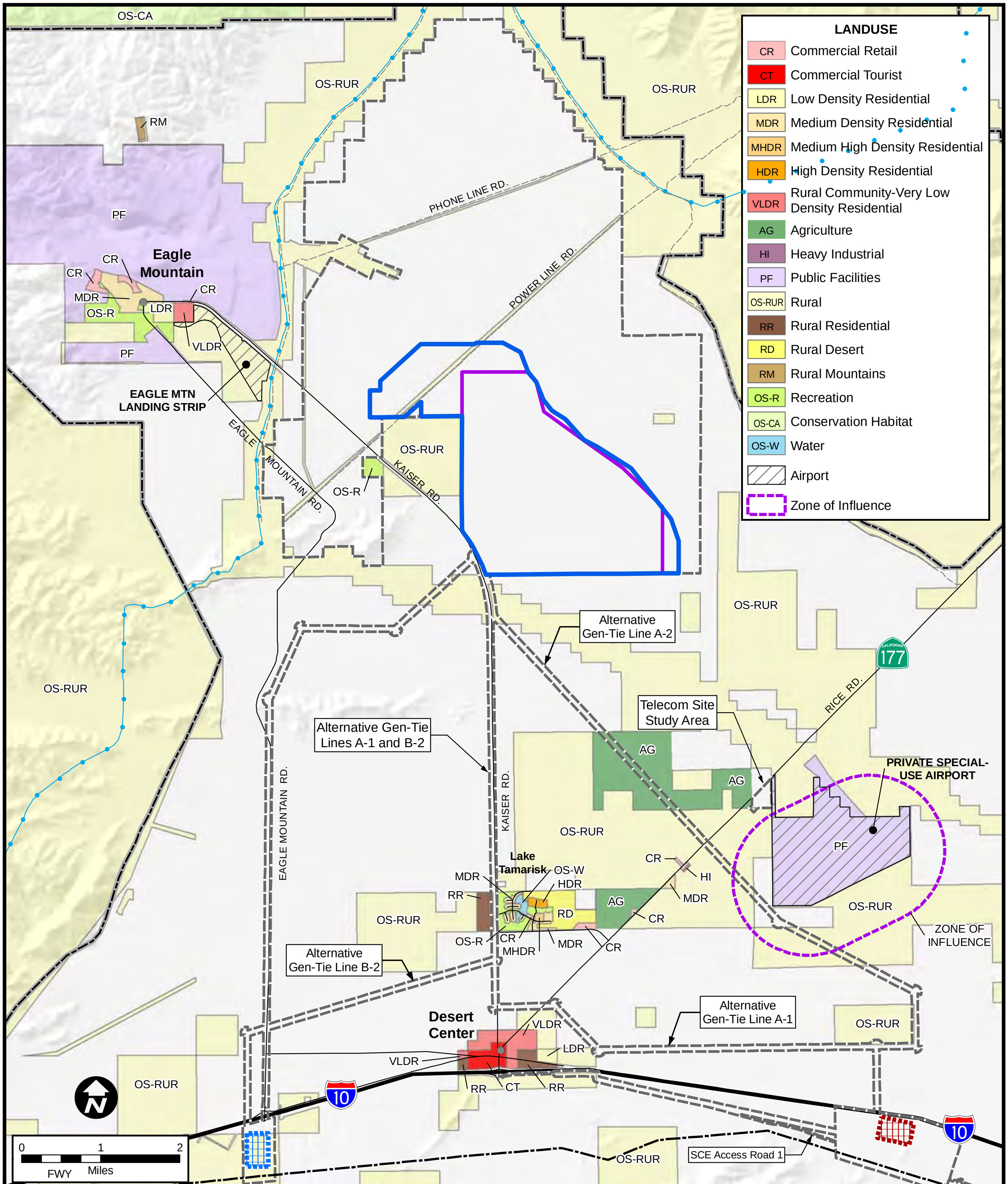

LEGEND

Adapted from: Riverside County Integrated Plan, 2003.

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- BLM Land
- Joshua Tree National Park Boundary
- Devers-Palo Verde Transmission Line (DPV1)
- Aqueduct

DESERT SUNLIGHT SOLAR FARM

Figure 3.9-3

Riverside County General Plan Land Use Designations

GT-A-2 would also traverse approximately 1.5 miles of land designated Agriculture (AG). According to the General Plan:

> The Agriculture land use designation has been established to help conserve productive agricultural lands within the County. These include row crops, nurseries, citrus groves and vineyards, dairies, ranches, poultry and hog farms, and other agricultural related uses. Areas designated for Agriculture generally lack an infrastructure that is supportive of urban development (Riverside County 2003).

Relevant land use policies of the General Plan for Agriculture (AG) are as follows:

LU 16.1 Encourage retaining agriculturally designated lands where agricultural activity can be sustained at an operational scale, where it accommodates lifestyle choice, and in locations where impacts to and from potentially incompatible uses, such as residential uses, are minimized, through incentives such as tax credits.

LU 16.2 Protect agricultural uses, including those with industrial characteristics (dairies, poultry, hog farms, etc.) by discouraging inappropriate land division in the immediate proximity and allowing only uses and intensities that are compatible with agricultural uses.

LU 16.4 Encourage conservation of productive agricultural lands. Preserve prime agricultural lands for high-value crop production.

LU 16.5 Continue to participate in the California Land Conservation Act (the Williamson Act) of 1965.

LU 16.6 Require consideration of State agricultural land classification specifications when a 2.5-year Agriculture Foundation amendment to the General Plan is reviewed that would result in a shift from an agricultural to a non-agricultural use.

LU 16.7 Adhere to Riverside County's Right-to-Farm Ordinance (Riverside County 2003).

Riverside County Zoning

Where the Project would be located on private land, Riverside County zoning would apply. Figure 3.9-4 depicts the zoning on private land in the Project area as reported in the General Plan. Zoning classifications are defined in the Riverside County Land Use Ordinance, Ordinance 348, as amended, Article III. The ordinance details all permitted uses on private property based on the assigned zone classification.

GT-A-2 would cross and Red Bluff Substation B would be entirely on private land zoned as Controlled Development Zone (W-2-10). Permitted uses include single-family dwellings, field and tree crops, outside storage of materials, and limited animal husbandry. Limited additional uses are permitted where the lot size is greater than one acre. Many additional uses are allowed by approval or by permit, including "structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power" (Riverside County 2009).

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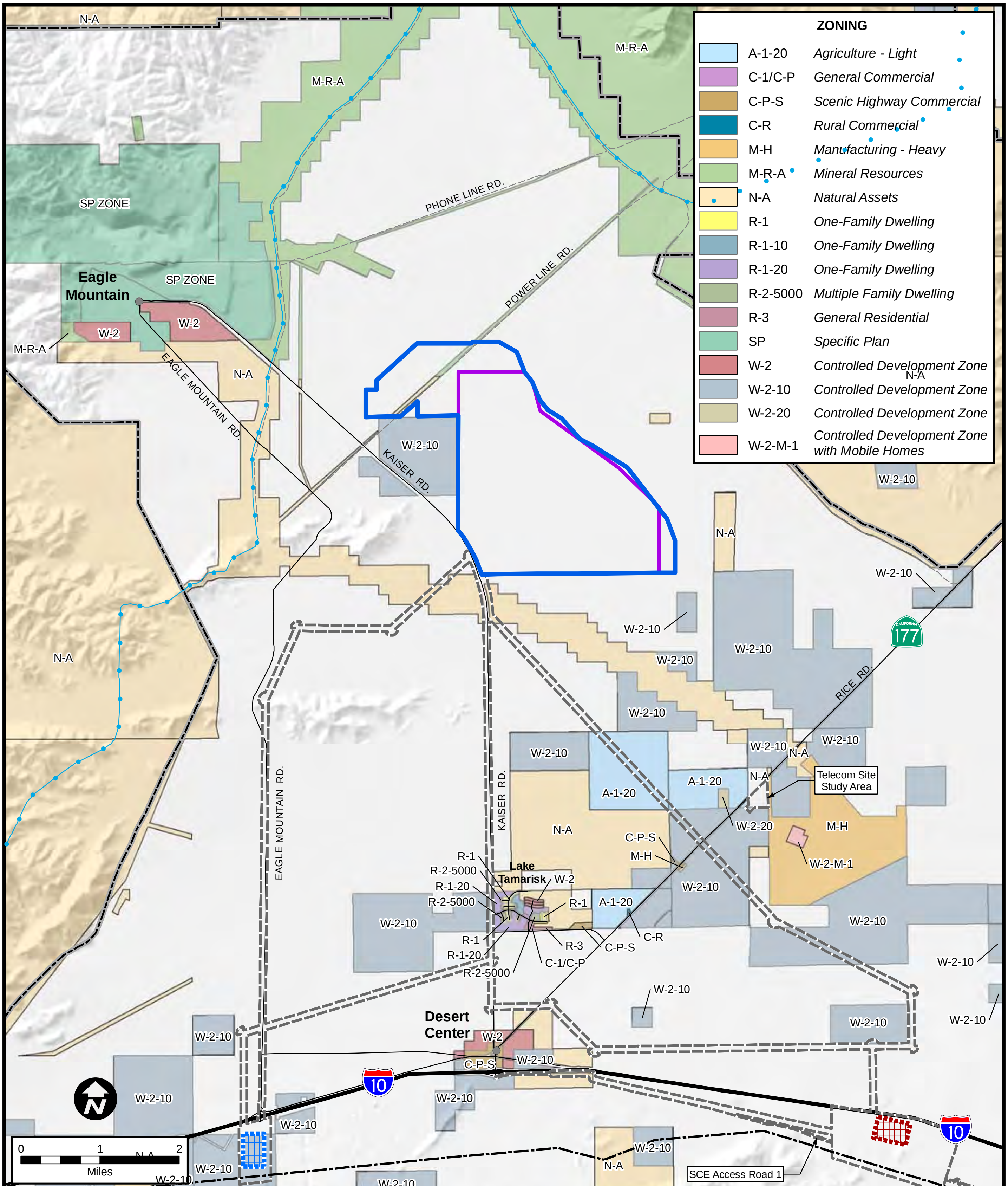

LEGEND

Solar Farm Boundary (Alternative B)

Solar Farm Boundary (Alternative C)

Red Bluff Substation (Alternative A)

Red Bluff Substation (Alternative B)

Joshua Tree National Park Boundary

Devers-Palo Verde Transmission Line (DPV1)

Aqueduct

BLM Land

Adapted from: Riverside County Integrated Plan, 2003.

DESERT SUNLIGHT SOLAR FARM

Figure 3.9-4

Riverside County Zoning

GT-A-2 would also overlap private land zoned Agriculture, Light (A-1-20). As the name implies, a variety of agricultural land uses are permitted here. No power-generating facilities are permitted, but, in accordance with Section 13.1(11)(d), the Planning Director can approve uses that are deemed to be “substantially the same in character and intensity” as the listed uses (Riverside County 2009).

A 0.6-mile portion of GT-A-1 and GT-B-2 would overlap one parcel of private land near Lake Tamarisk zoned Natural Assets (N-A). Permitted uses in areas zoned Natural Assets include some dwellings and accessory buildings, field and tree crops, grazing subject to stated limitations, and apiaries. Several other uses, including utility substations, are allowed by approval or by permit (Riverside County 2009).

3.9.3 Existing Uses

Lands and Realty-Related Uses

A number of easements, ROWs, and claims related to utility corridors, transmission lines, telephone lines, pipelines, railroads, roads, water transmission facilities, and mining claims are located in the Project area. These are shown on Figures 3.9-5 through 3.9-7 and in Tables 3.9-2 and 3.9-3.

The Project would overlap three major transmission lines. The Kaiser 33-kilovolt (kV) transmission line, owned by Kaiser Ventures, runs parallel to Kaiser Steel Road. South of the Kaiser 33-kV line, a 230-kV transmission line and a 33-kV distribution line run southwest to northeast along Power Line Road; both lines are owned by the MWD. Several of the proposed Gen-Tie Lines would cross SCE’s existing 161-kV transmission line, which runs northwest to southeast. In addition, the DPV1 transmission line runs parallel to I-10. There are a number of smaller distribution lines that overlap project components as well.

In addition to ROW for existing roads and transmission lines, the Project would overlap two designated two-mile-wide utility corridors, labeled “E” and “K” (Figure 3.9-5). The northern portion of the Solar Farm area and a portion of GT-B-1 would overlap utility corridor “E.” The proposed Red Bluff Substation alternatives and portions of all of the Gen-Tie Line alternatives would overlap utility corridor “K.”

There are also multiple ROWs for existing underground oil and gas pipelines and telephone cables in the vicinity of the Red Bluff Substation alternatives, as well as a ROW for a gas distribution pipeline, which parallels Kaiser Road. There are two Federal Energy Regulatory Commission (FERC) easements for the Eagle Mountain Pump Storage Project (First Solar 2009).

The Colorado River Aqueduct, owned by MWD, traverses in a northeast to southwest direction through the Colorado Desert. It is outside the Project area to the west and north.

Twelve water wells and associated pipelines are within the vicinity of the Solar Farm. Two of the wells are owned by Kaiser Steel and the others are owned by private parties.

West of GT-B-2 and Kaiser Road, the Riverside County Waste Management Department leases 160 acres from the BLM for a sanitary landfill[1]. The lease, serial number CAS005340, was authorized in 1975 (BLM and USFS 2010). Land disturbance is evident in this area (Google Earth 2010).

[1] Specific plans for a sanitary landfill are approved but are not currently in effect.

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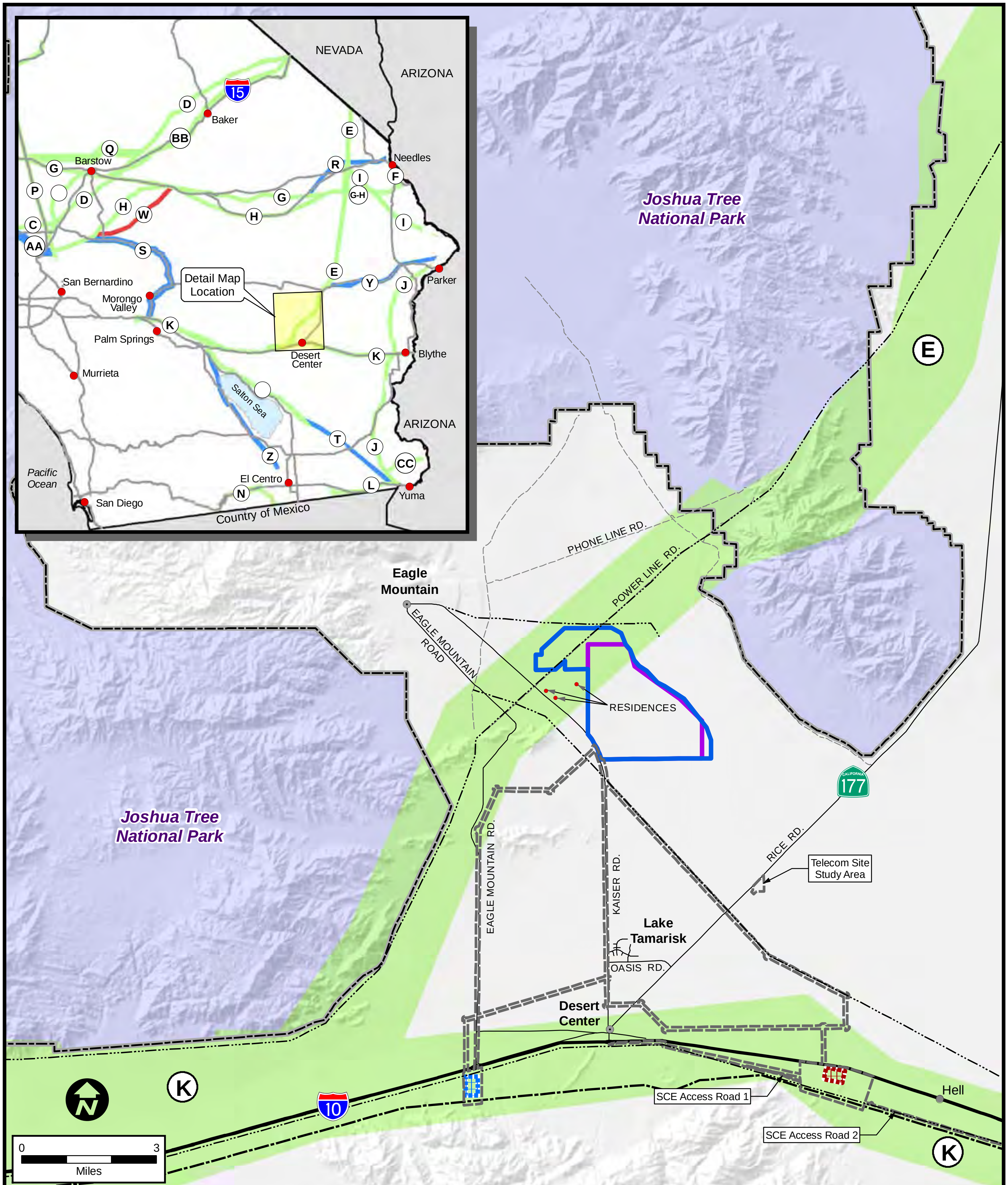


LEGEND

BLM Utility Corridor
(Approximate Location)

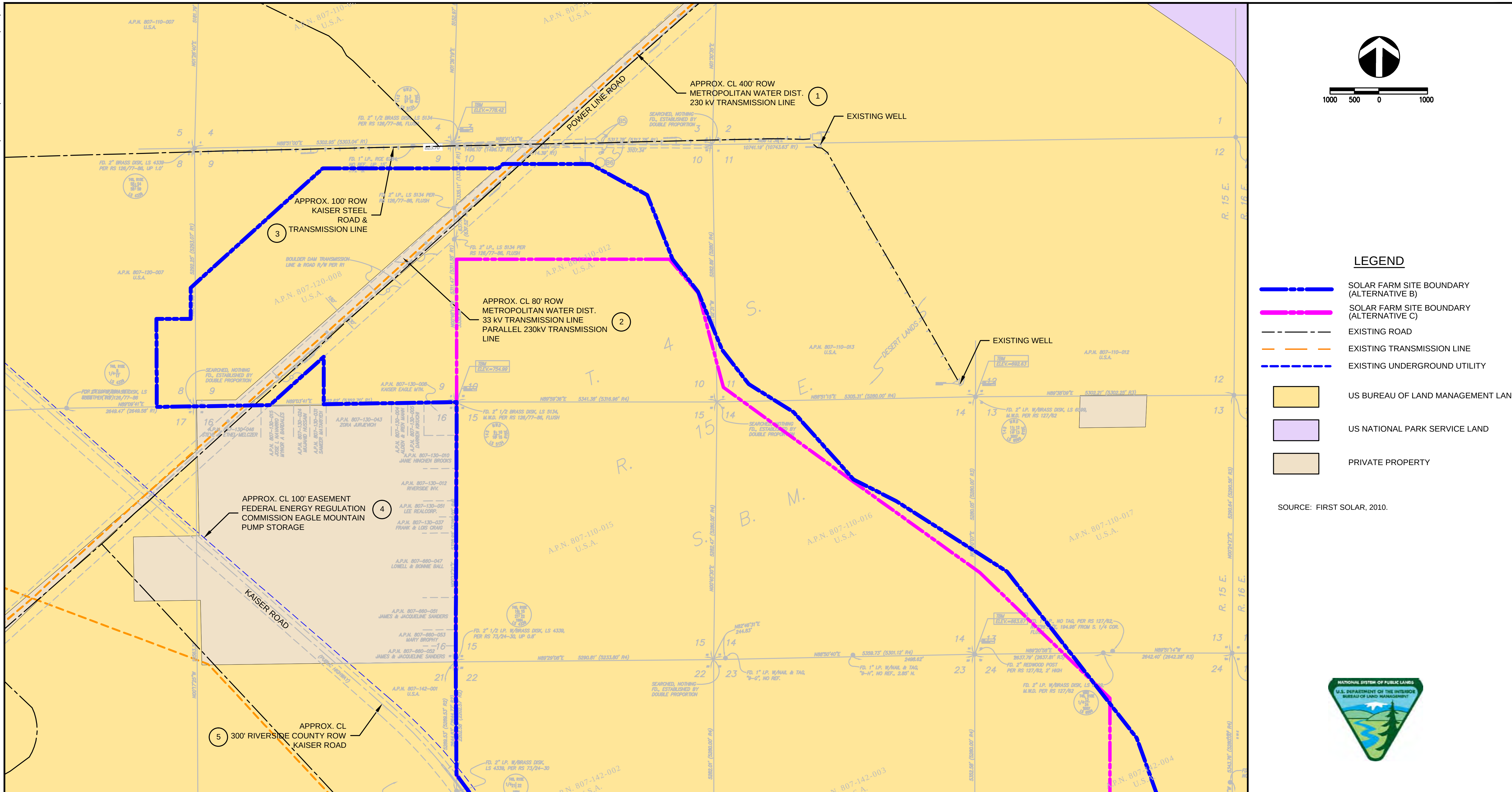
- Designated Corridor
- Contingent Corridor (see inset)
- Deleted Corridor (see inset)
- Existing Transmission Lines
- Devers-Palo Verde Transmission Line (DPV1)
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)

Source:
BLM, *California Desert Conservation Area Plan, 1980.*

DESERT SUNLIGHT SOLAR FARM

Figure 3.9-5

Utility Corridors and Existing Transmission Facilities



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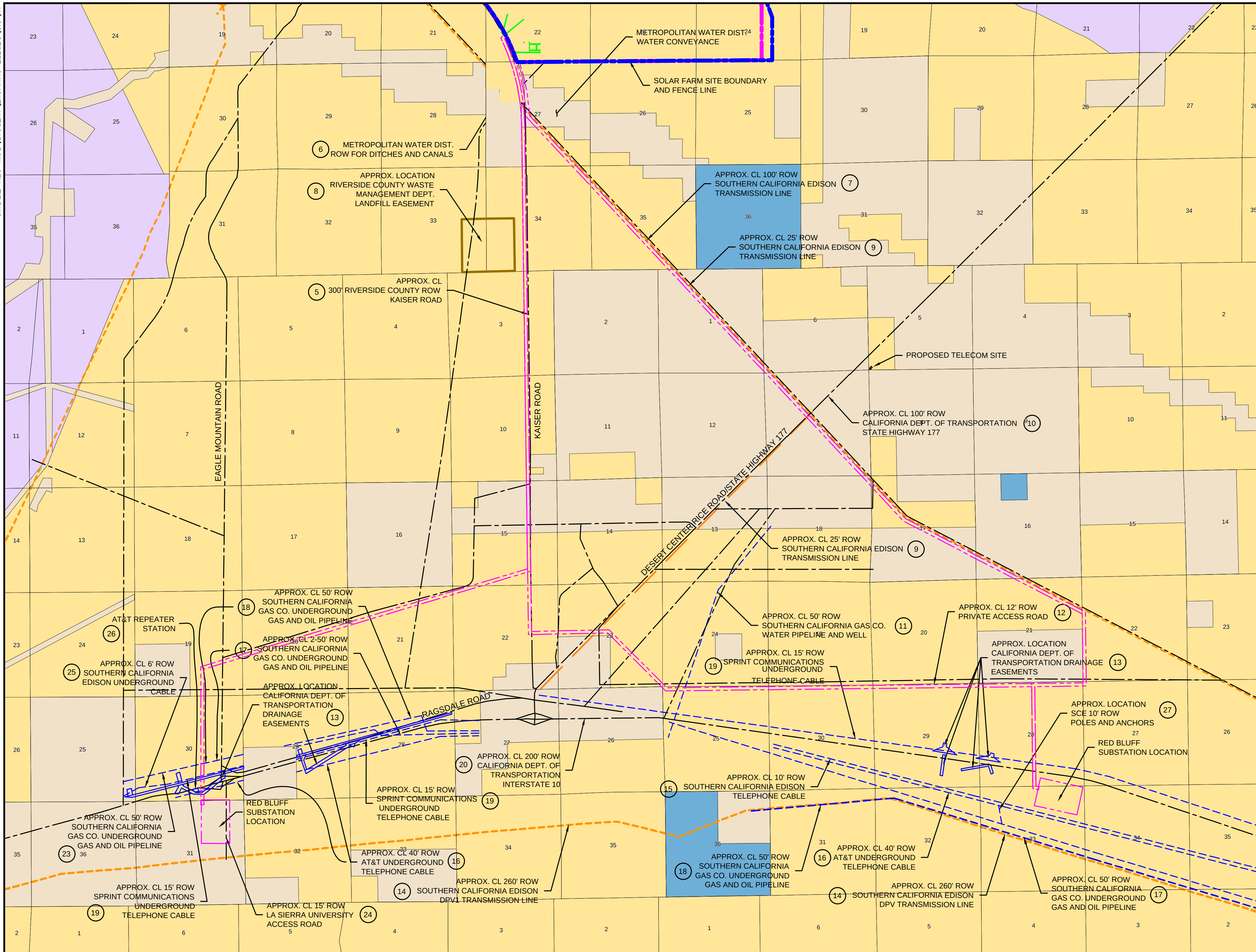
DESERT SUNLIGHT SOLAR FARM

Figure 3.9-6

Existing Lands and Realty-Related Uses: Solar Farm Alternatives



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LEGEND

- GEN-TIE CORRIDOR
- EXISTING TRANSMISSION LINE
- EXISTING ROAD
- EXISTING UNDERGROUND UTILITY
- STATE LAND
- US BUREAU OF LAND MANAGEMENT LAND
- US NATIONAL PARK SERVICE LAND
- PRIVATE PROPERTY

SOURCE: FIRST SOLAR, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 3.9-7

Existing Lands and Realty-Related Uses: Gen-Tie Line and Substation Alternatives

Table 3.9-2
Existing Uses, Easements, and ROW Relative to the Solar Farm Alternatives

Owner	Use	Width (feet)	Location Relative to the Project	BLM Serial File Number
MWD	230-kV transmission line	400	Along Power Line Road; all Solar Farm alternatives would overlap.	LA 052058
MWD	33-kV transmission line	80	Along Power Line Road; all Solar Farm alternatives would overlap.	LA 051206
Kaiser Steel	Kaiser Steel Road and transmission line	100	The northern portion of SF-B would overlap.	R 05089
FERC	Easement for Eagle Mountain Pumped Storage Project	100	Along Kaiser Road; southwest corner under all Solar Farm alternatives would overlap.	CA 044243

Source: First Solar 2010

Table 3.9-3
Existing Uses, Easements, and ROW Relative to the Gen-Tie Line Alternatives

Owner	Use	Width (feet)	Location Relative to the Project	BLM Serial File Number
Riverside County	Kaiser Road	300	Kaiser Road easement; Gen-Tie Lines A-1, B-1, and B-2 would cross.	Not applicable
MWD	ROW for ditches and canals	Not applicable	South of Solar Farm boundary overlapping Kaiser Road; all Gen-Tie Lines would cross.	R 07041
SCE	Transmission line	100	Northwest to southeast east of Kaiser Road; all Gen-Tie Lines would cross; GT-A-2 would parallel it for much of its length.	LA 0149780
SCE	Transmission line	25	Northwest to southeast east of Kaiser Road; all Gen-Tie Lines would cross; GT-A-2 would parallel it for much of its length.	LA 0153144
Caltrans	I-10	200	Road easement; all Gen-Tie lines would cross.	Not applicable
Caltrans	SR-177 (Desert Center Rice Road)	100	Road easement; Gen-Tie Lines A-1 and A-2 would cross.	Not applicable
SCE	Water pipeline and well	50	GT-A-1 would cross.	LA 098376
Sprint	Underground telephone cable	15	All Gen-Tie Lines would cross.	CA 18888
Private owner	Private access road	12	GT-A-1 would cross and parallel for part of its length.	CA 37076
Caltrans	Drainage easements	Not applicable	GT-B-2 would cross near I-10.	R 05498 and R01732
Kaiser Ventures, Inc.	Eagle Mountain Railroad	200	No Project components would cross.	Not applicable

Table 3.9-3 (continued)
Existing Uses, Easements, and ROW Relative to the Gen-Tie Line Alternatives

Owner	Use	Width (feet)	Location Relative to the Project	BLM Serial File Number
Riverside County	Eagle Mountain Road	80	Road easement; GT-B-2 would cross.	Not applicable
Southern California Gas Company	Underground oil and gas pipeline	50	GT-B-2 would cross near I-10.	R 2341
Southern California Gas Company	Underground oil and gas pipeline	50	GT-B-2 would cross near I-10.	LA 0134693
Southern California Gas Company	Underground oil and gas pipeline	50	GT-B-2 would cross near I-10.	LA 0110795

Source: First Solar 2010

The Project is sited within a Solar Energy Study Area proposed to be designated under the Department of Energy and BLM Programmatic Solar Energy Development EIS. The site is also within a California Renewable Energy Zone identified by the Renewable Energy Transmission Initiative (First Solar 2009). The site is positioned in a priority interconnection location within the California Independent System Operator; it would interconnect to the existing 500-kV transmission line, SCE's DPV1 Line.

Minerals–Related Uses

There are no known salable mineral resources (e.g., sand and gravel) at the Project site. Although the Project site is not used to produce salable minerals, salable materials are present throughout the region.

The potential for the exploration and development of other mineral resources such as oil, gas, coal, sodium, potassium, and phosphate exists in the Project area and throughout the region.

3.10 NOISE

Noise is defined as unwanted or extraneous sound. Sound is caused by vibrations that generate waves of minute air pressure fluctuations. Air pressure fluctuations that occur from 20 to 20,000 times per second can be detected as audible sound. The number of pressure fluctuations per second is normally reported as cycles per second or Hertz (Hz). Different vibration frequencies produce different tonal qualities for the resulting sound. In general, sound waves travel away from the noise source as an expanding spherical surface. The energy contained in a sound wave is consequently spread over an increasing area as it travels away from the source. This results in a decrease in loudness at greater distances from the noise source.

Decibel Scales

Human hearing varies in sensitivity for different sound frequencies. The ear is most sensitive to sound frequencies between 800 and 8,000 Hz, less sensitive to higher and lower sound frequencies, and least sensitive to sound frequencies below 250 Hz. Peak sensitivity to pure tones typically occurs at frequencies between 2,000 Hz and 6,000 Hz. Relative sensitivity remains fairly high between about 250 Hz and 2,000 Hz. Relative sensitivity drops off slightly above 7,000 Hz, and drops off significantly below 200 Hz. In addition, relative sensitivity to different acoustic frequencies also varies with the intensity of the sound. Several different frequency weighting schemes have been developed, using different decibel (dB) adjustment values for each octave or 1/3 octave interval. Some of these weighting schemes are intended to approximate the way the human ear responds to noise levels; others are designed to account for the response of building materials to airborne vibrations and sound. The most commonly used decibel weighting schemes are the A-weighted and C-weighted scales.

The "A-weighted" decibel scale (dBA) is normally used to approximate human hearing response to sound. The A-weighted scale significantly reduces the measured pressure level for low frequency sounds while slightly increasing the measured pressure level for some middle frequency sounds. The "C-weighted" decibel scale (dBC) is often used to characterize low frequency sounds capable of inducing vibrations in buildings or other structures. The C-weighted scale makes only minor reductions to the measured pressure level for low frequency components of a sound while making slightly greater reductions to high frequency components than does the A-weighted scale.

Table 3.10-1 provides examples of typical dBA levels.

Table 3.10-1
Examples of Typical dBA Levels

Characterization	dBA	Example Noise Condition
Threshold of pain	130	Peak noise 50 feet behind firing position, M-16 and M-24 rifles.
	125	Mach 1.9 sonic boom under aircraft at 11,000 feet.
Possible building damage	120	Air raid siren at 50 feet. Mach 1.1 sonic boom under aircraft at 12,000 feet.
Threshold of immediate NIPTS[1]	115	Commercial fireworks (5 pound charge) at 1,500 feet.
	110	Peak noise 50 feet behind firing position, .22 caliber rifle. Peak crowd noise, pro football game, inside open stadium.
	105	Emergency vehicle siren at 50 feet. Conventional pile driver peak noise at 50 feet. Chain saw (2-stroke gasoline engine) at 3 feet.
	100	Jackhammer at 10 feet.

Table 3.10-1 (continued)
Examples of Typical dBA Levels

Characterization	dBA	Example Noise Condition
Extremely noisy	95	Locomotive horn at 100 feet. Large wood chipper processing tree branches at 30 feet.
8-hour OSHA[2] limit	90	Leaf blower at 5 feet. Jackhammer at 50 feet. Dog barking at 5 feet.
Very noisy	85	Gas engine lawnmower at 5 feet. Bulldozer, excavator, or paver at 50 feet. Pneumatic wrench at 50 feet.
	80	Fork lift or front end loader at 50 feet. Table saw at 25 feet. Vacuum cleaner at 5 feet.
Noisy	75	Idling locomotive at 50 feet. Street sweeper at 30 feet.
	70	Leaf blower at 50 feet. 300 feet from busy 6-lane freeway.
Moderately noisy	65	Typical daytime busy downtown background conditions. Typical gas engine lawn mower at 50 feet.
	60	Typical daytime urban mixed use area conditions. Normal human speech at 5 feet. Typical electric lawn mower at 50 feet.
	55	Typical urban residential area away from major streets. Low noise electric lawn mower at 65 feet.
	50	Typical suburban daytime background conditions. Open field, summer night with numerous crickets.
Quiet	45	Typical rural area daytime background conditions. Suburban back yard, summer night with several crickets.
	40	Typical suburban area at night. Typical whispering at 1 to 2 feet.
	35	Quiet suburban area at night. Quiet whispering at 1 to 2 feet.
Very quiet	30	Quiet rural area, winter night, no wind. Quiet bedroom at night, no air conditioner.
	20	Empty recording studio. Remote area, no audible wind, water, insects, or animal sounds.
Barely audible	10	Audiometric testing booth.
Threshold of hearing, no hearing loss	0	

Notes:

[1] NIPTS = noise-induced permanent threshold shift (permanent hearing damage)

[2]OSHA = Occupational Safety and Health Administration

Indicated noise levels are average dBA levels for stationary noise sources or peak noise levels for brief noise events and noise sources moving past a fixed reference point.

Average and peak dBA levels are not 24-hour CNEL (community noise exposure level) or Ldn (day-night noise level) values.

Decibel scales are not linear. Apparent loudness doubles with every 10 dBA increase, regardless of the initial dBA level.

Most adults have accumulated some hearing loss and have a threshold of hearing above 15 dBA. In occupational hearing conservation programs, a threshold of hearing between 20 and 30 dBA is considered normal.

Source: data compiled by Tetra Tech staff.

Common Noise Descriptors

Varying noise levels are often described in terms of the equivalent constant decibel level. Equivalent noise levels (Leq) are used to develop single-value descriptions of average noise exposure over various periods. Such average noise exposure ratings often include additional weighting factors for annoyance potential due to time of day or other considerations. The Leq data used for these average noise exposure descriptors are generally based on A-weighted sound level measurements, although other weighting systems are used for special conditions (such as blasting noise).

Average noise exposure over a 24-hour period is often presented as a day-night average sound level (Ldn) or a community noise equivalent level (CNEL). Ldn values are calculated from hourly Leq values, with the Leq values for the nighttime period (10:00 PM to 7:00 AM) increased by 10 dB to reflect the greater disturbance potential from nighttime noises. CNEL values are very similar to Ldn values, but include a 5 dB annoyance adjustment for evening (7:00 PM to 10:00 PM) Leq values in addition to the 10 dB adjustment for nighttime Leq values. Except in unusual situations, the CNEL descriptor will be within 1.5 dB of the Ldn descriptor for the same set of noise measurements. Unless specifically noted otherwise, Ldn and CNEL values are assumed to be based on dBA measurements.

Working with Decibel Values

The nature of dB scales is such that individual dB ratings for different noise sources cannot be added directly to give the dB rating of the combination of these sources. Two noise sources producing equal dB ratings at a given location will produce a composite noise level 3 dB greater than either sound alone. When two noise sources differ by 10 dB, the composite noise level will be only 0.4 dB greater than the louder source alone. Most people have difficulty distinguishing the louder of two noise sources that differ by less than 1.5 to 2 dB. In general, a 10 dB increase in noise level is perceived as a doubling in loudness. A 2 dB increase represents a 15 percent increase in loudness, a 3 dB increase is a 23 percent increase in loudness, and a 5 dB increase is a 41 percent increase in loudness.

When distance is the only factor considered, sound levels from an isolated noise source will typically decrease by about 6 dB for every doubling of distance away from the noise source. When the noise source is essentially a continuous line (e.g., vehicle traffic on a highway), noise levels decrease by about 3 dB for every doubling of distance.

3.10.1 Applicable Plans, Policies, and Regulations

Various federal, state, and local agencies have developed guidelines for evaluating land use compatibility under different noise level ranges. The federal Noise Control Act of 1972 (Public Law 92-574) established a requirement that all federal agencies must administer their programs in a manner that promotes an environment free from noise that jeopardizes public health or welfare. The US Environmental Protection Agency (EPA) was given the responsibility for: providing information to the public regarding identifiable effects of noise on public health or welfare, publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety, coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce. The federal Noise Control Act also directed all federal agencies to comply with applicable federal, state, interstate, and local noise control regulations to the same extent that any person is subject to such requirements.

Although EPA was given major public information and federal agency coordination roles, each federal agency retains authority to adopt noise regulations pertaining to agency programs. EPA can require other federal agencies to justify their noise regulations in terms of the federal Noise Control Act policy requirements, but has no authority to approve or disapprove the noise regulations and policies of other federal agencies. The Occupational Safety and Health Administration has primary authority for setting workplace noise exposure standards. Due to aviation safety considerations, the Federal Aviation Administration has primary jurisdiction over aircraft noise standards.

Federal Criteria and Standards

In response to the requirements of the federal Noise Control Act, EPA (1974) has identified indoor and outdoor noise limits to protect public health and welfare (hearing damage, sleep disturbance, and communication disruption). Outdoor Ldn values of 55 dB and indoor Ldn values of 45 dB are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and health care areas. Noise level criteria to protect against hearing damage in commercial and industrial areas are identified as 24-hour Leq values of 70 dB (both outdoors and indoors).

In 1980 the Federal Interagency Committee on Urban Noise (FICUN) developed guidelines to evaluate whether existing and proposed land uses are compatible with prevailing noise levels (FICUN 1980). The primary federal agencies participating in the FICUN report included EPA, the Department of Defense, the Department of Housing and Urban Development (HUD), the Department of Transportation, and the Veterans Administration. The FICUN guidelines address land use compatibility and recommend building design considerations according to three noise level categories:

- Zone 1 = Ldn or CNEL levels below 65 dB;
- Zone 2 = Ldn or CNEL levels of 65 to 75 dB; and
- Zone 3 = Ldn or CNEL levels above 75 dB.

The FICUN guidelines indicate that all land uses are compatible with Zone 1 noise levels. Educational and residential land uses generally are not compatible with Zone 2 noise levels unless special acoustic treatments and designs are used to ensure acceptable interior noise levels. Residential and educational land uses are not compatible with Zone 3 noise levels. Industrial and manufacturing land uses may be acceptable in Zone 3 areas if special building designs and other measures are implemented.

The Federal Highway Administration (FHWA) has adopted criteria for evaluating noise impacts associated with federally funded highway projects and for determining whether these impacts are sufficient to justify funding noise mitigation actions (47 FR 131:29653-29656). FHWA noise abatement criteria are based on peak hour Leq noise levels, not Ldn or 24-hour Leq values. The peak 1-hour Leq criteria for residential, educational, and health care facilities are 67 dB outdoors and 52 dB indoors. The peak 1-hour Leq criterion for commercial and industrial areas is 72 dB (outdoors).

The relationship between peak hour Leq values and associated Ldn values depends on the distribution of traffic over the entire day. There is no precise way to convert a peak hour Leq value to an Ldn value. In urban areas with heavy traffic, the peak hour Leq value is typically 2 to 4 dB lower than the daily Ldn value. In less heavily developed areas, the peak hour Leq is often equal to the daily Ldn value. For rural areas with little nighttime traffic, the peak hour Leq value will often be 3 to 4 dB greater than the daily Ldn value.

HUD has established guidelines for evaluating noise impacts on residential projects seeking financial support under various grant programs (44 FR 135:40860-40866). Sites are generally considered acceptable for residential use if they are exposed to outdoor Ldn values of 65 dB or less. Sites are considered “normally unacceptable” if they are exposed to outdoor Ldn values of 65 to 75 dB. Sites are considered unacceptable if they are exposed to outdoor Ldn values above 75 dB.

State Criteria and Standards

The California Governor’s Office of Planning and Research (2003) has published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes outdoor CNEL/Ldn levels into as many as four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows overlapping CNEL/Ldn ranges for two or more compatibility categories.

The noise element guidelines chart identifies the normally acceptable range for low density residential uses as CNEL/Ldn values less than 60 dB, while the conditionally acceptable range is 55 to 70 dB. The normally acceptable range for high density residential uses is identified as CNEL/Ldn values below 65 dB, while the conditionally acceptable range is identified as 60 to 70 dB. For educational and medical facilities, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 60 to 70 dB are considered conditionally acceptable. For office and commercial land uses, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 67.5 to 77.5 dB are categorized as conditionally acceptable. The overlapping CNEL/Ldn ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

Local Criteria and Standards

Cities and counties in California are required to adopt a noise element as part of their general plans. Many cities and counties have incorporated the California Department of Health Services land use compatibility guidelines as a key item in the general plan noise element, while other cities and counties have developed their own land use compatibility guidelines. In addition to local general plan noise elements, some cities and counties have adopted noise ordinances to legally define noise nuisances. Local noise ordinances vary considerably in their format and coverage. Many noise ordinances establish property line performance standards for different land use or zoning categories. There is considerable variation among communities as to the types of noise sources covered under local noise ordinances.

The noise element of the Riverside County General Plan (Riverside County 2003) identifies noise-sensitive land uses to include:

- Residential uses,
- Schools,
- Hospitals,

- Rest homes,
- Long-term care facilities,
- Mental care facilities,
- Libraries,
- Places of worship, and
- Passive recreation uses.

Riverside County has adopted the land use compatibility criteria summarized in Table 3.10-2 as part of the noise element of the County General Plan.

Table 3.10-2
Riverside County Land Use Compatibility Standards

Land Use	CNEL or Ldn Noise Level			
	Normally Acceptable	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Low density residential (single family, duplex, mobile homes)	Up to 60 dBA	55 – 70 dBA	70 – 75 dBA	Over 75 dBA
Multiple-family residential	Up to 65 dBA	60 – 70 dBA	70 – 75 dBA	Over 75 dBA
Transient lodgings (motels and hotels)	Up to 65 dBA	60 – 70 dBA	70 – 80 dBA	Over 80 dBA
Schools, libraries, churches, hospitals, nursing homes	Up to 70 dBA	60 – 70 dBA	70 – 80 dBA	Over 80 dBA
Auditoriums, concert halls, amphitheaters	Category not used	Up to 70 dBA	Over 65 dBA	Category not used
Sports arenas, outdoor spectator sports	Category not used	Up to 75 dBA	Over 70 dBA	Category not used
Playgrounds, neighborhood parks	Up to 70 dBA	Category not used	67.5 – 75 dBA	Over 72.5 dBA
Golf courses, riding stables, water recreation, cemeteries	Up to 75 dBA	Category not used	70 – 80 dBA	Over 80 dBA
Office buildings, business commercial, professional	Up to 70 dBA	67.5 – 77.5 dBA	Category not used	Over 75 dBA
Industrial, manufacturing, utilities, agriculture	Up to 75 dBA	70 – 80 dBA	Category not used	Over 75 dBA

Source: Riverside County 2003

The noise element of the County General Plan includes numerous policies intended to minimize noise-related conflicts between adjacent types of land uses. These policies include the following:

- Discourage noise-sensitive land uses from being located in areas exposed to CNEL levels above 65 dBA;

- Guide noise-tolerant land uses into areas committed to land uses that are noise-producing, such as transportation corridors or areas adjacent to airports;
- Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive areas;
- Discourage projects that cannot successfully mitigate excessive noise;
- Require commercial or industrial truck delivery hours to be limited when next to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits;
- New land use development within Airport Influence Areas should comply with airport land use noise compatibility criteria contained in the applicable airport land use compatibility plan;
- Require development that generates increased traffic and subsequent increases in ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures;
- Ensure that construction activities are regulated to establish hours of operation in order to prevent or mitigate the generation of excessive or adverse noise impacts on surrounding areas;
- Require that all construction equipment utilize noise reduction features (such as mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer; and
- Consider the issue of adjacent residential land uses when designing and configuring all new non-residential development. Design and configure on-site ingress and egress points to divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable.

The noise element of the County General Plan also identifies preferred noise standards for stationary noise sources that affect residential land uses (Table 3.10-3).

Table 3.10-3
Stationary Source Noise Standards

Land Use	Time of Day	Interior Noise Standard	Exterior Noise Standard
Residential	7:00 AM to 10:00 PM	55 dBA, 10-minute Leq	65 dBA, 10-minute Leq
	10:00 PM to 7:00 AM	40 dBA, 10-minute Leq	45 dBA, 10-minute Leq

Note: The Riverside County Planning Department and Riverside County Office of Public Health have administrative discretion regarding application of these standards.
Source: Riverside County 2003.

Riverside County has adopted a noise ordinance (Ordinance 847) to regulate noise sources on one property that may impact adjacent properties. The noise ordinance sets general noise standards according to the land use designation of the affected property. Table 3.10-4 summarizes the basic noise standards in Riverside County Ordinance 847.

Table 3.10-4
Noise Limits in the Riverside County Noise Ordinance

Impacted Land Use	General Plan Designations	Noise Standard, 7 AM to 10 PM	Noise Standard, 10 PM to 7 AM
Rural Residential	RR, RM, RD	45 dBA	45 dBA
Community Residential	EDR, VLDR, LDR, MDR, MHDR, HDR, VHDR, HTDR, SP	55 dBA	45 dBA
Commercial and Office	CR, CO, CT, CC, SP	65 dBA	55 dBA
Business Park	BP	65 dBA	45 dBA
Light Industrial	LI, SP	75 dBA	55 dBA
Heavy Industrial	HI, SP	75 dBA	75 dBA
Public Facility	PF	65 dBA	45 dBA
Agriculture	AG	45 dBA	45 dBA
Open Space	C, CH, REC, RUR, W	45 dBA	45 dBA
Mineral Resources	MR	75 dBA	45 dBA

Source: Riverside County Ordinance 847

The Riverside County noise ordinance also includes special provisions related to sound amplification systems, live music, audio equipment, and power tools. The noise ordinance also provides for exceptions from the general and special noise standard provisions. In addition, the following facilities and activities are exempt from the provisions of the noise ordinance:

- Facilities owned or operated by government agencies;
- Capital improvement projects of government agencies;
- Maintenance and repair of public properties;
- Public safety personnel and their equipment in the course of conducting their official duties;
- Agricultural operations conducted on lands designated agricultural in the General Plan or on lands zoned A-1, A-2, A-P, A-D, or C/V provided those operations are carried out in a manner consistent with accepted industry standards;
- Wind energy conservation systems provided that they comply with Riverside County Ordinance 348;
- Private construction projects located a quarter mile or more from the nearest inhabited dwelling;
- Private construction projects located within a quarter mile of an inhabited dwelling provided that construction activities are limited to 6:00 AM to 6:00 PM during the months of June through September and are limited to 7:00 AM to 6:00 PM during the months of October through May;
- Property maintenance, including the use of mowers, leaf blowers, etc. provided that such activity is limited to the hours of 7:00 AM to 8:00 PM;
- Motor vehicles other than off-highway vehicles, but this exemption does not apply to motor vehicle sound systems; and
- The discharge of firearms in compliance with all state laws.

Vibration

Ground-borne vibrations can be a source of annoyance to people or a source of structural damage to some types of buildings. Although vibration measurements can be presented in many different forms, peak particle velocity (PPV) is the unit of measure used most often to assess building damage potential. The California Department of Transportation (Caltrans) has identified vibration impact criteria for both building damage potential and human annoyance (Caltrans 2002, 2004). Both human annoyance effects and building damage effects depend in part on whether vibration events are isolated, discrete events or a relatively continuous episode of vibrations. In general, there is less sensitivity to single, discrete events than to continuous events or frequently repeated discrete events. Table 3.10-5 summarizes Caltrans criteria for assessing the effects of ground-borne vibration.

Table 3.10-5
Summary of Caltrans Vibration Criteria

		Peak Particle Velocity, inches / second	
Type of Criteria	**Threshold Condition**	**Transient Sources**	**Continuous or Frequent Sources**
Human Response	Barely perceptible	0.04	0.01
	Distinctly perceptible	0.25	0.04
	Strongly perceptible; may be annoying to some people in buildings	0.9	0.10
	Severe; unpleasant for people in buildings; unacceptable to pedestrians on bridges	2.0	0.4
Building Damage	Cosmetic damage threshold for extremely fragile historic buildings, ruins, and ancient monuments	0.12	0.08
	Cosmetic damage threshold for fragile buildings	0.2	0.1
	Cosmetic damage threshold for historic and some old buildings	0.5	0.25
	Cosmetic damage threshold for older residential structures	0.5	0.3
	Cosmetic damage threshold for newer residential structures	1.0	0.5
	Cosmetic damage threshold for modern industrial/ commercial buildings	2.0	0.5

Source: Caltrans 2002, 2004

The noise element of the Riverside County General Plan includes consideration of ground-borne vibrations. The following land uses are identified by the noise element as being vibration sensitive:

- Hospitals,
- Residential areas,
- Concert halls,
- Libraries,
- Sensitive research operations,
- Schools, and
- Offices.

Riverside County General Plan policies related to vibration include the following:

- Restrict the placement of sensitive land uses in proximity to vibration-producing land uses, and
- Prohibit the exposure of residential dwellings to ground vibration from passing trains that would be perceptible on the ground or second floors (vibrations are presumed to be perceptible if they exceed a peak particle velocity of 0.01 inch per second over a range of 1 to 100 Hz).

3.10.2 Existing Conditions

Noise

Existing noise sources near the Solar Farm site, Gen-Tie Line corridors, and alternative Substation sites include local roadway traffic, off-highway recreational vehicle use, agricultural operations, aircraft overflights, private landing strips, traffic on I-10, and aerodynamic noise from wind blowing through vegetation or around structures. Ambient noise levels have not been measured in the vicinity of the proposed Solar Farm, Gen-Tie Line corridors, or at the alternative Substation locations. However, based on general land use conditions *and the remote nature of the Project locations*, existing background noise levels would be expected to vary from 35 to 50 dBA during the daytime, and to drop to 25 to 35 dBA at night. Somewhat higher noise levels would occur in proximity to I-10. At distances of more than a few hundred feet from I-10, existing CNEL levels would probably be about 45 dBA.

Locations of noise-sensitive land uses in the Project vicinity include homes along Kaiser Road near the Solar Farm site, homes between the south end of the Solar Farm site and SR-177, homes in Eagle Mountain Village (three occupied by caretakers, the rest vacant), Eagle Mountain Elementary School at Eagle Mountain Village, the Tamarisk Lake development, and homes in Desert Center. *The closest residence is about 1,175 feet from the property line of the proposed Solar Farm site. All other nearby homes are 2,640 feet or farther from the proposed Solar Farm property line. In addition, Joshua Tree National Park is located as close as 1.4 miles from the southeast boundary of the Project site.* Figure 3.10-1 illustrates the locations of noise-sensitive land uses.

Vibration

There are no identifiable sources of significant ground-borne vibrations in the Project vicinity. Traffic on I-10 will produce low levels of vibration, but those vibrations would dissipate very rapidly to imperceptible levels at the Project locations. All of the noise-sensitive *land uses* discussed above would also be considered vibration-sensitive.

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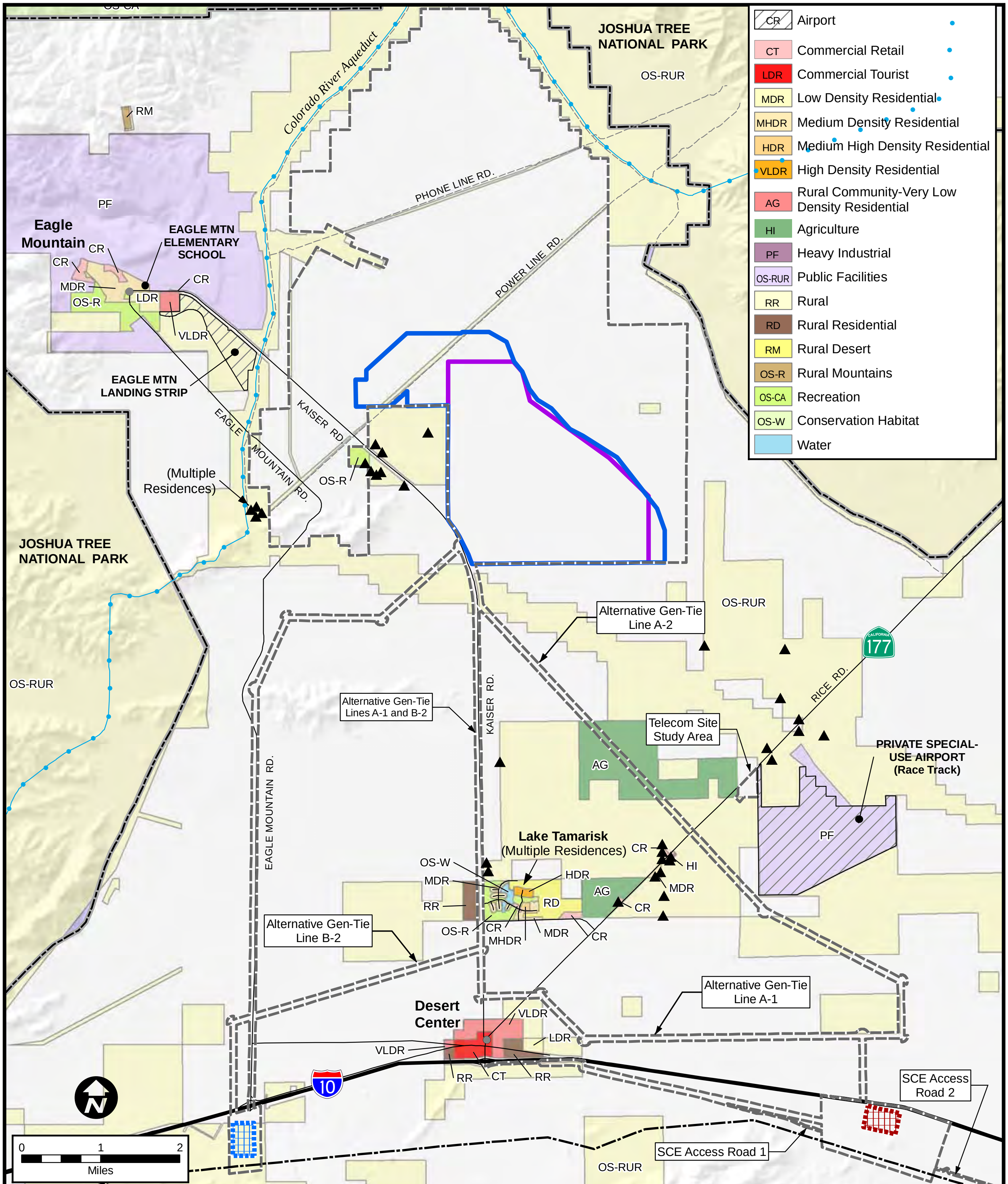

LEGEND

- ▲ Rural Residence
- Devers-Palo Verde Transmission Line (DPV1)
- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- BLM Land

Source: Riverside County Integrated Plan, 2003.

DESERT SUNLIGHT SOLAR FARM

Figure 3.10-1

Residences and Residential Areas in the Vicinity of the Project Area

3.11 PUBLIC HEALTH AND SAFETY/HAZARDOUS MATERIALS

This section describes the *existing* environmental and regulatory settings associated with the construction and operation of the proposed Project or its alternatives with respect to hazards, health and safety that may be present in the Project Study Area.

3.11.1 Applicable Plans, Policies, and Regulations

The following section provides a summary of the federal, state, and local regulatory framework and the laws, regulations and standards that govern hazards, health and safety in the Project area.

Federal

Hazardous Materials Transportation Act (49 USC § 5101 et seq.)

The US Department of Transportation has regulatory authority for the safe transportation of hazardous materials under the Hazardous Materials Transportation Act, as amended and codified in 49 United States Code (USC) 5101 et seq. Vehicles transporting hazardous materials must comply with strict containment, safety, labeling and manifesting requirements.

Resource Conservation and Recovery Act (42 USC. § 6901 et seq.)

The Resource Conservation and Recovery Act (RCRA) of 1976 establishes a program administered by the US Environmental Protection Agency (USEPA) for the regulation of the generation, transportation, treatment, storage and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (HSWA), which affirmed and extended the "cradle to grave" system of regulating hazardous waste. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by HSWA. RCRA regulates hazardous waste from the time that the waste is generated, through to its management, storage, transport, and treatment until its final disposal. In California, the EPA has authorized the Department of Toxic Substance Control (DTSC) to administer the RCRA program, pursuant to the State's Hazardous Waste Control Law (HWCL).

Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) of 1980 (42 USC. § 9601 et seq.)

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) provides a federal Superfund to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills and other emergency releases of pollutants and contaminants into the environment. The EPA generally administers CERCLA. This law provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Superfund Amendments and Reauthorization Act of 1986 (Title III 40 CFR§ 68.110 et seq.)

The Superfund Amendments and Reauthorization Act (SARA) amended CERCLA and established a nationwide emergency planning and response program, and imposed reporting requirements for businesses that store, handle or produce significant quantities of extremely hazardous materials. Administered by the EPA, the act requires states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. Additionally, SARA identifies requirements for planning, reporting, and notification concerning hazardous materials.

Clean Water Act (33 USC. §1251 et seq.)

The Clean Water Act (CWA) is the principal federal statute protecting navigable waters of the United States and adjoining shorelines from the discharge of pollution from point sources. Since its enactment, the CWA has formed the foundation for the regulations and permitting of pollution prevention and response measures in waters subject to federal jurisdiction. The CWA establishes basic structure for regulating discharges of pollutants into the waters of the United States; establishes pollution control programs such as setting wastewater standards for industry; and sets water quality standards for all contaminants in surface waters.

Oil Pollution Prevention (40 CFR Part 112)

The goal of the oil pollution prevention regulation in 40 Code of Federal Regulations (CFR) Part 112 is to prevent oil discharges from reaching navigable waters of the United States or adjoining shorelines. Facilities that could reasonably be expected to discharge oil into navigable waters in quantities that may be harmful are required to develop and implement Spill Prevention, Control and Countermeasures (SPCC) plans per the SPCC rule.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) administers health standards that (1) provide regulations for safety in the workplace; (2) regulate construction safety; and (3) require a Hazards Communication Plan. The plan includes identification and inventory of all hazardous materials for which Material Safety Data Sheets (MSDS) would be maintained, and employee training in safe handling of said materials.

State of California

California Environmental Protection Agency

The California Environmental Protection Agency (Cal EPA) unifies California's environmental authority, consolidating the California Air Resources Board (CARB), State Water Resources Control Board (SWRCB), Regional Water Quality Control Board (RWQCB), Integrated Waste Management Board (IWMB), the DTSC, Office of Environmental Health Hazard Assessment (OEHHA), and the Department of Pesticide Regulation (DPR) under one agency. The California Hazardous Waste Control Law is administered by Cal EPA's DTSC.

Department of Toxic Substance Control

The DTSC is the primary agency in California that regulates hazardous waste, administers clean-ups of existing contamination and looks for ways to reduce hazardous waste produced in California. The DTSC regulates hazardous waste in California primarily under the authority of RCRA and the California Health and Safety Code. The DTSC manages, maintains and monitors the Cortese list of hazardous waste sites. The Cortese list, or Hazardous Waste and Substances Sites List, is a planning resource used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites.

California Emergency Management Agency

The California Emergency Management Agency (Cal/EMA) was formed January 1, 2009 as a result of a merger between the Governor's Office of Emergency Services (OES) and the Office of Homeland Security. The Hazardous Materials Unit of the Cal/EMA is responsible for HAZMAT emergency planning and response, spill release notifications, and HAZMAT enforcement of the Unified Program. The OES provides emergency response services in support of local jurisdictions.

California Public Utilities Commission

The Applicant and SCE would use the CPUC General Order 95 and 165, as related to fire-safe design and maintenance practices for transmission lines, to establish minimum requirements for the Project regarding inspection (including maximum allowable inspection cycle lengths), condition rating, scheduling and performance of corrective action, record keeping and reporting, in order to ensure a safe and high-quality electrical service.

Riverside County

County of Riverside Department of Environmental Health

The County of Riverside Department of Environmental Health (DEH) acts as the Certified Unified Program Agency (CUPA) for Riverside County and is responsible for reviewing Hazardous Materials Business Plans. A CUPA is a local agency that has been certified by Cal EPA to implement state environmental programs related to hazardous materials and waste. The DEH is responsible for protecting the health and safety of the public and the environment of Riverside County by assuring that hazardous materials are properly handled and stored. The DEH accomplishes this through inspection, emergency response, site remediation and hazardous waste management services. The specific responsibilities of the DEH include the following:

- Inspecting hazardous material handlers and hazardous waste generators to ensure full compliance with laws and regulations.
- Implementing CUPA programs for the development of accident prevention and emergency plans, proper installation, monitoring, and closure of underground storage tanks and the handling, storage and transportation and disposal of hazardous wastes.
- Providing 24-hour response to emergency incidents involving hazardous materials or wastes in order to protect the public and the environment from accidental releases and illegal activities.
- Overseeing the investigation and remediation of environmental contamination due to releases from underground storage tanks, hazardous waste containers, chemical processes or the transportation of hazardous materials.
- Conducting investigations and taking enforcement action as necessary against anyone who disposes of hazardous waste illegally or otherwise manages hazardous materials or wastes in violation of federal, state or local laws and regulations.

County of Riverside Fire Department

The County of Riverside Fire Department enforces county fire code standards, as detailed in Ordinance 787.2. Project proponents within Riverside County are required to complete a project-specific fire prevention plan that encompasses fire risk management during construction, operation, and decommissioning.

3.11.2 Existing Conditions

This section contains a description of the environmental setting for the proposed Project and alternatives with respect to hazardous materials/waste and public health and safety issues that may exist in the proposed Project area. The following issues are addressed: past hazardous materials/hazardous waste use in the area, proximity to airports and schools, emergency evacuation routes, emergency response plans, wildfire, intentionally destructive acts, and electromagnetic fields (EMF).

The Project is proposed in an area that has a variety of uses including open space recreation and preserve, residential housing, and commercial businesses. There are no hazardous materials or hazardous waste generators in the proposed Project or alternatives areas.

Hazardous Materials/Waste

Existing and past land use activities are potential indicators of hazardous materials and hazardous waste storage and use. The primary reasons to define potentially hazardous sites are to protect the health and safety of construction and operations personnel and to minimize public exposure to hazardous materials during construction and waste handling.

The following is a summary definition of hazardous materials and hazardous waste.

- **Hazardous Material**: Any material that due to its quantity, concentration or physical characteristics poses a significant present or potential hazard to human health and safety or to the environment if released into the work place or environment.
- **Hazardous Waste**: A waste or combination of wastes, which due to its quantity, concentration or physical, chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating but reversible illness; or pose a substantial present or potential hazard to human health or the environment due to factors including, but not limited to carcinogenicity, acute toxicity, chronic toxicity, bioaccumulative properties or persistence in the environment when improperly treated, stored, transported, or disposed of or otherwise managed.

Database Review

A Phase I Environmental Site Assessment (ESA) was prepared for the Project area (including all Project components). As part of the Phase I ESA, a review of relevant hazardous waste/materials databases was completed by Environmental FirstSearch (2010) and resulted in the identification of a number of sites with potentially hazardous waste or materials. None of the sites were identified in the Phase I ESA as Recognizable Environmental Concerns (RECs) for the Project (AECOM Environment 2010). However, the Phase I preparers noted one non-REC issue that may require additional assessment: One small portion of the Project area (the telecom site) was formerly part of a military reservation and should be assessed to determine the presence of unexploded ordnance, if that particular area would be used as part of the Project. (These types of materials are referred to as munitions and explosives of concern, or MEC.) Unexploded ordnance may be a subset of these types of materials.

According to the Phase I ESA, seven entries were recorded on the Emergency Response Notification Systems (ERNS) list for spills within proximity to the proposed Project and its alternatives. These spills were identified along I-10. None of these spills were identified as needing additional work past initial cleanup activities. Therefore, none of the sites were deemed of potential concern to the Project or its alternatives.

Two additional sites were identified as permitted facilities. A sanitary landfill, listed as the Desert Center Sanitary site (17-991 Kaiser Road), was listed as a permitted Solid Waste Landfill (SWL) site that is permitted to accept agricultural, construction/demolition and mixed municipal waste by the County of Riverside Waste Management Department. The second permitted site is the Iron Mountain pumping station (6001 Iron Mountain Pumping Plant Road), which is also listed as a RCRA waste generator. An underground storage tank (UST) has also been associated with the Eagle Mountain pumping station. No violations or environmental actions for these sites were listed.

One additional site, the Eagle Mountain Mine, was listed as a No Further Remedial Action Planned (NFRAP). No violations or environmental actions for this site were listed.

A number of listings in the area were listed as registered USTs. No violations or environmental actions for these sites were identified. Two sites, also identified as UST sites, were listed on the Leaking Underground Storage Tank (LUST) list. The Caltrans Desert Center site (44740 Ragsdale Road) and the Metropolitan Water District Eagle Mountain Pumping Station (Eagle Mountain Road) were both listed as site closures with a no further action letter. No additional environmental actions were identified for either site.

Other Hazardous Waste Issues

Both the Phase I study and the Class I cultural inventory of the Project area indicated that the area was historically used as a military training facility and that there is potential for MEC to be present. During the Class III cultural resources survey, evidence of possible MEC was identified along two of the Gen-Tie Line alternatives.

Airports

Aboveground transmission lines associated with the Gen-Tie Line and the tower associated with the telecom site may pose a threat to aviation safety if they are located with an airport land use plan or flight zone. The former Desert Center Airport is located approximately four miles east, southeast from the proposed Solar Farm and less than a mile from the Gen-Tie Line A-2 transmission alternative. The 185-foot tower associated with the telecom site that is part of the Red Bluff Substation would be just *over* one mile (5,500 feet) from the private special-use airport's runway. This airport is no longer in regular use but has been developed into a multi-use recreational facility, including an automotive race track facility with accessory buildings, dry (without utility hook-ups) on-site camping and associated amenities. The redevelopment includes use of the runway as a private special-use airport (County of Riverside Redevelopment Agency 2009). There is also a private landing strip associated with the closed Eagle Mountain mine that is approximately two miles northwest of the proposed Solar Farm site. This private airstrip is minimally used to access the closed Eagle Mountain mine.

Schools

There is one school in the vicinity of the proposed Project. Eagle Mountain Elementary School is located approximately 2.5 miles from the Solar Farm site at 1434 Kaiser Road. It supports kindergarten through eighth grade students. Eagle Mountain Elementary School is part of the Desert Center Unified School District.

Emergency Evacuation Routes

Emergency evacuation routes in the Desert Center region are I-10 and SR-177 (Rice Road). Further discussion of transportation routes is provided in Section 3.15.

Emergency Response Plan

The County of Riverside DEH acts as the CUPA for Riverside County. The CUPA program is designed to consolidate, coordinate, and administer permits, inspection activities, and enforcement activities throughout the County of Riverside. The programs administered by the CUPA are as follows:

- Business Emergency Plan / Hazardous Materials Handler;
- Hazardous Waste Generators;
- Underground Storage Tanks;
- California Accidental Release Program (CalARP);
- Aboveground Petroleum Storage Act (APSA) / SPCC Plan; and
- Uniform Fire Code Hazardous Materials Management Plans.

The Applicant and SCE will be required to complete emergency response plans as identified by the DEH as relevant to the construction and operation of the proposed Project.

Wildfire/Fire

Wildfires consist of uncontrolled fire spreading through vegetation. Wildfires are caused by arson, campfires, improper burning of debris, accidental ignition caused by the use of gas-powered tools or vehicles, other man-made causes, and lightning. Wildfire behavior may vary due to individual fire characteristics, topography, fuels (i.e., type and quantity of available flammable material, referred to as fuel load), and weather conditions. The proposed Project and alternatives would be in open desert, characterized by sparse vegetation and minimal development. The Project Study Area in Riverside County has been determined to have a low to moderate susceptibility to wildfire (County of Riverside 2003).

Intentionally Destructive Acts

In light of two decisions by the US Court of Appeals for the Ninth Circuit, Department of Energy NEPA documents explicitly address the potential environmental consequences of intentionally destructive acts (i.e., acts of sabotage or terrorism) (US Department of Energy 2006). Each NEPA analysis of project and alternative impacts should explicitly consider intentionally destructive acts. As with any US energy infrastructure, the proposed Project or alternatives could be the target of terrorist attacks or sabotage.

Electromagnetic Fields

The information presented here is for informational purposes only, as requested by the CPUC. The source of information regarding EMF originated from the DPV2 EIR/EIS (California Public Utilities Commission and BLM 2006). There is no information available regarding existing EMF in the Project area, nor is there a requirement under NEPA or CEQA to address this issue.

Background – CPUC Guidelines

On January 15, 1991, the CPUC initiated an investigation to consider its role in mitigating the health effects, if any, of EMF from utility facilities and power lines. A working group of interested parties, called the California Electromagnetic Frequency Consensus Group, was created by the CPUC to advise it on this issue. The group consisted of stakeholders representing citizens groups, consumer groups, environmental groups, stakeholder agencies, unions and utilities. Based on the work of the Consensus Group, written testimony and evidentiary hearings, the CPUC issued its decision (93-11-013) on November 2, 1993, to address public concerns about possible EMF health effects from electric utility facilities.

In response to a situation of scientific uncertainty and public concerns, the decision specifically required utilities to consider "no-cost" and "low-cost" measures, where feasible, to reduce exposure from new or upgraded utility facilities requiring certification under General Order 131-D. It directs that no-cost mitigation measures be undertaken, and that low-cost options, when they meet certain guidelines for field reduction and cost, are adopted through the project certification process. The decision directed the utilities to use a 4 percent benchmark on the low-cost mitigation. These reduction measures would be documented in a project-specific Field Management Plan. The CPUC did not adopt any specific numerical limits or regulations on EMF levels related to electric power facilities.

In Decision D.93-11-013, the CPUC addressed mitigation of EMF of utility facilities and implemented the following recommendations:

- No-cost and low-cost steps to reduce EMF levels;
- Workshops to develop EMF design guidelines;
- Uniform residential and workplace programs;
- Stakeholder and public involvement;
- A four-year education program;
- A four-year nonexperimental and administrative research program; and
- An authorization of federal experimental research conducted under the National Energy Policy Act of 1992.

Most recently the CPUC issued Decision D.06-01-042, on January 26, 2006, affirming the low-cost/no-cost policy to mitigate EMF frequency exposure from new utility transmission and substation projects. This decision also adopted rules and policies to improve utility design guidelines for reducing EMF. The CPUC stated: "At this time we are unable to determine whether there is a significant scientifically verifiable relationship between EMF exposure and negative health consequences."

The CPUC has not implemented a general requirement that utilities include nonroutine mitigation measures or other mitigation measures that are based on numeric values of EMF exposure and has not adopted any specific limits or regulation on EMF related to electric power facilities. Mitigation measures may be determined on a project-by-project basis by the CPUC.

Electromagnetic Fields

EMF is a term used to describe electric and magnetic fields that are created by electric voltage (electric field) and electric current (magnetic field). Electromagnetic fields can be viewed as a combination of both an electric and magnetic field that can be regarded as a smooth, continuous field, propagating in a wavelike manner. Power frequency EMF is a natural consequence of electrical currents, and can be either directly measured using the appropriate measuring instruments or calculated using appropriate information.

Electric fields are present whenever voltage exists on a wire, and are not dependent on current. The magnitude of the electric field is primarily a function of the configuration and operation voltage of the line and decreases with the distance from the source. The electric field can be shielded (i.e., the strength can be reduced) by any conducting surface, such as trees, fences, walls, buildings, and most types of structures. The strength of an electric field is measured in volts per meter (V/m) or kilovolts per meter (kV/m). Typical electric field values for appliances are presented in Table 3.11-1.

Table 3.11-1
Typical Electric Field Values for Appliances, at 12 Inches

Appliance	Electric Field Strength (kV/m)
Electric Blanket	0.25*
Broiler	0.13
Stereo	0.09
Refrigerator	0.06
Iron	0.06
Hand Mixer	0.05
Coffee Pot	0.03

*1 to 10 kV/m next to blanket wires.
kV/m: Kilovolts/meter
Source: Enertech Consultants 1985

Magnetic fields are present whenever current flows in a conductor, and are not dependent on voltage of the conductor. The strength of these fields also decreases with distance from the source. However, unlike electric fields, most common materials have little shielding effect on magnetic fields.

The magnetic field strength is a function of both the current on the conductor and the design of the system. Magnetic fields are measured in units called Gauss. However, for low levels normally encountered near electric utility facilities, the field strength is expressed in a much smaller unit, the milliGauss (mG), which is one thousandth of a Gauss.

Power frequency EMF is present whenever electricity is used. This includes not only electric power generation, utility transmission lines, distribution lines and on-site and off-site substations as proposed with this Project, but also the building wiring in homes, offices, schools and in the appliances and machinery used in these locations. Magnetic field intensities from these sources can range from below 1 mG to above 1,000 mG (1 Gauss).

Research on ambient magnetic fields in homes and buildings in several western states found average magnetic field levels within most rooms to be approximately 1 mG. In a room with appliances present, the measured values ranged from 9 to 20 mG (Severson et al., 1988 and Silva et al., 1988). Immediately adjacent to appliances (within 12 inches), field values are much higher as illustrated in Table 3.11-2.

Table 3.11-2
Magnetic Field from Household Appliances

	Magnetic Field (mG)	
Appliance	**12-inch Distance**	**Maximum mG**
Electric range	3-20	100-2,000
Electric oven	2-25	10-50
Garbage disposal	10-20	850-1,250
Refrigerator	0.3-3	4-15
Clothes washer	2-30	10-400
Clothes dryer	1-3	3-80
Coffee maker	0.8-1	15-250
Toaster	0.6-8	70-150
Crock pot	0.8-1	15-80
Iron	1-3	90-300
Can opener	35-250	10,000-20,000
Mixer	6-100	500-7,000
Blender, popper, processor	6-20	500-7,000
vacuum cleaner	20-200	2,000-8,000
Portable heater	1-40	100-1,100
Fan/blower	0.4-40	20-300
Hair dryer	1-70	60-20,000
Electric shaver	1-100	150-500
Color television	9-20	150-500
Fluorescent fixture	2-40	140-2,000
Fluorescent desk lamp	6-20	400-3,500
Circular saw	10-250	2,000-10,000
Electric drill	25-35	4,000-8,000

Source: Gauger 1985

Magnetic field strength diminishes with distance. Fields from compact sources (i.e., those containing coils such as small appliances and transformers) drop off with distance (r) from the source by a factor of $1/r^3$. For three-phase power lines with balanced currents, the magnetic field strength drops off at a rate of $1/r^2$. Fields from unbalanced currents, which flow in paths such as neutral or ground conductors, fall off inversely proportional to the distance from the source or $1/r$. Conductor spacing and configuration also affect the rate at which the magnetic field strength decreases, as well as the presence of other sources of electricity.

EMF levels can be reduced in three primary ways: shielding, field cancellation or increasing the distance from the source. Shielding, which primarily reduces exposure to electric fields, can be actively accomplished by placing trees or other physical barriers adjacent to the EMF generating structure. Since electric fields can be blocked by most materials, shielding is effective for the electric fields but of limited effectiveness for magnetic fields.

Magnetic fields can be reduced by either cancellation or by increasing distance from the field. Cancellation is achieved in two ways. A transmission line circuit consists of three “phases”: three separate wires (conductors) on a transmission tower. The configuration of these three conductors can reduce magnetic fields. When the configuration places the three conductors closer together, the interference or cancellation of the fields from each wire is enhanced. This technique has practical limitations because of the potential for short circuits if the wires are placed too close together. There are also worker safety issues to consider if spacing is reduced. In instances where there are two circuits (more than three phase wires), cancellation can be accomplished by arranging phase wires from different circuits near each other. The distance between the source of fields and the public can be increased by either placing the wires higher above ground, burying underground cables deeper, or by increasing the right-of-way. These methods can prove effective in reducing fields because the field strength drops rapidly with distance.

Electric and Magnetic Fields and Other Field-Related Concerns

Additional concerns regarding the Project related to power line fields include radio, television, electronic equipment interference, induced currents and shock hazards, and effects on cardiac pacemakers. Each of these issues is described below.

Radio/Television/Electronic Equipment Interference

Although corona can generate high frequency energy that may interfere with broadcast signals or electronic equipment, this is generally not a problem for transmission lines. Corona is a process by which a current, perhaps sustained, develops from an electrode with a high potential in a neutral fluid, usually air, by ionizing that fluid to create a plasma around the electrode. The Institute of Electrical and Electronic Engineers (IEEE) has published a design guide (IEEE 1971) that is used to limit conductor surface gradients to avoid electronic interference.

Gap discharges or arcs can also be a source of high frequency energy. Gap discharges occur when an arc forms across a gap in loose or worn line hardware. It is estimated that over 90 percent of interference problems for electric transmission lines are due to gap discharges. Line hardware is designed to be problem-free, but wind motion, corrosion, and other factors can create a gap discharge condition. When identified, gap discharges can be located and remedied by utilities.

Electric fields from power lines do not typically pose interference problems for electronic equipment in businesses since the equipment is shielded by buildings and walls. However, magnetic fields can penetrate buildings and walls, thereby interacting with electronic equipment. Depending on the sensitivity of equipment, the magnetic fields can interfere with operation. Review of this phenomenon in regard to the sensitivity of electrical equipment identifies a number of thresholds for magnetic field interference. Interference with typical computer monitors can be detected at magnetic field levels of 10 mG and above, while large screen or high-resolution monitors can be susceptible to interference at levels as low as 5 mG.

Other specialized equipment, such as medical or testing equipment, can be sensitive at levels below 5 mG. Equipment that may be susceptible to very low magnetic field strengths is typically installed in specialized and controlled environments, since even building wiring, lights, and other equipment can generate magnetic fields of 5 mG or higher.

The most common electronic equipment that can be susceptible to magnetic field interference is probably computer monitors. Magnetic field interference results in disturbances to the image displayed on the monitor, often described as screen distortion, "jitter," or other visual defects. In most cases it is annoying, and at its worst, it can prevent use of the monitor. This type of interference is a recognized problem in the video monitor industry. As a result, there are manufacturers who specialize in monitor interference solutions and shielding equipment. Possible solutions to this problem include relocating the monitor, using magnetic shield enclosures, installing software programs, and replacing cathode ray tube monitors with liquid crystal displays that are not susceptible to magnetic field interference.

Induced Currents and Shock Hazards

Power line fields can induce voltages and currents on conductive objects, such as metal roofs or buildings, fences, and vehicles. When a person or animal comes in contact with a conductive object, a perceptible current or small secondary shock may occur. Secondary shocks cause no physiological harm, but they may present a nuisance.

Cardiac Pacemakers

An area of concern related to electric fields from transmission lines has been the possibility of interference with cardiac pacemakers. There are two general types of pacemakers: asynchronous and synchronous. The asynchronous pacemaker pulses at a predetermined rate. It is generally immune to interference because it has no sensing circuitry and is not exceptionally complex. The synchronous pacemaker, however, pulses only when its sensing circuitry determines that pacing is necessary. Interference from transmission line electric field may cause a spurious signal on the pacemaker's sensing circuitry. However, when these pacemakers detect a spurious signal, such as a 60 Hertz (Hz) signal, they are programmed to revert to an asynchronous or fixed pacing mode of operation, returning to synchronous operation within a specified time after the signal is no longer detected. Cardiovascular specialists do not consider prolonged asynchronous pacing a problem, since some pacemakers are designed to operate that way. Periods of operation in this mode are commonly induced by cardiologists to check pacemaker performance. So, while transmission line electric fields may interfere with the normal operation of some of the older model pacemakers, the result of the interference is generally not harmful and is of short duration (Illinois Institute of Technology Research Institute 1979; University of Rochester 1985).

EMF Associated with the Project Locations

Gen-Tie Line

Where possible, proposed and alternative Gen-Tie Lines would be placed in existing transmission corridors. The Project area a predominantly undeveloped, with minor rural residential development. In undeveloped and natural areas, measurable EMFs are not present except in the vicinity of existing power lines. Public exposure to EMF in undeveloped areas is limited, primarily due to the absence of the public. *The closest sensitive receptors to the Gen-Tie lines would be the Lake Tamarisk development which is approximately 500 feet from the nearest structure within the development.*

Solar Farm and Substation

There are currently no developments generating EMF within the locations of the proposed Project or alternatives for either the Solar Farm or the Red Bluff Substation. The proposed Project would be built in undeveloped open desert, with no EMF sources and limited potential for exposure to EMF sources. The decision on the level of detail sufficient for analysis of potential impacts from EMF associated with the Red Bluff Substation would be made by the CPUC.

3.12 RECREATION

The Project Study Area encompasses the vacant, undeveloped area within the Chuckwalla Valley, portions of which are administered by the BLM. This section describes recreational uses within and around the Project Study Area and any recreational facilities directly or indirectly linked to the area.

3.12.1 Applicable Plans, Policies, and Regulations

The following federal, state, and local laws and policies apply to the administration of recreation within the Project Study Area.

Federal Land Policy and Management Act

FLPMA recognizes the value of public lands and includes the multiple use/sustained yield framework for management to provide for outdoor recreation for future generations (BLM 2001). Title VI of FLPMA, *Designated Management Areas, California Desert Conservation Area*, acknowledges the recreational resources contained within the California desert environment and directs the BLM to develop a multiple use and sustained yield management plan to conserve the desert's resources, particularly recreational use.

California Desert Conservation Area Plan

The CDCA Plan defines Multiple-Use Classes for all BLM-managed lands, which includes the lands within the Project Study Area. The CDCA Plan establishes goals for management of recreation in the California Desert (BLM 1980). The goals are to provide for the use of the public lands and resources of the CDCA, including recreational uses, in a manner that enhances wherever possible—and that does not diminish—the environmental, cultural, and aesthetic values of the desert (BLM 1980). The goals of the Recreation Element of the plan are to:

- Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use;
- Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety;
- Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources;
- Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources;
- Adjust management approach to accommodate changing visitor use patterns and preferences; and
- Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of those groups.

The CDCA also contains a motorized-vehicle access element, which provides a system and a set of rules that governs access to the CDCA by motor vehicles. The rules include providing for constrained motor-vehicle access, while protecting desert resources (BLM 1980). When the CDCA Plan was first adopted, the BLM designated a network of motorized vehicle routes on public lands within the northern and eastern Mojave Desert. The BLM designated routes for north-central and southern portions of the CDCA. The BLM manages OHV use, so the conditions of special status species and other natural and cultural resources are maintained (BLM 2004).

Northern and Eastern Colorado Desert Coordinated Management Plan

The NECO Plan, an amendment to the CDCA Plan, provides for management of recreation within the California Desert area of El Centro, Blythe, Needles, and cities in the Coachella Valley, including the Project Study Area (BLM and CDFG 2002). The NECO Plan specifies the types of recreational activities allowed in Multiple-Use Classes on BLM-administered land. Under this plan, new routes may be allowed if approved by the authorized officer. Pit, start, and finish areas must be designated by the authorized officer. All competitive and organized events having 50 or more vehicles require permits. The plan includes an *off-highway vehicles (*OHV*)* route inventory and is the current authority on OHV routes.

Off-Road Vehicles (Title 43 CFR 8340, et seq.)

This regulation establishes criteria for designating public lands as open, limited, or closed to the use of OHVs and for establishing controls governing the use and operation of OHVs in such areas, while protecting resources, promoting safety, and minimizing user conflicts. Recreational use, under Title VI, "includes the use, where appropriate, of off-road recreational vehicles" (BLM 2001).

Riverside County Integrated Plan, General Plan, and Desert Center Area Plan

The Riverside County General Plan includes policy area locations, such as for Desert Center, that have a separate Land Use Plan for future development and growth. The entire Project Study Area falls within the DCAP, which is part of the General Plan. Local land use does not apply to the BLM, but the FLPMA requires the BLM to coordinate with local governments in land use planning in Title II, Section 202, (b)(9).

Additional land use policies are described in more detail in Section 3.9, Lands and Realty.

3.12.2 Affected Environment

Recreation Management Areas. The Solar Farm sites, Red Bluff Substation A, and most of GT-A-1, GT-A-2, and GT-B-2 are on BLM-administered land. The portions of the Project on BLM-administered land are not designated as *Special Recreation Management Areas (SRMA)* but are managed as default Extensive Recreation Management Areas (ERMA). The BLM does not have recreation facilities, trails, or other improvements in the Project area and does not have traffic counters or other means of estimating use. ERMAs normally experience light to moderate dispersed recreation use, including camping, hiking, hunting, and OHV use. The proposed location of the Project includes land that is mostly classified as Multiple-Use Class M (Moderate Use) and some as Multiple-Use Class L (Limited Use). Multiple-Use Class M are lands controlled by a balance between higher intensity recreation use and protection of public lands. These lands are managed to provide a variety of uses, including mining, grazing, recreation, utilities, and energy development. Multiple-Use Class L lands are managed to provide for generally lower intensity, carefully controlled, multiple use of resources (BLM and CDFG 2002). There are no BLM-designated open OHV areas in Riverside County. *O*pen OHV area*s* permit *driving or* rid*ing* off designated routes.

OHV Management/Designations. OHV use is allowed only on BLM land along designated routes that are open to travel per the *NECO Plan Amendment to the CDCA Plan.*

Four designated open routes traverse the Project area in the vicinity of the Solar Farm site (all of which are unpaved): Power Line Road *(660334)*, Kaiser Steel Road *(660335)*, an unnamed route that intersects Kaiser Steel Road *(660298)*, and an unnamed route that runs north-south *from the intersection of* Kaiser Road and Power Line Road *(660260)*. Figure 3.15-1 in the Transportation section (Section 3.15) depicts these roads and their locations. *These OHV routes would remain open to the public during construction of the proposed Solar Farm site, except for unnamed route (660260).*

Power Line Road (NECO Route # 660334)

Power Line Road is a maintained dirt road that runs northeast-southwest and connects with Kaiser Road. The road parallels MWD transmission and distribution lines. OHVs are allowed on this road.

Phone Line Road (NECO Route # 660330)

Phone Line Road is a maintained dirt road that intersects Power Line Road near Eagle Mountain Road, runs north-south, and then turns northeast at the Eagle Mountain Townsite. OHVs are allowed on this road.

Kaiser Steel Road (NECO Route # 660335)

Kaiser Steel Road is a private east-west unmaintained dirt road owned by Kaiser Ventures. The road parallels a Kaiser Ventures distribution line and is used to access two water wells east of the Solar Farm site. OHVs are allowed on this road west of the intersection with Power Line Road. The road is closed east of the intersection with Power Line Road for ecological preservation (First Solar 2009).

Other Roads

Several smaller unpaved and unmaintained local roads or routes have been documented in the project vicinity and are shown on Figure 3.15-1.

Developed Recreation Sites. A recreational use in the Project Study Area is the Desert Center Airport, southwest of the Solar Farm site, previously owned and operated by Riverside County but now privately owned. The airport consists of one paved 4,200-foot-long 50–foot-wide runway, a pilot lounge, storage building, beacon tower, and hangar (Riverside County Economic Development Agency 2010). The airport has been redeveloped for use as a private, members-only automotive racetrack, with spaces for recreational vehicles (no utility hook-ups) (Riverside County TLMA 2010; Riverside County Planning Department 2009).

Another recreational development is the Lake Tamarisk Resort, approximately five miles south of the Solar Farm area and next to a portion of GT-A-1 and GT-B-2. This member-owned resort has 60 members and 150 mobile home spaces, mobile home rentals, camping spaces, a heated pool, a clubhouse, and a nine-hole public golf course.

Dispersed Recreation. Although not within the proposed Project, the Desert Lily ACEC is a recreation attraction near the proposed Project. This ACEC covers 2,031 acres and was established to protect botanical values, in particular, the desert lily (*Hesperocallis undulata*). This area is withdrawn from all forms of appropriation including mineral entry, and is bound on the western edge by a fence bordering Highway 177. It is 2.6 miles southeast of the Solar Farm layouts A, B, and C area. The use of this ACEC is a few hundred visitors per year but includes a car and RV camping area, along with recreation activities, such as photography and nature studies.

Joshua Tree National Park surrounds the northern portion of the Project Study Area. The Joshua Tree Wilderness Area (discussed in Section 3.14 – Special Designations), on the southern tip of the Coxcomb Mountains, is less than two miles to the east of the Solar Farm site at its closest point. The Joshua Tree Wilderness Area is composed of arroyos, playas, bajadas, narrow ravines, and steep mountains. *Some visitors are likely to access this area because of its proximity to Highway 177, though in general, because* of the steep terrain and lack of trails, much of the park in this area is difficult to access. As a result, most of the recreation use closest to the Project Area is highly dispersed, with visitors seeking opportunities for day hiking, backpacking, and other forms of nonmotorized recreation. Motorized vehicles must stay on established roads. Aerial photography and the Park Service's visitor brochure reveal no significant trails, routes, or other park improvements within eight miles of the Project boundary. A visitor study was completed in spring 2004, but specific data are not available for visitor use and visitor preferences for dispersed recreation areas next to the proposed Project.

Chuckwalla Mountains and Palen-McCoy Wilderness Areas, administered by the BLM, are located approximately 8 miles south and 10 miles east of the Project Study Area. These dispersed recreation areas are within the viewshed of the Project Study Area and are discussed in Section 3.14-Special Designations.

Other recreation near the Project Study Area, but not within it, is the Edmund C. Jaeger Nature Sanctuary, about a quarter-mile south of Red Bluff Substation B. In addition, Corn Springs Campground, about 20 miles south of the Project (south of I-10, surrounded by the Chuckwalla Mountains Wilderness), which averages 300 campers a year (Hill 2010). *The developed Wiley's Well and Coon Hollow Campgrounds are within the Mule Mountain Long Term Visitor Area (LTVA), located about 35 miles southeast of the Project Study Area, and Midland LTVA is 45 miles east from the Project Study Area (Cook 2010).* LTVAs are long-term permit areas where "snow birds" can stay all winter in self-contained recreational vehicles (normally camping is limited to 14 days on public land). There are no facilities or services, except for a volunteer host, information kiosk, and vault toilet (no water). Each averages about 52 *long term* visitors a year (Hill 2010). Chiraco Summit, the location of the General Patton Museum, is 19 miles west of Desert Center, on BLM land but administered by a nonprofit group (Hill 2010).

General Project Site Recreation Use. Although recreation use in the vicinity of the Project site is minimal, some uses have been observed by BLM staff and ranger patrols. The most common recreation use would be driving for pleasure or sightseeing, in both street legal vehicles and OHVs on approved routes. Car or RV camping may occur but has not been observed and is not considered a popular use. Day use of the area is most common, mostly by residents of Desert Center or off-duty workers from facilities around Eagle Mountain. Some hiking, photographer, target shooting, and limited hunting is assumed to occur in the general area *other* than on the project site. Though the project site is near Joshua Tree National Park, access to the park and wilderness from this area is not common and has not been observed by BLM staff.

3.13 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section provides an overview of the applicable plans, policies, and regulations and existing conditions, historic trends, and relevant projections for population and housing, employment and income, public services and utilities, and environmental justice. Data is provided for Riverside County, for local communities where applicable and available, and for California for comparison.

3.13.1 Applicable Plans, Policies, and Regulations

Federal

Applicable plans, policies, and regulations for socioeconomics and environmental justice include NEPA (42 United States Code [USC] 4321 et seq.) and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. NEPA requires an analysis of the proposed Project's economic, social, and demographic effects related to effects on the natural or physical environment in the affected area, but does not allow for economic, social, and demographic effects to be analyzed in isolation from the physical environment. Executive Order 12898 requires that federal agencies, as well as state agencies receiving federal funds, identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations.

State

California state regulations regarding socioeconomics and environmental justice (including the provision of public services and utilities) that apply to the proposed Project include Title 14 of the California Code of Regulations, Chapter 3, Guidelines for Implementation of the California Environmental Quality Act, Article 9(a), Section 15131; California Education Code, Section 17620; California Government Code, Sections 65996–65997; and California Revenue and Taxation Code, sections 721–725: California Board of Equalization (BOE) – Property Tax Rule 905 (BOE authority to assess electrical generating facilities is found in Article XIII, section 19, of California's Constitution).

CEQA Article 9(a), Section 15131, states the following with regard to economic and social effects:

- Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes. The intermediate economic or social changes need not be analyzed in any detail greater than necessary to trace the chain of cause and effect. The focus of the analysis shall be on the physical changes.
- Economic or social effects of a project may be used to determine the significance of physical changes caused by the project. For example, if the construction of a new freeway or rail line divides an existing community, the construction would be the physical change, but the social effect on the community would be the basis for determining that the effect would be significant. As an additional example, if the construction of a road and the resulting increase in noise in an area disturbed existing religious practices in the area, the disturbance of the religious practices could be used to determine that the construction and use of the road and the resulting noise would be significant effects on the environment. The religious practices would need to be analyzed only to the extent to show that the increase in traffic and noise

would conflict with the religious practices. Where an EIR uses economic or social effects to determine that a physical change is significant, the EIR shall explain the reason for determining that the effect is significant.

- Economic, social, and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR. If information on these factors is not contained in the EIR, the information must be added to the record in some other manner to allow the agency to consider the factors in reaching a decision on the project.

The other California regulations pertain to social infrastructure and government revenues. Section 73 of the California Revenue and Taxation Code allows a property tax exclusion for certain types of solar energy systems installed between January 1, 1999, and December 31, 2016. This section was amended in 2008 to include the construction of an active solar energy system incorporated by an owner-builder in the initial construction of a new building that the owner-builder does not intend to occupy or use.

California Education Code, Section 17620, authorizes the governing board of any school district to levee a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities. California Government Code, Sections 65996–65997 includes provisions for school district levies against development projects. Property Tax Rule 905 allows for the assessment of taxes on electric generation facilities.

The responsibilities of California utility operators working in the vicinity of utilities are detailed in Section 1, Chapter 3.1, “Protection of Underground Infrastructure” (Article 2 of California Government Code §§42 16-4216.9). This law requires that an excavator must contact a regional notification center at least two days prior to excavation of any subsurface installation. Any utility provider seeking to begin a project that may damage underground infrastructure can call Underground Service Alert, the regional notification center. Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area.

The Integrated Waste Management Act of 1989 (PRC 40050 et seq. or Assembly Bill (AB 939, codified in PRC 40000), administered by the California Integrated Waste Management Board (CIWMB), requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills. This law sets reduction targets at 25 percent by the year 1995 and 50 percent by the year 2000. To assist local jurisdictions in achieving these targets, the California Solid Waste Reuse and Recycling Access Act of 1991 (SWRR) requires all new developments to include adequate, accessible, and convenient areas for collecting and loading recyclable and green waste materials.

Local

The proposed Project would affect only unincorporated areas in Riverside County, including the unincorporated town of Desert Center. The relevant plans for each of these jurisdictions include land use direction, policy guidance, and consistency zoning. The Riverside County General Plan was updated in 2008 to incorporate 19 more detailed Area Plans, including one for Desert Center. The Fiscal/Financial Analysis evaluates the potential for population and economic growth over the next 20 years, and the General Plan identifies areas suitable for development of the economic base and transportation system of Riverside County. The land use element designates the distribution and intensities of use, including residential, commercial, industrial, public facilities, and open space, for the entire county. The safety element establishes policies and programs to protect the community from risks associated with seismic, geologic, flood, and wildfire hazards; and the multipurpose open space element provides management of the availability for parks. The housing element assesses housing needs and proposes residential sites for all economic segments of the county.

The Desert Center Area Plan (DCAP) identifies the limited areas available for development. Most of the area covered by the DCAP is remote, inaccessible, subject to natural hazards, or unable to support intense development due to a lack of public infrastructure and services. The plan, therefore, recommends infill development and expansion areas contiguous to existing development. Guidance is provided for the transition of the former Kaiser iron ore mining facility to a Class III nonhazardous waste landfill (Eagle Mountain Landfill) with the former Kaiser employee housing area becoming a housing and service area for landfill employees (although a recent legal ruling has halted the landfill project). The area between Desert Center and Lake Tamarisk Park could accommodate limited future expansion, accompanied by a plan amendment; and growth in the area of the airport would be subject to restrictions due to public safety considerations (Riverside County 2003).

3.13.2 Existing Conditions

Regional Setting and Approach to Data Collection

This section presents an overview of the regional setting and comprehensive baseline population, housing, and employment data, as well as information on utilities and public services within the study area and the ROI for socioeconomic resources, which involves three subsets:

- The discussion of income and employment includes all of Riverside County because this is the area from which the labor force would be drawn, according to the Plan of Development prepared by Sunlight;
- The discussion of public services and facilities also includes a large portion of Riverside County since, in general, these are supplied from a wider area than the unincorporated communities next to the proposed Project and by regional providers; and
- The discussion of the area that would be affected with respect to social values, the potential for disruption of businesses, and potential disruption of utilities and public services is limited to Desert Center, Lake Tamarisk Park, and Eagle Mountain Village, as well as to businesses and residences next to construction activities.

The terms “regional” or “ROI” are used to describe employment and income and the supply area from which public services and facilities are derived; the term “local” is used to describe social values, individual businesses, and the area where public services and utilities could be affected by the proposed project.

The Project Study Area lies entirely within unincorporated Riverside County, as do the alternative transmission corridors and substation sites. The proposed Project would be located entirely on

BLM-administered land, but portions of the Gen-Tie Line corridor would traverse private land. The nearest populated areas include the unincorporated town of Desert Center, the Lake Tamarisk Park area, and Eagle Mountain Village. The nearest incorporated population centers include Blythe, Coachella, and Indio in Riverside County and Twentynine Palms in San Bernardino County.

Most of the land that would be affected by the proposed Project is administered by the BLM, which contributes to the social and economic characteristics of the area, primarily by providing recreation and mineral resources and energy development. Socioeconomic data were collected for jurisdictions in the vicinity of the proposed Project that could be affected and would contribute to the construction labor force. Demographic, economic, and environmental justice data are derived from the California Department of Finance (CADOF), the US Bureau of Economic Analysis (BEA), the BLM, Sunlight, and Riverside County. Public services and utility information was collected from planning documents or other published information from the jurisdictions in the study area and Sunlight.

Population and Housing

There are 26 incorporated areas within Riverside County, where the majority (about 78 percent of its population) resides. With a population of 2,107,653 as of January 2009, it ranks as the fourth most populous of California's 58 counties, after Los Angeles, San Diego, and Orange Counties. Table 3.13-1 shows the historic population data (for 1990 and 2000) and the most current population data for Riverside County and the state. As identified in Table 3.13-1, the population of Riverside County grew by more than twice the rate of the state between 1990 and 2000 and between 2000 and 2009. Between 1990 and 2000, Riverside County became home to an increasing percentage of the state's population. Also during this period, the population in incorporated areas was greater than in unincorporated areas, and most population growth occurred in incorporated areas (CADOF 1990, 2007a, and 2009b). The most current population counts for unincorporated areas in Riverside County are available from the US Census Bureau for the 2000 Census. As of 2000, Census Block data show that the population of Desert Center is 51, based on 16 census blocks analyzed; Eagle Mountain Village is 576, based on the 25 census blocks analyzed, and Lake Tamarisk Park is 215, based on the six census blocks analyzed. Since 2007, the dominant source of population increase has been from natural increase; whereas, in the previous years since 1999 in-migration dominated the population increase in Riverside County (CADOF 2009a).

As shown in Table 3.13-2, the population of Riverside County is forecast to grow by a greater percentage than the State throughout the planning period, increasing by almost 57 percent between 2010 and 2030 (CADOF 2007b).

In Riverside County, the vacancy rate in 2009 for single- and multiple-family housing units and mobile homes was approximately 13 percent, with vacancy in the unincorporated portion of the County at 15 percent. In the incorporated portion of the County, it was over 12 percent. Table 3.13-3 identifies the housing vacancy of the incorporated areas nearest to the study area. Indio had the highest vacancy rate of the nearby cities and the largest number of vacant units.

Table 3.13-1
Current and Historic Population

Location	1990	2000	Percent Change 1990–2000	2009	Percent Change 2000–2009
Riverside County (Number)	1,144,400	1,535,125	34.14	2,107,653	37.30
Riverside County (Percent of State Total)	3.87	4.55		5.50	
Incorporated	765,800	1,117,163	45.88	1,648,465	47.56
Blythe	13,271	20,465	29.14	21,346	4.30
Coachella	17,139	22,724	32.58	41,043	80.61
Indio	37,691	49,116	30.31	82,325	67.61
Unincorporated	378,600	417,962	10.40	459,188	9.86
California	29,558,000	33,721,583	14.09	38,292,687	13.56

Source: CADOF 1990, 2007a, 2009a, and 2009b

Table 3.13-2
Population Projections

Year/Location	Population	Percent Change
2010		
Riverside County	2,239,053	
California	39,135,676	
2020		
Riverside County	2,904,848	29.74
California	44,135,923	12.78
2030		
Riverside County	3,507,498	20.75
California	49,240,891	11.57
2010 to 2030 Change		
Riverside County	1,268,445	56.65
California	10,105,215	25.82

Source: CADOF 2007b.

Table 3.13-3
2009 Housing Characteristics

Location	Total Housing Units	Percent Vacant	Number Vacant
Riverside County	780,112	13.14	102,507
Incorporated	609,938	12.57	76,669
Blythe	5,468	16.11	881
Coachella	8,873	4.38	389
Indio	27,899	17.97	5,013
Unincorporated	170,174	15.19	25,849
Twenty-nine Palms, San Bernardino County	9,195	13.53	1,244

Source: CADOF 2009c

Although research shows that construction workers would commute as much as two hours each direction from their communities rather than relocate (BLM and CEC 2009), and Sunlight has indicated that, to the extent possible, the labor force for the proposed project would be derived from Riverside County (much of which is within this two-hour commute window), some employees may choose temporary lodging facilities closer to the project site in nearby municipalities. The Atlas Hospitality Group tracked the number of hotels and rooms available in Riverside County in 2008, which totaled approximately 22,508 rooms and 242 properties, as of December 2008 (Pierceall 2009). Relative to the proposed Project area, the closest municipality to the east is Blythe, at approximately 48 miles, and to the west is Indio, at approximately 49 miles, where there are about 35 lodging facilities offering an average of roughly 55 rooms per facility. Although availability and lodging cost is subject to change based on season and demand, room rates range between $40 and $120. Municipalities to the north and south, such as Twentynine Palms and Brawley, would be less likely to provide lodging that would be appropriate in terms of proximity or cost.

Employment and Income

During construction, the Project construction workforce is expected to average approximately 405, with a peak of 532 total on-site workers. The workforce for the Gen-Tie Line is expected to average 25 employees over the 20-month Gen-Tie construction period, with a peak of approximately 60 employees; and the workforce for the on-site substation is expected to average 10 people, with a peak of 30 employees. The total Project workforce is expected to peak at 630 employees, approximately 0.78 percent of the total number of construction employees identified in Table 3.16-4. As previously stated, Sunlight has indicated that the construction workforce would be recruited from within Riverside County and elsewhere in the surrounding area, as available (First Solar 2010) and, based on research (BLM and CEC 2009), would not be expected to relocate from Riverside County and closer to the project site. Table 3.13-4 provides the most current data available on employment sectors in Riverside County. As shown in Table 3.13-3, most industry sectors in Riverside County provided similar levels of employment to those of the state, except for construction, which was one of the largest employment sectors in Riverside County, with almost five percent more of the population employed than at the state level. Government was the largest employer in Riverside County, with local government providing the majority of the employment in this sector.

The historic trend between 1990 and 2000 shows that the labor force in Riverside County increased by about 27 percent, and the unemployment rate decreased from 7.2 percent to 5.4 percent. Between 2000 and 2007 the labor force increased by another 34 percent, but unemployment also increased to 6.0 percent. By 2008 unemployment had reached an annual average of 8.6 percent, with a total of 78,967 unemployed out of a labor force of 918,845 (BLS 2009a). In April 2009 and 2010 the percentage of unemployment in California, at 11.0 percent and 12.6 percent, was lower than for Riverside County at 12.2 percent and 14.3 percent, for these years (BLS 2010a and 2010c).

Between 1980 and 2007, per capita personal income in Riverside County remained below the State average, with a gap that has widened in almost every year. The widest gap between the County and State averages was in 2007 at $12,245. In 2007, per capita personal income in Riverside County was $29,560; while, the State average was $41,805. High average per capita incomes in San Francisco, San Mateo, Santa Clara, Contra Costa, Napa, and Orange Counties helped to boost the overall State average (BEA 2009b).

Table 3.13-4
2008 Employment by Industry

NAICS Industry	Riverside County Employment (Number)	Riverside County Employment (Percent of Total County Employment)	California Employment (Percent of Total State Employment)
Total employment	864,108		
Farm employment	8,121	0.94	1.06
Nonfarm employment	855,987	99.06	98.94
Private employment	724,411	83.83	85.86
Forestry, fishing, and related activities	7,573	0.88	1.02
Mining	1,527	0.18	0.24
Utilities	1,928	0.22	0.29
Construction	79,752	9.23	5.49
Manufacturing	53,842	6.23	7.24
Wholesale and Retail trade	133,269	15.43	13.69
Transportation and warehousing	28,621	3.31	3.00
Finance, insurance, and information	41,056	4.76	7.27
Real estate and rental and leasing	46,674	5.40	5.48
Professional, scientific, and technical services	45,538	5.27	8.61
Management of companies and enterprises	3,811	0.44	1.02
Administrative and waste services	57,975	6.71	6.36
Educational services	10,129	1.17	2.00
Health care and social assistance	71,326	8.25	8.69
Arts, entertainment, and recreation	18,847	2.18	2.64
Accommodation and food services	68,681	7.95	6.85
Other services, except public administration	53,862	6.23	5.97
Government and government enterprises	131,576	15.23	13.08
Federal, civilian	6,729	0.78	1.18
Military	3,514	0.41	1.06
State and local	121,333	14.04	10.84
State government	13,296	1.54	2.36
Local government	108,037	12.50	8.48

Source: BEA 2010.

Public Services and Utilities

The public services and utilities in Riverside County discussed in this section include schools, hospitals, fire response, police departments, electrical and natural gas service, water districts, and cable and telecommunications suppliers, since these are services that could be affected either by construction of the proposed Project or population growth if it were to result from the proposed Project.

There were 467 schools in Riverside County in the 2008 to 2009 fiscal year, with a total enrollment of 420,159 students and a pupil-to-teacher ratio of 22.2. These schools included 277 elementary schools with 197,328 students, 74 middle schools with 83,945 students, 55 high schools with 119,177 students, and 5 kindergarten-through-twelfth-grade schools with 4,093 students. The Desert Center Unified School District provides the nearest school closest to the project area: Eagle Mountain Elementary School, which had an enrollment of 14 students in 2008 to 2009 and is located along Kaiser Road in the project study area. Palo Verde Valley High School and Palo Verde College are about 40 miles southeast of the Project Study Area along I-10. Indio High School, La Quinta High School, *and* Page Middle School are about 45 miles southwest of the Project Study Area along I-10, and Twentynine Palms High School in San Bernardino County, north of Joshua Tree National Park *is the nearest school to the north* (Education Data Partnership 2010).

Thirty-one hospitals are located in Riverside County. Closest to the Project Study Area are Palo Verde Hospital in Blythe, John F. Kennedy Memorial Hospital in Indio, Eisenhower Medical Center in Rancho Mirage, and Desert Regional Medical Center in Palm Springs, High Desert Medical Center in Joshua Tree (San Bernardino County), and Angel View Children's Hospital in Desert Hot Springs (California Gazetteer 2010).

All fire stations in Riverside County are dispatched by the California Department of Forestry and Fire Protection (CAL FIRE) Riverside Unit / Riverside County Fire Department Emergency Command Center and are part of the "Integrated Fire Protection System," under contract with the State. Ninety-nine fire stations or dispatch centers are within Riverside County, of which 84 have paramedic firefighters, seven are fire stations only, five are volunteer fire companies only, and three are municipal fire departments that contract with Riverside County for dispatch services. Closest to the Project Study Area are the Lake Tamarisk Fire Station in Desert Center (with one County paramedic assessment engine), Blythe Air Base in Blythe (with one County paramedic assessment engine), Riverbend Volunteer Fire Department in Blythe, La Quinta South Fire Station in La Quinta (with one City paramedic assessment engine and one County brush engine), Coachella Fire Station (with one City paramedic assessment engine), Sun City Shadow Hills Station in Indio (with one City paramedic assessment engine), and Indio, North Indio, and West Indio Fire Stations in Indio (Riverside County Fire Department 2010).

The Riverside County Sheriff's Department provides police services in unincorporated Riverside County and provides contract services to individual municipalities in Riverside County. The Colorado River Station in Blythe provides service to the unincorporated area from Red Cloud Road on the west, to the Arizona state line on the east, and the Imperial County line on the south to the San Bernardino County line on the north. Communities included in this area are Desert Center, Eagle Mountain, East Blythe, Hayfield, Midland, Nicholls Warm Springs, Ripley and the Colorado River (Riverside County Sheriff's Department 2010). Similarly, the Project area falls within the Border Division of the California Highway Patrol. This division has twelve area offices: Blythe, San Juan Capistrano, El Cajon, Imperial, Indio, Oceanside, San Diego (division office), Beaumont, Santa Ana, Temecula, Westminster, and Felicity. Additionally, the Border Division of the Highway Patrol contains four residential posts, five commercial inspection facilities, two transportation management centers, 900 uniformed officers, and 380 nonuniformed personnel (California Highway Patrol 2010).

SCE provides electric power service to the Project Study Area. An existing SCE 161-kV transmission line crosses Eagle Mountain Road, Kaiser Road, and Desert Center Rice Road from the northwest to the southeast from about one mile north of the Eagle Mountain Substation toward Blythe, and the SCE Devers Palo Verde transmission line is along I-10 on the south side of the highway. MWD owns the Eagle Mountain Substation along Powerline Road, as well as the 230-kV transmission line and 33-kV distribution line along Powerline Road. The Colorado River Aqueduct, also owned by MWD, bends around the northern end of the Project Study Area and then runs from north to south next to the western boundary of the Project; the aqueduct is underground at this location (First Solar 2010).

Additional public utilities in the study area are provided by the following:

- Water: MWD;
- Natural Gas: Southern California Gas Company;
- Waste Management: Riverside County Waste Management Department; and
- Telecommunications: Sprint Communications, AT&T Communications, and AT&T California.

Environmental Justice

Several steps have been undertaken in order to comply with Executive Order 12898, protecting low income and minority populations from disproportionate impacts from the proposed Project, including public outreach and a screening analysis of potential environmental justice populations in the vicinity of the proposed Project. The public has been provided access to project documentation and been included in the EIS process through various forms of outreach. Public outreach to the communities and residents that potentially could be affected by the proposed Project and alternatives, including low-income and minority populations, is discussed in Section 5.3 (Public Participation Summary) and includes public scoping. In addition, the BLM has engaged in official government-to-government consultation with all Native American tribes that could be affected by the proposed Project, transmission tie-in lines, and substation alternatives.

The intention of an environmental justice screening analysis is to determine whether a low-income and/or minority population exists within the potential affected area of a proposed Project. As defined by the "Final Guidance for Incorporating Environmental Justice Concerns" contained in the Guidance Document of the US EPA's NEPA Compliance Analysis (EPA 1998), minority and low-income populations are identified where either:

- The minority or low-income population of the affected area is greater than 50 percent of the affected area's general population; or
- The minority or low-income population percentage of the affected area is meaningfully greater (50 percent or greater per EPA Guidance Document) than the minority or low-income population percentage in the general population of the jurisdiction or other appropriate unit of geographic analysis (i.e., County, State, or Native American Reservation) where the affected area is located.

The screening analysis presented in this section investigates the distributional patterns of minority populations and low-income populations on a regional basis and characterizes the distribution of such populations adjacent to the proposed and alternative segments. The impacts analysis in Chapter 4 focuses on these existing environmental conditions and the effects relative to these populations to determine how project impacts could affect these populations, focusing on possible disproportionate effects and potential exacerbation of existing conditions.

In 1997, the President's Council on Environmental Quality issued Environmental Justice Guidance that defines minority and low-income populations as follows:

- "Minorities" are individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black not of Hispanic origin; or Hispanic (without double-counting non-white Hispanics falling into the Black / African-American, Asian / Pacific Islander, and Native American categories)
- "Low-income populations" are identified as populations with mean annual incomes below the annual statistical poverty level.

Census Block Group data concerning poverty levels and the racial and ethnic population distribution provide the finest scale of screening data that is widely available; however, the most recent information dates back to 2000. Therefore additional, more recent, county-level data is provided to supplement this information and identify the direction of changes to the income, racial, and ethnic composition of the study area. Census Block Group data, Census Tract data, county data, and state averages are compared to determine whether the local ethnic and poverty distribution differs from the California average. The study area lies entirely within one Census Tract (458) in Riverside County, and all of the built components and adjacent communities lie within Block Groups 3, 5, and 6 of this Census Tract.

If these three Census Block Groups have a combined population of 50 percent or greater for either minority or low-income population groups, it is identified for a more detailed analysis of whether the proposed Project would produce physical or socioeconomic effects that could adversely impact the identified groups. If the Project Census Groups' minority and low-income populations are 50 percent or less for any of these categories, no further environmental justice analysis was performed on the jurisdiction.

Table 3.13-5 shows that for Census Block Groups 3, 5, and 6, in which all elements of the proposed Project are situated had a higher percentage of Black or African American, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, Some Other Race, and Hispanic minority populations than the county average or state average in 2000. The Asian portion of the population for Census Block Groups 3, 5, and 6 and in the Census Tract was 2.23 percent lower and 2.26 percent lower than the average for Riverside County, respectively, and 9.46 percent lower than the average for California. Data from 2007 indicate that the overall percentage of minorities increased for both Riverside County and the state, and of the minorities to proportion of Hispanic and Asian minorities increased. Overall, in 2000 the minority population for Census Block Groups 3, 5, and 6 was 71.15 percent and for Census Tract 458 was 70 percent, while that of the county and state were 46.63 percent and 50.43 percent. A more detailed analysis of potential impacts on minorities is provided in Chapter 4.

The US Census Bureau uses a set of money income thresholds that vary by family size and composition to determine which families are living in poverty. If a family's total income is less than its threshold, then that family, and every individual in it, is considered to be living in poverty. The poverty thresholds do not vary geographically, but they are updated annually for inflation using the Consumer Price Index. For example, in 1999 the average estimated poverty threshold for an individual was an annual income of $8,501, and for 2008 it was $10,991 (US Census 2009a and 2009b). According to US Census 2000 estimates (Table 3.13-6), the percentage of the population below the poverty line of Census Tract 458 was greater than that of either Riverside County or the State in 1999; although, it was well below 50 percent of the population. However, the percentage of

Table 3.13-5
Population by Percentage Race / Ethnicity

Year	2000				2007	
Percent Race / Ethnicity	Block Group 3,5, and 6 for Census Tract 458	Census Tract 458	Riverside County	California	Riverside County	California
White	26.71	27.92	51.04	46.70	40.83	41.32
Black or African American (Not Hispanic)	21.39	20.68	5.98	6.44	5.19	6.18
American Indian and Alaska Native (Not Hispanic)	0.78	0.84	0.66	0.53	0.75	0.56
Asian (Not Hispanic)	1.34	1.31	3.57	10.77	5.87	12.06
Native Hawaiian and Other Pacific Islander (Not Hispanic)	0.35	0.34	0.21	0.31	0.22	0.36
Some other race (Not Hispanic)	1.26	1.21	0.16	0.21	NA	NA
Two or more races (Not Hispanic)	0.88	0.85	2.17	2.67	2.34	2.60
Hispanic of All Races	47.29	46.83	36.21	32.38	44.82	36.91
All Minorities	71.15	70.00	46.63	50.43	56.85	56.07

Source: US Census Bureau 2000a and 2000b, CADOF 2009d.

Table 3.13-6
Poverty Characteristics

	1999		2008	
Location	Poverty Line Income for Individuals	Percent Below Poverty Line	Poverty Line Income for Individuals	Percent Below Poverty Line
Census Tract 458	$8,501	21.4	NA	NA
Census Block Groups 3, 5, and 6	$8,501	4.3	$10,991	NA
Riverside County	$8,501	14.2	$10,991	12.6
California	$8,501	14.2	$10,991	13.3

Source: US Census Bureau 2000c, 2002, 2009b, and 2009c

the population below the poverty line in Census Blocks 3, 5, and 6 were below that of Riverside County and the state at 4.3 percent. In 1999, the median household income for Census Tract 458 was about 70 percent of the Riverside County average and 63 percent of the State average (US Census 2000c). In 2008, the percentage in poverty in Riverside County dropped below the State average; while, the median income for the County continued to be lower than the State average (US Census 2009c). Poverty data for Census Blocks 3, 5, and 6 for 2008 are not available.

3.14 SPECIAL DESIGNATIONS

3.14.1 Applicable Plans, Policies, and Regulations

Federal Regulations

Federal Land Policy Management Act of 1976

The designation of *Areas of Critical Environmental Concern* (ACECs) was authorized in Section 202 (c)(3) of FLPMA, and was designed to be used as a process for determining the special management required by certain environmental resources or hazards (BLM 1980). According to Section 103(a) of FLPMA, an ACEC is defined as the following:

> *An area within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.*

Prior to its designation, management prescriptions are developed for each proposed ACEC. These prescriptions are site-specific and include actions that the BLM has authority to carry out, as well as recommendations for actions that the BLM does not have direct authority to implement, such as cooperative agreements with other agencies and mineral withdrawals (BLM 1980).

Wilderness Act of 1964

Wilderness Areas (WA) are designated by Congress, under the authority of the Wilderness Act of 1964 as part of the National Wilderness Preservation System, and are managed by one of the following four land management agencies: the BLM, the US Fish and Wildlife Service (USFWS), the US Department of Agriculture (USDA), the Forest Service, or the National Park Service.

According to the Wilderness Act, wilderness is defined as the following:

> (c) A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value. (Public Law 88-577, Section 2[c])

A number of uses are specifically prohibited within WAs. Prohibited uses include commercial enterprises; permanent and temporary roads (with exceptions for administration and emergency purposes); use of motorized vehicles, equipment, motorboats, or mechanical transport; landing of aircraft; or the erection of a structure or installation (Public Law 88-577, Section 4[c]).

California Desert Protection Act of 1994

The CDPA designated 69 WAs on BLM-managed public lands in the California Desert. The CDPA states that “wilderness is a distinguishing characteristic of the public lands in the California desert.” and “The wilderness values of desert lands are increasingly threatened by . . . development.” The CDPA further states that there are no buffer zones designated along with wilderness areas: “The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area [Public Law 103-433, Section 103(d)].

BLM Policy and Plans

BLM Manual 8560, Management of Designated Wilderness Areas

This manual section identifies BLM’s role in administering WAs on public lands, provides policy guidance for BLM personnel, and sets the framework for wilderness management program development. It states the goals of wilderness management, as well as administrative functions and specific activities related to wilderness management.

California Desert Conservation Area Plan

The CDCA is a 25-million acre expanse of land in Southern California designated by Congress in 1976 through FLPMA. The BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, proximity to the population centers of Southern California, and the need for a comprehensive plan for managing the area. Congress stated that the CDCA Plan must be based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The proposed project falls within the CDCA. The primary active wildlife management tools used in the CDCA Plan are ACECs. Refer to Sections 3.3 (Vegetation), 3.4 (Wildlife), and 3.9 (Lands and Realty) for a more detailed discussion of the CDCA Plan.

Northern and Eastern Colorado Desert Coordinated Management Plan

The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) was prepared under the regulations implementing the FLPMA. The NECO established regional standards for public land health and set forth guidelines for grazing management. The NECO plan also established two Desert Wildlife Management Areas (DWMAs) encompassing 1.75 million acres that are managed as ACECs for recovery of the desert tortoise. Southern Mojave and Sonoran Wildlife Habitat Management Areas (WHMAs) for bighorn sheep were established totaling over one million acres and 13 multi-species WHMAs totaling over a 500 million acres such that 80 percent of the distribution of all special status species and all natural community types are included in conservation areas. The NECO plan also combined herd management areas for wild burros and horses, designated routes of travel, identified principles for acquisition of private lands and disposal of public lands, provided access to resources for economic and social needs; and incorporated 23 wilderness areas established by the 1994 CDPA in the CDCA.

Local Regulations

County of Riverside General Plan, Desert Center Area Plan, 2003

This Plan describes a multi-purpose open space element for the unincorporated areas of Riverside County and Desert Center. It defines local open space policies that relate to wildlife habitat, particularly desert tortoise, and aims to preserve the desert environment. The three local open space policies defined for Desert Center within the Riverside County General Plan are:

- Encourage clustering of development for the preservation of contiguous open space;
- Work to limit OHV use within the Desert Center Area Plan; and
- Require new development to conform with Desert Tortoise Critical Habitat designation requirements.

A more specific discussion of the Riverside County General Plan is provided in Section 3.9, Lands and Realty.

3.14.2 Existing Conditions

The locations of all special designations near the Project are shown in Figure 2-1.

Areas of Critical Environmental Concern

There are *three* ACECs near the proposed Project area, the Alligator Rock ACEC, Desert Lily Preserve ACEC, *and Chuckwalla DWMA. The first two* ACECs were officially designated with the approval of the CDCA Plan in 1980. No Project activities are proposed within an ACEC, although Access Road 1 for Red Bluff Substation A is next to the Alligator Rock ACEC. *The Chuckwalla DWMA was designated as an ACEC through the Northern and Eastern Colorado Desert Coordinated Management Plan. The discussion for this special area is found in Wildlife-Section 3.4.6.*

Alligator Rock ACEC

Covering 7,726 acres, this ACEC was established to protect archaeological values. Activities represented at archaeological sites within the ACEC include milling of seeds and other food products, the manufacture of stone tools, storage of food and other items, temporary habitation, travel, trade, hunting, artistic endeavor, and possibly religious or ritual activity. The Alligator Rock ACEC was so designated not only because of the unusual array of archaeological sites present, but also because these sites are seriously endangered by current use of the area for a number of activities, particularly recreation. Two sites within the ACEC have been listed on the National Register of Historic Places (BLM 1986c).

Actions taken to protect the sensitive resources within this ACEC include designating road closures in certain areas to prevent vehicular damage to archaeological sites, and implementing physical protection measures, continued inventorying, and monitoring (BLM 1986c). Its boundary is located 550 feet west of Red Bluff Substation A, and Substation B shares a portion of its eastern boundary with the ACEC.

Desert Lily Preserve ACEC

This ACEC covers 2,031 acres and was established to protect botanical values, in particular, the desert lily (*Hesperocallis undulata*). This area is withdrawn from all forms of appropriation including mineral entry, and is bound on the western edge by a fence bordering Highway 177. It is located 2.6 miles southeast of the Solar Farm area. This ACEC has a parking area and is one of the few “attractions” near the Project. This site is also being used as a Key Observation Point (KOP) for the

Visual Resource Management analysis. Use of the ACEC is a few hundred visits a year, but includes car and RV camping, photography, and nature study.

Wilderness

The Chuckwalla Mountains Wilderness to the south and the Joshua Tree Wilderness to the west, north, and east are the Wilderness Areas closest to the proposed Project area. *Palen-McCoy Wilderness is farther away, approximately 10 miles to the east*. Project activities are not proposed within *any* Wilderness Area. In areas designated as a wilderness, use of motorized or mechanized vehicles or equipment is not permitted (except for authorized uses, but not by the public). These wilderness areas have no trails, facilities, or water and receive little recreation use. Though permitted, there is no record of hunting, fishing, or trapping in these areas. Short day hikes may occur, but backpacking or camping has not been observed or recorded. There are no trailheads, parking, or other access to the Joshua Tree Wilderness from the project site, or nearby. The Chuckwalla Wilderness is more accessible due to the Corn Springs Campground, which is surrounded by the wilderness.

Joshua Tree National Park Wilderness

The 594,502-acre Joshua Tree National Park Wilderness, which is administered by the National Park Service, is approximately 42 miles west of Blythe, California. Designated in 1976 by the Wilderness Act, the Joshua Tree Wilderness became part of Joshua Tree National Park in 1994 when the park (then a National Monument) was expanded and designated as a National Park by the California Desert Protection Act. This Wilderness Area is approximately 2.6 miles west, 3.6 miles north, and 1.6 miles east of the proposed Solar Farm site. It is at the southern end of the Coxcomb Mountains and contains arroyos, playas, bajadas, narrow ravines, and steep mountains. The steep terrain provides views to the south and west, which overlook the proposed Project. Some visitors are likely to access this area because of its proximity to Highway 177. In general, however, much of the park in this area is difficult to access because of the steep terrain and lack of trails.

This Wilderness Area is composed of two unique desert ecosystems. The Colorado Desert to the east is home to abundant creosote, the spidery ocotillo, and the jumping cholla cactus. The Mojave Desert covers the western area and is home to the wilderness namesake, the Joshua tree. Visitors to this wilderness seek desert experiences with opportunities for solitude and unconfined recreation. Area photography shows no trails or other established routes within this wilderness segment. (Visitor use and visitor preference data in the Wilderness Area are not available.) The area can be accessed three ways: (1) the west entrance is five miles south of the junction of State Highway 62 and Park Boulevard at Joshua Tree Village; (2) the north entrance is in the town of Twenty-Nine Palms; and 3) the south entrance is 20 miles east of Indio and approximately 27 miles west of Desert Center and can be approached from I-10.

Chuckwalla Mountains Wilderness

The Chuckwalla Mountains Wilderness is located approximately 40 miles west of Blythe, California, and covers 99,548 acres. This Wilderness Area is approximately six miles south of the Solar Farm site, 3,310 feet south of Red Bluff Substation A, and 2,890 feet south of Red Bluff Substation B. It was designated by the CDPA in 1994. It is composed of a variety of landforms, such as steep-walled canyons, inland valleys, large and small washes, isolated rock outcrops, and vast desert expanses. As a result, it provides habitat for a variety of plant and wildlife species, including bighorn sheep, burro deer, desert tortoise, ocotillo, and barrel and foxtail cactus. The area can be accessed by both the west and east from I-10.

Hunting, fishing, and non-commercial trapping are allowed under state and local laws. Pets and horses are permitted.

The Palen/McCoy Wilderness Area encompasses approximately 236,488 acres. Within it are the Granite, McCoy, Palen, Little Maria and Arica Mountains, which are five distinct mountain ranges separated by broad sloping bajadas. The diversity of vegetation and landforms is exceptional because this large area incorporates so many major geological features. The desert wash woodland found here provides food and cover for burro deer, coyote, bobcat, gray fox and mountain lion. Desert pavement, bajadas, interior valleys, canyons, dense ironwood forests, canyons and rugged peaks form a constantly changing landscape pattern. State Highway 62, near the Riverside County line provides access from the north, and I-10 via the Midland Road near Blythe provides access from the south. The area is accessible by four-wheel drive vehicles only. Mechanized or motorized vehicles are not permitted in a wilderness (CEC RSA, 2010). Wilderness users on the southern slopes would be within the viewshed of the proposed action (BLM 2010).

While the Joshua Tree National Park, Chuckwalla Mountains, and Palen-McCoy Wilderness Areas, are close to the proposed Project area, project activities are not proposed within these Wilderness Areas.

Lands with Wilderness Characteristics

All Public Lands within the CDD were analyzed and summarized in 1979 wilderness inventory decisions performed pursuant to the FLPMA. See *"California Desert Conservation Area - Wilderness Inventory –Final Descriptive– March 31, 1979"*. Public Land in the First Solar-Desert Sunlight (CACA 048649) project area is contained within CDCA Wilderness Inventory Units (WIU) #CDCA 332 and 333. The project area is also on Public Lands to the north and west that were too small to be identified as WIUs and so were not analyzed in the inventory.

WIU #CDCA 332 is bounded on the southeast by Highway 177, on the southwest by the Kaiser Mine Road and a power line, on the northwest by a transmission line and road associated with the Los Angeles Aqueduct and on the northeast by a road (which forms a portion of the boundary of Joshua Tree National Park). WIU #CDCA 333 is bounded on the east by Kaiser Mine Road, on the south by I-10, on the west by Eagle Mountain Road, and on the north by a transmission line and road associated with the Los Angeles Aqueduct. There is also Public Land north of WIUs 332 and 333 that were not in a WIU. They are bounded on the north by the Los Angeles Aqueduct, which is on non-federal lands. Roads fragment that area into at least three roadless areas. The acreage of two are approximately 4,000 and 600. The dominant feature of the WIUs and other lands is a southerly trending wash. Vegetation is sparse and primarily creosote. Most developments are on private lands. However, there are several rights of ways within the WIUs associated with the Los Angeles Aqueduct and the Kaiser Mine. The 1979 decision was that the imprints of man were substantially unnoticeable in WIU CDCA 332. It appears that the same decision was made for a portion of CDCA 333. However, neither WIU had outstanding opportunities for solitude or primitive and unconfined recreation and, therefore, it was determined that no wilderness characteristics are present in the area. As a result, no portions of these Public Lands were identified as a wilderness study area.

The Wilderness Inventory for the two WIUs was maintained pursuant to Section 201[a] of the FLPMA. Conditions existing in 2010 are essentially the same as in 1979. Several rights-of-ways have subsequently been issued, which may further degrade naturalness. In summary, no changes have occurred since 1979 that would warrant reversal of that 1979 decision that wilderness characteristics were not present in the area. Therefore, wilderness characteristics will not be analyzed further in this EIS.

3.15 TRANSPORTATION, TRAFFIC AND PUBLIC ACCESS

This section describes the environmental and regulatory settings associated with the construction and operation of the proposed Project or its alternatives with respect to transportation and public access in the Project Study Area.

3.15.1 Applicable Plans, Policies, and Regulations

California Desert Conservation Area Plan of 1980, as amended

The California Desert Conservation Area (CDCA) Plan provides a framework for land management decision-making for the BLM-administered lands in the California Desert District (CDD). First, land is assigned to one of four BLM Multiple Use Classes. Then, specific land management decisions are made as needed based on the uses and usage level appropriate for each class (BLM 1980). The CDCA Plan addresses vehicle travel and access across public lands as follows:

"The need for access across public lands to permit utilization of State and privately owned lands and to permit authorized developments on public lands, including mining claims, is recognized. The routes of travel and construction standards are subject to such BLM control as is required to prevent unnecessary or undue degradation of the public lands and their resources or to afford environmental protection (BLM 1980)."

"To engage in most desert recreational activities outside of open areas, visitors must use motorized vehicles and usually travel on some previously used or marked motorized-vehicle route. Understandably, vehicle access is among the most important recreation issues in the Desert. A primary consideration of the recreation program, therefore, is to ensure that access routes necessary for recreation enjoyment are provided. Specific route identification, as outlined in the Motorized-Vehicle Access Element, will be initiated upon adoption of this Plan (BLM 1980)."

Northern and Eastern Colorado Desert Coordinated Management Plan (2002)

The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan) is one of six amendments to the CDCA Plan and is discussed in more detail in Chapter 2.

Federal Aviation Administration Regulations (14 CFR 77)

Title 14 CFR Section 77 contains standards for determining physical obstructions to navigable airspace. Form 7460-1, Notice of Proposed Construction or Alteration, must be filed with the Federal Aviation Administration (FAA) if an object to be constructed has the potential to affect navigable airspace according to these standards.

Federal Transportation Regulations (49 CFR, Subtitle B)

Title 49 CFR, Subtitle B, contains procedures and regulations pertaining to interstate and intrastate transport, including hazardous materials program procedures, and provides safety measures for motor carriers and motor vehicles that operate on public highways.

California Vehicle Code

The California Vehicle Code contains regulations applicable to roadway damage; licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

California Streets and Highways Code

The California Streets and Highways Code specifies that permits issued by the California Department of Transportation (Caltrans) be required for any roadway encroachment during truck transportation and delivery, as well as for any load that exceeds Caltrans's weight, length, or width standards for public roadways.

County of Riverside General Plan and Desert Center Area Plan

The policies of the Desert Center Area Plan (DCAP; Riverside County 2003) were developed for the Desert Center area in accordance with the vision and policies of the County of Riverside General Plan (Riverside County 2003). The DCAP contains specific policies related to the vehicular circulation system, airports, and scenic highways that are relevant to this Project.

County of Riverside Congestion Management Plan

Riverside County's Congestion Management Plan (CMP) specifies that all CMP roadways operate at a Level of Service of "E" or better. All state highways and principal arterials are CMP roadways. I-10 and SR-177 are the only CMP roadways in the Project area.

3.15.2 Existing Conditions

This section provides a discussion of the transportation system in the vicinity of the proposed Project. The section includes a discussion of roads, traffic, airports, railways, bicycle facilities, and public transportation.

Roads and Intersections

Roads in the Project vicinity are limited due to the remoteness and lack of development in the area. The primary roads in the vicinity of the proposed Project are shown in Figure 3.15-1, summarized in Table 3.15-1 and described below.

Table 3.15-1
Roads in the Project Area

Road	General Direction	Condition	Jurisdiction
I-10	East-west	Major road	Caltrans
SR-177	Northeast-southwest	Major road	Riverside County
Kaiser Road	North-south	Major road	Riverside County
Eagle Mountain Road	North-south	Minor Road	Riverside County
Power Line Road	Northeast-southwest	Maintained dirt	Riverside County
Phone Line Road	North-south/east-west	Maintained dirt	Riverside County
Kaiser Steel Road	East-west	Unmaintained dirt	Private
Aztec Avenue	East-west	Minor road	Riverside County
Airport Access Road	East-west	Maintained dirt	Private
Corn Springs Road	Northeast-southwest	Maintained dirt	BLM
Chuckwalla Valley Road	Northwest-southeast	Minor road	Riverside County

Source: First Solar 2009

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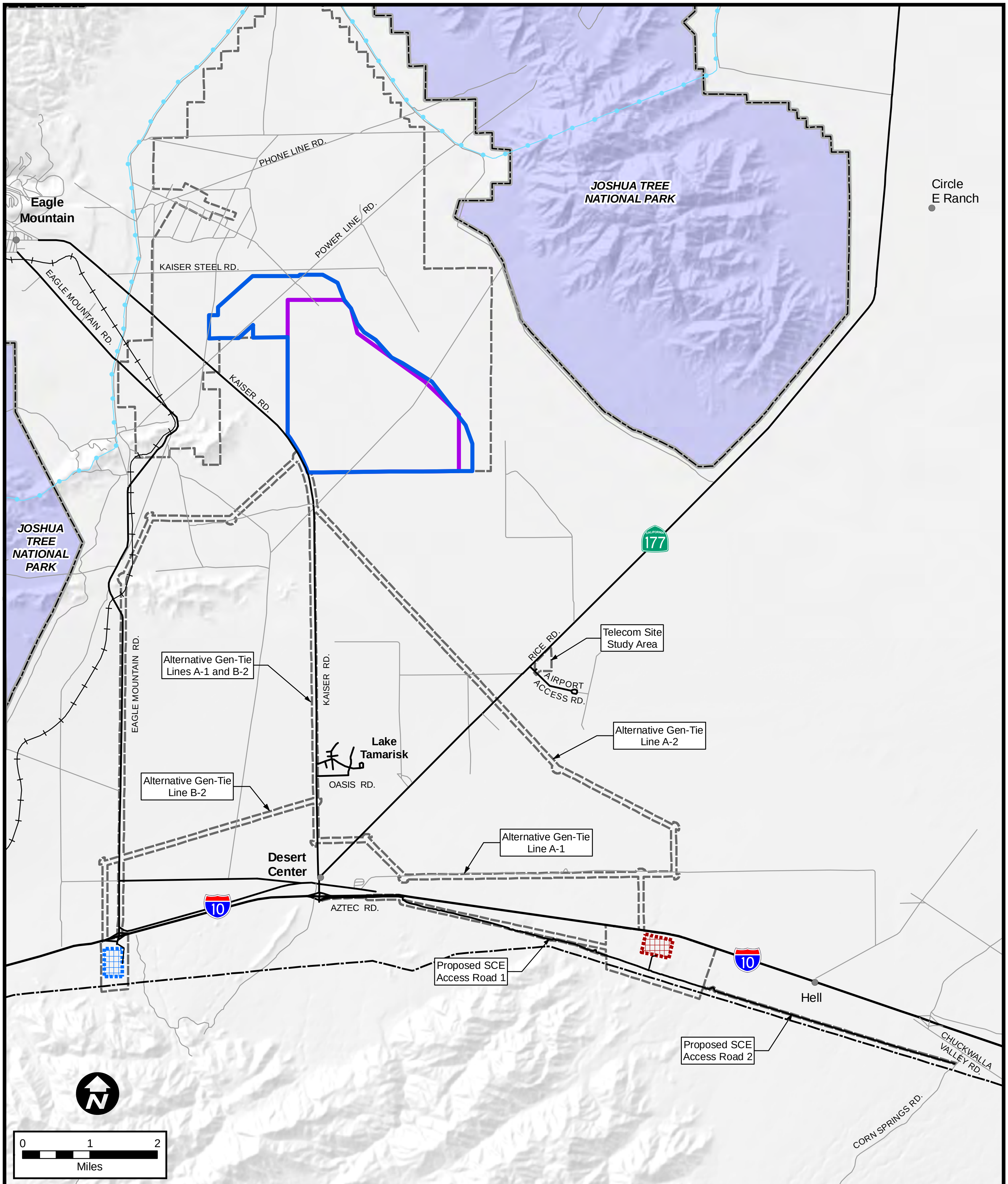


LEGEND

- Eagle Mountain Railroad
- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative A)
- Red Bluff Substation (Alternative B)
- Devers-Palo Verde Transmission Line (DPV1)
- Aqueduct

Source: Tele Atlas North Ameica, Inc., ESRI 2009.

DESERT SUNLIGHT SOLAR FARM

Figure 3.15-1

Existing Roads

Interstate 10 (I-10)

I-10 is an east-west interstate with a western terminus in Santa Monica, California, and an eastern terminus in Jacksonville, Florida. In the vicinity of the proposed Project it has two lanes of travel in each direction (HKA 2010).

State Route 177 (SR-177)

SR-177 is a predominantly north-south road that provides access from Kaiser Road to I-10. It is also known as Desert Center Rice Road, although it will be referred to as SR-177 in this EIS. In the vicinity of the proposed Project it is paved with centerline and edge of pavement markings, and has one lane of travel in each direction.

Kaiser Road

Kaiser Road would be the primary road to provide access to the proposed Project. It is paved, has one lane of travel in each direction and a centerline stripe. It is a predominantly north-south road with a southern terminus at SR-177 in Desert Center and a northern terminus at the Eagle Mountain Mine. The road is primarily traveled by local residents (HKA 2010).

Aztec Avenue

Aztec Avenue is an east-west road with a western terminus at SR-177 that runs along the southern frontage of I-10 from approximately one mile, where it intersects an unimproved pipeline patrol road. A 6,000-foot section of Aztec Avenue would provide access to the proposed Red Bluff Substation A for Alternative 1, along with approximately 20,000 feet of a pipeline patrol road. Aztec Avenue is paved, but the pipeline patrol road is not.

Airport Access Road

This road provides access to the former Desert Center Airport (now a private special-use airport) from SR-177.

Corn Springs Road

Corn Springs Road is an unpaved northeast-southwest road with a northern terminus at Chuckwalla Valley Road and a southern terminus in undeveloped BLM-administered land approximately five miles south of Desert Center. A 300-foot section of Corn Springs Road would provide access to the proposed Red Bluff Substation A for Alternative 3, along with approximately 24,000 feet of an unpaved pipeline patrol road.

Chuckwalla Valley Road

Chuckwalla Valley Road is a paved road accessed from I-10 approximately nine miles east of Desert Center. A 3,200-foot section of Chuckwalla Valley Road between I-10 and Corn Springs Road would provide access to the proposed Red Bluff Substation A for Alternative 3, along with approximately 24,000 feet of an unpaved pipeline patrol road.

Eagle Mountain Road

Eagle Mountain Road is primarily a north-south road with a southern terminus just south of I-10 and the Eagle Mountain exit and a northern terminus at the Eagle Mountain townsite. Eagle

Mountain Road would be extended 300 feet to the south of I-10 to become the primary road to provide access to the proposed Red Bluff Substation B. It is paved and has one lane of travel in each direction.

Power Line Road

Power Line Road is a maintained dirt road that runs northeast-southwest and connects with Kaiser Road. The road parallels Metropolitan Water District of Southern California (MWD) transmission and distribution lines. *Off-highway vehicles (*OHVs*)* are allowed on this road; OHVs are discussed in Section 3.12, Recreation.

Phone Line Road

Phone Line Road is a maintained dirt road that intersects Power Line Road near Eagle Mountain Road, runs north-south, and then turns northeast at the Eagle Mountain townsite. OHVs are allowed on this road; see Section 3.12, Recreation.

Kaiser Steel Road

Kaiser Steel Road is a private east-west unmaintained dirt road owned by Kaiser Ventures. The road parallels an existing Kaiser Ventures distribution line and is used to access two water wells east of the Solar Farm site. OHVs are allowed on this road west of the intersection with Power Line Road (see Section 3.12, Recreation). The road is closed east of the intersection with Power Line Road for ecological preservation (First Solar 2009).

Other Roads

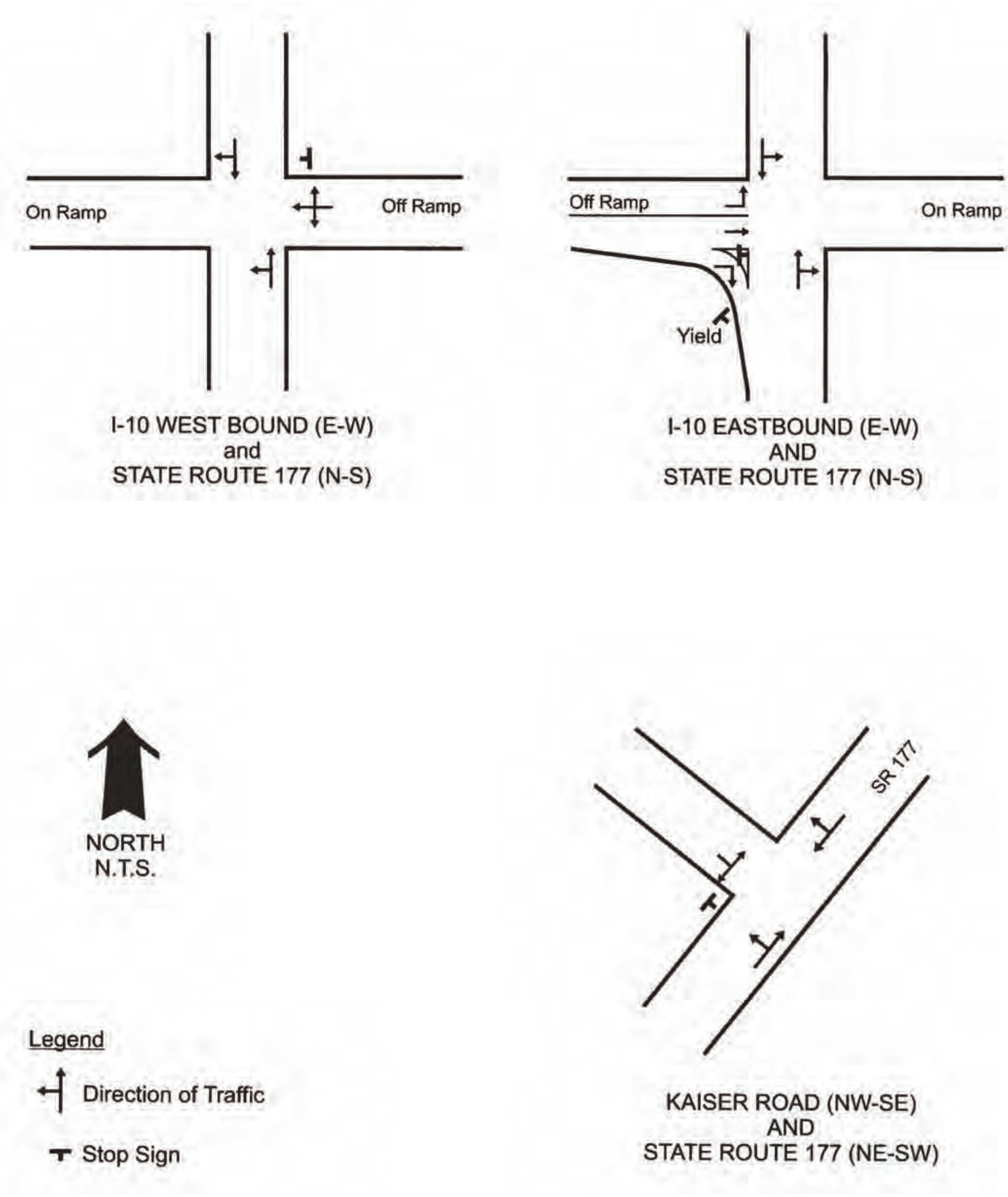
Several smaller unpaved and unmaintained local roads or routes have been documented in the project vicinity and are shown on Figure 3.15-1.

Intersections

The following intersections are the primary intersections that would be traversed by construction traffic associated with the proposed Project:

- SR-177 and the I-10 eastbound off-ramp;
- SR-177 and the I-10 westbound off-ramp; and
- SR-177 and Kaiser Road.

The geometry of the intersections is shown in Figure 3.15-2. Turning movements at these intersections are controlled by stop or yield signs, as appropriate. None of the intersections are signalized. Existing traffic at these intersections is shown in Figure 3.15-3, which shows the AM peak-hour traffic volume, and Figure 3.15-4, which shows the PM peak-hour traffic volumes (HKA 2010).



DESERT SUNLIGHT SOLAR FARM

Figure 3.15-2

Intersection Geometry

Source: Hernandez, Kroone & Associates, 2010.

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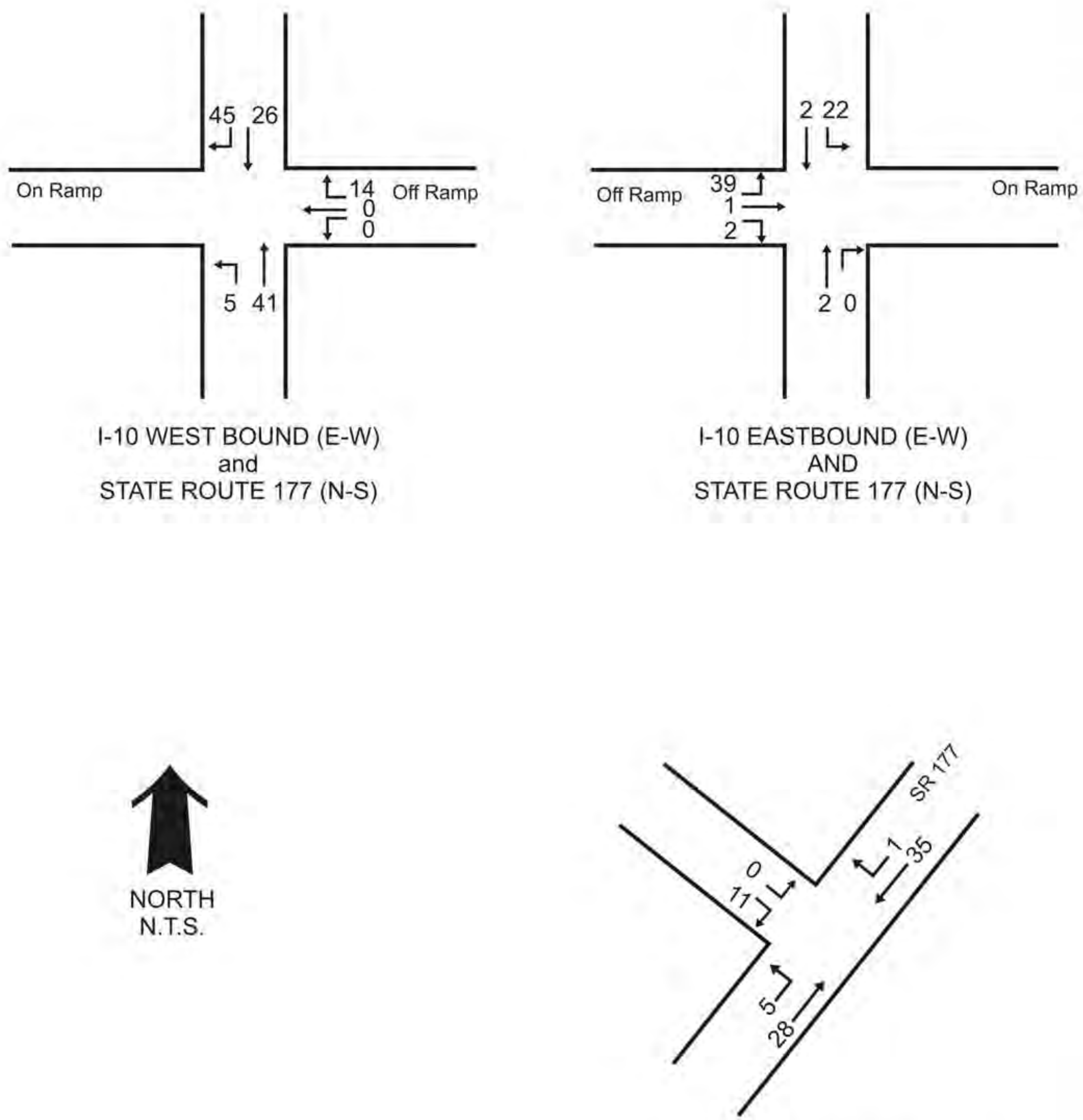


KAISER ROAD (NW-SE)
AND
STATE ROUTE 177 (NE-SW)

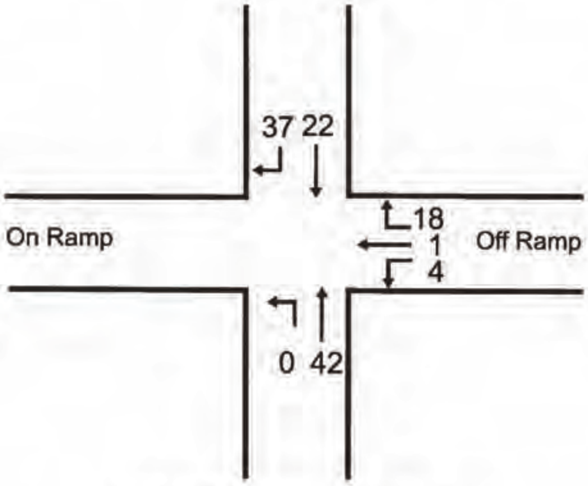
Note: The numbers shown are the number of vehicles that moved through the intersection as indicated (turning left, going straight, or turning right) during the AM Peak Period, which is 7:00 am to 9:00 am.

Source: Hernandez, Kroone & Associates, Inc. 2010.

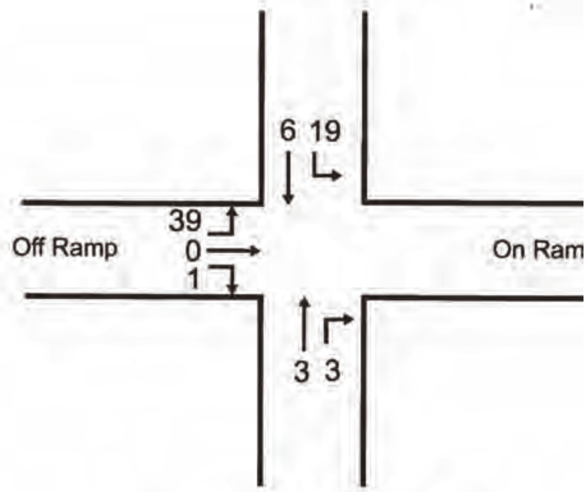
DESERT SUNLIGHT SOLAR FARM

Figure 3.15-3

Existing Intersection Traffic - AM Peak Period

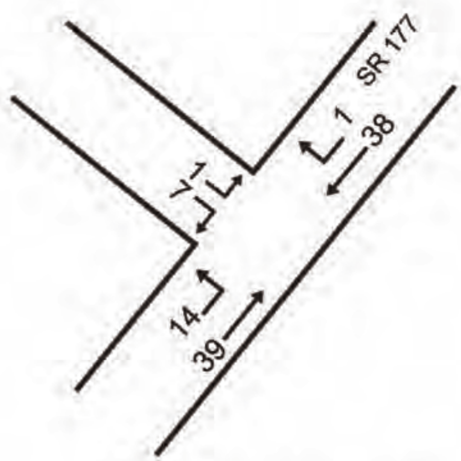


I-10 WEST BOUND (E-W)
and
STATE ROUTE 177 (N-S)



I-10 EASTBOUND (E-W)
AND
STATE ROUTE 177 (N-S)

NORTH
N.T.S.



KAISER ROAD (NW-SE)
AND
STATE ROUTE 177 (NE-SW)

Note: The numbers shown are the number of vehicles that moved through the intersection as indicated (turning left, going straight, or turning right) during the PM Peak Period, which is 4:00 pm to 6:00 pm.

Source: Hernandez, Kroone & Associates, Inc. 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 3.15-4

Existing Intersection Traffic - PM Peak Period

Photographs of some of the roads and intersections in the project vicinity are included as Figures 3.15-5 through 3.15-8.

Figure 3.15-5 Photograph at the Intersection of SR 177 and Kaiser Road Looking Southeast

Figure 3.15-6 Photograph of Kaiser Road One Mile North of SR 177 Looking North

Figure 3.15-7 Photograph of Kaiser Road at the Proposed Project Location Looking North

Figure 3.15-8 Photograph at the Intersection of SR 177 and the I-10 Eastbound Off-Ramp Looking Northwest

Existing Traffic Volumes

A traffic study was conducted by Hernandez, Kroone, and Associates (HKA). The study included traffic counts by Counts Unlimited, Inc., on February 17, 2010, at four locations:

- The intersection of SR-177 and I-10 eastbound;
- The intersection of SR-177 and I-10 westbound;
- The intersection of SR-177 and Kaiser Road; and
- Kaiser Road north of Lake Tamarisk Resort.

Intersection Traffic Volume

Vehicle turning movements were counted at the three intersections during the two-hour peak period in the morning (7:00 AM to 9:00 AM) and in the afternoon (4:00 PM to 6:00 PM). The relevant analysis period is the hour when the highest volume of traffic occurs. The total number of vehicles passing through each intersection during the AM and PM peak hours is presented in Table 3.15-2.

Table 3.15-2
Peak Hour Traffic Counts

Intersection	Total Vehicles during AM Peak Hour	Total Vehicles during PM Peak Hour
SR-177 and I-10 Eastbound	68	71
SR-177 and I-10 Westbound	131	124
SR-177 and Kaiser Road	80	100

Source: HKA 2010

Roadway Segment Traffic Volume

Total traffic was counted and classified by vehicle type over a 24-hour period on Kaiser Road north of Lake Tamarisk Resort. A total of 108 vehicles were counted, 101 of which were cars, trailers or other two-axle vehicles and seven of which had three or more axles (HKA 2010).

Traffic count data for I-10 and SR-177 were obtained from Caltrans. The average daily traffic (ADT) volume on I-10 near the SR-177 interchange is between 21,400 and 23,000 vehicles, with between 2,800 and 3,000 vehicles during the peak hour (Caltrans 2009). The ADT volume on SR-177 near the I-10 interchange is about 3,700 vehicles, with about 490 vehicles during the peak hour (Caltrans 2009).

Existing Level of Service

The perceived operating level of an intersection or roadway segment can be described using the term “Level of Service” (LOS). LOS is generally described in terms of travel time and speed, freedom to maneuver, traffic interruptions, comfort, and convenience. The LOS applies quantifiable traffic measurements, such as intersection delays, to provide a qualitative assessment of motorists’ perception of and satisfaction with traffic conditions. LOS is designated by the letters “A” through “F” with “A” for most favorable and “F” for least favorable, with each letter representing a range of conditions. For unsignalized intersections, LOS is reported for the vehicle movement controlled by a stop or yield sign (i.e., LOS is not reported for the intersection as a whole, or for vehicles that do not have to stop). LOS definitions for unsignalized intersections are provided in Table 3.15-3.

Table 3.15-3
Definition of Level of Service for Unsignalized Intersections

LOS	Qualitative Delay	Quantitative Delay (seconds/vehicle)
A	Little or no delay	≤ 10
B	Short traffic delays	> 10 and ≤ 15
C	Average traffic delays	> 15 and ≤ 25
D	Long traffic delays	> 25 and ≤ 35
E	Very long traffic delays	> 35 and ≤ 50
F	Extreme delays potentially affecting other traffic movements in the intersection	> 50

Source: Transportation Research Board 2000

The LOS of the intersections analyzed in the traffic study and the delay in seconds upon which the LOS calculation is based are presented in Table 3.15-4.

Table 3.15-4
Existing Level of Service and Delay at Project Intersections

Intersection	LOS during AM Peak Hour	Delay during AM Peak Hour (seconds)	LOS during PM Peak Hour	Delay during PM Peak Hour (seconds)
SR-177 and I-10 Eastbound	A	9.0	A	8.9
SR-177 and I-10 Westbound	A	8.6	A	8.7
SR-177 and Kaiser Road	A	8.5	A	8.6

Source: HKA 2010

The DCAP includes the following policy regarding LOS:

> "DCAP 6.2 Maintain the County's roadway Level of Service standards as described in the Level of Service section of the General Plan Circulation Element" (Riverside County 2003).

LOS "C" or better is the County standard according to the Riverside County General Plan Circulation Element. LOS "D" or "E" may be acceptable on some types of roads when special circumstances exist (Riverside County 2003).

Airports and Airspace

There are no airports within the Project Study Area. A landing strip owned by Kaiser Industries and associated with Eagle Mountain is approximately 0.5 mile west of the Solar Farm area (Eagle Crest Energy Company 2008). It was not listed in a database of airports in the US and is assumed to see little, if any, traffic (AirNav 2010).

The Desert Center Airport (FAA Identifier L64) was previously located approximately five miles northeast of Desert Center, California, south of SR-177. It was a public general aviation airport that saw little traffic. In 2004, approximately 150 aircraft operations (take-offs and landings) took place at the airport.

Recently, Riverside County sold the airport to a private firm, Chuckwalla Valley Associates, LLC. The 4,200-foot airport runway continues to operate as a private special-use airport (and includes a racetrack). The 4,200-foot runway is surrounded by an influence area that extends approximately 1,750 feet from the runway in all directions (County of Riverside Planning Department Staff Report 2009).

The DCAP includes the following policy, which may require amendment due to the recent conversion of the airport from a public airport to a private special-use airport:

> "DCAP 3.1 To provide for the orderly development of Desert Center Airport and the surrounding area, comply with the Airport Land Use Compatibility Plan for Desert Center Airport as fully set forth in Appendix L and as summarized in Table 4, as well as any applicable policies related to airports in the Land Use, Circulation, Safety and Noise Elements of the Riverside County General Plan" (Riverside County 2003).

The private-use airport zone of influence area and Eagle Mountain landing strip are shown on Figure 3.9-3 in the Lands and Realty section.

The nearest public airport is the Chiriaco Summit Airport, which is approximately 18 miles west of the Project area, along I-10.

The Project would overlap several low-level military flight paths (State of California 2000). All of the Project components for Alternatives 1, 2, and 3 would overlap a Department of Defense area where consultation with the military is required to ensure that construction does not interfere with low-level flight operations (BLM and USFS 2010).

Railways

There are no railways within the Project Study Area. The nearest railway is the Eagle Mountain railroad, which runs north from I-10 to Eagle Mountain as shown in Figure 3.15-1. The railroad will likely be used in the future to transport nonhazardous solid waste to the *proposed* Eagle Mountain Landfill (Riverside County 2003).

Bicycle Routes

There are no bicycle routes or facilities such as designated bicycle lanes on the roads discussed in this section (Riverside County 2003). No bicycles were observed during the traffic counts on February 17, 2010 (HKA 2010); however, it is likely that cyclists use area roads infrequently.

Public Transportation

Greyhound Bus service and potentially other commercial bus lines provide public transportation eastbound and westbound on I-10. There is no public transportation in Desert Center, on SR-177, or on Kaiser Road (HKA 2010; Riverside County 2003).

Public Access

Public access refers to the legal rights of citizens to access public land for certain purposes without barriers or impediments. The affected environment related to public access includes recreational use of land by the public as well as other legal guarantees or limitations on access such as deeds, right-of-way, easements, leases, licenses, and permits.

The majority of the Project Study Area is remote, vacant, and undeveloped with few apparent uses by the public. A review of 2010 aerial photographs revealed no obvious evidence of public use or land development within the Project Study Area other than a small number of roads and transmission lines (Google Earth 2010). The roads in the Project Study Area have been previously discussed in this section and are shown on Figure 3.15-1. The transmission and distribution lines are discussed in Section 3.9 (Lands and Realty) and shown on Figure 3.9-5.

3.16 VISUAL RESOURCES

Visual resources refer to the natural and man-made, moving and stationary physical features that compose the character of the landscape as visually observed from a given location. The physical features (e.g., landforms, water bodies, animals, vegetation, and structures) that are visible on a landscape contribute to the scenery, visual quality, and visual appeal of the landscape.

The region of influence (ROI) (or geographic extent that is being evaluated) for visual resources is defined as the viewshed, an area seen from a particular location to the visible horizon. Delineation of the viewshed from the proposed Project location must extend from the top elevation of all of the proposed facilities rising at the Project location, expanded to 5.5 feet above the ground of the visible horizon. Mountains surrounding the proposed Project site limit the viewshed to generally less than 15 miles from the proposed Project to mountain ridgelines. Consequently, the ROI is mostly bounded by ridgelines (of the Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains), except on the southeast and a small area on the southwest. A description of the visual resources in the ROI follows the discussion of applicable plans, policies, and regulations below.

A scenic vista is a distant view of a broad area that is visually or aesthetically pleasing, typically because of the mostly undeveloped landscape being viewed. Although there are no designated scenic vistas, general scenic vistas across the landscape are still available. Most scenic vistas involving the Project site are from viewpoints along I-10, along SR-177, and in Desert Center and Lake Tamarisk.

The visual character and quality of a site and its surroundings are the combination of visual resources in a specific area that contribute to the overall local setting. The areal extent of scenic vistas is greater than that of the local setting, which includes only the readily visible surrounding area. However, both are still composed of natural and man-made, moving and stationary physical features.

3.16.1 Applicable Plans, Policies, and Regulations

California Desert Conservation Area

Covering more than 25 million acres, the geologically diverse California Desert Conservation Area (CDCA) includes sand dunes, canyons, dry lakes, mountain ranges, and wilderness areas. The Project area is within the CDCA, which was established, in part, to protect the area's scenic resources that are located adjacent to a population center. The BLM manages approximately 12 million acres in the CDCA. The CDCA Plan did not include BLM Visual Resource Management (VRM) classes. However, a BLM-authorized visual resource inventory (VRI) was conducted in 2010 and includes the Project area. It is described below under Existing Conditions.

In the CDCA Plan, the location of the proposed Project includes land that is mostly classified as Multiple-Use Class (MUC) M (Moderate Use) and some classified as Multiple-Use Class L (Limited Use). The BLM's CDCA Plan defines the classes as follows:

- Class L (Limited Use)—These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values.

- Class M (Moderate Use)—These lands are managed in a controlled balance between higher-intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and the development of new utility facilities are allowed.

Federal Land Policy and Management Act

The Federal Land Policy and Management Act (FLPMA) mandates protection of scenic values. In order to meet its responsibility to maintain the scenic values of public lands, BLM developed a VRM system. BLM's VRM policy is set forth in Manual 8400-1 (BLM 1984), with guidance provided in handbooks H-8410-1 Visual Resource Inventory (BLM 1986a) and H-8431-1 Visual Resource Contrast Rating (BLM 1986b). Additional guidance is contained in BLM Washington Office Instruction Memorandum 2009-167, Application of the Visual Resource Management Program to Renewable Energy.

FLPMA requires coordination with local planning (Title II, Sec. 202 (b)(9)). Portions of projects on private land are subject to local planning.

Visual Resource Management System

The objective of the VRM system is to manage public lands in a manner that will protect the quality of the scenic values of these lands. The VRM system consists of three stages: VRI, designation of VRM classes during the land use planning or plan amendment process, and visual resource contrast rating.

Visual Resource Inventory

The inventory stage involves identifying the visual resources of an area and assigning them to inventory classes using the BLM's VRI process. The process involves rating the visual appeal of a tract of land, measuring public concern for scenic quality, and determining whether the tract of land is visible from travel routes or observation points. The process is described in detail in Handbook H-8410-1, Visual Resource Inventory.

Visual Resource Management Objectives

Visual resource management objectives are established in resource management plans (RMPs). Visual resource management decisions consider visual values established by the inventory along with land use allocations, desired outcomes, and future desired conditions. The management classes may differ from inventory classes, based on management priorities for land uses and compatibility with land use allocations. A description of the classes is provided in Table 3.16-1.

For the Project area, the VRM objectives have not been established. Interim visual management classes are established where a project is proposed and there are no RMP-approved VRM objectives. These classes are developed using the VRI process and must conform to the land use allocations set forth in the RMP covering the project area.

The interim objectives serve as the baseline for plan conformance, while the underlying VRI remains the baseline for determining actual physical impacts on the visual resources of the area.

Table 3.16-1
Bureau of Land Management Visual Resource Class Descriptions

Class	Description
I	Objective: Preserve landscape character. This class provides for natural ecological changes but does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
II	Objective: Retain existing landscape character. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract a casual observer's attention. Any changes must repeat the basic elements of line, form, color, and texture found in the predominant natural features of the characteristic landscape.
III	Objective: Partially retain existing landscape character. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate a casual observer's view. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
IV	Objective: Provide for management activities that require major modification of the landscape character. The level of change to the characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic landscape elements.

Source: BLM 1986a

Visual Contrast Rating

Proposed plans of development are evaluated for conformance to the VRM class objectives through the use of the visual resource contrast rating process set forth within BLM Handbook H-8431-1, Visual Resource Contrast Rating. Because this concerns the environmental consequences of the proposed project, this process is further described and applied in Section 4.16, Visual Resources.

Scenic Roadway Programs

After a review of applicable planning and management documents, no officially designated or eligible California Department of Transportation state scenic highways were identified in the ROI. Although there are no state-designated or state-eligible scenic highways, there is a county-eligible scenic highway in the ROI. I-10, a Riverside County-eligible scenic highway, runs past the Desert Center area, affording views of the contrasting desert and mountainous terrain (LSA Associates, Inc. 2000). The stark contrast between sparsely vegetated desert flat lands and rocky mountainous terrain is pronounced in the Desert Center area. The visual landscape seen from I-10 in the vicinity of Desert Center is described further below under Existing Conditions.

Riverside County General Plan

The Riverside County General Plan's Land Use (LU) Element contains the following policies involving visual resources that are applicable to the ROI (Riverside County 2003):

- LU 4.1 requires that new developments be located and designed to visually enhance, not degrade the character of the surrounding area. Consideration should be given to preserving natural features, such as unique natural terrain, drainage ways, and native vegetation, wherever possible, particularly where they provide continuity with more extensive regional systems.

- LU 13.1 preserves and protects outstanding scenic vistas and visual features for the enjoyment of the traveling public.
- LU 13.3 ensures that the design and appearance of new landscaping, structures, equipment, signs, or grading within designated and eligible state and county scenic highway corridors are compatible with the surrounding scenic setting or environment.
- LU 13.5 requires new or relocated electric or communication distribution lines, which would be visible from designated and eligible state and county scenic highways, to be placed underground.
- LU 13.8 seeks to avoid the blocking of public views by solid walls.
- LU 20.1 requires that structures be designed to maintain the environmental character in which they are located.
- LU 20.2 requires that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.
- LU 20.4 ensures that development does not adversely impact the open space and rural character of the surrounding area.

The Desert Center Area Plan (DCAP) contains the following policies involving visual resources that are applicable to the ROI (Riverside County 2003):

- DCAP 2.3 assures that the design of new land uses subject to discretionary review visually enhances, and does not degrade, the character of the Desert Center region.
- DCAP 5.1 requires that outdoor lighting use fixtures that minimize effects on the nighttime sky and wildlife habitat areas, except as necessary for security reasons.
- DCAP 9.1 protects the scenic highways within the DCAP from change that would diminish the aesthetic value of adjacent properties through adherence to the policies found in the Scenic Corridors sections of the General Plan Land Use, Multipurpose Open Space, and Circulation Elements.
- DCAP 9.2 supports the designation of I-10 as an eligible and, subsequently, official scenic highway, in accordance with the California State Scenic Highway Program.
- DCAP 10.1 encourages clustering of development for the preservation of contiguous open space.

3.16.2 Existing Conditions

Inventory

In 2010, the BLM conducted a VRI to characterize the visual resources on the lands it manages (Otak 2010). The VRI process provides BLM managers with a means for determining visual values. The inventory consists of a scenic quality evaluation, sensitivity level analysis, and delineation of distance zones. Based on these three factors, BLM-administered lands are placed into one of four VRI classes. These inventory classes represent the relative value of the visual resources.

Scenic quality is a measure of the visual appeal of a tract of land. In the VRI process, public lands are given an A, B, or C rating based on the apparent scenic quality, which is determined using seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. According to the VRI, the scenic quality of the Chuckwalla Valley is characterized by a vast, low, gently rolling valley bottom; some variety of vegetation (one or two major types); no water, subtle color variation and some color contrast in soil and vegetation; dramatic mountains surrounding the area; a fairly distinctive but not unusual environment; and some cultural modification but overall natural appearance. As a result, the area of the Project received a low B scenic quality rating because it received low scores for landform and water; low/medium scores for color and scarcity; medium scores for vegetation and cultural modifications; and a medium/high score for adjacent scenery.

Sensitivity levels are a measure of public concern for scenic quality. Public lands are assigned high, medium, or low sensitivity levels by analyzing the various indicators of public concern. Factors considered in a sensitivity level analysis include type of users, amount of use, public interest, adjacent land uses, special areas, and any other factors that include visual sensitivity issues. According to the VRI, the sensitivity level of the Chuckwalla Valley is characterized by modest recreational use, energy corridors, and private land development; high volumes of traffic on I-10 and low amounts of traffic on secondary and BLM roads; public interest and special sensitivity associated with the CDCA; being surrounded by special areas (a National Park and BLM wilderness); and the presence of development. As a result, the area of the Project received an overall medium sensitivity level rating because it received low scores for type of use and other factors; medium scores for amount of use, public interest, adjacent land uses, and special areas; and no high scores.

Landscapes are subdivided into three distance zones based on relative visibility from travel routes or observation points. The three zones are foreground-middleground, background, and seldom seen. The foreground-middleground zone includes areas seen from highways, rivers, or other viewing locations that are less than three to five miles away. Areas beyond the foreground-middleground zone, but usually less than 15 miles away, are in the background zone. Areas not seen as foreground-middleground or background (i.e., hidden from view) are in the seldom-seen zone. Distance zones are determined in the field by actually traveling along each route and observing the area that can be viewed. The Project area is in the foreground-middleground distance zone for most viewer groups, which are described below under Setting. However, for the limited recreational users in the surrounding wilderness areas, the Project area could be in the background to seldom-seen distance zones, depending on the exact location of the recreational users in the surrounding wilderness areas.

Based on the combination of the scenic quality, sensitivity levels, and distance zones, the Project area received VRI Class II and III designations. The scenic quality, sensitivity levels, and distance zones are further described below under Setting.

The VRI classes, along with the MUCs, are used to determine interim visual management class designations. Both Solar Farm alternatives, most of GT-A-1 and GT-A-2, and segments of GT-B-2 would be on land designated MUC M. Most of GT-B-2 and Red Bluff Substation A would be on land designated MUC L. Red Bluff Substation B would be on private land. A wide variety of uses such as mining, livestock grazing, recreation, energy, and the development of new utility facilities are allowed under MUC M. MUC L provides for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values. As a result, the BLM land north of I-10 is assigned an interim visual management Class III designation, and the BLM land south of I-10 is assigned an interim visual management Class II designation due to its connection to the Alligator Rock Area of Special Environmental Concern and proximity to BLM wilderness (Figure 3.16-1).

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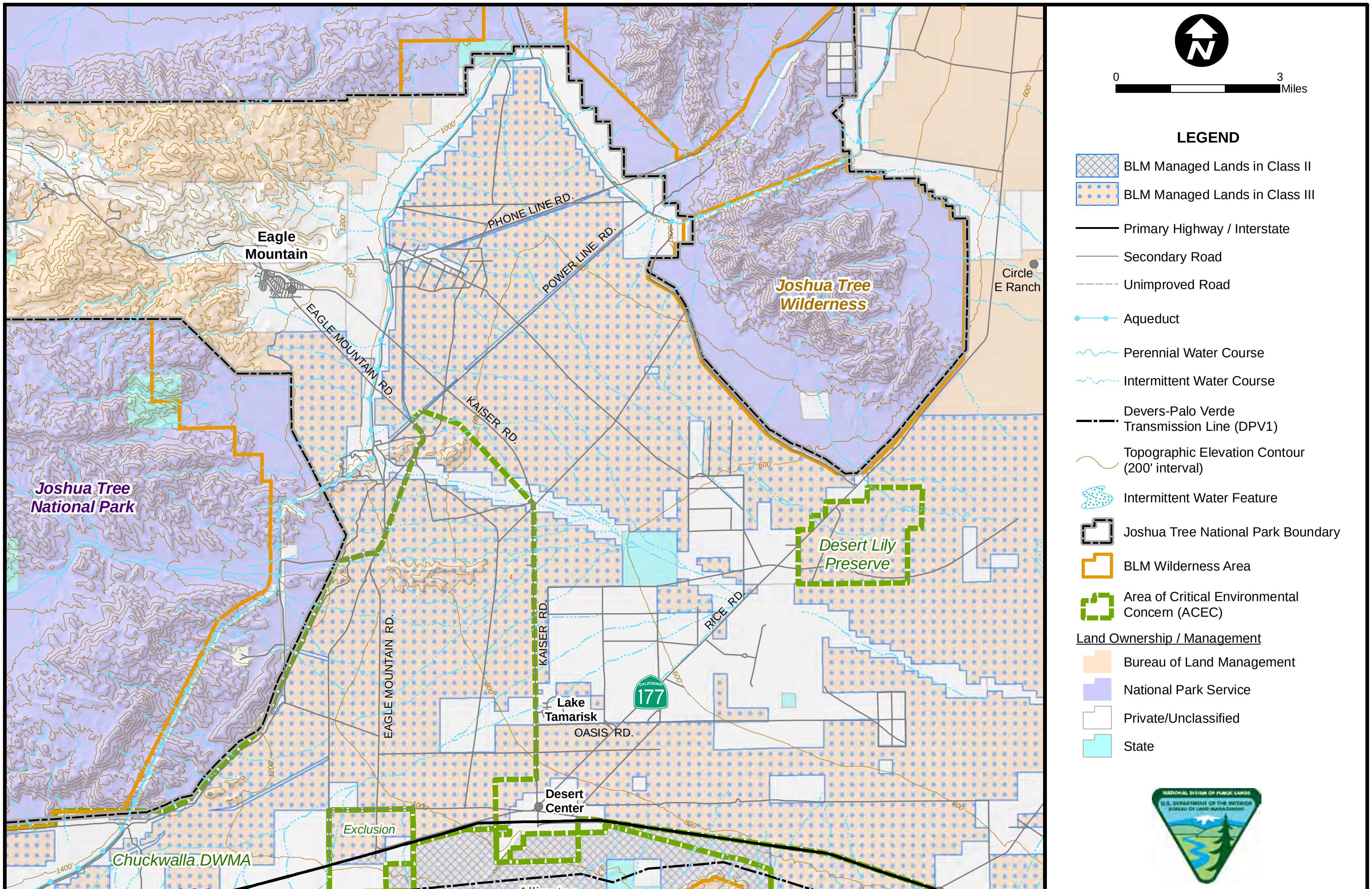

DESERT SUNLIGHT SOLAR FARM

Figure 3.16-1

Interim Visual Management Classes

The interim visual management classes are only for analysis of the proposed Project. The establishment of interim management classes will not require an RMP amendment, unless the project that is driving the evaluation requires one.

Setting

The Chuckwalla Valley is a broad, flat desert plain that includes scattered dry lakes and rolling sand dunes. It is bordered by a number of rugged mountain ranges. Mountains offer dramatic relief to the landscape and contain more diverse vegetation. The mountains can be more than 1,000 feet higher than the valley floor. The ROI is mostly bounded by ridgelines of the Eagle Mountains, Coxcomb Mountains, and Chuckwalla Mountains, except on the southeast and a small area on the southwest. The Joshua Tree Wilderness Area and Chuckwalla Mountains Wilderness Area are in these mountains.

Viewer groups of the ROI include dispersed recreational users in the surrounding mountains and the valley floor, nearby residents in Lake Tamarisk and dispersed private land, visitor-serving businesses in Desert Center, and roadway traffic on Kaiser Road, SR-177, and I-10. The majority of views of the proposed Project are from Lake Tamarisk and along I-10 on the valley floor. Views of the Project area from the valley floor are fairly horizontal due to the relatively flat valley floor. A higher angle of view of the Project area is available from the surrounding mountains and wilderness areas. Although limited by access and lack of trails or facilities, some hikers or other visitors may view the project site from the surrounding mountains. Use of the surrounding mountains by dispersed recreational users is very low. As a result, it is the views of the surrounding mountains from the valley, rather than the views from the surrounding mountains, that are more important.

The duration of views depends on the viewer group. Stationary viewer groups (such as those in nearby residences and visitor-serving businesses) and slow-moving viewer groups (such as certain dispersed recreational users) have more time to view the Project area. Fast-moving viewer groups (such as motorists in roadway traffic) have limited time to view the Project area. Due to the relatively undeveloped nature of the Project area, direct views of the Project area are primarily influenced by topography because there are few obstructions (such as walls, buildings, and vegetation) capable of blocking direct views of the Project area.

As discussed above under Scenic Roadway Programs, I-10 is a Riverside County-eligible scenic highway and runs past the Desert Center area, affording views of the contrasting desert and mountainous terrain. General panoramic vistas of high quality also exist from other roadways such as SR-177 and Kaiser Road. As discussed in Section 3.15, traffic volumes are light on SR-177 and on Kaiser Road in the ROI. Slightly over 100 vehicles were counted in a 24-hour period on Kaiser Road north of Lake Tamarisk.

Peak hour volume on I-10 near the intersection with SR-177 is between 2,800 and 3,000 vehicles. Approximately 26,500 vehicles use I-10 daily.

The photograph in Figure 3.16-2 was taken from SR-177 next to the Desert Lily Sanctuary and is characteristic of the visual resources found within the Project area. The broad valley has flat to gentle slopes and is very gently rolling. The landscape is horizontal with vast open space. The terrain has light brown to buff-colored soils and rock. The valley floor is smooth. Vegetation is rounded,

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This westward-facing photograph was taken from State Route 177 near Desert Lily Sanctuary and is characteristic of the visual resources found within the region of influence.

DESERT SUNLIGHT SOLAR FARM

Figure 3.16-2

Typical View of Visual Resources in Region of Influence

clumpy, and mottled in form and follows the line of the terrain. Vegetation colors are tan, brown, green, and dark green. The texture of the vegetation is moderately coarse, consisting of grasses, creosote bushes, and isolated clusters of palm trees. The primary source of permanent water is the Colorado River aqueduct.

Clusters of buildings and structures are found along I-10, at Desert Center, at Lake Tamarisk, and at the landing field southwest of the Desert Lily Sanctuary. The former Kaiser iron ore mining facility, which also has clusters of mostly vacant housing, is northwest of Lake Tamarisk and the proposed Project. Other dispersed developments, such as residences, utility poles, and substations, are found throughout the ROI. Roads of varying composition crisscross the area of the proposed Project.

The buildings and structures, as well as vehicles using the roadways, are the primary sources of artificial light. One of the attractions for residents in less developed areas of the county is the brilliance of the nighttime sky on clear nights, unencumbered by lighting scattered over a large urban area. Residents also value certain wildlife that prefer habitat areas where there is little artificial lighting.

While not all areas of the CDCA would be rated high for viewer sensitivity, the BLM has received consistent feedback from the public that scenery is one of the most prized values of the CDCA. Congress also noted scenery as one of the values of the California Desert. MUC L is the only class that mentions scenery.

The ROI is surrounded by the scenic landscapes of Joshua Tree National Park (including the Joshua Tree Wilderness Area) and Chuckwalla Mountains Wilderness Area. The proposed Project is over 1.5 miles from the closest wilderness area. It is important to note that the portions of wilderness areas closest to the proposed Project have landscape characteristics that more closely resemble the proposed Project area than most of the wilderness area. Additionally, use of the surrounding mountains by dispersed recreational users is low *because of the general lack of facilities serving visitors, developed access, permanent natural water sources, and the steep terrain. While use levels in these areas are low, the remote and isolated character of the landscape and the access to unencumbered, panoramic views of the region are attributes that are highly valued by its users. As such, these users are likely to be highly sensitive to visual changes in adjacent landscapes that are visible from wilderness areas.*

3.17 WATER RESOURCES

3.17.1 Applicable Plans, Policies, and Regulations

Federal

Clean Water Act

The Federal Water Pollution Control Act was passed in 1972, and was amended in 1977 as the Clean Water Act (CWA, 33 USC 1251-1376). The CWA was reauthorized in 1981, 1987 and 2000. The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Many pollutants are regulated under the CWA, including various toxic pollutants, total suspended solids, biological oxygen demand and pH (acidity/alkalinity measure scale).

Section 401

Section 401 of the CWA requires the State to issue Water Quality Certifications for licenses or permits issued for, among other things, the discharge of dredged or fill materials to 'waters of the United States' located within the State, including jurisdictional wetlands, headwaters and riparian areas.

Sections 301 and 402

Sections 301 and 402 of the CWA prohibit the discharge of pollutants (except for dredged or fill material, which is regulated under Section 404 of the CWA) from point sources to 'waters of the United States," unless authorized under a National Pollutant Discharge Elimination System (NPDES) permit, issued by EPA or by agencies in delegated states. The NPDES permit program has been delegated in California to the State Water Resources Control Board (SWRCB). The Colorado River Basin Regional Water Quality Control Board (RWQCB) administers the NPDES permits under the CWA in the Project area.

Section 404

Section 404 establishes a permit program administered by the US Army Corps of Engineers (USACE) regulating the discharge of dredged or fill material into "waters of the United States," including wetlands. Implementing regulations by USACE are found at 33 CFR Parts 320-330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines and were developed by the EPA in conjunction with USACE (40 CFR Parts 230). The Guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts. A final jurisdictional waters *determination was completed by the USACE on December 28, 2010. The USACE determined that there are no waters of the United States on the Project site.*

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act (33 USC 401 et seq.) is administered by USACE. This section requires permits in navigable waters of the US for all structures such as riprap and activities such as dredging. Navigable waters are defined as those subject to the ebb and flow of the tide and susceptible to use in their natural condition or by reasonable improvements as means to transport interstate or foreign commerce. The USACE grants or denies permits based on the effects on navigation. Most activities covered under this act are also covered under Section 404 of the CWA.

Safe Drinking Water Act

This act was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources, which are rivers, lakes, reservoirs, springs, and groundwater wells. This act authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. The act also mandates a groundwater/wellhead protection program be developed by each state in order to protect groundwater resources that are a source for public drinking water.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA), a component of the US Department of Homeland Security. The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. In support of the NFIP, FEMA identifies flood hazard areas throughout the US and its territories by producing flood hazard boundary maps, flood insurance rate maps, and flood boundary and floodway maps. Several areas of flood hazards are commonly identified on these maps. One of these areas is the special flood hazard area, a high-risk area defined as any land that would be inundated by a flood having a 1% chance of occurring in any given year (also referred to as the base flood). Participation in the NFIP is based on an agreement between communities and the federal government. The agreement states that if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government will make flood insurance available to the community.

Executive Order 11988, Floodplain Management

This order directs all federal agencies to avoid the long-term and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Executive Order 11990, Protection of Wetlands

This order directs all federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

10 CFR Part 1022

This regulation establishes policy and procedures relating to the Department of Energy's (DOE) responsibilities under Executive Orders (EO) 11988 and 11990, including:

- DOE policy regarding the consideration of floodplain and wetland factors in DOE planning and decision making; and
- DOE procedures for identifying proposed actions located in a floodplain or wetland, providing opportunity for early public review of such proposed actions, preparing floodplain or wetland assessments, and issuing statements of findings for actions in a floodplain.

To the extent possible, DOE shall accommodate the requirements of EO 11988 and EO 11990 through applicable DOE NEPA procedures or, when appropriate, the environmental review process under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC. 9601 *et seq.*).

Colorado River Accounting Surface Rule

The Colorado River Account Surface Rule (Proposed Rule) was proposed by the U.S. Bureau of Reclamation (Reclamation) in the Federal Register on July 16, 2008 (43 CFR Part 415), as a means for tracking and allocating water use along the Colorado River, including in the vicinity of the Project. The Proposed Rule has not been promulgated as a final regulation.

USGS Report 2008-5113 (Wiele et al 2008) updated the location and extent of the Accounting Surface in support of the Proposed Rule. Figure 6 in that USGS document shows that the Project site is located within the areal extent of the river aquifer, and that the Accounting Surface within this aquifer is predicted to be at an elevation of between 238 and 242 feet above mean sea level (msl). The Accounting Surface is proposed to identify which groundwater wells, located outside the floodplain of the Colorado River, pump groundwater that will be replaced by surface water from the Colorado River and, thus, would need to be accounted for as consumptive use of Colorado River water as required under the Consolidated Decree (547 U.S.150 (2006)), (Wiele et al, 2008, page 3).

The Accounting Surface is defined as the elevation and slope of the static water table in the river aquifer that would exist if the water in the aquifer were derived only from the Colorado River (Wilson and Owen-Joyce 1994, Wiele et al 2008). The river aquifer is defined as those saturated sediments that are hydraulically connected to the Colorado River and includes groundwater basins and tributary valleys that are adjacent to the river. The static water level, which is the measured elevation of the water table not affected by groundwater withdrawal, is used to determine whether a well is pumping water that would be replaced by Colorado River water (Wiele et al 2008). A static water level below the Accounting Surface is presumed to yield water that will be replaced by water from the Colorado River (43CFR 415.2(4), Weile et al 2008). Groundwater wells with static water levels above the Accounting Surface are presumed to yield water that will be replaced by precipitation, mountain front recharge, or inflow from tributary valleys (tributary water).

State of California

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1967, Water Code Section 13000 et seq. regulates surface water and groundwater within California and assigns responsibility for implementing CWA §401 through 402 and 303(d). It established the SWRCB and divided the state into nine regions, each overseen by a RWQCB, and requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. Those criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies, but much of its daily implementation authority is delegated to the nine RWQCBs. Water quality criteria for the proposed Project area are contained in the Water Quality Control Plan for the Colorado River Basin - Region 7 (Basin Plan) which was adopted in 1993. This plan sets numerical and/or narrative water quality standards controlling the discharge of wastes to the State's waters and land. *Due to the lack of any perennial waters of the state in or near the Project area, and due to the low probability that septic system discharge associated with the Project would impact groundwater, it is not anticipated that the RWQCB would issue Waste Discharge Requirements for either the stormwater discharge or septic system discharge* *associated with the Project. Sunlight will coordinate with the Riverside County Department of Environmental Health to determine whether a Report of Waste Discharge for the septic system would need to be filed with the RWQCB.*

Senate Bill 610

Senate Bill 610 (SB 610), approved by the Governor in October 2001, requires that all projects, as defined under Water Code Section 10912, must provide a water supply assessment (WSA) to demonstrate that there is a sufficient water supply available for the project. SB 610 applies only if the project is subject to the requirements of CEQA. If there is a public water system supplying water for the project, the public water system must provide a WSA, otherwise the lead agency for the project must supply a WSA. The WSA must include an evaluation of whether the total projected available water supplies, determined to be available during normal, single dry, and multiple dry water years during a 20-year projection, would meet the projected water demand associated with the proposed project.

Water Code Section 10912 defines a project as follows:

- A proposed residential development of more than 500 dwelling units;
- A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space;
- A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space;
- A proposed hotel or motel, having more than 500 rooms;
- A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area;
- A mixed-use project that includes one or more of the projects specified in this subdivision;
- A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling project.

With regard to last item in this list, one acre-foot of water can generally serve two to three households annually, so one dwelling unit typically consumes 0.3 to 0.5 acre-foot of water per year (DWR 2003).

The proposed project does not meet the first six criteria above to qualify as a project under Water Code Section 10912. The final criterion speaks to total project water demand and also indicates that the proposed Project would not be considered a project under Water Code Section 10912. The projected water demand for the proposed Project totals *1,506 to 1,606* acre-feet for the 26 months required for project construction and approximately 0.2 acre-foot per year for operations and maintenance of the Solar Farm*; and less than 0.1 acre-foot per year for operations and maintenance of Red Bluff Substation*. Over the 20-year evaluation period, total water usage for the proposed project would be on the order of *1,511 to 1,611* acre-feet. Conversely, over the 20-year evaluation period for a 500-unit project, total water usage would be on the order of 5,000 acre-feet (250 acre-feet per year for 20 years). Because total estimated water use for the proposed Project falls well below the total water usage standard outlined in the last bullet above, the proposed Project would not be considered a project under the Water Code, and the provisions of SB 610 do not apply.

California Construction General Stormwater Permit

CWA §402 regulates construction-related stormwater discharges to surface waters through the NPDES program. In California, the EPA has delegated to the SWRCB the authority to administer the NPDES program through the RWQCBs and has developed a general permit for Stormwater Discharges Associated with Construction Activities, the Construction General Permit (Water Quality Order 99-08-DWQ). Construction activities that disturb more than one acre are required to obtain an NPDES Construction General Permit from the SWRCB. The General Permit requires the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) for controlling stormwater, reduces pollutants that leave the site and minimize erosion caused by the project. *Note that the California Construction General Stormwater Permit is applicable only where there is a linkage to "waters of the United States," thereby establishing a federal nexus under the Federal Clean Water Act.*

California Industrial Stormwater Program

Industrial activities with the potential to impact stormwater discharges are required to obtain an NPDES permit for those discharges. In California, an Industrial Stormwater General Permit, Order 97-03-DWQ (General Industrial Permit CAS 000001) may be issued to regulate discharges associated with 10 broad categories of industrial activities, including electrical power generating facilities. The General Industrial Permit requires the implementation of management measures that will protect water quality. In addition, the discharger must develop and implement a SWPPP and a monitoring plan. The monitoring plan requires sampling of stormwater discharges during the wet season and visual inspections during the dry season. A report must be submitted to the RWQCB each year by July 1 documenting the status of the program and monitoring results. *Permits associated with the California Industrial Stormwater Program Permit are applicable only where there is a linkage to "waters of the United States," thereby establishing a federal nexus under the Federal Clean Water Act.*

California Water Code Section 1200, Water Rights

The law in California requires that water be identified as one of three categories: surface water, percolating groundwater, and "subterranean streams that flow through known and definite channels". Only surface water and subterranean stream water are within the permitting jurisdiction of the SWRCB. Appropriation of those waters requires a SWRCB permit, and is subject to various permit conditions.

Water subject to appropriation is defined in Water Code Section 1201, as "all water flowing in any natural channel", except water that is or may be needed for use upon riparian land or water that is otherwise appropriated. The SWRCB's authority over groundwater extends only to the water in un-appropriated subterranean streams that flow through known or defined channels, except as it is or may be reasonably be needed for useful and beneficial purposes upon lands riparian to the channel through which it is flowing.

"Percolating groundwater" has two sub-classifications: overlying land use, and surplus groundwater. Land owners overlying percolating groundwater may use it on an equal basis and share a right to reasonable use of the groundwater aquifer. In this right, a user cannot take unlimited quantities without regard to the needs of other users. Surplus groundwater may be appropriated for use on non-overlying lands, provided such use will not create an overdraft condition.

Streambed Alteration Agreements, California Fish and Game Code, Sections 1601 – 1603

Under these sections of the Fish and Game Code, the Applicant is required to notify the California Department of Fish and Game (CDFG) prior to constructing any project that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a Streambed Alteration Agreement that becomes part of the plans, specifications, and bid documents for the project.

State Water Resources Control Board Resolution 88-63

On May 19, 1988, the SWRCB adopted the Policy entitled "Sources of Drinking Water", which was later revised by Resolution No. 2006-0008. The purpose was to provide sufficient detail to be incorporated into the RWQCB Water Quality Control Plans (Basin Plan) to judge clearly what is or is not a source of drinking water for various purposes. All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards with the exception of surface and ground waters where:

- The Total Dissolved Solids (TDS) exceed 3,000 milligram per liter (mg/L) (5,000 microSiemens per centimeter (µS/cm), electrical conductivity) and it is not reasonably expected by RWQCB to supply a public water system, or
- There is contamination, either by natural processes or by human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using either Best Management Practices or best economically achievable treatment practices, or
- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

Groundwater Protection Areas and Wellhead Protection

The overall concept behind wellhead protection is to develop a reasonable distance between point sources of pollution and public drinking water wells so that releases from point sources are unlikely to impact groundwater from the well. The California Department of Public Health established the Drinking Water Source Assessment and Protection Program, which guides local agencies in protecting surface water and groundwater that are sources of drinking water. The California Department of Pesticide Regulation's Groundwater Protection Program is charged with identifying areas sensitive to pesticide contamination and develops mitigation measures and regulations to prevent pesticide movement into groundwater systems.

Regional and Local Regulations

County of Riverside

The Desert Center Area Plan within the County of Riverside General Plan aims to preserve the natural character of the unincorporated areas of Riverside County and Desert Center. The plan encourages clustering of development for the preservation of contiguous open space, aims to limit off-road vehicle use, and requires new development to conform with desert tortoise critical habitat designation requirements.

The Riverside County Flood Control and Water Conservation District is the regional flood management authority for the western part of Riverside County. The responsibility for the eastern part of the County is borne by a combination of the County Transportation Department, the Coachella Valley Water District and the various cities and a variety of local entities.

Riverside Code Section 13.20 (Ordinance 682): Construction, Reconstruction, Abandonment and Destruction of Wells

This ordinance provides minimum standards for construction, reconstruction, abandonment, and destruction of all wells. Permits shall be issued after compliance with the standards provided and incorporated by reference in this ordinance. Plans shall be submitted to the Department demonstrating compliance with such standards.

Standards for the construction, reconstruction, abandonment, or destruction of wells shall be the standards recommended in the Bulletins of the California Department of Water Resources as follows: Bulletin No. 74-81 Chapter II Water Wells, and Bulletin No. 74-90 (Supplement to Bulletin No. 74-81) and as these Bulletins may be amended by the State of California from time to time.

Water from all new, repaired, and reconstructed community water supply wells, shall be tested for and meet the standards for constituents required in the California Code of Regulations, Title 22, *Domestic Water Quality and Monitoring.*

Riverside Code Section 8.124 (Ordinance 650.5) – Septic System

This ordinance regulates the discharge of sewage in the unincorporated areas of Riverside Country. An on-site water treatment system (OWTS) means any individual or community onsite wastewater treatment, pretreatment and dispersal system including septic systems. An application must be submitted to the Riverside County Department of Environmental Health for approval, and the OWTS will be subject to an annual operating permit.

3.17.2 Water Resources Existing Conditions

The proposed Desert Sunlight Solar Farm is located in eastern Riverside County, six miles north of the Desert Center community, in the Chuckwalla Valley. The Chuckwalla Valley generally trends northwest to southeast and is surrounded by the Chuckwalla Mountains to the south, Eagle Mountains to the west and north, Coxcomb Mountains to the north, and Palen Mountains to the East.

The California Interagency Watershed Mapping Committee (CIWMC) has developed a system for naming and delineating watersheds and subunits in California, beginning with 10 Hydrologic Regions that each covers millions of acres, and which are progressively subdivided into five smaller nested levels. The smaller nested levels in order of decreasing size are 1) Hydrologic Units (HU), 2) Hydrologic Areas, 3) Hydrologic Sub-Areas, 4) Super Planning Watersheds and 5) Planning Watersheds. The proposed project is located in the Colorado Hydrologic Region, and is within the Chuckwalla HU (HU# = 17) and entirely within the Palen Hydrologic Area subdivision of the Chuckwalla HU. The Chuckwalla HU contains 1,268,650 acres and the Palen Hydrologic Area is

419,660 of these acres (see Figure 3.17-1). The proposed project is contained within the US Geological Survey (USGS) 8-digit HU code 18100100, known as the Southern Mojave (CIWMC 1999). The following discussion of surface water resources relates to the Chuckwalla HU, unless identified otherwise.

Surface Water Resources

The Porter-Cologne Water Quality Control Act divided the state into nine regions, each overseen by an RWQCB. The proposed Project is within the Colorado River Basin Region, which corresponds almost exactly to the area of the Colorado Hydrologic Region discussed above. There are seven planning areas within the region, and the proposed Project is in the Hayfield Planning Area (SWRCB 2006). This corresponds closely to the Chuckwalla HU described above, although the Hayfield Planning Area includes two additional small watersheds. No perennial streams flow in this planning area. The average annual precipitation in the Hayfield Planning Area ranges from less than 3 inches in the lower valleys to 8 inches in the highest mountains. Almost all of the moisture from rain in the Hayfield Planning Area is lost through evaporation and evapotranspiration (SWRCB 2006). Although there are no perennial streams in the Hayfield Planning Area, Pinto Wash is an ephemeral stream that serves as the main drainage in the Project Study Area when there is surface water, and surface water *generally* flows from west to east. Pinto Wash traverses the Project Study Area for approximately 6 miles, trending northwest to southeast. Pinto Wash is just east of the Solar Farm Site B and C. Big Wash is another large ephemeral stream that traverses the Project Study Area northwest to southeast (for approximately 4.5 miles), although most of this wash is just south of the Project Study Area. A third ephemeral stream, Eagle Creek, terminates at the Project Study Area and crosses the Project Study Area for a little over 2 miles. All three of these ephemeral streams originate north and west of the Project Study Area, and all three of them are fed by rainfall. These three ephemeral streams, along with multiple other, smaller ephemeral streams, are shown in Figure 3.17-2. A few intermittent springs exist in the northwest portion of the Chuckwalla Valley, but there are no springs that are documented as permanent or year-round (Eagle Crest Energy Company 2008).

There are also no outlets from the Chuckwalla Valley, which is internally drained. *Desert washes within the Chuckwalla Valley either terminate in localized groundwater sinks (as is the case for the proposed Project), or flow to* Palen Dry Lake, approximately five miles east of the Project Study Area, or to Ford Lake, southeast of Palen Dry Lake. Both Palen Dry Lake and Ford Lake are playas, which are shallow, centrally located basins or depressions where water gathers after a rain but evaporates quickly. Palen Dry Lake is a wet playa, with shallow groundwater discharge at the surface due to evaporation, and is approximately three miles wide and four miles long. Ford Lake is a “dry playa,” with groundwater occurring well below the ground surface, and is approximately two miles wide and seven miles long.

The Colorado River Aqueduct flows along the northern and western edges of the Project Study Area, less than a mile from the Project Study Area (see Figure 3.17-2), and it is underground along the western edge. The Colorado River is approximately 50 miles east of the eastern edge of the Project Study Area.

Although there are no perennial surface water features in the basin, storm water can have a significant effect on an area’s surface water hydrology. Stormwater hydrology studies were performed for First Solar for the Solar Farm Layout A (no longer being considered in this EIS but

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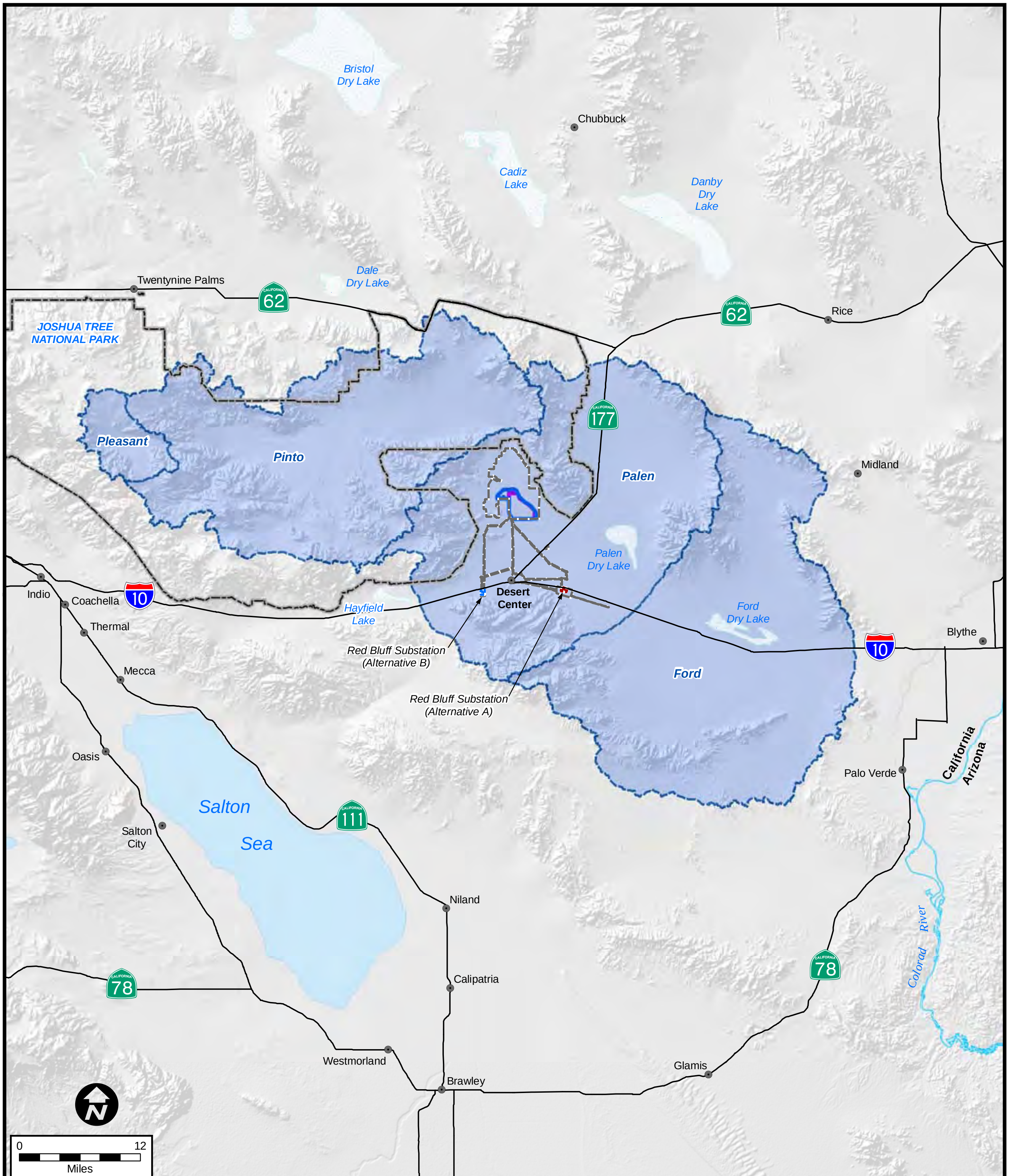

LEGEND

- Perennial Water Feature
- Intermittent Water Feature
- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Joshua Tree National Park Boundary
- Hydrologic Areas

Source: Department of Water Resources, Hydrologic Regions of California

DESERT SUNLIGHT SOLAR FARM

Figure 3.17-1

Chuckwalla Hydrologic Unit (Watershed)

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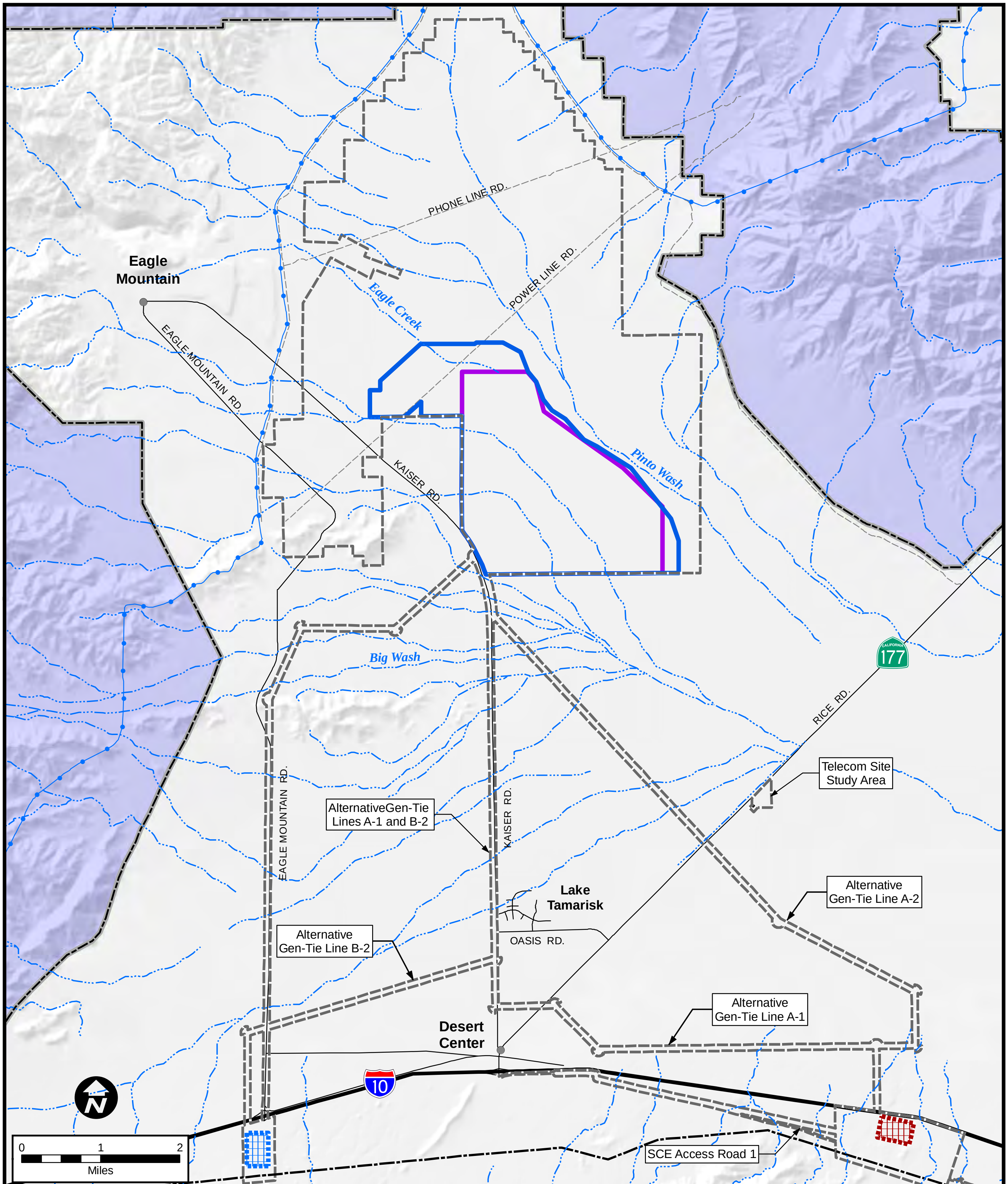


LEGEND

Intermittent Creek

Aqueduct

Desert Sunlight Study Area Boundary

Solar Farm Boundary (Alternative B)

Solar Farm Boundary (Alternative C)

Red Bluff Substation (Alternative B)

Red Bluff Substation (Alternative A)

Joshua Tree National Park Boundary

Devers-Palo Verde Transmission Line (DPV1)

Source: USGS, 2008.

DESERT SUNLIGHT SOLAR FARM

Figure 3.17-2

Surface Water Resources

the information is relevant to the analysis) (AECOM 2010a; Appendix G) and the Solar Farm Layout B (AECOM 2010b; Appendix G) to evaluate the impacts of the proposed Project facilities on surface water flow, sediment transport, local scour effects and geomorphology of the landforms within the project site. The boundaries and elevations of hydrologic basins for the study were defined using USGS's National Elevation Dataset and EPA's BASINS model, and are shown in Figure 2 of the stormwater hydrology study reports (AECOM 2010a and 2010b; Appendix G). Slightly different model boundaries were used for the Solar Farm Layout A model versus the Solar Farm Layout B model, and both model areas include most of the area of the Solar Farm Layouts A and B, including the portions of Eagle Creek and Big Wash that cross the Solar Farm Layouts A and B. The model area also includes the portion of Pinto Wash that is just east of the Solar Farm Layouts A and B. A two-dimensional model (FLO-2D) was built to simulate flow patterns and sediment transport in the Solar Farm areas, with hydrologic flows for the different storm scenarios estimated using the USACE HEC-HMS model. The model was run for the design case (100-year storm), the 10-year storm and an Additional Considerations Case (100-year storm with 100 percent soil saturation prior to the storm), to provide a conservative evaluation of potential impacts from the proposed Project.

The hydrologic basins for the model show flow occurring from the northwest to the southeast across the Solar Farm Layouts A and B, consistent with the overall topography of the Chuckwalla Valley. Peak outflow under existing conditions for the design case (Solar Farm Layout A for the 100-year storm) was calculated to be 24,811 cubic feet per second (cfs), with a peak velocity of 4.6 feet per second (Figure 8, AECOM 2010a; Appendix G). *The maximum peak flow depth on site was 2.2 feet, occurring in locations in the eastern portion of the site, caused by influence of the Pinto Wash, which is located immediately east of SF-B (Figure 5, AECOM 2010a; Appendix G).* The model results show that sheet flow occurs across the Solar Farm Layout A to a maximum depth of 0.1 to 0.5 foot for both the 10-year and 100-year storm (Figures 5 and 11, AECOM 2010a; Appendix G). *The model results show that sheet flow occurs across the Solar Farm B to a maximum peak flow depth on site of 1.4 feet for the 10-year storm and 2.2 feet for the 100-year storm event (Tables 3 and 4, AECOM 2010a; Appendix G).*

A jurisdictional waters delineation was submitted to the USACE on September 16, 2010, for the Project Study Area (Ironwood Consulting and Huffman-Broadway Group, Inc., 2010), in accordance with the CFR definitions of jurisdictional waters, the Wetlands Delineation Manual (USACE 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008), *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008), and supporting guidance documents, such as the Rapanos guidance (December 2008).

Results of the delineation indicated that there were no areas within the Project location that met the USACE criteria for wetlands. *USACE has concurred that it has no jurisdiction over any area within the Project boundary under the Federal Clean Water Act.*

Surface Water Quality

Under section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are defined as "waters that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes." The law further requires that these jurisdictions establish priority rankings for waters on the lists and develop a Total Maximum Daily Load (TMDL) for these waters. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards (EPA 2009c).

For the proposed project site, the Colorado River Basin RWQCB (CRBRWQCB) Region 7 is responsible for maintaining the Section 303d impaired waters list. The most recent adopted 303d impaired waters list is from 2006. Several impaired water bodies are identified on this list for the Colorado River Basin Region, but none of th*ese* impaired water bodies are within the Hayfield Planning Unit, so there are no impaired water bodies on the proposed project site (CRBRWQCB 2006). Additionally, there is no other surface water quality data available for the Project Study Area.

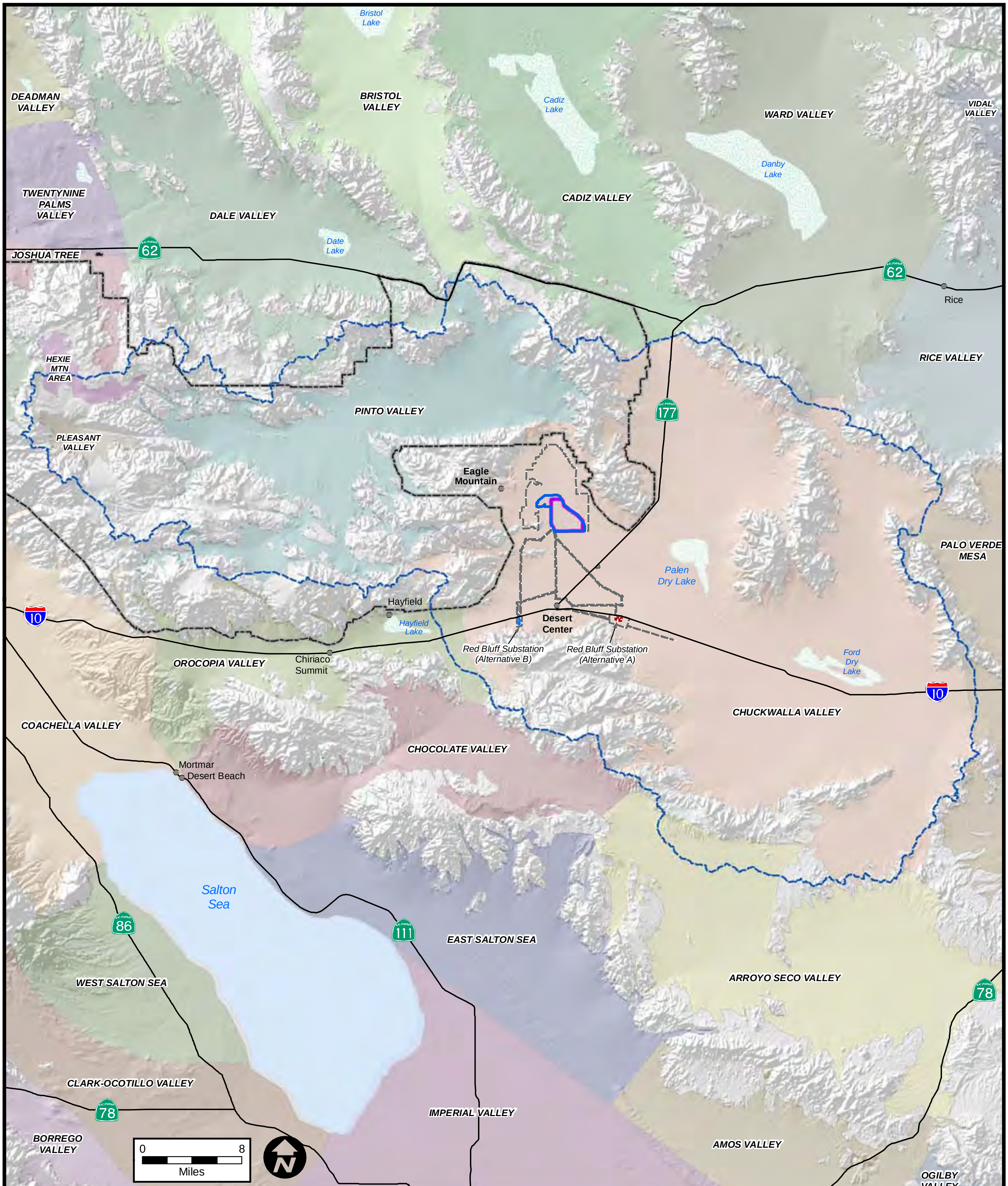
Groundwater Resources

The following terms are defined for readers to facilitate their understanding of this section (DWR 2003, except where noted):

- Groundwater—Water that occurs beneath the land surface and fills the pore spaces of the alluvium, soil, or rock formation in which it is situated.
- Aquifer—A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs.
- Transmissivity—A measure of an aquifer's ability to transmit groundwater (the ability of water to move through the aquifer) horizontally through its entire saturated thickness. Mathematically, transmissivity is defined as the product of hydraulic conductivity and the aquifer thickness.
- Specific Yield—The volume of water that an unconfined aquifer releases from storage per unit surface area of the aquifer per unit decline in the water table (Freeze and Cherry 1979). For example, if the height of the water table of the aquifer declines by 10 feet, 1 foot (10 percent of 10 feet) of water would be released from the aquifer.
- Perennial Yield—The maximum quantity of water that can be annually withdrawn from a groundwater basin over a long period (during which water supply conditions approximate average conditions) without developing an overdraft condition.

The project area is located within the Chuckwalla Valley Groundwater Basin (California Department of Water Resources [DWR] Basin #7-5), which has a surface area of 940 square miles (605,000 acres). The groundwater basin is contained almost entirely within the Chuckwalla HU (see Figure 3.17-3). Water bearing units in the groundwater basin range in age from Pliocene to Quaternary, and include Quaternary alluvium, the Pleistocene-age Pinto Formation and the Pliocene-age Bouse Formation. The maximum thickness of these sediments is 1,200 feet and the average specific yield in the upper 500 feet is estimated to be 10 percent. The Quaternary alluvium is likely the most important aquifer in the basin (DWR 2003).

The Chuckwalla Valley groundwater basin is recharged by flow from the Pinto Valley Groundwater Basin located west of Chuckwalla Valley. DWR (2003) reports that Chuckwalla Valley is also recharged by flow from the Cadiz Valley Groundwater Basin, located adjacent to the northwest portion of Chuckwalla Valley. *A* study by Black and Veatch*, however,* indicated that Cadiz Valley groundwater does not flow into the *Chuckwalla HU* (Eagle Crest Energy Company 2008). Similar to surface water flow, groundwater flow is from northwest to southeast in the *western portion of the* Chuckwalla Valley groundwater basin *and west to east in the eastern portion of the basin*.



LEGEND

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Red Bluff Substation (Alternative B)
- Red Bluff Substation (Alternative A)
- Chuckwalla Hydrologic Unit
- Joshua Tree National Park Boundary

Source:
Department of Water Resources,
Hydrologic Regions of California

DESERT SUNLIGHT SOLAR FARM

Figure 3.17-3

Groundwater Basins

There are more than 60 wells in the Chuckwalla Valley *Groundwater Basin*, with an average pumping rate for each well of about 1,800 gallons per minute (gpm) and a maximum reported pumping rate of 3,900 gpm (DWR 1975). Depth to groundwater in the eastern part of the basin ranges from approximately 20 feet to 270 feet below ground surface (WorleyParsons 2009). There are 14 known groundwater wells within a two-mile radius of the Project Study Area (Figure 3.17-4). Two of these are owned by Kaiser Steel, and the remaining twelve are private wells.

Reported transmissivities range from 95 to 247,000 gallons per day per foot (gpd/ft), but are generally in the range of 45,000 to 147,000 gpd/ft. The perennial yield of the *Chuckwalla Valley Groundwater Basin* is between approximately *2,608 and 3,346* acre-feet per year (AFY) (BLM and CEC, 2010; *WorleyParsons, 2009*).

Groundwater budgets were developed for the Chuckwalla Valley groundwater basin for the Palen Solar Power Project EIS (BLM and CEC 2010) and the Genesis Solar Energy Project (WorleyParsons 2009). Both groundwater budgets identified recharge from precipitation as the greatest source of inflow to the basin, and groundwater pumpage as the greatest source of outflow from the basin. Both groundwater budgets indicated there was a net inflow into the basin, with the Palen Solar Power Project EIS identifying a net inflow of 2,608 AFY and the groundwater resources investigation for the Genesis Solar Energy Project identifying a net inflow of 2,446 AFY.

Historically, the greatest use of groundwater in the basin was for agriculture. The highest amount of recorded pumping in the basin occurred in 1986, when approximately 21,000 acre-feet (AF) was pumped, mostly for jojoba and asparagus farming, which had begun being planted in 1981. *Other major historical water users include the former Eagle Mountain Mine and associated housing.* From 1950 to 1981, water levels were relatively stable in the basin, but during the years of highest water use, water levels declined in the vicinity of the pumping by up to 130 feet, indicating that groundwater levels in the basin are very sensitive to pumping. Since 1986, water use has stabilized in the range of 5,000 to 7,000 AFY, and groundwater levels between 1986 and 2002 recovered over 100 feet (Eagle Crest Energy Company 2008).

Eagle Crest Energy Company has proposed the construction of a pumped storage project within a mile of the proposed project site. The Eagle Mountain Pumped Storage Project *proposes to* pump water from a lower reservoir to an upper reservoir using off-peak energy, and then run the water back down to the lower reservoir during high energy demand periods. The initial filling of the reservoirs (24,200 AF over two years) *would* be accomplished using either local groundwater or water purchased outside the basin. *For a discussion of the Colorado River Accounting Surface, refer to the previous Applicable Plans, Policies, and Regulations subsection of this chapter.*

Groundwater Quality

TDS concentrations in groundwater across the Chuckwalla Valley basin ranges from 274 to 12,300 mg/L, with the lowest concentrations occurring in the western part of the basin, where TDS concentrations range from 274 to 730 mg/L. EPA has established a secondary (non-mandatory) standard for TDS in drinking water of 500 mg/L, based upon potential odor and taste concerns (EPA 2009d). Overall, the TDS concentrations are considered high for domestic use, and the groundwater may have elevated levels of sulfate, chloride and fluoride (DWR 2003).

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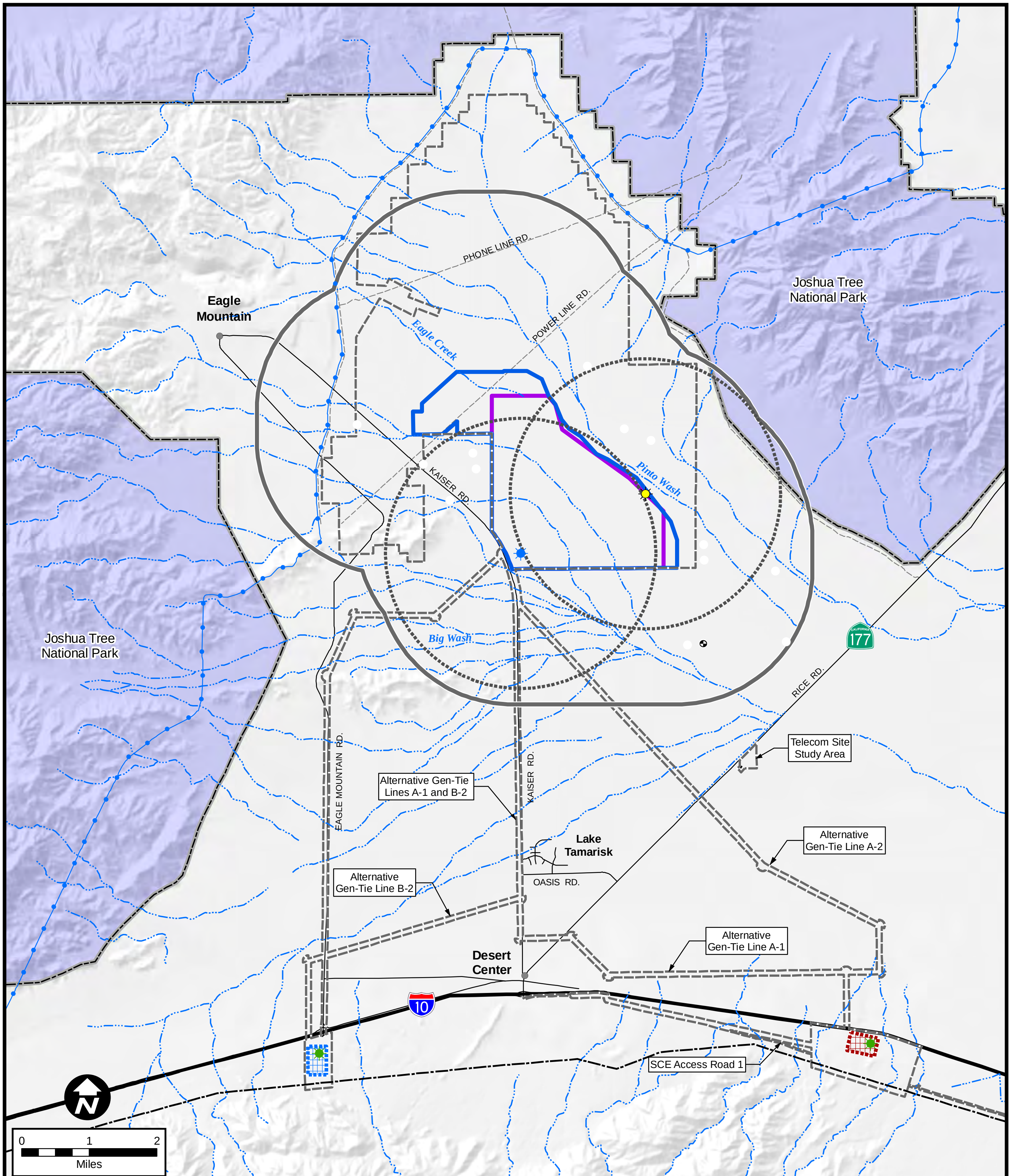

LEGEND

Existing Well Location
Proposed Permanent Well Location
Proposed Temporary Well Location
Proposed Substation Well Location
2-Mile Proposed Well Buffer
2-Mile Site Buffer
Desert Sunlight Study Area Boundary
Solar Farm Boundary (Alternative B)
Solar Farm Boundary (Alternative C)
Red Bluff Substation (Alternative B)
Red Bluff Substation (Alternative A)
Intermittent Creek
Aqueduct
Devers-Palo Verde Transmission Line (DPV1)

Source: USGS, 2008.
AECOM, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 3.17-4

Project Study Area Well Locations

3.18 CUMULATIVE ANALYSIS

3.18.1 Introduction

In accordance with NEPA, this EIS analyzes cumulative effects of the proposed Project and its alternatives in conjunction with other past, present, and reasonably foreseeable actions that affect or could affect the area. Because CPUC intends to use this document for the environmental review required for its approval of SCE's Red Bluff Substation, this document also considers the CEQA requirements for cumulative analysis.

NEPA and CEQA have similar definitions of "cumulative impact." According to the CEQ's regulations implementing NEPA, "cumulative impact" or effect "is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR §1508.7). "Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR §1508.7). Under NEPA, when determining what is "significant," both context and intensity are considered. When considering intensity of an effect, we consider "[w]hether the action is related to other actions with individually minor but cumulatively significant impacts. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts" (40 CFR §1508.27[b][7]).

Under CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (14 California Code of Regulations [CCR] §15130[a][1]). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects, is "cumulatively considerable" (14 CCR §15130[a]). Such incremental effects are to be "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (14 CCR §15164[b][1]). Together, these projects compose the cumulative baseline that forms the basis of the cumulative impact analysis.

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

To comply with both NEPA and CEQA, a cumulative projects scenario has been developed for this EIS that identifies and evaluates projects that already exist within the *relevant geographic scope defined for each resource area* or are reasonably foreseeable to be constructed or begin operation during the time of activity associated with the proposed Project. This scenario is consistent with that developed for other large-scale solar projects in eastern Riverside County.

3.18.2 Definition of Cumulative Project Scenario

Cumulative impacts analysis is intended to highlight past, *present, and reasonably foreseeable* actions that are closely related either in time or location to the project being considered, catalogue past projects and discuss how they have harmed the environment, and discuss past actions even if they were undertaken by another agency or another person. Most of the projects listed in the cumulative projects tables in Section 3.18.4 have or will be required to undergo their own independent environmental review under either NEPA and/or CEQA.

Under NEPA, an EIS must provide a detailed catalogue of past, present, and reasonably foreseeable future projects, and provide an adequate analysis of how these projects, in conjunction with the proposed action, may adversely impact the environment. While NEPA requires cataloging of past projects, it also requires a discussion of consequences of those past projects.

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

3.18.3 Methodology and Approach

Given the selection of the "list approach" for the Project's cumulative impact analysis, there needs to be a determination of the general geographic area within which to identify the baseline for cumulative impacts analysis for each resource area. The BLM identified the California desert (California Desert District area) as the largest area within which cumulative effects should be assessed for all disciplines. However, within the desert region, the specific area of cumulative effect varies by resource. For this reason, each discipline has an identified geographic scope for analysis of cumulative impacts.

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

1. Define the geographic scope of the cumulative impact analysis area for each resource, based on the potential area within which impacts of the Project could combine with those of other projects.
2. Evaluate the effects of the Project on that resource in combination with past and present projects within the geographic area defined for each resource.
3. Evaluate the effects of the Project on that resource with reasonably foreseeable future projects within the geographic area defined for each resource.

Each of these steps is described below.

Geographic Scope of Cumulative Analysis

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

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

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

Project Effects in Combination with Past, Present, and Reasonably Foreseeable Future Projects

The intensity, or severity, of the cumulative effects should include the magnitude, geographic extent, duration and frequency of the effects (CEQ 1997). The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent, or chronic (CEQ 1997). CEQA similarly requires that the Project's contribution to cumulative impacts depends on the severity and duration of the Project's impacts on a resource. Whether these impacts are significant may be determined by applying the significance criteria for each resource.

<u>The impacts of the proposed Project are evaluated for each discipline added to the current baseline: the past, present (existing) and reasonably foreseeable projects within the geographic scope identified for each resource area.</u>

<u>The geographic scope of reasonably foreseeable projects that could contribute to the cumulative effects scenario depends on the extent of the Project effects for each resource area, but could include projects in the immediate I-10 corridor, as well as the larger California Desert District. The discussion in Section 3.18.4 illustrates there are a number of projects in the immediate area around the I-10 corridor with impacts that could combine with those of the proposed Project.</u>

3.18.4 Potential Cumulative Projects and Projections

The projects considered part of the cumulative scenario are (a) closely related, completed, past projects; (b) projects approved and under construction; (c) projects approved but not yet under construction; and (d) projects proposed but not approved. They are renewable energy projects, transportation projects, infrastructure improvement projects, pipeline projects, and other projects that meet these criteria.

<u>Renewable Energy Projects in the California Desert District</u>

A large number of renewable energy projects have been proposed on BLM managed land, state land, and private land in California. As of January 2010, there were 244 proposed renewable energy projects in California in various stages of the environmental review process or under construction. As of December 2009, 49 of these projects, representing approximately 10,500 MW, were planning on requesting American Recovery and Reinvestment Act (ARRA) funds from the federal government. Solar, wind, and geothermal development applications have requested use of BLM land, including approximately one million acres of the California desert. State and private lands have also been targeted for renewable solar and wind projects.

Figure 3.18-1 and Table 3.18-1 illustrate the numerous proposed renewable energy projects (solar and wind) on BLM land in the California Desert District. In particular, solar and wind development applications for use of BLM land (excluding state and private land) have been submitted for approximately one million acres of the California Desert Conservation Area.

Table 3.18-1
Renewable Energy Projects on BLM Land in the California Desert District

BLM Field Office	Number of Projects & Acres	Total MW
	Solar Energy	
Barstow Field Office	18 projects 132,560 acres	12,875 MW
El Centro Field Office	7 projects 50,707 acres	3,950 MW
Needles Field Office	17 projects 230,480 acres	15,700 MW
Palm Springs Field Office	17 projects 123,592 acres	11,873 MW
Ridgecrest Field Office	4 projects 30,543 acres	2,835 MW
TOTAL – CA Desert District	63 projects 567,882 acres	47,233 MW
	Wind Energy	
Barstow Field Office	25 projects 171,560 acres	N/A
El Centro Field Office	9 projects (acreage not given for 3 of the projects) 48,001 acres	N/A
Needles Field Office	8 projects 115,233 acres	N/A
Palm Springs Field Office	4 projects 5,851 acres	N/A
Ridgecrest Field Office	16 projects 123,379 acres	N/A
TOTAL – CA Desert District	62 projects 433,721 acres	N/A

Source: Renewable Energy Projects in the California Desert Conservation Area identifies solar and wind renewable projects as listed on the BLM California Desert District Alternative Energy Website (BLM 2010b)

Likelihood of Development

The large renewable energy projects now described in applications to the BLM and on private land are competing for utility Power Purchase Agreements, which will allow utilities to meet state-required Renewable Portfolio Standards. Not all of the projects listed in Table 3.18-1 will complete the environmental review, and not all projects that do complete environmental review will be funded and constructed. It is thus unlikely that all of these projects will be constructed for the following reasons:

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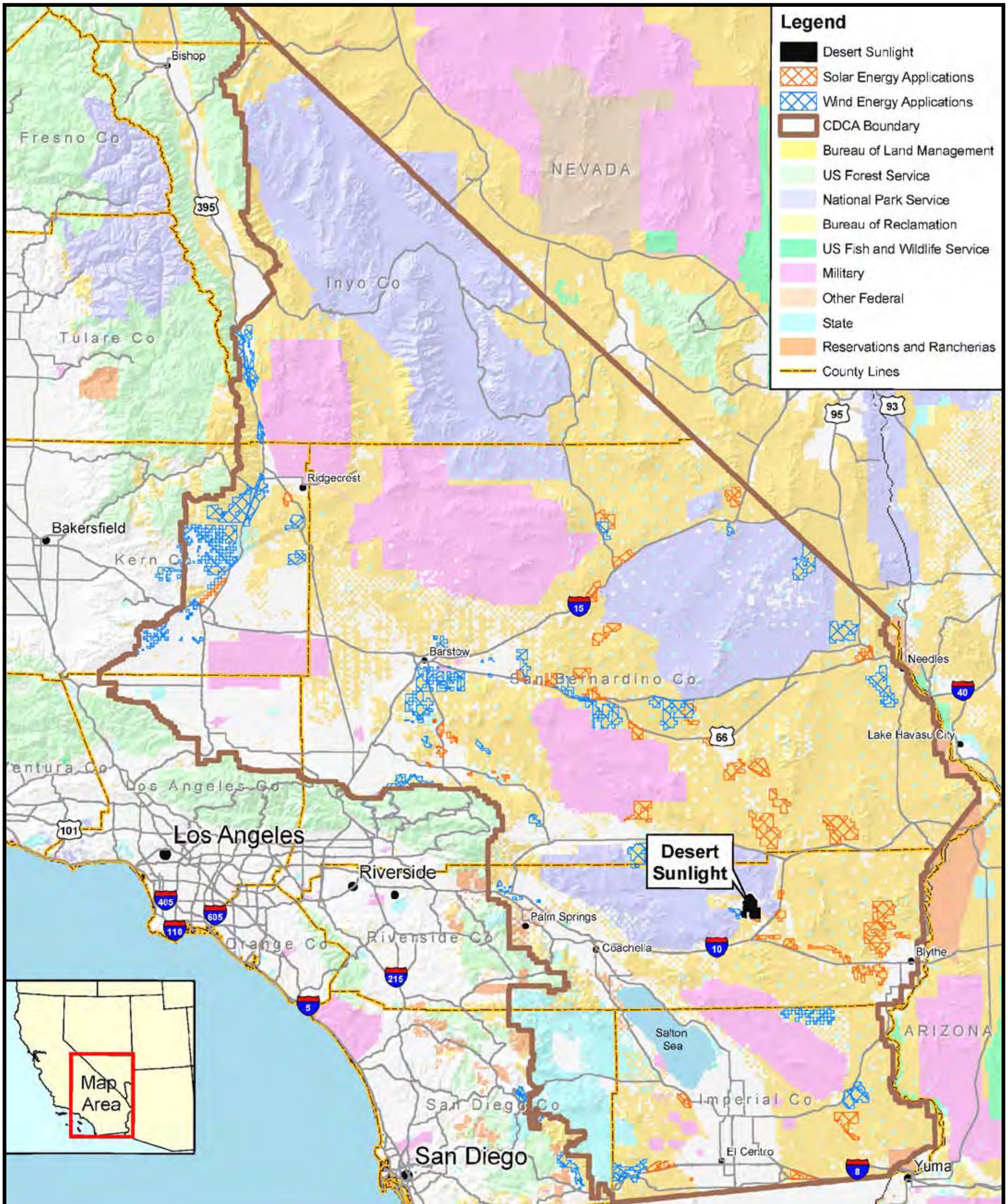

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Source: BLM, 2010.

DESERT SUNLIGHT SOLAR FARM

Figure 3.18-1

Overview of Regional Renewable Energy Applications

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

Incentives for Renewable Energy Development

A number of existing policies and incentives encourage renewable energy development. These incentives lead to a greater number of renewable energy proposals. *Incentives for renewable energy projects include:*

- US Treasury Department's Payments for Specified Energy Property in Lieu of Tax Credits under §1603 of the American Recovery and Reinvestment Act of 2009 (Public Law 111-5)—Offers a grant (in lieu of investment tax credit) to receive funding for 30 percent of the total eligible capital cost when a project begins commercial operation (currently applies to projects that begin construction by December 31, 2010 and begin commercial operation before January 1, 2017).
- US Department of Energy (DOE) Loan Guarantee Program pursuant to §1703 of Title XVII of the Energy Policy Act of 2005—Offers a loan guarantee that is also a low interest loan to finance up to 80 percent of the capital cost at an interest rate much lower than conventional financing. The lower interest rate can reduce the cost of financing and the gross project cost on the order of several hundred million dollars over the life of the project.
- *Section 1705 of Title XVII of the Energy Policy Act of 2005, as amended by §406 of the American Recovery and Reinvestment Act of 2009—Authorized a new program for rapid deployment of renewable energy projects and related manufacturing facilities, electric power transmission projects, and leading edge biofuels projects that commence construction before September 30, 2011.*

Other Projects in Eastern Riverside County

Figure 3.18-2, Table 3.18-2 and Table 3.18-3 define the projects in the immediate vicinity of the I-10 corridor. The area included on these tables consists of a 15- to 20-mile radius around the Project site. Table 3.18-2 identifies existing projects and Table 3.18-3 identifies future foreseeable projects. The locations of all projects in these tables are shown on Figure 3.18-2.

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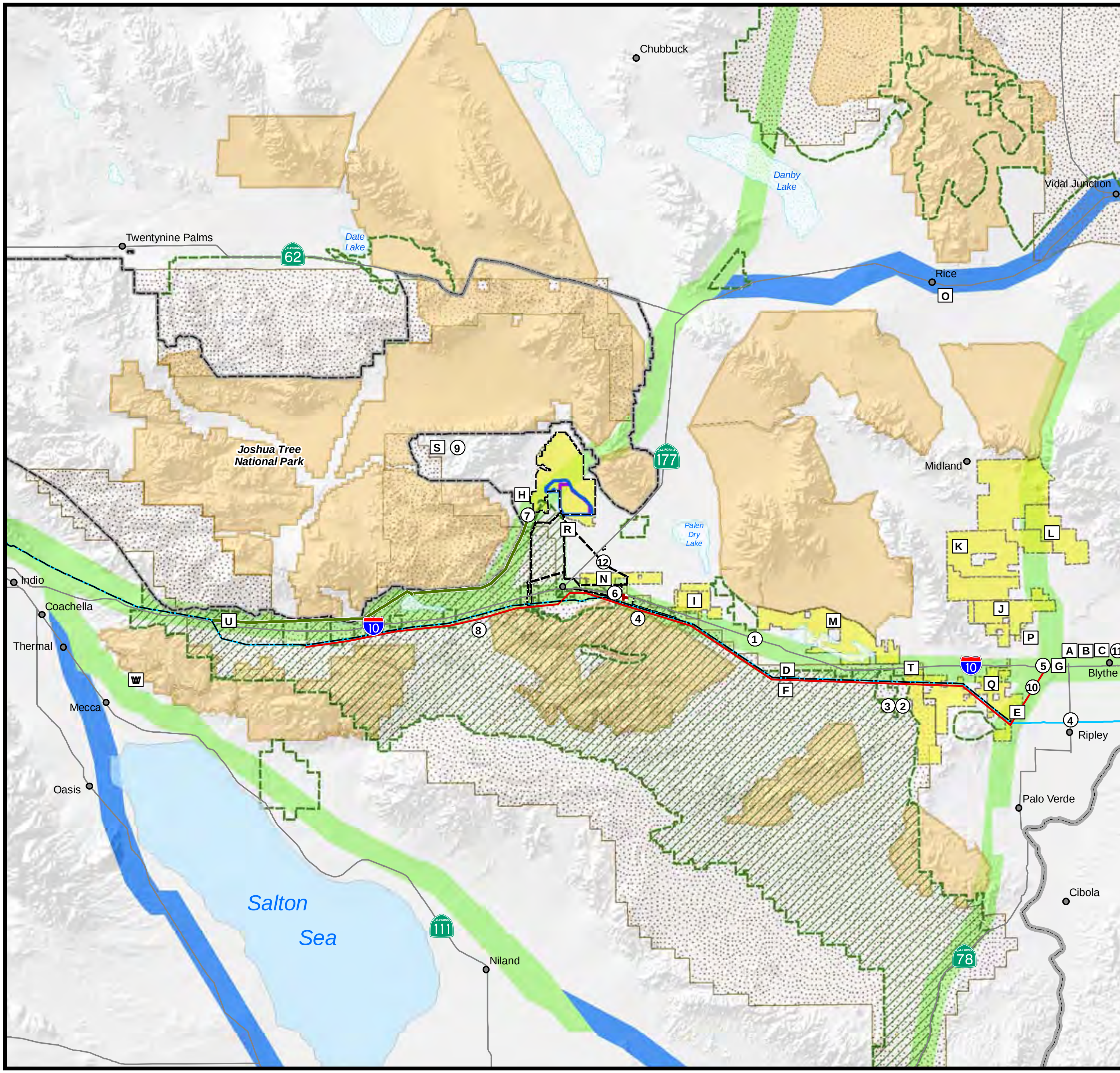

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LEGEND

- Desert Sunlight Study Area Boundary
- Solar Farm Boundary (Alternative B)
- Solar Farm Boundary (Alternative C)
- Joshua Tree National Park Boundary
- Area of Critical Environmental Concern (ACEC)
- Chuckwalla DWMA
- BLM Wilderness Area
- Desert Tortoise Critical Habitat Boundary

PROJECTS

- Blythe Energy Project Transmission Line
- Devers-Palo Verde Transmission Line (DPV1)
- DPV 2 and Desert Southwest Transmission Line
- Green Energy Express Transmission Line
- BLM Solar ROW Application
- 5 Existing Projects (Table 3.18-2)
- A Proposed Projects (Table 3.18-3)

BLM Utility Corridor

- Designated Corridor
- Contingent Corridor

Source: California Energy Commission, 2010.
BLM, 2010.

Riverside County, 2010

DESERT SUNLIGHT SOLAR FARM

Figure 3.18-2

Cumulative Projects in the Project Area

Table 3.18-2
Existing Projects along the I-10 Corridor (Eastern Riverside County)

ID # on Figure 3.18-2	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
1	Interstate 10	Linear *interstate highway* running from Santa Monica to Blythe (in California)	Caltrans	Existing	N/A	Interstate 10 (I-10) is a major east-west route for trucks delivering goods to and from California. It is a four-lane divided highway in the project region.
2	Chuckwalla Valley State Prison	19025 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	1,080	State prison providing long-term housing and services for male felons classified as medium and low-medium custody inmates jointly located on 1,720 acres of state-owned property. APN 879040006, 008, 012, 027, 028, 029, 030
3	Ironwood State Prison	19005 Wiley's Well Rd. Blythe, CA	CA Dept. of Corrections & Rehabilitation	Existing	640	ISP jointly occupies with Chuckwalla Valley State Prison 1,720 acres of state-owned property, of which ISP encompasses 640 acres. The prison complex occupies approximately 350 acres with the remaining acreage used for erosion control, drainage ditches, and catch basins. *APNs* 879-040-001, 004, 009, 010, 011, 015, 016, 017, 018, 019, 020
4	Devers-Palo Verde 1 Transmission Line	From *Palo Verde (Arizona)* to Devers Substation	SCE	Existing	N/A	Existing 500 kV transmission line parallel to I-10 from *Arizona* to the SCE Devers Substation, near Palm Springs. *DPV1 will loop into the approved Midpoint Substation (now called Colorado River Substation), which will be located 10 miles southwest of Blythe. See D and E in Table 3.18-3.*
5	Blythe Energy Project	City of Blythe, north of I-10, 7 miles west of the CA /AZ border	Blythe Energy, LLC	Existing	76	520 MW combined-cycle natural gas-fired electric-generating facility. Project is connected to the Buck Substation owned by WAPA.
6	West-wide Section 368 Energy Corridors	Riverside County, parallel to DPV corridor	BLM, DOE, US Forest Service	Approved by BLM and US Forest Service	N/A	Designation of corridors on federal land in the 11 western states, including California, for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). One of the corridors runs along the southern portion of Riverside County.

Table 3.18-2 (continued)
Existing Projects along the I-10 Corridor (Eastern Riverside County)

ID # on Figure 3.18-2	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
7	Eagle Mountain Pumping Plant	Eagle Mountain Road, west of Desert Center	Metropolitan Water District of Southern California	Existing		144-foot pumping plant that is part of the Metropolitan Water District of Southern California's facilities. APNs 807-150-007, 807-150-009, 807-150-010
8	Recreational Opportunities	Eastern Riverside County	BLM	Existing	N/A	BLM has numerous recreational opportunities on lands in eastern Riverside County along the I-10 corridor including the Wiley's Well Campground, Coon Hollow Campground, and Midland Long-Term Visitor Area.
9	Kaiser Mine	Eagle Mountain, north of Desert Center	Kaiser Ventures, Inc.	*Existing*		Kaiser Steel mined iron ore at Kaiser Mine in Eagle Mountain and provided much of the Pacific Coast steel in the 1950s. Mining project also included the Eagle Mountain Railroad, 51 miles long. Imported steel captured market share in the 1960s and 1970s and primary steelmaking closed in the 1980s. 701380031
10	Blythe Energy Project Trans-mission Line	From the Blythe Energy Project (Blythe, CA) to *Julian Hinds* Substation	Blythe Energy, LLC	*Existing*	N/A	Transmission line modifications including upgrades to Buck Substation, approximately 67.4 miles of new 230 kV transmission line between Buck Substation and Julian Hinds Substation, upgrades to the Julian Hinds Substation, installation of 6.7 miles of new 230 kV transmission line between Buck Substation and SCE's DPV 500 kV transmission line.
11	*Blythe PV Project*	*Blythe*	*First Solar*	*CPUC approved project terms of a 20 year power purchase agreement for sale of 7.5 MW, Under construction in fourth quarter, 2009*	*200*	*7.5 MW solar photovoltaic project located on 200 acres. Project was constructed by First Solar and sold to NRG Energy.*
12	*Chuckwalla Valley Raceway*	*Desert Center Airport (no longer a community airport)*	*Developer Matt Johnson*	*Existing*	*400*	*Proposed 500-mile race track located on 400 acres of land that used to belong to Riverside County and was used as the Desert Center Airport. APNs 811-142-016, 811-142-006. Small private airstrip kept as part of project. Construction completed in March 2010.*

Table 3.18-3
Future Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID # on Figure 3.18-2	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
A	Four Commercial Projects	Blythe, CA	Various	Approved	N/A	Four commercial projects have been approved by the Blythe Planning Department including the Agate Road Boat & RV Storage, Riverway Ranch Specific Plan, Subway Restaurant and Motel, and Agate Senior Housing Development.
B	Intake Shell	Blythe, CA		Under Construction	N/A	Reconstruction of a Shell facility located at Intake & Hobson Way. Demolition occurred in 2008, reconstruction planned for 2009-2010.
C	Fifteen residential developments	Blythe, CA	Various	Approved or Under Construction	N/A	Twelve residential development projects have been approved by the Blythe Planning Department including: Vista Palo Verde (83 Single Family Residential [SFR]), Van Weelden (184 SFR), Sonora South (43 SFR), Ranchette Estates (20 SFR), Irvine Assets (107 SFR), Chanslor Village (79 SFR), St. Joseph's Investments (69 SFR), Edgewater Lane (SFR), The Chanslor Place Phase IV (57 SFR), Cottonwood Meadows (103 Attached SFR), Palo Verde Oasis Phase IV (29 SFR). Three residential development projects have been approved and are under construction including: The Chanslor Phase II & III (78 SFR), River Estate at Hidden Beaches, Mesa Bluffs Villas (26 Attached SFR).
D	Devers-Palo Verde 2 Trans-mission Line Project	From the Midpoint Substation to Devers Substation *(CA-only portion)*	SCE	*CPUC Petition to Modify Request to construct CA-only portion was* approved by CPUC 11/2009. *DPV2 to Arizona was originally approved by CPUC in 6/2007. BLM ROD not yet issued.*	N/A	New 500 kV transmission line parallel to the existing Devers-Palo Verde Transmission Line from Midpoint Substation, approximately 10 miles southwest of Blythe, to the SCE Devers Substation, near Palm Springs. The ROW for the 500 kV transmission line would be adjacent to the existing DPV ROW and would require an additional 130 feet of ROW on federal and State land and at least 130 feet of ROW on private land and Indian Reservation land.
E	Colorado *River* Substation *Expansion*	10 miles southwest of Blythe	SCE	Approved by CPUC 11/2009. *Application for expansion filed with CPUC in 11/2010. Expansion currently under environmental review.*	44	The *substation was approved by the CPUC (as the "Midpoint Substation") but is proposed to be expanded as a* 500/230 kV substation *and* would be constructed in an area approximately 1,000 feet by 1,900 feet, permanently disturbing approximately *90* acres. The 500 kV switching station would include buses, circuit breakers, and disconnect switches. The switchyard would be equipped with 108-foot-high dead-end structures. Outdoor night lighting would be designed to illuminate the switchrack when manually switched on. *The Draft Supplemental EIR was published by the CPUC in February 2011.*

Table 3.18-3 (continued)
Future Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID # on Figure 3.18-2	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
F	Desert Southwest Trans-mission Line	118 miles primarily parallel to DPV	Imperial Irrigation District	Final EIR/EIS prepared *in* 2005. Approved by the BLM in 2006.	N/A	New, approximately 118-mile 500 kV transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation located approximately 10 miles north of Palm Springs, California.
G	Blythe Energy Project II	Blythe, CA. Near the Blythe Airport and I-10	Blythe Energy, LLC	Approved *by CEC in* December 2005	30 acres (located on Blythe Energy Project land)	520 MW combined-cycle power plant located entirely within the Blythe Energy Project site boundary. Blythe Energy Project II will interconnect with the Buck Substation constructed by WAPA as part of the Blythe Energy Project. Project is designed on 30 acres of a 76-acre site.
H	Eagle Mountain Pumped Storage Project	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	License application filed with FERC in June 2009. *EIR published in mid- 2010; FERC Draft EIS published in December 2010*.	1,524	1,300 MW pumped storage project designed to store off-peak energy to use during peak hours. The captured off-peak energy would be used to pump water to an upper reservoir. When the water is released to a lower reservoir through an underground electrical generating facility the stored energy would be added into the Southwestern grid during “high demand peak” times, primarily weekdays. Estimated water use is 8,100 AFY for the first four-year start-up period and replacement water is 1,763 AFY thereafter.
I	Palen Solar Energy Project	North of I-10, 10 miles east of Desert Center	Solar Millennium LLC/ Chevron Energy	*Approved by CEC in December 2010. Undergoing environmental review by BLM. Proposed to have one unit online in 2012 and one unit online in 2013.*	5,200	500 MW solar trough project on 5,200 acres. Facility would consist of two 250 MW plants disturbing approximately 3,870 acres. Project would include interconnection to the SCE Red Bluff Substation. Project would use an estimated 300 AFY of water.
J	Blythe Solar Power Project	North of I-10, immediately north of the Blythe Airport	Solar Millennium LLC/Chevron Energy	*Approved by CEC and BLM in 2010; under construction.*	9,400	1,000 MW solar trough facility on 9,400 acres.
K	NextEra (FPL) McCoy	Northwest of Blythe, CA, immediately north of Blythe Solar Power Project	NextEra (FPL)	Plan of Development in to Palm Springs BLM	20,608	250 MW solar trough project. ROW in process for monitoring water well drilling.

Table 3.18-3 (continued)
Future Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID # on Figure 3.18-2	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
L	McCoy Soleil Project	10 miles northwest of Blythe	enXco	Plan of Development in to Palm Springs BLM	1,959	300 MW solar power tower project located on 1,959 acres. Project would require a 14-mile transmission line to proposed SCE Colorado Substation south of I-10. Would use 575-600 AFY of water.
M	Genesis Solar Energy Project	North of I-10, 25 miles west of Blythe and 27 miles east of Desert Center	NextEra (FPL)	*Approved by CEC and BLM in 2010; under construction*		250 MW solar trough project on 4,640 acres north of the Ford Dry Lake. Project includes six-mile natural gas pipeline and a 5.5-mile gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, then travel east on shared transmission poles to the Colorado River Substation.
N	Chuckwalla Solar I	1 mile north of Desert Center	Chuckwalla Solar I, LLC	Plan of Development submitted to BLM	4,083	200 MW solar photovoltaic project on 4,083 acres. Project would be developed in several phases and would tap into an existing SCE 161-kV transmission line crossing the site.
O	Rice Solar Energy Project	Rice Valley, Eastern Riverside County	Rice Solar Energy, LLC (Solar Reserve, LLC)	*Approved by CEC; construction to begin in 2011*	1,410	150 MW solar power tower project with liquid salt storage. Project is located on approximately 1,410 acres and includes a power tower approximately 650 feet tall and a 10-mile long interconnection with the WAPA Parker-Blythe transmission line.
P	Blythe Airport Solar I Project	Blythe Airport	U.S. Solar	City of Blythe approved the project in November, 2009	640	100 MW solar photovoltaic project located on 640 acres of Blythe airport land.
Q	Desert Quartzite	South of I-10, 8 miles southwest of Blythe	First Solar (previously OptiSolar)	POD in to BLM	7,724	600 MW solar photovoltaic project located on 7,724 acres. Adjacent to DPV transmission line and SCE Colorado Substation. Approximately 27 AF of water would be used during construction and 3.8 AFY during operation.
R	Desert Harvest Project	6 miles north of Desert Center	enXco	*POD submitted to BLM*	1,057	100 MW photovoltaic plant on 1,057 acres of BLM land. Would require a 5- to 8-mile transmission line to planned SCE Red Bluff Substation.
S	Eagle Mountain Landfill Project	Eagle Mountain, North of Desert Center	Mine Reclamation Corporation and Kaiser Eagle Mountain, Inc.	US Court of Appeals for the Ninth Circuit issued its opinion regarding the EIS for the project in 11/09 and ruled that the land exchange for the project was not properly approved by	~ 3,500	The project proposed to be developed on a portion of the Kaiser Eagle Mountain Mine in Riverside County, California. The proposed project comprises a Class III nonhazardous municipal solid waste landfill and the renovation and repopulation of Eagle Mountain Townsite. The proposal by the proponent includes a land exchange and application for rights-of-way with the Bureau of Land Management and a Specific Plan, General Plan Amendment, Change of Zone, Development Agreement, Revised Permit to Reclamation Plan, and Tentative Tract Map with the County. The Eagle Mountain

Table 3.18-3 (continued)
Future Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID # on Figure 3.18-2	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
				the administrative agency. Kaiser's Mine and Reclamation is considering all available options.		landfill project proposes to accept up to 20,000 tons of non-hazardous solid waste per day for 50 years.
T	Wiley's Well Communi-cation Tower (part of the Public Safety Enterprise Communi-cation System)	East of Wiley's Well Road, just south of I-10	Riverside County	Final EIR for the Public Safety Enterprise Communication System published in August 2008.	N/A	The Public Safety Enterprise Communication project is the expansion of Riverside County's fire and law enforcement agencies approximately 20 communication sites to provide voice and data transmission capabilities to personnel in the field.
U	Paradise Valley "New Town" Development	Approximately 30 miles west of Desert Center (7 miles east of the city of Coachella)	Glorious Land Company	Notice of Preparation (NOP) of an EIR published in December 2005. Still under environmental review.	6,397	Company proposes to develop a planned community as an international resort destination with residential, recreational, commercial, and institutional uses and facilities. The project is planned as a self-contained community with all public and quasi-public services provided. The project is located outside the Coachella Valley Water District (CVWD) boundaries and the applicant has entered into an agreement with the CVWD to manage artificial recharge of the Shaver's Valley groundwater. The proponent has purchased a firm water supply from Rosedale-Rio Bravo Water District in Kern County. In-kind water would be transferred to the MWD that would release water from the Colorado River Aqueduct to a 38-acre percolation pond on the project site. MWD would deliver approximately 10,000 AFY to the percolation pond and over the long term, no net loss of groundwater in storage is anticipated.
V	Mecca Specific Plan	North of Salton Sea, east of community of Mecca, southeast of City of Coachella.	Mecca Group LLC	NOP of an EIR published in June 2008. Still under environmental review.	2,934	The proposed project includes 19,476 units with a mix of low-, medium- and high-density residential development. Non-residential uses include retail/commercial, mixed use, a golf course, and open space with civic uses and agricultural buffers. The Specific Plan incorporates existing residential, commercial, industrial, and civic uses with a blend of proposed low-, medium- and high-density residential and commercial land uses. The proposed General Plan Amendment and Change of Zone would be changed to Specific Plan and Specific Plan zoning.

Table 3.18-3 (continued)
Future Foreseeable Projects along the I-10 Corridor (Eastern Riverside County)

ID # on Figure 3.18-2	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
Additional Projects Outside Cumulative Figure Boundaries or Not Analyzed in Cumulative Discussion						
W	Proposed National Monument (former Catellus Lands)	Between Joshua Tree National Park and Mojave National Preserve		In December 2009, Senator Feinstein introduced bill S.2921 that would designate two new national monuments including the Mojave Trails National Monument.	941,000	The proposed Mojave Trails National Monument would protect approximately 941,000 acres of federal land, including approximately 266,000 acres of the former railroad lands along historic Route 66. The BLM would be given the authority to conserve the monument lands and also to maintain existing recreational uses, including hunting, vehicular travel on open roads and trails, camping, horseback riding and rockhounding.
X	BLM *Solar Energy Zones (SEZs)*	Along the I-10 corridor between Desert Center and Blythe	BLM	Proposed	202,*896* (eastern Riverside County only)	The DOE and the BLM identified 24 tracts of land as Solar Energy Study Areas in the BLM and DOE Solar Programmatic *Draft* EIS, *published in December 2010.* These areas have been identified for in-depth study of solar development and may be found appropriate for designation as solar energy zones in the future.

Three projects included on Table 3.18-3 would interconnect to the SCE Red Bluff Substation, and their construction and operational impacts would occur at the same times and in the same general area as the proposed Project. These projects are separate projects that are being undertaken by different entities. However, the following provides additional, clarifying information about the description and environmental impacts of these projects and the potential for these impacts to combine with impacts of the proposed Project:

- ***Palen Solar Power Project (PSPP)**: This is a 500 MW solar trough project on 5,200 acres, about seven miles south of the Desert Sunlight project and about two miles north of the Red Bluff Substation. It would consist of two adjacent 250 MW plants disturbing approximately 3,870 acres. PSPP would interconnect to the SCE Red Bluff Substation; the gen-tie is evaluated in its CEQA document. It would use an estimated 300 AFY of water. Impacts of this project were defined by the California Energy Commission, which approved the project in December 2010 (CEC, 2010; see Commission Decision CEC-800-2010-010 CMF, Docket Number 09-AFC-07). As defined in that Decision, the significant and unmitigable impacts of the PSPP were defined by the CEC as follows:*
    - ***Cultural Resources**. The project may permanently change and/or result in the destruction of cultural resources, both known and as yet unknown, contributing to a cumulatively considerable impact which will be mitigated to the extent possible, but may not be fully mitigated.*
    - ***Land Use**. The CEC's decision states that the contribution of PSPP to the loss of desert lands, in combination with the other renewable energy projects proposed in the region (including Desert Sunlight and the Red Bluff Substation), would be cumulatively significant. Lands formerly available for multiple uses—habitat, open space, grazing, and recreation—would no longer be available for those uses once a power plant is constructed.*
    - ***Visual Resources**. PSPP would result in the installation of a large, industrial facility in the I-10 corridor. The CEC defined significant visual impacts from several Key Observation Points in the Chuckwalla Valley, the Palen McCoy Wilderness, and along I-10. A significant cumulative impact to visual resources in eastern Riverside County was identified from the combination of PSPP and other existing and proposed energy projects including the Desert Sunlight and Red Bluff Substation projects. The PSPP transmission line would also result in a substantial contribution to cumulative visual impacts in the context of existing cumulative conditions. PSPP's contribution to visible industrialization of the desert landscape also constitutes a substantial contribution to a significant visual impact when considering existing and foreseeable projects, both within the immediate project viewshed and in a broader context encompassing the whole of the I-10 corridor.*
- ***enXco Desert Harvest Solar Project**: This 100 MW photovoltaic plant is proposed on 1,057 acres of BLM-administered land (BLM Application CACA 049491). It would require a five- to eight-mile gen-tie line to connect to the SCE Red Bluff Substation. This project has not yet been evaluated under NEPA or CEQA. The impacts would be similar to those of the Desert Sunlight project, as disclosed in this EIS, but since its ground disturbance would be about one-quarter of the size of that project, most impacts would be reduced proportionally.*
- ***Eagle Mountain Pumped Storage Project:** On June 22, 2009, Eagle Crest Energy Company filed an application for an original license with the Federal Energy Regulatory Commission (FERC) for the proposed Eagle Mountain Pumped Storage Hydroelectric Project, which would be located on the site of the inactive Eagle Mountain mine, in Riverside County, California, near the town of Desert Center. The project would occupy 1,059 acres of federal lands administered by BLM and 1,162 acres of private lands owned by Kaiser Eagle Mountain, LLC. The power generated at Eagle Mountain would be transmitted to the electric*

grid via the Red Bluff Substation. The estimated annual production from the proposed project would be a maximum of 4,308 gigawatt-hours of on-peak generation. According to the Draft EIS published by the Federal Energy Regulatory Commission in December 2010 (FERC, 2010), the primary environmental issues associated with licensing the project are the effects from construction and operation on groundwater, water quality, and terrestrial species, including several state sensitive bat species, the BLM sensitive desert bighorn sheep, and the threatened desert tortoise.